Distributions & Channels

MORNSUN®

China Hong Kong Australia Austria Benelux Brazil Bulgaria Czech Republic Denmark

Finland France Germany India Iran Israel Italy Japan Korea

Malaysia New Zealand Norway Poland Portugal Russia Singapore South Africa Spain

Sweden Switzerland Thailand Turkey United Kingdom United States Mexico Canada

mornsun website

mornsunamerica website


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**AC-DC Converter · DC-DC Converter · Isolation Transmitter**

**IGBT Driver · LED Driver · EMC Auxiliary Device**

# Product Catalogue 2017

MORNSUN®

MORE THAN RELIABILITY

Headquarter in Guangzhou

Manufacturing Center in Guangzhou

R&D Center in Guangzhou

# CONTENT





**MORNSUN®** , being a national high-tech enterprise in China, has grown into one of the biggest vertical industrial power module manufacturers in China over the past 19 years.

MORNSUN keeps the spirit of being a front runner and making high quality AC/DC converter, DC/DC converter, Isolation Amplifier, IGBT Driver and LED Driver, etc. As specializing in research and application on Magneto electric isolation technology and products, most of MORNSUN products have UL, CE, EN60601-1 and [Exia] IIC approval. And with multiple management systems of ISO9001:2008, TS16949, ISO14001 and OHSMS18001, MORNSUN quality has obtained the recognition and praise from leading enterprises such as GE, SIEMENS, Honeywell and Emerson, etc.

As a pioneer and leader in Chinese micro-power industry, MORNSUN continues achieving self-transcendence and has gained 300+ patents.

Today, MORNSUN is a leading brand around the world. The company continues to globalize its operations with sample inventory in North America, Japan, India and Germany, etc. Following the service principle of "trust worthy", MORNSUN is also expanding its distribution network in 40+ countries to offer better services to local clients in those locations.

As part of society, MORNSUN focuses on teamwork and persistent hard work, and it's deeply devoted to its role as a responsible corporate citizen around the world. Based on it, MORNSUN holds the core value of "creating value for its employees, clients, shareholders and developing our business to repay the society" and takes it as its mission to make contribution to the development of society and progress of the humankind by pursuing excellence unremittingly.

MORNSUN is marching a new silk road like a camel without any stop to realize new brilliant.


Manufacturing Center in Huaihua

## Milestones

2016----Recognized as "Industrial Leading Enterprises" in Guangzhou
2016----Awarded "To 20 Enterprise of Patent Creating in Development Zone "
2016----Awarded "Innovative Enterprise (Pilot) in Guangdong Province"
2015----Awarded "Best Employer of China 2015"
2015----Awarded "Science and Technology Prize of 3rd China Power Supply Society"
2015----Awarded "Guangdong Engineering Technology Research Center of Industrial Power Supply Module "
2015----Awarded "Well-Known Trademark"in Guangdong
2014----High frequency switching DC power source awarded "Well-Known Product" in Guangdong
2014----Purchased Mornsun Guangzhou R&D center building
2013----Awarded "Best Employer of China 2013" under the Hi-Tech category
2013----Awarded "Science and Technology Prize of 2nd China Power Supply Society"
2013----Awarded the "Well-Known Trademark" in Guangzhou
2013----Drafted Fixed voltage input and Unregulated output isolated DC-DC model power supply, standard number (pending): *Energy 20130817*
2012----Drafted Wide voltage input and regulated output isolated DC-DC model power supply, standard number *NB/T 42039-2014*, which goes into effect from Nov.1 2014
2012----AC-AC Converters awarded "China's Independent Innovation" and"TOP 10 Power Supply Product"
2012----Awarded "Indigenous Innovation Company of EDN China 2012"
2012----Ranked top 18th of 100 most potential private companies by Forbes China
2012----Awarded "Most Satisfactory Employer of China 2012"under the Hi-Tech category
2011----Established Mornsun Huaihua manufacturing center
2010----Moved to MORNSUN new headquarter building in Guangzhou Science City
2008----Established Mornsun Huangpu manufacturing center
2008----Established Mornsun America, LLC in MA, USA
2007----Acquired ISO14001, OHSMS18001 approval
2003----Awarded "High-tech Enterprise"
2003----Acquired products UL and CE approval
2002----Acquired ISO 9001:2000 approval
2001----Implemented informational management system
1998.07----Established MORNSUN in Guangzhou, China



## One-stop solutions of industrial power supplies

### Professional Technology & International Standard

- 350+ patents and IIPR: power circuit topology, transformer structures, assembling technology and figures, etc;
- Drafted the national standard *NB/T 42039-2014* and *Energy 20130817*;
- International standard pin-out and SMD package with convenient design and automatic manufacturing process.

### 360° Professional Support

- Professional selection guide : 'Choose the product that works';
- Precise trading: Nearly 100% OTD and door-to-door delivery which reduce customers' cost and risks;
- 360° professional support: Fast response within 24hrs, routine visit, technical communication and discussion.

### Reliability Ensured throughout the whole manufacturing process

- Seven platforms ensuring the reliability and controllability for the whole process from R&D, manufacturing to marketing;
- Seven platforms: technological platform, failure analysis platform, material platform, manufacturing platform, personnel training platform, process supervision platform, FAE support platform.


### Notes:

NB/T 42093-2014: Wide voltage input and regulated output isolated DC-DC model power supply
Energy 20130817: Fixed voltage input and Unregulated output isolated DC-DC model power supply

**Honored by: GE, SIEMENS, Emerson, Alstom, Honeywell, HUAWEI, CREE, CRRC**

Automatic SMT clean room

Automatic workshop

## Product Certificationrs

CE CB REACH RoHS COMPLIANT

## Systems

TS16949 ISO9001 ISO14001 OHSAS18001

## Key to the Reliability

Power supply is the heart of industrial equipment. What customers concern most is not the price, the function or the efficiency, but the reliability of the power supply. In other words, it must not break down especially in various extreme situations.

It is easy to guarantee the function of the power supply, but not for the reliability, particularly the reliability of the power supply under harsh conditions. The reliability can only be achieved by a perfect management system which consists of advanced research technology, high-quality raw material platform, advanced equipment, excellent manufacturing process management, specialized screening sequence on reliability and rich experience.

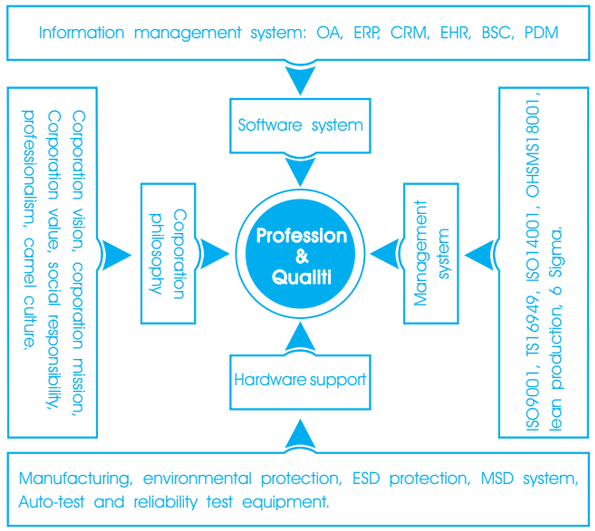
Meanwhile, the reliability of products depends on not only design and manufacturing but also customers' proper operation. Therefore, MORNSUN FAE team are ready to offer professional technical support to customers to enhance the reliability.

Therefore, improving the reliability of the products is not a simple task but a rather complex system.

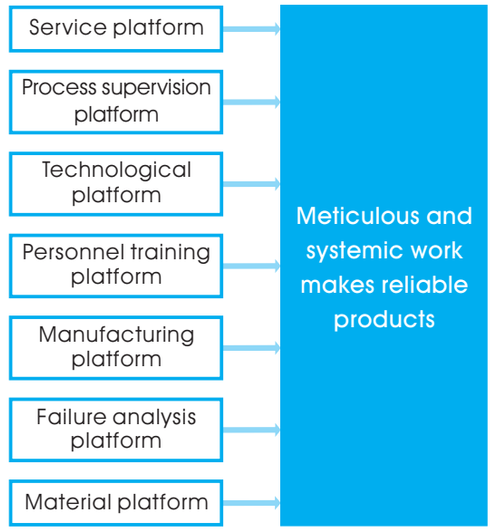
To meet customers demand and expectation, MORNSUN spends much time and money to improve the power supply reliability. In 2007, MORNSUN established the power supply reliability system project and brought in 7 platforms to improve the reliability of MORNSUN products in the following 7 years, including material platform, technological platform, failure analysis platform, manufacturing platform, personnel training platform, process supervision platform, FAE support platform. Thanks to these platforms, MORNSUN makes significant breakthroughs in all existing products and newly develops R3 DC-DC Converter with higher reliability and perfecter performance.

"No pain, no gain." The reliability can only be achieved by earnest, meticulous work, step by step, which is consistent with MORNSUN's Camel Culture. In conclusion, MORNSUN's meticulous and systemic work makes products reliable .

## MORNSUN's TQA System Architecture




## Meticulous and Systemic Work Marks Reliable Products



Product Guide by Industry

# Industrial Control

## Inverter & Motor Drive and Control System

| Series | Nominal Input Voltage(VDC) | Input Voltage Range(VDC) | Positive Output (VDC) | Negative Output (VDC) | Output Current (mA) | Efficiency | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| QA01 | 15 | 14.5-15.5 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS c UL us CB | 81 |
| QA02 | 12 | 11.6-12.4 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS c UL us CB | 81 |
| QA03 | 24 | 23.3-24.7 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS c UL us CB | 81 |
| QA04 | 12 | 9-15 | +15 | -8 | +100/-80 | 80% | 3000VAC | RoHS c UL us CB | 81 |
| QA01C | 15 | 13.5-16.5 | +20 | -4 | +100/-100 | 83% | 3500VAC | RoHS c UL us CE CB | 82 |
| QAW01 | 12 | 9-18 | +15 | -9 | +200/-200 | 85% | 3000VDC | RoHS | 82 |
| QAW02 | 24 | 18-36 | +15 | -9 | +200/-200 | 85% | 3000VDC | RoHS | 82 |
| QA152D | 15 | 13.5-16.5 | +15 | -9 | +200/-200 | 83% | 4000VAC | RoHS | 82 |
| QA156D-24 | 15 | 13.5-16.5 | +24 | / | 150/15 | 80% | 12000VDC | RoHS | 82 |
| QA1201C-20 | 12 | 10.8-13.2 | +20 | -4 | +100/-100 | 80% | 3500VAC | RoHS | 82 |
| QA121 | 12 | 11.4-12.6 | +15 | -8 | +120/-120 | 81% | 3000VAC | RoHS | 81 |
| QA151 | 15 | 14.25-15.75 | +15 | -8 | +120/-120 | 81% | 3000VAC | RoHS | 81 |
| QA241 | 24 | 22.8-25.2 | +15 | -8 | +120/-120 | 81% | 3000VAC | RoHS | 81 |

| Series | Input Voltage (VDC) | Input Voltage Range(VDC) | Output High-level Voltage VOH(VDC) | Output Low-level Voltage VOL(VDC) | Max. Driving Current (A) | Max.Frequency (KHz) | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| QP12W08S-37 | 15 | 14.5-15.5 | 15 | -9 | ±8 | 20 | 3750VAC | RoHS | 83 |

| Series | Positive input Voltage(VDC) | Negative input Voltage(VDC) | Output High-level Voltage VOH(VDC) | Output Low-level Voltage VOL(VDC) | Max. Driving Current (A) | Max.Frequency (KHz) | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| QC962-8A | 15 | -10 | 14 | -9 | ±8 | 40 | 3750VAC | RoHS | 83 |

## DCS & PLC & SCADA

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LS01-SS | 1W | 85-264VAC/70-400VDC | 5,9,12,15,24 | RoHS CE | 22 |
| LS03-SR2S(-F) | 3W | 85-264VAC/70-400VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE CB | 22 |
| LS03-16BxxSS | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE | 23 |
| LS05-SS | 5W | 85-264VAC/100-400VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE CB | 22 |

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LH-10B | 5W,10W,15W,20W,25W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24,48 | RoHS c UL us CE CB | 27-28 |
| LH-13B | 5W,10W,15W,20W,25W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24,48 | RoHS c UL us CE CB | 26 |
| LH40 | 40W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | RHS c UL us CE | 29 |
| LH60-20B | 60W | 90-264VAC/122-370VDC | 5,9,12,15,24,48 | RoHS c UL us CE | 29 |

| Series | Power | Input Voltage Range(VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| WRA_S-1WR2/3WR2 | 1W,3W | 4.5–9,9–18,18-36,36-72 | ±5,±9,±12,±15 | RoHS CE | 53,55 |
| WRB_S-1WR2/3WR2 | 1W,3W | 4.5-9,9-18,18-36,36-72 | 3.3,5,9,12,15,24 | RoHS CE | 53,55 |

| Series | Function | Power Supply | Data Rate | Certification | Page |
|---|---|---|---|---|---|
| TD301/501D485 | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0-9.6Kbps | RoHS | 73 |
| TD301/501D485H | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0-200Kbps | RoHS c UL us CE CB | 73 |
| TD301/501D485H-A | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0-115.2Kbps | RoHS CE | 73 |
| TD301/501D485H-E | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0-500Kbps | RoHS c UL us CE CB | 73 |
| TDH301/501D485H | Single economical/high rate/high isolated Rs485 | 3.17-3.45V,4.75-5.25V | 0-115.2Kbps | RoHS CE | 73 |
| TD312P485/TD512P485 | Duplex economical/high rate high isolated Rs485 | 3.17-3.45V,4.75-5.25V | 0-9.6Kbps | RoHS | 73 |
| TD312P485H/TD512P485H | Duplex economical/high rate high isolated Rs485 | 3.17-3.45V,4.75-5.25V | 0-115.2Kbps | RoHS | 73 |
| TD31IP485H/TD51IP485H | Duplex economical/high rate high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0-115.2Kbps | RoHS | 73 |
| TD301/501DCAN | Single economical/ universal/high rate CAN | 3.0-3.6V,4.5-5.5V | 0-1Mbps | RoHS | 74 |
| TD301/501DCANH3 | Single economical/ universal/high rate CAN | 3.0-3.6V,4.5-5.5V | 0-1Mbps | RoHS | 74 |
| TD302/502DCAN | Duplex universal CAN | 3.0-3.6V,4.5-5.5V | 0-1Mbps | RoHS | 74 |
| TD301/501D232H | Single/duplex high rate RS232 | 3.0-3.6V,4.5-5.5V | 0-115.2Kbps | RoHS | 75 |
| TD302/502D232H | Single/duplex high rate Rs232 | 3.0-3.6V,4.5-5.5V | 0-115.2Kbps | RoHS | 75 |
| TDx01MCAN | Single high rate transceiver module | 3.15-3.45,4.75-5.25 | 0K-1M | RoHS | 75 |
| TD301MCANFD | Single high rate transceiver module | 3.15-3.45,4.75-5.25 | 40K-5M | RoHS | 75 |

| Series | Function | Input Signal | Output Signal | Isolation | Certification | Page |
|---|---|---|---|---|---|---|
| TE_N | Active module | 0-5V,0-10V,4-20mA | 0-5V,0-10V | 2000VAC | RoHS CE | 76 |
| TE_AN | Active module positive and negative signal | ±5V,±10V | 0-5V,0-10V | 2000VAC | RoHS CE | 76 |
| TE_CN | Active module positive and negative signal | ±5V,±10V | ±5V,±10V | 2000VAC | RoHS CE | 76 |
| TEM_AN | Active, mV-class, positive and negative signal | ±75mV/±100mV | 0~5V | 2000VAC | RoHS CE | 76 |
| TEM_CN | Active, mV-class, positive and negative signal | ±50mV/±100mV/±200mV | ±5V/±10V | 2000VAC | RoHS CE | 76 |
| TF_N | Active module | 0-5V,0-10V | 0/4-20mA,0-5V,0-10V | 2000VAC | RoHS CE | 77 |
| T_P | Active module | 0/4-20mA,0-5V,0-10V | 0/4-20mA,0-5V,0-10V | 2500VDC | RoHS | 79 |
| T_AP | Active high precision signal | ±5V,±10V | 4-20mA,0-5V,0-10V | 2500VDC | RoHS | 79 |
| TM_P | Active high precision(mV-class) signal | 0-10/30/50/75/100mV | 0/4-20mA,0-2.5/3.3/5/10V | 2500VDC | RoHS | 78 |
| TM_AP | Active high precision(mV-class) signal | ±10/±20/±50/±75/±100mV/±200mV | 4-20mA,0-3/3.3/5/10V | 2500VDC | RoHS | 78 |
| TM_CP | Active high precision(mV-class) signal | ±10/±20/±50/±75/±100mV/±200mV | ±5V/±10V | 2500VDC | RoHS | 78 |
| T1100N | Passive module | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T1100L | Passive module | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T1100L–F | Passive module(loop power supply) | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T_HL | Two-wire Self-Powered module with HART | 0-2.5V | 3.7-22mA | 2000VAC | RoHS CE | 80 |
| T_L | Two-wire loop power supply | 0-2.5V | 3.7-22mA | 2000VAC | RoHS CE | 80 |
| TRP_P | RTDs detection type isolated module | Pt100(0-200℃) | 4-20mA | 2000VAC | RoHS CE | 80 |
| TE_HN | Active high precision high isolated detection type signal | 0-5V | 0-5V | 4000VAC | RoHS | 81 |

## Instrumentation

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LS01-SS | 1W | 85-264VAC/70-400VDC | 5,9,12,15,24 | RoHS CE | 22 |
| LS03-SR2S(-F) | 3W | 85-264VAC/70-400VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE CB | 22 |
| LS03-16BxxSS | 3W | 85-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE | 23 |
| LD03-16B | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE | 23 |
| LS05-SS | 5W | 85-264VAC/100-400VDC | 3.3,5,9,12,15,24 | RoHS c UL us CE CB | 22 |

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| B_LS-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5.9,12,15,24 | RoHS cULus CE | 44 |
| A_XT-1WR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 46 |
| B_XT-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 46 |
| A_S-2WR2 | 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 48 |
| B_S-2WR2 | 2W | 5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 48 |

## Renewable Energy

### TLS-CB & PV Inverter & Wind Energy Converter & UHV Power Transmission & SVG

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| PV(05-15)-27BxxR2 | 5W,10W,15W | 100-1000 | 5,9,12,15,24 | RoHS CE | 38 |
| PV40-27B | 40W | 200-1200 | 12,15,24 | RoHS | 38 |
| PV45-29D | 45W | 150-1500 | 12,15,24 double outputs available | RoHS | 39 |
| PV(15-40)-29B | 10W,15W,40W | 200-1500 | 5,12,15,24 | RoHS CE | 39 |
| PV15-29BxxL | 10W,15W | 200-1500 | 5,12,15,24 | RoHS | 39 |

### Protective Relaying System

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LM30-00J0512-03E | 30W | 85-264VAC/100-370VDC | 5/±12/24 | RoHS | 34 |
| G-S-2WR2 | 2W | 5,12,24VDC | ±5,±9,±12,±15 | RoHS cULus CE | 42 |
| H-S-2WR2 | 2W | 5,12,24VDC | 5,12,15 | RoHS cULus CE | 42 |
| LH-10BxxER2 | 10W,15W,25W | 85-264VAC/120-370VDC | 5,12,15,24 | RoHS | 35 |

### Intelligent Surveillance System

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| E_XT-1WAR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 46 |
| F_XT-1WR2/2WR2 | 1W, 2W | 3.3,5,12,15,24 | 3.3,5,9,12,15,24 | RoHS cULus CE | 46,49 |
| E_S-1WR2/2WR2 | 1W, 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 45,48 |
| F_S-1WR2/2WR2 | 1W, 2W | 3.3,5,12,15,24 | 5,12,15,24 | RoHS cULus CE | 45,48 |
| WRE_S-1WR2/3WR2 | 1W,3W | 4.5-9,9-18,18-36,36-75 | ±5,±9,±12,±15 | RoHS CE | 53,57 |
| WRF_S-1WR2/3WR2 | 1W,3W | 4.5-9,9-18,18-36,36-75 | 3.3,5,9,12,15,24 | RoHS CE | 53,57 |

### Smart Home

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LS01-SS | 1W | 85-264VAC/70-400VDC | 5,9,12,15,24 | RoHS CE | 22 |
| LS03-SR2S(-F) | 3W | 85-264VAC/70-400VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 22 |
| LS03-16BxxSS | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 23 |
| LS05-SS | 5W | 85-264VAC/100-400VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 22 |
| LD03-10BxxR2 | 3W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 24 |
| LD05-23B | 5W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 25 |
| LN(01-03)-12B | 1W,2W,3W | 165-264VAC/233-370VDC | 5,12,24 | RoHS CE | 31 |
| LD03-16B | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 23 |
| LO10-24B | 10W | 30-280VAC/30-400VDC | 5,12,13 | RoHS | 33 |
| LO10-26D0512-04L | 10W | 57-528VAC/80-745VDC | 5.1,12 | RoHS | 34 |



Product Guide by Industry

### Distribution Network Automation

| Series | Power | Output Voltage/ Current | Floating charging voltage | Charging current | Certification | Page |
|---|---|---|---|---|---|---|
| MCP100-2A27D27 | 100W | 27V/1.5A | 27V | 3A | RoHS | 36 |
| MBP300-2A27D27 | 108W(350W/30s,432W/1s) | 27V/3A | 27V | 1A | RoHS | 36 |
| MBP500-2A27D27 | 162W(540W/30s,702W/1s) | 27V/4.5A | 27V | 1.5A | RoHS | 36 |
| MBP500-2A54D54 | 135W(540W/30s,702W/1s) | 54V/1A | 54V | 1.5A | RoHS | 36 |
| MBP300-2A27D27220 | 63W | 27V/1A | 27V/220V | 0.1A/0.5A | RoHS | 31 |

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| URF_LP-10WR3 | 10W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 61 |
| URF_LP-20WR3 | 20W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |

## Transportation

### OBU

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| URB1D-YMD-6WR3 | 6W | 40-160 | 5,12,15,24 | RoHS | 65 |
| URB1D-LMD-10WR3/15WR3/20WR3 | 10W,15W,20W | 40-160 | 3.3,5,12,15,24 | RoHS | 65 |
| URF1D_QB-50W/75W/100W | 50W,75W,100W | 66-160 | 5,12,15,24 | RoHS | 66 |
| URF1D_HB_150W | 150W | 50-160 | 12,15,24 | RoHS | 66 |

### Railway Auxiliary Device

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| IB_LS-1W | 1W | 5,12,15,24VDC | 3.3,5,12,15,24 | RoHS | 51 |
| URB_YMD-10WR3 | 10W | 9-36,18-75VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 61 |
| URB_LMD-20WR3 | 20W | 9-36,18-75VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |
| LH_10B | 5W,10W,15W,20W,25W | 85-264VAC/100–370VDC | 3.3,5,9,12,15,24,48 | RoHS cULus CE CB | 27-28 |

### Electric Vehicle--Motor Drive

| Series | Input Voltage (VDC) | Input Voltage Range (VDC) | Output Voltage (VDC) | Isolation Capacitance (pF) | Output Current (mA) | Effi(%) (typ) | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| CWRF_S | 12 | 7-18 | ±15 | / | ±200 | 82% | 4300VDC | RoHS | 58 |

### BMS(Battery Management System)

| Series | Power | Input Voltage (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| B05_LD-1WR2 | 1W | 5 | 50,60 | RoHS | 41 |

## Medical

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| G_S-1W/2WR2 | 1W,2W | 5,12,24VDC | ±5,±9,±12,±15 | RoHS cULus CE | 42 |
| H_S-1W/2WR2 | 1W,2W | 5,12,24VDC | 5,12,15 | RoHS cULus CE | 42 |
| URH_P-6WR3 | 6W | 9-36,18-75VDC | 5,9,12,15,24 | RoHS CE | 58 |
| LD05-20BxxMU | 5W | 85-264VAC/100-370VDC | 5,12,15,24 | RoHS cULus CE | 32 |
| LH15-20BxxMU | 15W | 85-264VAC/100-370VDC | 5,12,15,18,24 | RoHS CE | 32 |
| LH25-20BxxMU | 25W | 85-264VAC/100-370VDC | 5,12,15,18,24 | RoHS CE | 32 |

## Lighting

| Series | Input Voltage Range | Output Voltage (VDC) | Output Current (mA) | Certification | Page |
|---|---|---|---|---|---|
| KC24H-1000 | 5.5-48VDC | 3.3-36 | 0-1000 | RoHS | 92 |
| KC24H-1200 | 5.5-48VDC | 3.3-36 | 0-1200 | RoHS | 92 |
| KC24RT | 5.5-48VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| KC24H-R | 5.5-46VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| KC24W | 5.5-48VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| LO60-26B | 200-400VAC/280-560VDC | 0-60V available | 0.9A constant current | RoHS | 91 |

## Communication

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| URA_YMD-6WR3 | 6W | 9-36,18-75 | ±5,±12,±15,±24 | RoHS cULus CE CB | 60 |
| URB_YMD-6WR3 | 6W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 60 |
| URF_P-6WR3 | 6W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 60 |
| URA_YMD-10WR3 | 10W | 9-36,18-75 | ±5,±9,±12,±15,±24 | RoHS cULus CE CB | 61 |
| VRB-LD-15WR3 | 15W | 18-36,36-75 | 5,12,15,24 | RoHS cULus CE CB | 62 |
| URA_LD-20WR3 | 20W | 9-36,18-75 | ±5,±9,±12,±15 | RoHS cULus CE CB | 62 |
| URF_LP-20WR3 | 20W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |
| URB_LD-30WR3 | 30W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 63 |
| VRB_LD-50W | 50W | 18-36,36-75 | 3.3,5,12,15,24 | RoHS | 63 |

## IOT(Internet of Things)

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| LS01-SS | 1W | 85-264VAC/70-400VDC | 5,9,12,15,24 | RoHS CE | 22 |
| LS03-SR2S(-F) | 3W | 85-264VAC/70-400VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 22 |
| LS03-16BxxSS | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 23 |
| LS05-SS | 5W | 85-264VAC/100-400VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 22 |
| LD03-16B | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 23 |
| B_XT-1WR2 | 1W | 3.3,5,12,15,24VDC | 3.3,5,12,15,24 | RoHS cULus CE | 46 |



Product Guide by Industry

| Series | Output Current (mA) | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| K78(L)-500R3 | 500mA | 4.75-36 | 3.3,5,-5,9,-12,12,-15,15 | RoHS cULus CE | 52 |
| K78(L)-1000R3(L) | 1000mA | 6-36 | 3.3,5,-5,9,-12,12,-15,15 | RoHS cULus CE | 52 |
| K78U-500(L) | 500mA | 9-72 | 3.3,5,12 | RoHS | 52 |
| K78-1500(L) | 1500mA | 4.75-18 | 3.3,5,6.5 | RoHS | 52 |
| K78-2000(L) | 2000mA | 4.75-18 | 3.3,5,6.5 | RoHS cULus CE | 52 |

| Series | Function | Input Voltage Range (VDC) | Data Rate | Certification | Page |
|---|---|---|---|---|---|
| TD301/501DCANH3 | Single economical/ universal/high rate CAN | 3.0-3.6,4.5-5.5 | 0-1Mbps | RoHS | 73 |
| TD301/501D485H | Single economical/high rate/high isolated Rs485 | 3.17-3.45,4.75-5.25 | 0-200Kbps | RoHS cULus CE CB | 73 |

## Charging Station

| Series | Power/Function | Input Voltage Range/Input Voltage | Output Voltage/Data Rate | Certification | Page |
|---|---|---|---|---|---|
| LI120-10B | 120W | 85-264VAC/120-370VDC | 12,24,48 | RoHS cULus CE CB | 30 |
| LI240-10B | 240W | 85-264VAC/120-370VDC | 24,48 | RoHS cULus CE CB | 30 |
| LH05/10/15/20/25-10A/BXXX | 5W,10W,15W,20W,25W | 85-264VAC/100-370VDC | 5,12,24,±12 | RoHS cULus CE | 26 |
| LS03/05-15BXX | 3W,5W | 85-264VAC/100-370VDC | 5,12 | RoHS cULus CB | 22 |
| LM30-00J0512-03E | 30W | 85-264VAC/100-370VDC | 5,±12/24 | RoHS | 34 |
| URB_YMD-6WR3 | 6W | 9-36VDC | 5,12,±12 | RoHS cULus CE CB | 60 |
| WRB_S-3WR2 | 3W | 9-18,18-36VDC | 5,12,±12 | RoHS CE | 55 |
| B_S-1WR2 | 1W | 4.5-5.5,10.8-13.2,21.6-26.4VDC | 5,12 | RoHS cULus CE | 44 |
| F_S-1WR2 | 1W | 4.5-5.5,10.8-13.2,21.6-26.4VDC | 5,12 | RoHS cULus CE | 45 |
| TD301/501D485H | Single economical/high rate/high isolated RS485 | 3.17-3.45,4.75-5.25VDC | 0-200Kbps | RoHS cULus CE CB | 73 |
| TD301/501DCANH3 | Single economical/universal/high rate CAN | 3.0-3.6,4.5-5.5VDC | 0-1Mbps | RoHS | 74 |
| TD301/501D232H | Single/duplex high rate Rs232 | 3.0-3.6,4.5-5.5VDC | 0-115.2Kbps | RoHS | 75 |
| LM120-10B | 120W | 85-264VAC/100-370VD | 12,24 | RoHS | 35 |
| LO20-10C0512-01 | 18.7W | 165- 264VAC/230- 370VDC | 5,±12 | RoHS | 28 |

# Isolation Transmitter Selection Guide

## Signal Isolator / Isolation Barrier

| Series | Function | Input Signal | Output Signal | Feature | Page |
|---|---|---|---|---|---|
| TAxx0W | Analog signal | 0/4-20mA,0/1-5V,0/2-10V | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 84 |
| TAx05W | DC current input analog signal | 0/4-20mA | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 84 |
| TAx06W | Passive Barrier | 4-20mA | 4-20mA | / | 85 |
| TAxx0PW | DC current/voltage input programmable analog signal | 0/4-20mA,0/1-5V,0/2-10V | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 85 |
| TAxx5PW | DC current input programmable analog signal | 0/4-20mA,0/1-5V,0/2-10V | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 86 |
| TRxx0PW | Programmable RTD | Pt100,Cu50,Cu100 | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 86 |
| TR1x0PWE | Programmable RTD | Pt100,Cu50,Cu100 | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 87 |
| TCxx0PW | Programmable thermocouple | R,S,K,J,T,B,E thermocouple, mV signal | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 87 |
| TA_W-EX | Analog detection type | 4-20mA,0-10V | 0/4-20mA,0-10V | HART, DIN-Rail power supply | 88 |
| TAF_W-EX | Analog operation type | 4-20mA | 4-20mA | HART, DIN-Rail power supply | 88 |
| TS_W-EX | Switch detection type | Switch input | TSx00W-EX-xx: Relay output TSx01W-EX-xx: Transistor output | DIN-Rail power supply | 89 |
| TSF_W-EX | Switch operation type | Switch input | 12V/44mA | DIN-Rail power supply | 89 |
| TC_PW-EX | Programmable thermocouple | R,S,K,J,T,B,E thermocouple, mV signal | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 90 |
| TR_PW-EX | Programmable RTD | Pt100,Cu50,Cu100 | 0/4-20mA,0/1-5V,0/2-10V | DIN-Rail power supply | 90 |
| TD100 -EX-485 | RS 485 communication signal | RS485 digital signal | RS485/RS232 digital signal | Digital signal | 91 |
| TD101W-EX-485 | RS 485 communication signal | RS485 digital signal | RS485/RS232 digital signal | Digital signal | 91 |

## 1-5W DIY Type LS Series

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Output Current (mA) | Certification | Page |
|---|---|---|---|---|---|---|
| LS01-SS | 1W | 85-264VAC/70-400VDC | 5,9,12,15,24 | 200, 111, 83,67,42 | RoHS CE | 22 |
| LS03-SR2S(-F) | 3W | 85-264VAC/70-400VDC | 3.3,5,9,12,15,24 | 500, 500, 333, 250,200,125 | RoHS cULus CE CB | 22 |
| LS03-16BxxSS | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | 500, 500, 333, 250, 200,125 | RoHS cULus CE | 23 |
| LS05-SS | 5W | 85-264VAC/100-400VDC | 3.3,5,9,12,15,24 | 1000, 1000, 560, 420,340,210 | RoHS cULus CE CB | 22 |

## 1-3W No Electrolytic Capacitor LN Series

| Series | Power | Input Voltage Range | Output Voltage (Vo1) | Certification | Page |
|---|---|---|---|---|---|
| LN01-12B | 1W | 165-264VAC/233-370VDC | 5,12,24 | RoHS CE | 31 |
| LN02-12B | 2W | 165-264VAC/233-370VDC | 5,12,24 | RoHS CE | 31 |
| LN03-12B | 3W | 165-264VAC/233-370VDC | 5,12,24 | RoHS CE | 31 |

## 1-20W Compact LD Series

| Series | Power | Input Voltage Range | Output Voltage (Vo1) | Certification | Page |
|---|---|---|---|---|---|
| LD01-10B | 1W | 85-305VAC/120-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 25 |
| LD02-10B | 2W | 85-305VAC/120-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 25 |
| LD03-10BxxR2 | 3W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 24 |
| LD03-16B | 3W | 90-528VAC/100-745VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 23 |
| LD05-20B | 5W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 24 |
| LD05-23B | 5W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 25 |
| LD10-20B | 10W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | RoHS cULus CE | 24 |
| LD10-13B | 10W | 85-305VAC/120-430VDC | 3.3,5,9,12,15,24 | RoHS | 25 |
| LD12-20B | 12W | 85-264VAC/100-370VDC | 3.3,5,12,15,24 | RoHS cULus CE | 24 |
| LD20-10B | 20W | 85-264VAC/100-370VDC | 3.3,5,12,15,24 | RoHS cULus CE | 24 |

## 5-60W Standard Package LH Series

| Series | Power | Input Voltage Range | Output Voltage (Vo1) | Output Voltage (Vo2) | Certification | Page |
|---|---|---|---|---|---|---|
| LH05-10B | 5W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | | RoHS cULus CE | 27-28 |
| LH05-10A | 5W | 85-264VAC/100-370VDC | +5,+12,+15,+24 | -5,-12,-15,-24 | RoHS | 27-28 |
| LH05-10C | 5W | 85-264VAC/100-370VDC | 5 | ±5,±12,±15,±24 | RoHS | 27-28 |
| LH05-10D | 5W | 85-264VAC/100-370VDC | 5 | 5,12,15,24 | RoHS | 27-28 |
| LH10-10B | 10W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | | RoHS cULus CE CB | 27-28 |
| LH10-10A | 10W | 85-264VAC/100-370VDC | +5,+12,+15,+24 | -5,-12,-15,-24 | RoHS cULus CE | 27-28 |
| LH10-10C | 10W | 85-264VAC/100-370VDC | 5 | ±12,±15 | RoHS | 27-28 |
| LH10-10D | 10W | 85-264VAC/100-370VDC | 5 | 5,12,15,24 | RoHS cULus CE | 27-28 |
| LH15-10B | 15W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | | RoHS cULus CE CB | 27-28 |
| LH15-10A | 15W | 85-264VAC/100-370VDC | +5,+12,+15,+24 | -5,-12,-15,-24 | RoHS | 27-28 |
| LH15-10C | 15W | 85-264VAC/100-370VDC | 5 | ±5,±12,±15,±24 | RoHS cULus CE | 27-28 |
| LH15-10D | 15W | 85-264VAC/100-370VDC | 5 | 5,12,15,24 | RoHS | 27-28 |
| LH20-10B | 20W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | | RoHS cULus CE CB | 27-28 |
| LH20-10A | 20W | 85-264VAC/100-370VDC | +5,+12,+15 | -5,-12,-15 | RoHS | 27-28 |
| LH20-10C | 20W | 85-264VAC/100-370VDC | 5 | ±5,±12,±15,±24 | RoHS cULus CE | 27-28 |
| LH20-10D | 20W | 85-264VAC/100-370VDC | 5 | 12,15,24 | RoHS cULus CE | 27-28 |
| LH25-10B | 25W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24,48 | / | RoHS cULus CE CB | 27-28 |
| LH40-10B | 40W | 85-264VAC/100-370VDC | 3.3,5,9,12,15,24 | / | RoHS cULus CE | 29 |
| LH40-10A | 40W | 85-264VAC/100-370VDC | 5,12,15 | / | RoHS | 29 |
| LH40-10D | 40W | 85-264VAC/100-370VDC | 5 | 12,24 | RoHS | 29 |
| LH60-20B | 60W | 90-264VAC/122-370VDC | 5,9,12,15,24,48 | / | RoHS cULus CE | 29 |



AC/DC Converter Selection Guide

## 5-25W 85～305VAC Wide Input Voltage LH Series

| Series | Power | Input Voltage Range | Output Voltage (Vo1) | Certification | Page |
|---|---|---|---|---|---|
| LH05-13B | 5W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 26 |
| LH10-13B | 10W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 26 |
| LH15-13B | 15W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24,48 | RoHS cULus CE CB | 26 |
| LH20-13B | 20W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 26 |
| LH25-13B | 25W | 85-305VAC/100-430VDC | 3.3,5,9,12,15,24,48 | RoHS cULus CE CB | 26 |

## 120-240W DIN35 Package LI Series

| Series | Power | Input Voltage Range | Output Voltage (VDC) | Output Current (mA) | Certification | Page |
|---|---|---|---|---|---|---|
| LI120-10B | 120W | 85-264VAC/120-370VDC | 12,24,48 | 10000,5000,2500 | RoHS cULus CE CB | 30 |
| LI240-10B | 240W | 85-264VAC/120-370VDC | 24,48 | 10000,5000 | RoHS cULus CE CB | 30 |

## 5-25W AC/DC Converter Specialized for Medical

| Series | Power | Input Voltage Range | Output Voltage (Vo1) | Certification | Page |
|---|---|---|---|---|---|
| LD05-20BxxMU | 5W | 85-264VAC/100-370VDC | 5,12,15,24 | RoHS cULus CE | 32 |
| LH15-20BxxMU | 15W | 85-264VAC/100-370VDC | 5,12,15,18,24 | RoHS CE | 32 |
| LH25-20BxxMU | 25W | 85-264VAC/100-370VDC | 5,12,15,18,24 | RoHS CE | 32 |

## 10W LO Series Specialized for Flow-meter

| Series | Power | Input Voltage Range | Output Available (Vo1/Vo2/Vo3) | Output Available (Vo4/Vo5) | Output Available (Vo6/Vo7) | Certification | Page |
|---|---|---|---|---|---|---|---|
| LO10-10J | 10W | 85-264VAC/120-370VDC | Triple outputs (3.3V-24V) available | Positive and negative voltage (±5V to ±24V) available | Positive and negative voltage (±5V to ±70V) available | RoHS | 33 |

## 10-30W AC/DC Converter Specialized for Electric Power

| Series | Power | Input Voltage Range | Output Voltage (VDC) | EMI | Certification | Page |
|---|---|---|---|---|---|---|
| LO10-24B | 10W | 30-280VAC/30-400VDC | 5,12,13 | Class B | RoHS | 33 |
| LO10-26D0512-04L | 10W | 57-528VAC/80-745VDC | 5.1/12 | Class B | RoHS | 34 |
| LH10-10BxxER2 | 10W | 85-264VAC/120-370VDC | 12,24 | Class A | RoHS | 35 |
| LH10-10DxxER2 | 10W | 85-264VAC/120-370VDC | 5/5,5/12,5/24 | Class A | RoHS | 35 |
| LH15-10BxxER2 | 15W | 85-264VAC/120-370VDC | 5,12,24 | Class A | RoHS | 35 |
| LH15-10DxxER2 | 15W | 85-264VAC/120-370VDC | 5/12,5/24 | Class A | RoHS | 35 |
| LH25-10BxxER2 | 25W | 85-264VAC/120-370VDC | 5,12,15,24 | Class A | RoHS | 35 |
| LM30-00J0512-03E | 30W | 85-264VAC/100-370VDC | 5/±12/24 | Class B | RoHS | 34 |
| LM120-10B | 120W | 85-264VAC/100-370VDC | 12V,24 | CLASS B | RoHS | 35 |
| LO20-10C0512-01 | 18.7W | 165-264VAC/230-370VDC | 5/±12V | CLASS A | RoHS | 28 |

## 100W 165～265VAC Input Voltage Capacitor Charging MCP Series

| Series | Power | Input Voltage Range | Output Voltage/Current (Vo1/Io1) | Output Voltage/Current (Voc/Ioc) | Certification | Page |
|---|---|---|---|---|---|---|
| MCP100-2A27D27 | 100W | 165-265VAC | 27V/1.5A | 27V/3A | RoHS | 36 |

## 350W/540W 165～264VAC Input Voltage Battery Charging MBP Series

| Series | Long-Term Power | Input Voltage Range | Load Voltage/Current | Floating charging voltage/ Charging current | Certification | Page |
|---|---|---|---|---|---|---|
| MBP300-2A27D27 | 108W | 165-264VAC | 27V/3A | 27V/1A | RoHS | 36 |
| MBP500-2A27D27 | 162W | 165-264VAC | 27V/4.5A | 27V/1.5A | RoHS | 36 |
| MBP500-2A54D54 | 135W | 165-264VAC | 54V/1A | 54V/1.5A | RoHS | 36 |
| MBP300-2A27D27220 | 63W | 165-264VAC | 27V/1A | 27.0V/0.5A,220V/0.1A | RoHS | 31 |

## HK Series Specialized for Intelligent Instrument

| Series | Input Voltage (VDC) | Input Current (mA) | Output Voltage (VDC) | Output Current (mA) | Certification | Page |
|---|---|---|---|---|---|---|
| HK5S_B | 5 | 4–20 | 3.3, 5 | 2,3.2 | RoHS | 40 |
| HK8S_B | 7.5 | 4–20 | 3,3.3,5 | 3.5,5 | RoHS | 40 |

## Fixed Input Voltage, Isolated & Unregulated Output DC/DC Converter

| Series | Power | Input Voltage (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| B_S-W2R2 | 0.25W | 3.3,5,12,15,24 | 3.3,5,12 | RoHS cULus CE | 44 |
| B_XT-W2R2 | 0.25W | 3.3,5,12,24 | 3.3,5,12,15 | RoHS CE | 46 |
| F_XT-W2R2 | 0.25W | 5,12 | 5 | RoHS CE | 46 |
| CF0505XT-1WR2 | 1W | 5 | 5 | RoHS | 40 |
| B0560LS-1WR2 | 1W | 5 | 60 | RoHS | 41 |
| B05_LD-1WR2 | 1W | 5 | 50,60 | RoHS | 41 |
| G_S-1WR2 | 1W | 5,12,24 | ±5,±9,±12,±15 | RoHS cULus CE | 42 |
| H_S-1WR2 | 1W | 5,12,24 | 3.3,5,12,15 | RoHS cULus CE CB | 42 |
| B_RN-1WR2 | 1W | 5 | 5 | RoHS | 43 |
| B_RT-1WR2 | 1W | 5 | 5 | RoHS | 43 |
| F_RN-1W | 1W | 5 | 5 | RoHS | 43 |
| F_RT-1W | 1W | 5 | 5 | RoHS | 43 |
| A_S-1WR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 44 |
| B_S-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 44 |
| B_LS-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 44 |
| E_S-1WR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 45 |
| F_S-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 45 |
| A_XT-1WR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 46 |
| B_XT-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 46 |
| E_XT-1WAR2 | 1W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 46 |
| F_XT-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 46 |
| A_D-1WR2 | 1W | 5,12,24 | ±5,±12,±15 | RoHS | 47 |
| B_D-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 47 |
| E_D-1WR2 | 1W | 5,12,24 | ±5,±12,±15 | RoHS | 47 |
| F_D-1WR2 | 1W | 3.3,5,12,15,24 | 3.3,5,12,15 | RoHS | 47 |
| G_S-2WR2 | 2W | 5,12,24 | ±5,±9,±12,±15 | RoHS cULus CE | 42 |
| H_S-2WR2 | 2W | 5,12,24 | 5,12,15 | RoHS cULus CE | 42 |
| H_RN-2W | 2W | 5,12,24 | 5,12,15 | RoHS CE | 43 |
| H_LT-2W | 2W | 5,12,24 | 5,12,15 | RoHS CE | 43 |
| A_S-2WR2 | 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 48 |
| B_S-2WR2 | 2W | 5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 48 |
| E_S-2WR2 | 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 48 |
| F_S-2WR2 | 2W | 5,12,15,24 | 3.3,5,12,15,24 | RoHS cULus CE | 48 |
| B_XT-2WR2 | 2W | 5,12,15,24 | 3.3,5,12,15,24 | RoHS CE | 49 |
| F_XT-2WR2 | 2W | 5,12,15,24 | 5,12,15,24 | RoHS CE | 49 |
| A_D-2WR2 | 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 50 |
| B_D-2WR2 | 2W | 3.3,5,12,24 | 3.3,5,12,15,24 | RoHS cULus CE | 50 |
| E_D-2WR2 | 2W | 5,12,15,24 | ±5,±12,±15 | RoHS cULus CE | 50 |
| F_D-2WR2 | 2W | 5,12,15,24 | 5,12,15,24 | RoHS cULus CE | 50 |
| B_S-3WR2 | 3W | 5,12 | 5,12 | RoHS | 48 |
| F_S-3WR2 | 3W | 5,12 | 5,12 | RoHS | 48 |
| B0505T-3W | 3W | 5 | 5 | RoHS | 49 |





## Fixed Input Voltage, Isolated & Regulated Output DC/DC Converter

| Series | Power | Input Voltage (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| IB_LS-1W | 1W | 5,12,15,24 | 3.3,5,12,15,24 | RoHS | 51 |
| IB_XT-1WR2 | 1W | 5,12,15,24 | 3.3,5,12,15 | RoHS CE | 51 |
| IF_XT-1WR2 | 1W | 5,12,24 | 5,12,15 | RoHS CE | 51 |
| IF_S-1W | 1W | 5,12,24 | 5,12,15,24 | RoHS | 51 |
| IF_RN-1W | 1W | 5,12 | 5 | RoHS | 51 |
| IF_RT-1W | 1W | 5,12 | 5 | RoHS | 51 |
| IB_S-2W | 2W | 5,12,15,24 | 5,12,15 | RoHS | 51 |
| IF_S-2W | 2W | 5,12,24 | 5 | RoHS | 51 |

## 2:1Wide Input Voltage, Isolated & Regulated Output DC/DC Converter

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| WRA_S-1WR2 | 1W | 4.5-9,9-18,18-36,36-75 | ±5,±9,±12,±15 | RoHS CE | 53 |
| WRB_S-1WR2 | 1W | 4.5-9,9-18,18-36,36-75 | 3.3,5,9,12,15,24 | RoHS CE | 53 |
| WRE_S-1WR2 | 1W | 4.5-9,9-18,18-36,36-75 | ±5,±12,±15 | RoHS CE | 53 |
| WRF_S-1WR2 | 1W | 4.5-9,9-18,18-36,36-75 | 3.3,5,9,12,15,24 | RoHS CE | 53 |
| WRB_N-2W | 2W | 9-18,18-36 | 5,12,15 | RoHS | 54 |
| WRA_S-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | ±5,±9,±12,±15,±24 | RoHS CE | 55 |
| WRB_S-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | 3.3,5,6,9,12,15,24 | RoHS CE | 55 |
| WRA_ZP-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | ±5,±9,±12,±15,±24 | RoHS CE | 55 |
| WRB_ZP-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | 3.3,5,9,12,15,24 | RoHS CE | 55 |
| WRE_S-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | ±5,±9,±12,±15 | RoHS CE | 57 |
| WRF_S-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | 3.3,5,9,12,15,24 | RoHS CE | 57 |
| WRE_P-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | ±3.3,±5,±9,±12,±15 | RoHS CE | 57 |
| WRF_P-3WR2 | 3W | 4.5-9,9-18,18-36,36-75 | 3.3,5,12,15,24 | RoHS CE | 57 |
| VRA_YMD-6WR3 | 6W | 9-18,18-36 | ±5,±12,±15 | RoHS cULus CE CB | 59 |
| VRB_YMD-6WR3 | 6W | 9-18,18-36 | 3.3,5,12,15,24 | RoHS cULus CE CB | 59 |
| VRA_ZP-6WR3 | 6W | 9-18,18-36,36-75 | ±5,±12,±15 | RoHS cULus CE CB | 59 |
| VRB_ZP-6WR3 | 6W | 9-18,18-36,36-75 | 3.3,5,12,15,24 | RoHS cULus CE CB | 59 |
| VRB_YMD-10WR3 | 10W | 18-36 | 5,12,15,24 | RoHS | 61 |
| VRB_LD-15WR3 | 15W | 18-36,36-75 | 5,12,15,24 | RoHS cULus CE CB | 62 |
| VRA_LD-20WR3 | 20W | 18-36,36-75 | ±5,±9,±12,±15 | RoHS cULus CE CB | 62 |
| VRB_LD-20WR3 | 20W | 18-36,36-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |
| VRB_LD-30WR3 | 30W | 18-36,36-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 63 |
| VRB_LD-50W | 50W | 18-36,36-75 | 3.3,5,12,15,24 | RoHS | 63 |

## 5-45W Ultra-wide Input Voltage DC/DC Converter

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| PV05-27BxxR2 | 5W | 100-1000VDC | 5 | RoHS CE | 38 |
| PV10-27BxxR2 | 10W | 100-1000VDC | 5,9,24 | RoHS CE | 38 |
| PV15-27BxxR2 | 15W | 100-1000VDC | 12,15,24 | RoHS CE | 39 |
| PV40-27B | 40W | 200-1200VDC | 12,15,24 | RoHS | 39 |
| PV15-29B | 10W,15W | 200-1500VDC | 5,12,15,24 | RoHS CE | 39 |
| PV15-29BxxL | 10W,15W | 200-1500VDC | 5,12,15,24 | RoHS | 39 |
| PV40-29B | 40W | 200-1500VDC | 12,15,24 | RoHS CE | 39 |
| PV45-29D | 45W | 150-1500VDC | 12V/15V/24V double outputs | RoHS | 39 |

# DC/DC Converter Selection Guide

## 4:1 Ultra-wide Input Voltage, Isolated & Regulated Output DC/DC Converter

| Series | Power | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| PWB_CS-2W | 2W | 9-36,18-72 | 5,9,12,15 | RoHS | 54 |
| PWB_ZP-3WR2 | 3W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS CE | 56 |
| URB_MT-3WR3 | 3W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 56 |
| URH_P-6WR3 | 6W | 9-36,18-75 | 5,9,12,15,24 | RoHS CE | 58 |
| URA_YMD-6WR3 | 6W | 9-36,18-75 | ±5,±12,±15,±24 | RoHS cULus CE CB | 60 |
| URB_YMD-6WR3 | 6W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 60 |
| URA_ZP-6WR3 | 6W | 9-36,18-75 | ±5,±12,±15,±24 | RoHS cULus CE CB | 60 |
| URB_ZP-6WR3 | 6W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 60 |
| URE_P-6WR3 | 6W | 9-36 | ±5,±12,±15 | RoHS cULus CE CB | 60 |
| URF_P-6WR3 | 6W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 60 |
| URA_YMD-10WR3 | 10W | 9-36,18-75 | ±5,±9,±12,±15,±24 | RoHS cULus CE CB | 61 |
| URB_YMD-10WR3 | 10W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 61 |
| URE_LP-10WR3 | 10W | 9-36,18-75 | ±5,±12,±15 | RoHS | 61 |
| URF_LP-10WR3 | 10W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 61 |
| URA_LMD-20WR3 | 20W | 9-36,18-75 | ±5,±9,±12,±15 | RoHS cULus CE CB | 62 |
| URB_LMD-20WR3 | 20W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |
| URF_LP-20WR3 | 20W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 62 |
| URA_LMD-30WR3 | 30W | 9-36,18-75 | ±5,±12,±15,±24 | RoHS | 63 |
| URB_LMD-30WR3 | 30W | 9-36,18-75 | 3.3,5,9,12,15,24 | RoHS cULus CE CB | 63 |
| CWRF1215S-3W | 3W | 7-18 | 15 | RoHS | 58 |
| URB1D_YMD-6WR3 | 6W | 40-160 | 5,12,15,24 | RoHS | 65 |
| URB1D_LMD-10WR3 | 10W | 40-160 | 3.3,5,12,15,24 | RoHS | 65 |
| URB1D_LMD-15WR3 | 15W | 40-160 | 3.3,5,12,15,24 | RoHS | 65 |
| URB1D_LMD-20WR3 | 20W | 40-160 | 3.3,5,12,15,24 | RoHS | 65 |
| UW2405D-20W-TK | 20W | 6-50 | 5 | RoHS | 64 |
| URF1D_QB-50W | 50W | 66-160 | 5,12,15,24 | RoHS | 66 |
| URF1D_QB-75W | 75W | 66-160 | 5,12,15,24 | RoHS | 66 |
| URF1D_QB-100W | 100W | 66-160 | 12,15,24 | RoHS | 66 |
| URF1D_HB-150W | 150W | 50-160 | 12,15,24 | RoHS | 66 |
| URF_QB-100WR3 | 100W | 18-75 | 5,12,15,24,48 | RoHS | 64 |

## Wide Input Voltage, 0.5-2A Non-isolated Switching Regulator

| Series | Output Current (mA) | Input Voltage Range (VDC) | Output Voltage (VDC) | Certification | Page |
|---|---|---|---|---|---|
| K78-500R3 | 500/-300/-150 | 4.75-36 | 3.3,5,9,12,15 -5,-12,-15 | RoHS cULus CE | 52 |
| K78L-500R3 | 500/-300/-150 | 4.75-36 | 3.3,5,12,15 -5,-12,-15 | RoHS cULus CE | 52 |
| K78-1000R3(L) | 1000/-500/-300 | 6-36 | 3.3,5,9,12,15 -5,-12,-15 | RoHS cULus CE | 52 |
| K78L-1000R3 | 1000/-500/-300 | 6-36 | 3.3,5,12,15 -5,-12,-15 | RoHS cULus CE | 52 |
| K78U-500(L) | 500 | 9-72 | 3.3,5,12 | RoHS cULus CE | 52 |
| K78-1500 | 1500 | 4.75-18 | 3.3,5,6.5 | RoHS | 52 |
| K78-1500L | 1500 | 4.75-18 | 3.3,5,6.5 | RoHS | 52 |
| K78-2000 | 2000 | 4.75-18 | 3.3,5,6.5 | RoHS cULus CE | 52 |
| K78-2000L | 2000 | 4.75-18 | 3.3,5,6.5 | RoHS cULus CE | 52 |

## Specialized for Super-capacitor and Lithium Battery-powered DC/DC Converter

| Series | Input Voltage Range (VDC) | Output Voltage (VDC) | Constant Current (mA) | Effi(%) (typ) | Certification | Page |
|---|---|---|---|---|---|---|
| URB24R3D-10A | 9-24 | 0-2.7 | 10000 | 80 | RoHS | 64 |
| URF2428LP-700 | 9-36 | 0-28.5 | 700 | 86/88 | RoHS | 64 |
| URB24A5YMD-1000 | 9-36 | 0-4.8 | 1000 | 76/78 | RoHS | 64 |



# EMC Auxiliary Device/Isolation Transceiver Module Selection Guide

## EMC Auxiliary Device

| Series | Function | Input Voltage Range | Max. Output Power/Current | Certification | Page |
|---|---|---|---|---|---|
| FC-LX1D | EMC Filter | 85-305VAC | 1.5A | RoHS | 68 |
| FC-LX1D2 | EMC Filter | 85-305VAC | 1.5A | RoHS | 68 |
| FC-L01DV1 | EMC Filter | 85-305VAC | 0.3A | RoHS | 68 |
| FC-AX3D | EMC Filter | 10-36VDC | 30W | RoHS | 68 |
| FC-B02D | EMC Filter | 18-75VDC | 30W | RoHS | 68 |
| FC-D03D | EMC Filter | 18-36VDC | 50W | RoHS | 68 |
| FC-E03D | EMC Filter | 36-75VDC | 75W | RoHS | 68 |
| FC-A01D | EMC Filter | 9-36VDC | 1A | RoHS | 68 |
| FC-B01D | EMC Filter | 18-75VDC | 1A | RoHS | 68 |
| FC-C01D | EMC Filter | 40-160VDC | 10W | RoHS | 69 |
| FC-CX1D | EMC Filter | 40-160VDC | 30W | RoHS | 69 |
| FC-C03D | EMC Filter | 40-160VDC | 50W | RoHS | 69 |
| FC-CX3D | EMC Filter | 66-160VDC | 100W | RoHS | 69 |
| FI-B03D | EMI Filter | 0-80VDC | 3A | RoHS | 69 |
| FS-A01D | Surge Suppresser | 0-40VDC | 0.6A | RoHS | 70 |
| FT-BX1D | EFT Suppresser | 0-80VDC | 1.5A | RoHS | 70 |
| FS-TD01D | 485-AB Bus Surge Protection Module | 0-5VDC | ≤0.1 | RoHS | 71 |
| FL2D | Common Mode Filter | / | 0.5,1,3A | RoHS | 71 |

## Industrial Bus Isolation Transceiver Module

| Series | Function | Power Supply | Data Rate | Certification | Page |
|---|---|---|---|---|---|
| TD301/501D485 | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～9.6Kbps | RoHS | 73 |
| TD301/501D485H | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～200Kbps | RoHS cULus CE CB | 73 |
| TD301/501D485H-A | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～115.2Kbps | RoHS | 73 |
| TD301/501D485H-E | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～500Kbps | RoHS cULus CE CB | 73 |
| TDH301/501D485H | Single economical/high rate/high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～115.2Kbps | RoHS | 73 |
| TD312P485/TD512P485 | Duplex economical/high rate high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～9.6Kbps | RoHS | 73 |
| TD312P485H/TD512P485H | Duplex economical/high rate high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～115.2Kbps | RoHS | 73 |
| TD31IP485H/TD51IP485H | Duplex economical/high rate high isolated RS485 | 3.17-3.45V,4.75-5.25V | 0～115.2Kbps | RoHS | 73 |
| TD301/501DCAN | Single economical/ universal/high rate CAN | 3.0-3.6V,4.5-5.5V | 0～1Mbps | RoHS | 74 |
| TD301/501DCANH3 | Single economical/ universal/high rate CAN | 3.0-3.6V,4.5-5.5V | 0～1Mbps | RoHS | 74 |
| TD302/502DCAN | Duplex universal CAN | 3.0-3.6V,4.5-5.5V | 0～1Mbps | RoHS | 74 |
| TD301/501D232H | Single/dual high rate RS232 | 3.0-3.6V,4.5-5.5V | 0～115.2Kbps | RoHS | 75 |
| TD302/502D232H | Single/dual high rate RS232 | 3.0-3.6V,4.5-5.5V | 0～115.2Kbps | RoHS | 75 |
| TDx01MCAN | Single high rate transceiver module | 3.15-3.45,4.75-5.25 | 0K-1M | RoHS | 75 |
| TD301MCANFD | Single high rate transceiver module | 3.15-3.45,4.75-5.25 | 40K-5M | RoHS | 75 |

# Signal Conditioning Module/LED/IGBT Driver Selection Guide

## Signal Conditioning Module

| Series | Function | Input Signal | Output Signal | Isolation | Certification | Page |
|---|---|---|---|---|---|---|
| TE_N | Active module | 0-5V,0-10V,4-20mA | 0-5V,0-10V | 2000VAC | RoHS | 76 |
| TE_AN | Active module positive and negative signal | ±5V, ±10V | 0-5V,0-10V | 2000VAC | RoHS | 76 |
| TE_CN | Active module positive and negative signal | ±5V, ±10V | ±5V, ±10V | 2000VAC | RoHS | 76 |
| TEM_AN | Active, mV-class, positive and negative signal | ±75mV/±100mV | 0-5V | 2000VAC | RoHS | 76 |
| TEM_CN | Active, mV-class, positive and negative signal | ±50mV/±100mV/±200mV | ±5V/±10V | 2000VAC | RoHS | 76 |
| TF_N | Active module | 0-5V,0-10V | 0/4-20mA,0-5V,0-10V | 2000VAC | RoHS | 77 |
| T_P | Active module | 0/4-20mA,0-5V,0-10V | 0/4-20mA,0-5V,0-10V | 2500VDC | RoHS | 79 |
| T_AP | Active high precision signal | ±5V, ±10V | 4-20mA,0-5V,0-10V | 2500VDC | RoHS | 79 |
| TM_P | Active high precision(mV-class) signal | 0-10/30/50/75/100mV | 0/4-20mA,0-5V,0-10V | 2500VDC | RoHS | 78 |
| TM_AP | Active high precision(mV-class) signal | ±10/±20/±50/±75/±100mV/±200mV | 4-20mA,0-5V,0-10V | 2500VDC | RoHS | 78 |
| TM_CP | Active high precision(mV-class) signal | ±10/±20/±50/±75/±100mV/±200mV | ±5V/±10V | 2500VDC | RoHS | 78 |
| T1100N | Passive module | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T1100L | Passive module | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T1100L-F | Passive module(loop power supply) | 4-20mA | 4-20mA | 3000VDC | RoHS | 79 |
| T_HL | Two-wire self-powered module with HART | 0-2.5V | 3.7-22mA | 2000VAC | RoHS | 80 |
| T_L | Two-wire loop power supply | 0-2.5V | 3.7-22mA | 2000VAC | RoHS | 80 |
| TRP_P | RTDs detection type isolated module | Pt100(0-200℃) | 4-20mA | 2000VAC | RoHS | 80 |
| TE_HN | Active high precision high isolated detection type signal | 0-5V | 0-5V | 4000VAC | RoHS | 81 |

## LED Driver

| Series | Input Voltage Range | Output Voltage(VDC) | Output Current(mA) | Certification | Page |
|---|---|---|---|---|---|
| KC24H-1000 | 5.5-48VDC | 3.3-36 | 1000 | RoHS | 92 |
| KC24H-1200 | 5.5-48VDC | 3.3-36 | 1200 | RoHS | 92 |
| KC24H-R | 5.5-46VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| KC24W | 5.5-48VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| KC24RT | 5.5-48VDC | 3.3-36 | 0-300,0-350,0-500,0-600,0-700 | RoHS | 92 |
| LO60-26B | 200-400VAC/280-560VDC | 0-60V available | 0.9A (constant current ) | RoHS | 91 |

## DC/DC Converter for IGBT Driver

| Series | Nominal Input Voltage(VDC) | Positive Output (VDC) | Positive Output (VDC) | Negative Output (VDC) | Output Current (mA) | Efficiency | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| QA01 | 15 | 14.5-15.5 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS cULus CB | 81 |
| QA02 | 12 | 11.6-12.4 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS cULus CB | 81 |
| QA03 | 24 | 23.3-24.7 | +15 | -8.7 | +80/-40 | 80% | 3000VAC | RoHS cULus CB | 81 |
| QA04 | 12 | 9-15 | +15 | -8 | +100/-80 | 80% | 3000VAC | RoHS cULus CB | 81 |
| QA01C | 15 | 13.5-16.5 | +20 | -4 | +100/-100 | 83% | 3500VAC | RoHS cULus CE CB | 82 |
| QAW01 | 12 | 9-18 | +15 | -9 | +200/-200 | 85% | 3000VDC | RoHS | 82 |
| QAW02 | 24 | 18-36 | +15 | -9 | +200/-200 | 85% | 3000VDC | RoHS | 82 |
| QA152D | 15 | 13.5-16.5 | +15 | -9 | +200/-200 | 83% | 4000VAC | RoHS | 82 |
| QA156D-24 | 15 | 13.5-16.5 | +24 | / | 150/15 | 80% | 12000VDC | RoHS | 82 |
| QA1201C-20 | 12 | 10.8-13.2 | +20 | -4 | +100/-100 | 80% | 3500VAC | RoHS | 82 |
| QA121 | 12 | 11.4-12.6 | +15 | -8 | +120/-120 | 81% | 3000VDC | RoHS | 81 |
| QA151 | 15 | 14.25-15.75 | +15 | -8 | +120/-120 | 81% | 3000VDC | RoHS | 81 |
| QA241 | 24 | 22.8-25.2 | +15 | -8 | +120/-120 | 81% | 3000VDC | RoHS | 81 |

## Hybrid Integrated IGBT Driver (Built-in Isolated DC/DC Converter)

| Series | Power Supply (VDC) | Input Voltage Range(VDC) | Output High-level Voltage VOH(VDC) | Output Low-level Voltage VOL(VDC) | Max. Driving Current (A) | Max.Frequency (KHz) | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|---|
| QP12W08S-37 | 15 | 14.5-15.5 | 15 | -9 | ±8 | 20 | 3750VAC | RoHS | 83 |

## Hybrid Integrated IGBT Driver

| Series | Power Supply VCC(VDC) | Power Supply VEE(VDC) | Gate Voltage (VDC) | Max. Driving Current (A) | Max.Frequency (KHz) | Isolation | Certification | Page |
|---|---|---|---|---|---|---|---|---|
| QC962-8A | 15 | -10 | +14/-9 | ±8 | 40 | 3750VAC | RoHS | 84 |



# Pin-Out Details

## DC/DC Converter Pin-Out

| | |
|---|---|
| GND | Input GND |
| +Vo | +Output |
| 0V | Output GND |
| -Vo | -Output |
| DC(-Vin) | -Input |
| DC(+Vin) | +Input |
| Vadj | Voltage Adjustable |
| CTRL | ON/OFF Control Function |
| ON/OFF | ON/OFF Control, UVLO & Starting Time Delay Function |
| CS | With External Capacitance(Reduce Ripple) |
| Trim | Output Voltage Adjustable |
| -Sense | Voltage Output Remote Compensation(Output GND) |
| +Sense | Voltage Output Remote Compensation(Output+) |
| NC | No Electrical Connection |
| No Pin | No Pin |

## AC/DC Converter Pin-Out

| | |
|---|---|
| AC(N) | Neutral Wire |
| AC(L) | Live Wire |
| -Vo | -Output |
| +Vo | +Output |
| Trim | Output Voltage Adjustable |
| COM | Common |
| ⏚ | GND Protection |
| +V(CAP) | +External Capacitance |
| -V(CAP) | -External Capacitance |
| NC | No Electrical Connection |
| No Pin | No Pin |

## Isolation Transmitter Module Pin-Out

| | |
|---|---|
| Pin+ | Power Supply+ |
| Pin- | Power Supply- |
| Pout+ | Isolated Output+ |
| Pout- | Isolated Output- |
| Pgnd | Isolated Output GND |
| Vo | Output |
| +Poss | +Isolated Power, Output |
| -Poss | -Isolated Power, Output |
| FB | Input Feedback |
| Ocom | Output Common |
| Icom | Input Common |
| Pin com/GND | Power Common |
| Iout | Current Output |
| Iin | Current Input |
| Sin+ | Signal Input+ |
| Sin- | Signal Input- |
| Sout+ | Signal Output+ |
| Sout- | Signal Output- |
| +Piss | +Isolated Power, Input |
| -Piss | -Isolated Power, Input |
| -IN | -Input |
| +IN | +Input |
| Pin | Power supply |
| Adj | Gain Adjustable |
| GR | Gain auxiliary regulation |
| SG | Gain regulation |
| ZR | Zero auxiliary regulation |
| SZ | Zero regulation |

# AC/DC Converter





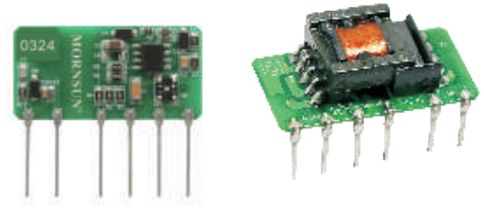


## 1-5W DIY Type LS Series

cULus CE CB RoHS

### Features

- Suitable for various applications, especially for limited dimension application
- Input voltage range: 85-264VAC/70-400VDC
- Operating temperature: -40℃ to +85℃ (LS05: -25℃ to +85℃)
- Isolation: 3000VAC
- Efficiency up to 80%
- cost-effective
- Output short-circuit and over-current protections
- IEC/UL/EN60950 approval



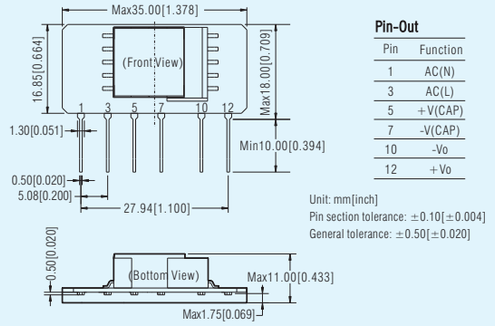

### Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LS01-15B05SS | 1W | 85-264VAC 70-400VDC | 5V/200mA | 66 | CE RoHS |
| LS01-15B09SS | | 85-264VAC 70-400VDC | 9V/111mA | 67 | |
| LS01-15B12SS | | 85-264VAC 70-400VDC | 12V/83mA | 70 | |
| LS01-15B15SS | | 85-264VAC 70-400VDC | 15V/67mA | 69 | |
| LS01-15B24SS | | 85-264VAC 70-400VDC | 24V/42mA | 68 | |
| LS03-15B03SR2S(-F) | 1.65W | 85-264VAC 70-400VDC | 3.3V/500mA | 63 | cULus CB CE RoHS |
| LS03-15B05SR2S(-F) | 2.5W | 85-264VAC 70-400VDC | 5V/500mA | 68 | |
| LS03-15B09SR2S(-F) | 3W | 85-264VAC 70-400VDC | 9V/333mA | 75 | |
| LS03-15B12SR2S(-F) | | 85-264VAC 70-400VDC | 12V/250mA | 77 | |
| LS03-15B15SR2S(-F) | | 85-264VAC 70-400VDC | 15V/200mA | 78 | |
| LS03-15B24SR2S(-F) | | 85-264VAC 70-400VDC | 24V/125mA | 80 | |
| LS05-15B03SS | 3.3W | 85-264VAC 100-400VDC | 3.3V/1000mA | 67 | |
| LS05-15B05SS | 5W | 85-264VAC 100-400VDC | 5V/1000mA | 74 | |
| LS05-15B09SS | | 85-264VAC 100-400VDC | 9V/560mA | 75 | |
| LS05-15B12SS | | 85-264VAC 100-400VDC | 12V/420mA | 76 | |
| LS05-15B15SS | | 85-264VAC 100-400VDC | 15V/340mA | 77 | |
| LS05-15B24SS | | 85-264VAC 100-400VDC | 24V/210mA | 79 | |

Note: 1. External electrolytic capacitors are required. For more details refer to typical application;
2. All series are available for 90° pin-out;
3. Detailed application please refer to datasheet;
4. If the application requires higher performance for EMC, our matching FC-L01DV1 is available.

### Package Dimension

LS01&LS03: LxWxH: 35.00x18.00x11.00(mm)

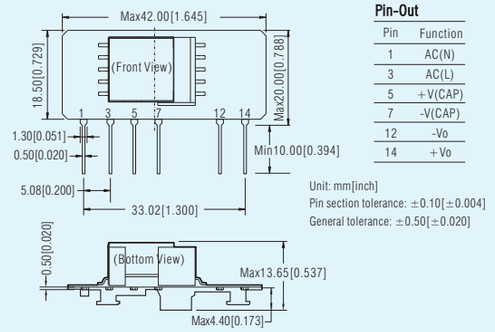



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 3 | AC(L) |
| 5 | +V(CAP) |
| 7 | -V(CAP) |
| 10 | -Vo |
| 12 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

LS05: LxWxH: 42.00x20.00x13.65(mm)



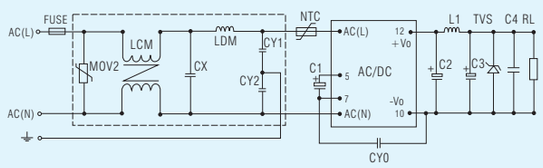

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 3 | AC(L) |
| 5 | +V(CAP) |
| 7 | -V(CAP) |
| 12 | -Vo |
| 14 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

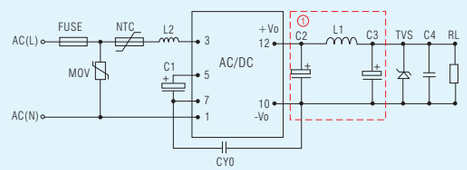
### EMC Solution-recommended Circuit

e.g.: LS03-15BXXSR2S(-F), for others please refer to datasheet.




### Typical Application Circuit

e.g.: LS03-15BXXSR2S(-F), for others please refer to datasheet.




Note: ① is Pi filter circuit

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 3W Three-phase four-wire Specialized for Electric Power

cULus CE RoHS (Pending)

## Features

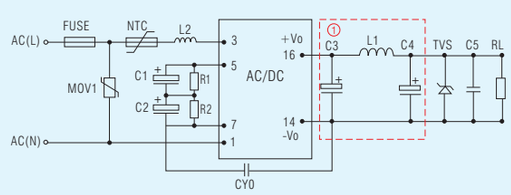
- Suitable for various applications, especially for limited dimension application
- Suitable for electric power and instrumentation applications
- Input voltage range: 90-528VAC/100-745VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 4000VAC (SIP) / 3000VAC (DIP)
- Output short-circuit and over-current protections
- Meet UL/EN60950 FCC part15 standards

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Certification |
|---|---|---|---|---|
| LS03-16B03SS | 1.65W | 90-528VAC | 3.3V/500mA | cULus (pending) CE (pending) RoHS |
| LS03-16B05SS | 2.5W | 90-528VAC | 5V/500mA | |
| LS03-16B09SS | 3W | 90-528VAC | 9V/333mA | |
| LS03-16B12SS | | 90-528VAC | 12V/250mA | |
| LS03-16B15SS | | 90-528VAC | 15V/200mA | |
| LS03-16B24SS | | 90-528VAC | 24V/125mA | |
| LD03-16B03 | 1.65W | 90-528VAC | 3.3V/500mA | cULus (pending) CE (pending) RoHS |
| LD03-16B05 | 2.5W | 90-528VAC | 5V/500mA | |
| LD03-16B09 | 3W | 90-528VAC | 9V/333mA | |
| LD03-16B12 | | 90-528VAC | 12V/250mA | |
| LD03-16B15 | | 90-528VAC | 15V/200mA | |
| LD03-16B24 | | 90-528VAC | 24V/125mA | |

Note: 1. External electrolytic capacitors are required to AC input modules for SIP package;
2. Modules in DIP package meet the requirements of ±1KV surge level. If the application requires higher performance for surge, our recommended peripheral circuit is available;
3. LS series are available for 90° pin-out.

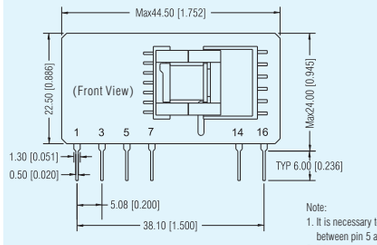
## Typical Application Circuit




Note: ① is Pi filter circuit

## Package Dimension

LS03 Series: LxWxH: 44.50x22.50x13.00(mm)



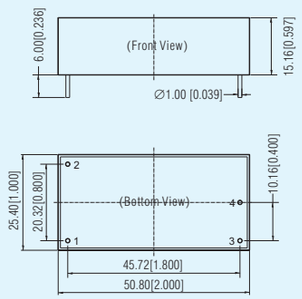

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 3 | AC(L) |
| 5 | +V(cap) |
| 7 | -V(cap) |
| 14 | -Vo |
| 16 | +Vo |

Note:
1. It is necessary to add C1、C2 and R1、R2 between pin 5 and pin 7;
2. It is necessary to add pi-type filter circuit to the output, such as the typical application of Figure 1.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

LD03 Series: LxWxH: 50.80x25.40x15.16(mm)



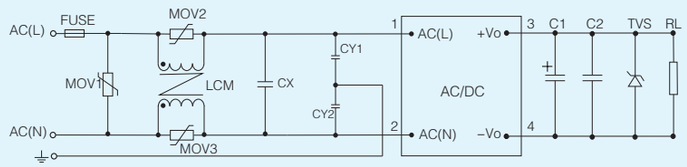

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 2 | AC(L) |
| 3 | +Vo |
| 4 | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

## EMC Solution-recommended Circuit

Take LD03-16Bxx as an example, others please refer to datasheet.








# 3-20W Compact LD Series

cULus CE CB RoHS

## Features

- Compact size, suitable for limited dimension application
- Input voltage range: 85-264VAC/100-370VDC
- Isolation: 3000VAC/4000VAC
- Efficiency up to 83%
- Low standby power consumption, high efficiency, environment friendly
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protections
- IEC/EN/UL60950 approval

A2S Chassis Mounting

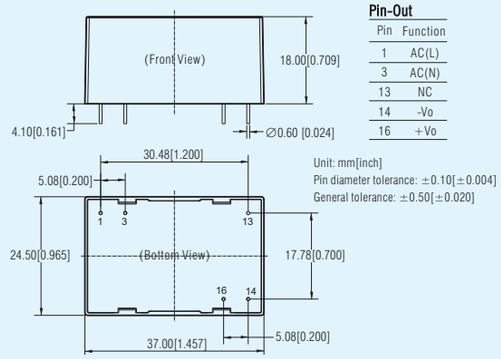

A4S DIN-Rail Mounting

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LD03-10B03R2 | 2. 3W | 85-264VAC | 3.3V/700mA | 66 | cULus CB CE RoHS |
| LD03-10B05R2 | 3W | 85-264VAC | 5V/600mA | 74 | |
| LD03-10B09R2 | | 85-264VAC | 9V/330mA | 75 | |
| LD03-10B12R2 | | 85-264VAC | 12V/250mA | 77 | |
| LD03-10B15R2 | | 85-264VAC | 15V/200mA | 77 | |
| LD03-10B24R2 | | 85-264VAC | 24V/125mA | 78 | |
| LD05-20B03 | 4.2W | 85-264VAC | 3.3V/1250mA | 74 | |
| LD05-20B05 | 5W | 85-264VAC | 5V/1000mA | 78 | |
| LD05-20B09 | | 85-264VAC | 9V/550mA | 78 | |
| LD05-20B12 | | 85-264VAC | 12V/420mA | 80 | |
| LD05-20B15 | | 85-264VAC | 15V/333mA | 82 | |
| LD05-20B24 | 5.5W | 85-264VAC | 24V/230mA | 83 | |
| LD10-20B03 | 6.6W | 85-264VAC | 3.3V/2000mA | 71 | cULus CE RoHS |
| LD10-20B05 | 10W | 85-264VAC | 5V/2000mA | 76 | |
| LD10-20B09 | | 85-264VAC | 9V/1100mA | 80 | |
| LD10-20B12 | | 85-264VAC | 12V/900mA | 81 | |
| LD10-20B15 | | 85-264VAC | 15V/700mA | 82 | |
| LD10-20B24 | | 85-264VAC | 24V/450mA | 83 | |
| LD12-20B03 | 7.9W | 85-264VAC | 3.3V/2400mA | 74 | cULus CE RoHS |
| LD12-20B05 | 12W | 85-264VAC | 5V/2400mA | 78 | |
| LD12-20B12 | | 85-264VAC | 12V/1000mA | 82 | |
| LD12-20B15 | | 85-264VAC | 15V/800mA | 82 | |
| LD12-20B24 | | 85-264VAC | 24V/500mA | 83 | |
| LD20-10B03 | 11.88W | 85-264VAC | 3.3V/3600mA | 74 | cULus CE RoHS |
| LD20-10B05 | 18W | 85-264VAC | 5V/3600mA | 78 | |
| LD20-10B12 | 20W | 85-264VAC | 12V/1660mA | 82 | |
| LD20-10B15 | | 85-264VAC | 15V/1330mA | 83 | |
| LD20-10B24 | | 85-264VAC | 24V/833mA | 83 | |

## Package Dimension

LD03 Series: LxWxH: 37.00x24.50x18.00(mm)

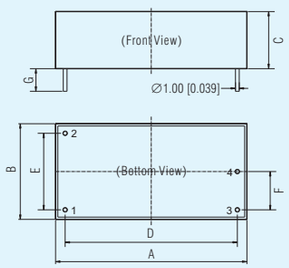



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 3 | AC(N) |
| 13 | NC |
| 14 | -Vo |
| 16 | +Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

LD05/10/12/20 Series:




**Outline & Dimensions**

| NO. | LD05 | LD10 | LD12/20 |
|---|---|---|---|
| A | 50.80 | 53.80 | 53.80 |
| B | 25.40 | 28.80 | 28.80 |
| C | 15.16 | 19.00 | 23.50 |
| D | 45.72 | 45.72 | 45.72 |
| E | 20.32 | 20.32 | 20.32 |
| F | 10.16 | 10.16 | 10.16 |
| G | 6.00 | 6.00 | 6.00 |

**Pin-Out**

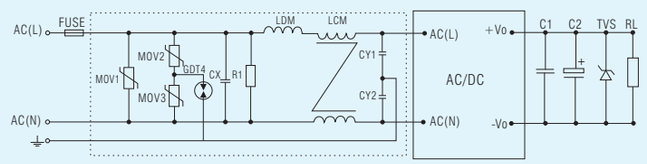
| | LD05 | LD10 | LD12 | LD20 |
|---|---|---|---|---|
| 1 | AC(N) | AC(N) | AC(N) | AC(N) |
| 2 | AC(L) | AC(L) | AC(L) | AC(L) |
| 3 | +Vo | +Vo | +Vo | +Vo |
| 4 | -Vo | -Vo | -Vo | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Note: A2S chassis mounting and A4S DIN-Rail mounting are available and please refer to datasheet for details.

Note: 1.LD series meet the requirements of lightning protection. If the application requires higher performance for lightning protection and EMI, our standard products LH series(surge level three), LH-ER2(surge level four) and recommended peripheral circuit are available;
2.If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, LD03/LD05 with FC-LX1D reaches to ±2KV/4KV( level four), and LD12/LD20 with FC-LX1D2 to ±4V/6KV;
3.Detailed application please refer to datasheet.

## EMC Solution-recommended Circuit




Take LD20-10Bxx as an example, others please refer to datasheet.

# 1-10W Compact 85-305VAC Wide Input Voltage LD Series

## Features

- Compact size, suitable for limited dimension application
- Input voltage range: 85-305VAC/120-430VDC
- Isolation: 3000VAC/4000VAC
- Efficiency up to 83%
- Low standby power consumption, high efficiency, environment friendly
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting

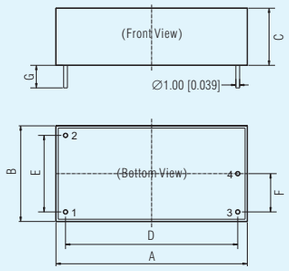
A4S DIN-Rail Mounting

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LD01-10B03 | 1W | 85-305VAC | 3.3V/300mA | 63 | cULus CE RoHS |
| LD01-10B05 | | 85-305VAC | 5V/200mA | 68 | |
| LD01-10B09 | | 85-305VAC | 9V/111mA | 72 | |
| LD01-10B12 | | 85-305VAC | 12V/83mA | 73 | |
| LD01-10B15 | | 85-305VAC | 15V/67mA | 74 | |
| LD01-10B24 | | 85-305VAC | 24V/42mA | 75 | |
| LD02-10B03 | 2W | 85-305VAC | 3.3V/600mA | 65 | |
| LD02-10B05 | | 85-305VAC | 5V/400mA | 70 | |
| LD02-10B09 | | 85-305VAC | 9V/222mA | 72 | |
| LD02-10B12 | | 85-305VAC | 12V/167mA | 76 | |
| LD02-10B15 | | 85-305VAC | 15V/133mA | 76 | |
| LD02-10B24 | | 85-305VAC | 24V/83mA | 78 | |
| LD05-23B03 | 4.2W | 85-305VAC | 3.3V/1250mA | 74 | cULus CB CE RoHS |
| LD05-23B05 | 5W | 85-305VAC | 5V/1000mA | 78 | |
| LD05-23B09 | | 85-305VAC | 9V/550mA | 78 | |
| LD05-23B12 | | 85-305VAC | 12V/420mA | 80 | |
| LD05-23B15 | | 85-305VAC | 15V/333mA | 82 | |
| LD05-23B24 | 5.5W | 85-305VAC | 24V/230mA | 83 | |
| LD10-13B03 | 10W | 85-305VAC | 3.3V/2000mA | 72 | RoHS |
| LD10-13B05 | | 85-305VAC | 5V/2000mA | 76 | |
| LD10-13B09 | | 85-305VAC | 9V/1100mA | 78 | |
| LD10-13B12 | | 85-305VAC | 12V/900mA | 80 | |
| LD10-13B15 | | 85-305VAC | 15V/700mA | 80 | |
| LD10-13B24 | | 85-305VAC | 24V/450mA | 80 | |

## Package Dimension

LD01/02/05/10 Series:




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

**Outline & Dimensions**

| NO. | LD01/02 | LD05 | LD10 |
|---|---|---|---|
| A | 33.70 | 50.80 | 53.80 |
| B | 22.20 | 25.40 | 28.80 |
| C | 18.00 | 15.16 | 19.00 |
| D | 28.00 | 45.72 | 45.72 |
| E | 15.24 | 20.32 | 20.32 |
| F | 7.62 | 10.16 | 10.16 |
| G | 6.00 | 6.00 | 6.00 |

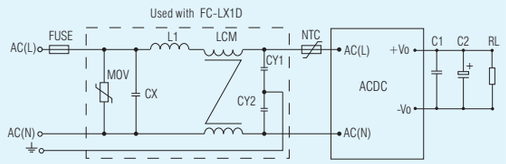
**Pin-Out**

| | LD01/02 | LD05 | LD10 |
|---|---|---|---|
| 1 | AC(N) | AC(N) | AC(N) |
| 2 | AC(L) | AC(L) | AC(L) |
| 3 | -Vo | +Vo | +Vo |
| 4 | +Vo | -Vo | -Vo |

Note: A2S chassis mounting and A4S DIN-Rail mounting are available and please refer to datasheet for details.

## EMC Solution-recommended Circuit

Take LD05-23Bxx as an example, others please refer to datasheet.




Note: 1.LD series meet the requirements of lightning protection. If the application requires higher performance for lightning protection and EMI, our standard products LH series(surge level three), LH-ER2(surge level four) and recommended peripheral circuit are available;
2.If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, LD05-23B with FC-LX1D reaches to ±2KV/4KV( level four);
3.Detailed application please refer to datasheet.



# 5-25W 85-305VAC Wide Input Voltage LH-13B Series

## Features

- Wide input voltage, suitable for unstable electric supply application
- Input voltage range: 85-305VAC/100-430VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 3000VAC
- Efficiency up to 87%
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- EMI meets EN55022 CLASS B
- Output short-circuit, over-current and over-voltage protections
- IEC/UL/EN60950 approval

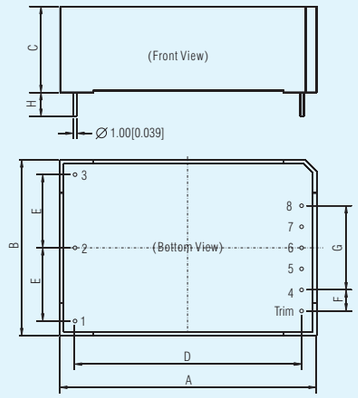
A2 Chassis Mounting

A4 DIN-Rail Mounting

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (230VAC,typ.) | Certification |
|---|---|---|---|---|---|
| LH05-13B03 | 4W | 85-305VAC | 3.3V/1250mA | 72 | cULus CB CE RoHS |
| LH05-13B05 | 5W | 85-305VAC | 5V/1000mA | 77 | |
| LH05-13B09 | | 85-305VAC | 9V/550mA | 79 | |
| LH05-13B12 | | 85-305VAC | 12V/420mA | 81 | |
| LH05-13B15 | | 85-305VAC | 15V/330mA | 82 | |
| LH05-13B24 | | 85-305VAC | 24V/230mA | 84 | |
| LH10-13B03 | 6.6W | 85-305VAC | 3.3V/2000mA | 70 | |
| LH10-13B05 | 10W | 85-305VAC | 5V/2000mA | 76 | |
| LH10-13B09 | | 85-305VAC | 9V/1100mA | 78 | |
| LH10-13B12 | | 85-305VAC | 12V/900mA | 80 | |
| LH10-13B15 | | 85-305VAC | 15V/700mA | 81 | |
| LH10-13B24 | | 85-305VAC | 24V/450mA | 82 | |
| LH15-13B03 | 9.9W | 85-305VAC | 3.3V/3000mA | 74 | |
| LH15-13B05 | 14W | 85-305VAC | 5V/2800mA | 78 | |
| LH15-13B09 | 15W | 85-305VAC | 9V/1600mA | 79 | |
| LH15-13B12 | | 85-305VAC | 12V/1250mA | 82 | |
| LH15-13B15 | | 85-305VAC | 15V/1000mA | 82 | |
| LH15-13B24 | | 85-305VAC | 24V/625mA | 84 | |
| LH15-13B48 | | 85-305VAC | 48V/320mA | 85 | |
| LH20-13B03 | 13.5W | 85-305VAC | 3.3V/3500mA | 75 | |
| LH20-13B05 | 17.5W | 85-305VAC | 5V/3500mA | 78 | |
| LH20-13B09 | 20W | 85-305VAC | 9V/2100mA | 79 | |
| LH20-13B12 | | 85-305VAC | 12V/1600mA | 83 | |
| LH20-13B15 | | 85-305VAC | 15V/1300mA | 84 | |
| LH20-13B24 | | 85-305VAC | 24V/850mA | 85 | |
| LH25-13B03 | 13.5W | 85-305VAC | 3.3V/4100mA | 75 | |
| LH25-13B05 | 20.5W | 85-305VAC | 5V/4100mA | 78 | |
| LH25-13B09 | 25W | 85-305VAC | 9V/2500mA | 79 | |
| LH25-13B12 | | 85-305VAC | 12V/2100mA | 83 | |
| LH25-13B15 | | 85-305VAC | 15V/1600mA | 84 | |
| LH25-13B24 | | 85-305VAC | 24V/1100mA | 85 | |
| LH25-13B48 | | 85-305VAC | 48V/500mA | 87 | |

## Package Dimension




**Outline & Dimensions**

| NO. | LH05 | LH10 | LH15 | LH20 | LH25 |
|---|---|---|---|---|---|
| A | 55.00 | 55.00 | 62.00 | 70.00 | 70.00 |
| B | 45.00 | 45.00 | 45.00 | 48.00 | 48.00 |
| C | 21.00 | 21.00 | 22.50 | 23.50 | 23.50 |
| D | 40.50 | 47.00 | 54.00 | 62.00 | 62.00 |
| E | 12.50 | 17.50 | 17.50 | 20.00 | 20.00 |
| F | - | - | - | 5.75 | 5.75 |
| G | 16.00 | 20.00 | 20.00 | 23.00 | 23.00 |

**Pin-Out**

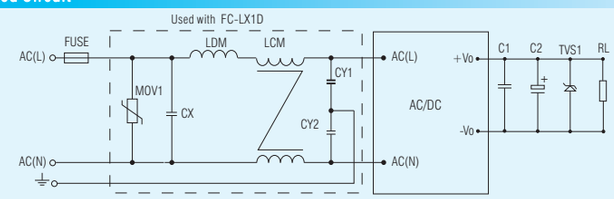
| Pin | LH-13B | Pin | LH-13B |
|---|---|---|---|
| 1 | ⏚ | 6 | No Pin |
| 2 | AC(N) | 7 | No Pin |
| 3 | AC(L) | 8 | +Vo |
| 4 | -Vo | Trim | Trim** |
| 5 | No Pin | | |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
Pin length(H): ≥6.00[0.236]
General tolerance: ±0.50[±0.020]

Note: There is no pin "1" ⏚ on LH15-13B
Trim**: only for LH20/25-13B Series
A2 chassis mounting and A4 DIN-Rail mounting are available and please refer to datasheet for details.
Further developing is also available if needed.

Note: 1. LH(05-25)-13B series meet the requirements of surge level of ±1KV/2KV(level three). If the application requires higher performance for surge, our recommended peripheral circuit for ±2KV/4KV(level four) is available;
2. If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, LH(05-25)-13B series with FC-LX1D reaches to ±2KV/4KV( level four);
3. Detailed application please refer to datasheet.

## EMC Solution-recommended Circuit



# 5-25W Standard Package LH Series

## Features

- Standard package, suitable for industrial control application requiring high EMC performance
- Input voltage range: 85-264VAC/100-370VDC
- Operating temperature:-40℃ to +70℃ (for the majority)
- Isolation: 3000VAC
- Efficiency up to 87%
- Low ripple & noise
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- EMI meets EN55022 CLASS B
- Output short-circuit, over-current and over-voltage protections
- IEC/UL/EN60950 approval

A2 Chassis Mounting

A4 DIN-Rail Mounting

## Product Program

| Model Number | Power | Output Voltage/ Current(Vo1/Io1) | Output Voltage/ Current(Vo2/Io2) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LH05-10B03 | 4W | 3.3V/1250mA | | 70 | |
| LH05-10B05 | | 5V/1000mA | | 75 | |
| LH05-10B09 | | 9V/550mA | | 77 | |
| LH05-10B12 | | 12V/420mA | | 79 | |
| LH05-10B15 | | 15V/330mA | | 80 | |
| LH05-10B24 | | 24V/230mA | | 82 | |
| LH05-10A05 | | +5V/500mA | −5V/500mA | 75 | |
| LH05-10A12 | | +12V/210mA | -12V/210mA | 79 | |
| LH05-10A15 | 5W | +15V/160mA | -15V/160mA | 79 | |
| LH05-10A24 | | +24V/100mA | -24V/100mA | 80 | |
| LH05-10C0505-01 | | 5V/800mA | ±5V/100mA | 70 | |
| LH05-10C0512-01 | | 5V/600mA | ±12V/100mA | 73 | |
| LH05-10C0515-01 | | 5V/600mA | ±15V/80mA | 74 | |
| LH05-10C0524-01 | | 5V/600mA | ±24V/50mA | 75 | |
| LH05-10D0505-01 | | 5V/900mA | 5V/100mA | 71 | |
| LH05-10D0512-01 | | 5V/750mA | 12V/100mA | 73 | |
| LH05-10D0515-01 | | 5V/700mA | 15V/100mA | 73 | |
| LH05-10D0524-01 | | 5V/600mA | 24V/100mA | 75 | |
| LH10-10B03 | 6.6W | 3.3V/2000mA | | 70 | |
| LH10-10B05 | | 5V/2000mA | | 76 | |
| LH10-10B09 | | 9V/1100mA | | 78 | |
| LH10-10B12 | | 12V/900mA | | 80 | |
| LH10-10B15 | | 15V/700mA | | 81 | |
| LH10-10B24 | | 24V/450mA | | 82 | |
| LH10-10A05 | | +5V/1000mA | −5V/1000mA | 76 | |
| LH10-10A12 | | +12V/450mA | -12V/450mA | 80 | |
| LH10-10A15 | 10W | +15V/350mA | -15V/350mA | 81 | |
| LH10-10A24 | | +24V/200mA | -24V/200mA | 84 | |
| LH10-10C0512-02 | | 5V/1000mA | ±12V/200mA | 75 | |
| LH10-10C0515-02 | | 5V/900mA | ±15V/200mA | 75 | |
| LH10-10D0505-02 | | 5V/1800mA | 5V/200mA | 75 | |
| LH10-10D0512-02 | | 5V/1500mA | 12V/200mA | 79 | |
| LH10-10D0515-02 | | 5V/1400mA | 15V/200mA | 79 | |
| LH10-10D0524-02 | | 5V/1000mA | 24V/200mA | 81 | |

Note: 1. Standard LH series meet the requirements of surge level of ±1KV/2KV(level three). If the application requires higher performance for surge, our LH-ER2 series for ±2KV/4KV (level four) and recommended peripheral circuit for ±2KV/4KV(level four) are available;
2. If the application requires higher performance for surge, our matching EMC auxiliary devices are available. For example, standard LH(05-25) series with FC-LX1D reaches to±2KV/4KV( level four);
3. Detailed application please refer to datasheet.

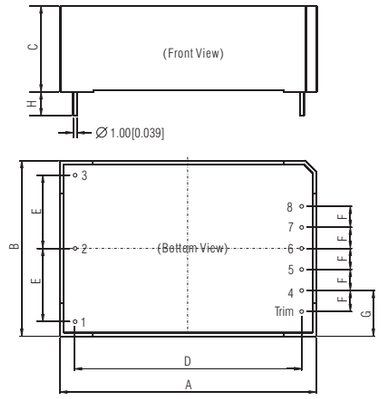
## Product Program

| Model Number | Power | Output Voltage/ Current(Vo1/Io1) | Output Voltage/ Current(Vo2/Io2) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LH15-10B03 | 9.9W | 3.3V/3000mA | | 73 | |
| LH15-10B05 | | 5V/2800mA | | 76 | |
| LH15-10B09 | | 9V/1600mA | | 78 | |
| LH15-10B12 | | 12V/1250mA | | 80 | |
| LH15-10B15 | | 15V/1000mA | | 80 | |
| LH15-10B24 | | 24V/625mA | | 84 | |
| LH15-10A05 | | +5V/1500mA | -5V/1500mA | 76 | |
| LH15-10A12 | | +12V/650mA | -12V/650mA | 81 | |
| LH15-10A15 | | +15V/500mA | -15V/500mA | 83 | |
| LH15-10A24 | 15W | +24V/310mA | -24V/310mA | 83 | |
| LH15-10C0505-05 | | 5V/2000mA | ±5V/500mA | 75 | |
| LH15-10C0512-02 | | 5V/2000mA | ±12V/200mA | 77 | |
| LH15-10C0515-02 | | 5V/1800mA | ±15V/200mA | 78 | |
| LH15-10C0524-01 | | 5V/2000mA | ±24V/100mA | 78 | |
| LH15-10D0505-08 | | 5V/2200mA | 5V/800mA | 78 | |
| LH15-10D0512-04 | | 5V/2000mA | 12V/400mA | 80 | |
| LH15-10D0515-03 | | 5V/2000mA | 15V/300mA | 81 | |
| LH15-10D0524-02 | | 5V/2000mA | 24V/200mA | 81 | |
| LH20-10B03 | 20W | 3.3V/4100mA | | 74 | |
| LH20-10B05 | | 5V/3500mA | | 78 | |
| LH20-10B09 | | 9V/2100mA | | 80 | |
| LH20-10B12 | | 12V/1600mA | | 82 | |
| LH20-10B15 | | 15V/1300mA | | 83 | |
| LH20-10B24 | | 24V/850mA | | 85 | |
| LH20-10A05 | | +5V/2000mA | −5V/2000mA | 75 | |
| LH20-10A12 | | +12V/830mA | -12V/830mA | 82 | |
| LH20-10A15 | | +15V/650mA | -15V/650mA | 83 | |
| LH20-10C0505-05 | | 5V/2500mA | ±5V/500mA | 74 | |
| LH20-10C0512-04 | | 5V/2000mA | ±12V/400mA | 75 | |
| LH20-10C0515-03 | | 5V/2000mA | ±15V/300mA | 76 | |
| LH20-10C0524-02 | | 5V/2000mA | ±24V/200mA | 77 | |
| LH20-10D0512-06 | | 5V/2500mA | 12V/600mA | 75 | |
| LH20-10D0515-05 | | 5V/2500mA | 15V/500mA | 76 | |
| LH20-10D0524-03 | | 5V/2500mA | 24V/300mA | 77 | |
| LH25-10B03 | 25W | 3.3V/4100mA | | 74 | |
| LH25-10B05 | | 5V/4100mA | | 79 | |
| LH25-10B09 | | 9V/2500mA | | 81 | |
| LH25-10B12 | | 12V/2100mA | | 83 | |
| LH25-10B15 | | 15V/1600mA | | 84 | |
| LH25-10B24 | | 24V/1100mA | | 85 | |
| LH25-10B48 | | 48V/500mA | | 87 | |





## Package Dimension




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
Pin length(H): ≥6.00[0.236]
General tolerance: ±0.50[±0.020]

**Outline & Dimensions**

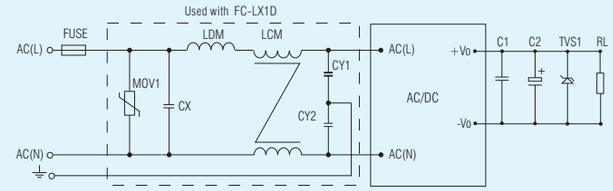
| NO. | LH05 | LH10 | LH15 | LH20 | LH25 |
|---|---|---|---|---|---|
| A | 48.50 | 55.00 | 62.00 | 70.00 | 70.00 |
| B | 36.00 | 45.00 | 45.00 | 48.00 | 48.00 |
| C | 20.50 | 21.00 | 22.50 | 23.50 | 23.50 |
| D | 40.50 | 47.00 | 54.00 | 62.00 | 62.00 |
| E | 12.50 | 17.50 | 17.50 | 20.00 | 20.00 |
| F | 4.00 | 5.00 | 5.00 | 5.75 | 5.75 |
| G | 10.00 | 12.50 | 12.50 | 12.50 | 12.50 |

**Pin-Out**

| Pin | LH-10B | LH-10A | LH-10C | LH-10D |
|---|---|---|---|---|
| 1 | ⏚ | ⏚ | ⏚ | ⏚ |
| 2 | AC(N) | AC(N) | AC(N) | AC(N) |
| 3 | AC(L) | AC(L) | AC(L) | AC(L) |
| 4 | -Vo | -Vo | -Vo1 | -Vo1 |
| 5 | No Pin | No Pin | +Vo1 | +Vo1 |
| 6 | No Pin | COM | -Vo2 | No Pin |
| 7 | No Pin | No Pin | COM | -Vo2 |
| 8 | +Vo | +Vo | +Vo2 | +Vo2 |
| Trim | Trim** | No Pin | No Pin | No Pin |

Note: There is no pin "1" ⏚ on LH15-10B
Trim**: only for LH20/25-10B Series
A2 chassis mounting and A4 DIN-Rail mounting are available and please refer to datasheet for details.

## EMC Solution-recommended Circuit




# 20W Three Outputs Open Frame LO20-10C0512-01 Specialized for AC Charging Station

RoHS

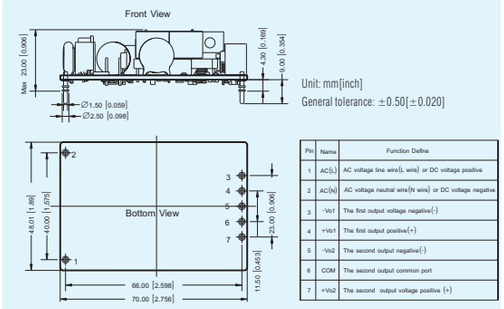
## Features

- Input voltage range: 165-264VAC/230-370VDC
- Isolation: 3000VAC
- Three outputs, high accuracy
- Efficiency up to 78%
- Output short-circuit, over-current and over-voltage protections
- Safety Class: CLASS II
- Meet IEC 60950/EN60950/UL60950

## Product Program

| Model Number | Power | output Voltage /current | Output Voltage /Current (Vo2/Io2)(-Vo2/-Io2) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LO20-10C0512-01 | 18.7W | 5V/500mA | 12V/1200mA -12V/150mA | 78 | RoHS |

## Package Dimension LxWxH: 70.00x48.00x23.00(mm)



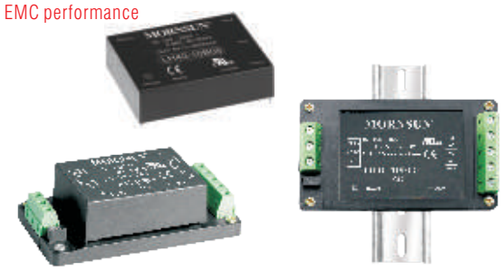

| Pin | Name | Function Define |
|---|---|---|
| 1 | AC(L) | AC voltage line wire(L wire) or DC voltage positive |
| 2 | AC(N) | AC voltage neutral wire(N wire) or DC voltage negative |
| 3 | -Vo1 | The first output voltage negative(-) |
| 4 | +Vo1 | The first output positive(+) |
| 5 | -Vo2 | The second output negative(-) |
| 6 | COM | The second output common port |
| 7 | +Vo2 | The second output voltage positive (+) |

# 40-60W Standard Package LH Series

cULus CE RoHS

## Features

- Standard package, suitable for industrial control application requiring high EMC performance
- Input voltage range: LH40: 85-264VAC/100-370VDC
  LH60: 90-264VAC/122-370VDC
- Operating temperature: -40℃ to +70℃
- Efficiency up to 86%
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protections
- UL/EN60950 approval



A5 Chassis Mounting



A6 DIN-Rail Mounting

## Product Program

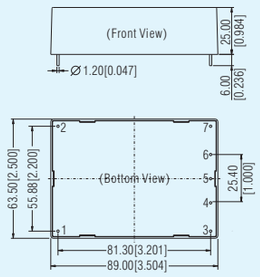
| Model Number | Power | Output Voltage/ Current(Vo1/Io1) | Output Voltage/ Current(Vo2/Io2) | Isolation | Certification |
|---|---|---|---|---|---|
| LH40-10B03 | 26.4W | 3.3V/8000mA | | 3000VAC | cULus CE RoHS |
| LH40-10B05 | 40W | 5V/8000mA | | | |
| LH40-10B09 | | 9V/4444mA | | | |
| LH40-10B12 | | 12V/3333mA | | | |
| LH40-10B15 | | 15V/2666mA | | | |
| LH40-10B24 | | 24V/1667mA | | | |
| LH40-10D0512-13 | 40W | 5VDC/5000mA | 12VDC/1250mA | 3000VAC | RoHS |
| LH40-10D0524-06 | | 5VDC/5000mA | 24VDC/625mA | | |
| LH40-10A05 | | +5VDC/4000mA | -5VDC/4000mA | | |
| LH40-10A12 | | +12VDC/1666m | -12VDC/1666mA | | |
| LH40-10A15 | | +15VDC/1333m | -15VDC/1333mA | | |

## Product Program

| Model Number | Power | Output Voltage/ Current(Vo1/Io1) | Max.Capcitive Load(μF) | Isolation | Certification |
|---|---|---|---|---|---|
| LH60-20B05 | 50W | 5V/10000mA | 80000 | 4000VAC | cULus CE RoHS |
| LH60-20B09 | 60W | 9V/6600mA | 28000 | | |
| LH60-20B12 | | 12V/5000mA | 14000 | | |
| LH60-20B15 | | 15V/4000mA | 12000 | | |
| LH60-20B24 | | 24V/2500mA | 4000 | | |
| LH60-20B48 | | 48V/1250mA | 1000 | | |

Note: 1. LH40 meets the requirements of surge level of ±1KV/2KV(level three). If the application requires higher performance for surge, our recommended peripheral circuit for ±2KV/4KV(level four) is available;
2. LH60 meets the requirements of surge level of ±2KV/4KV(level four). If the application requires higher performance for surge, our recommended peripheral circuit for ±4KV/6KV is available;
3. Detailed application please refer to datasheet.

## Package Dimension LxWxH: 89.00x63.50x25.00(mm)



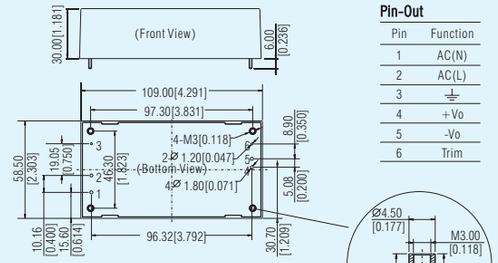

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | +Vo |
| 4 | No Pin |
| 5 | -Vo |
| 6 | No Pin |
| 7 | Trim |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Note: A5 chassis mounting and A6 DIN-Rail mounting are available and please refer to datasheet for details.

## Package Dimension LxWxH: 109.00x58.50x30.00(mm)



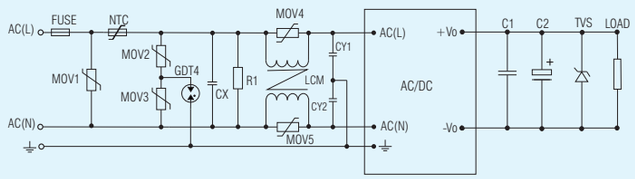

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 2 | AC(L) |
| 3 | ⏚ |
| 4 | +Vo |
| 5 | -Vo |
| 6 | Trim |

Unit: mm[inch]
pin 1,2,4,5 `s diamater:1.80[0.071],pin3,6`s diamater:1.20[0.047]
pin diamater tolerance:± 0.10[±0.004]
pin height tolerance: ±1.50[±0.059]
General tolerance: ±0.50[±0.020]
This series of products need to be fixed screws in vibration condition.

## EMC Solution-recommended Circuit

e.g.: LH60-20Bxx, for others please refer to datasheet.








# 120-240W DIN35 Package LI Series

cULus CE CB RoHS

## Features

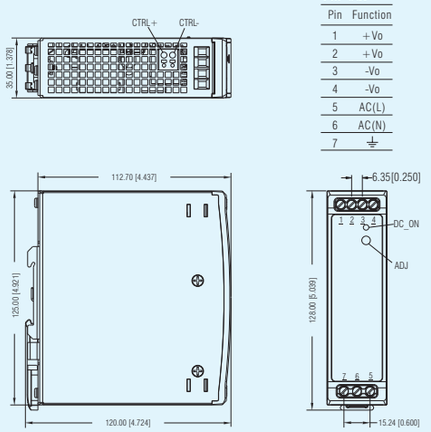
- Great power DIN-Rail power supply, suitable for industrial control, instrumentation and railway applications
- Input voltage range: 85-264VAC/120-370VDC
- Operating temperature: -25℃ to +70℃
- Isolation: 3000VAC
- Active PFC
- Input under-voltage, output short-circuit, over-current, over-voltage and over-temperature protections
- IEC/EN/UL60950 approval

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LI120-10B12 | 120W | 85-264VAC | 12V/10000mA | 89 | cULus CE CB (pending) |
| LI120-10B24 | | 85-264VAC | 24V/5000mA | 92 | cULus CE CB RoHS |
| LI120-10B48 | | 85-264VAC | 48V/2500mA | 93 | cULus CE CB (pending) |
| LI240-10B24 | 240W | 85-264VAC | 24V/10000mA | 92 | cULus CE CB RoHS |
| LI240-10B48 | | 85-264VAC | 48V/5000mA | 93 | cULus CE CB (pending) |

Note: LI120-10B Series without PFC is acceptable.

## LI120 Package Dimension LxWxH: 125.00x35.00x112.70(mm)

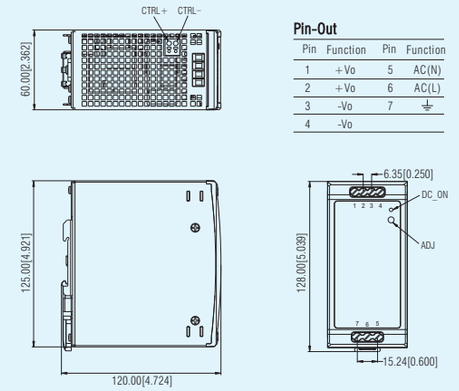



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | +Vo |
| 2 | +Vo |
| 3 | -Vo |
| 4 | -Vo |
| 5 | AC(L) |
| 6 | AC(N) |
| 7 | ⏚ |

Unit: mm[inch]
General tolerance: ±1.00[±0.040]
Wire range: 26~10AWG
Strip length: 8.0[0.32]

## LI240 Package Dimension LxWxH: 125.00x60.00x120.00(mm)




**Pin-Out**

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | +Vo | 5 | AC(N) |
| 2 | +Vo | 6 | AC(L) |
| 3 | -Vo | 7 | ⏚ |
| 4 | -Vo | | |

Unit: mm[inch]
General tolerance: ±1.00[±0.040]
Wire range: 26~10AWG
Installed on DIN-RAIL TS35

# 1-3W No Electrolytic Capacitor LN Series

CE RoHS

## Features

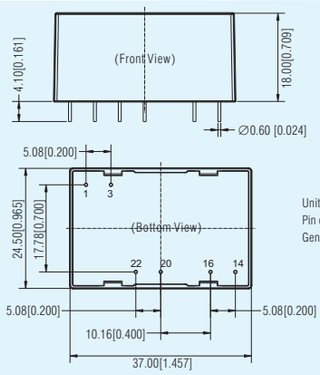
- No electrolytic capacitor, especially suitable for harsh environment and higher requirements for reliability and long life applications
- Input voltage range: 165-264VAC/233-370VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 3000VAC
- 5 years warranty
- EMI Meets CLASS B, anti surge capacity ±2KV
- Output short-circuit and over-current protections
- EN60950 approval

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LN01-12B05 | 1W | 165-264VAC | 5V/200mA | 68 | CE RoHS |
| LN01-12B12 | | 165-264VAC | 12V/83mA | 69 | |
| LN01-12B24 | | 165-264VAC | 24V/42mA | 69 | |
| LN02-12B05 | 2W | 165-264VAC | 5V/400mA | 70 | |
| LN02-12B12 | | 165-264VAC | 12V/167mA | 76 | |
| LN02-12B24 | | 165-264VAC | 24V/83mA | 78 | |
| LN03-12B05 | 3W | 165-264VAC | 5V/600mA | 71 | |
| LN03-12B12 | | 165-264VAC | 12V/500mA | 75 | |
| LN03-12B24 | | 165-264VAC | 24V/125mA | 76 | |

Note: 1.If the application requires higher performance for EMS, our EMC solution-recommended circuit is available as follows;
2. 85～264VAC input voltage is available as following typical application circuit;
3.Detailed application please refer to datasheet.

## Package Dimension LxWxH: 37.00x24.50x18.00(mm)

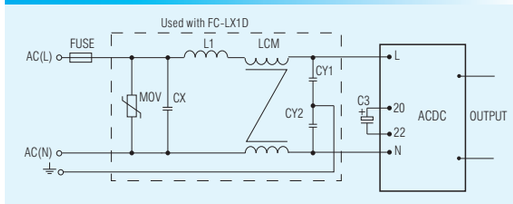



**Pin-Out**

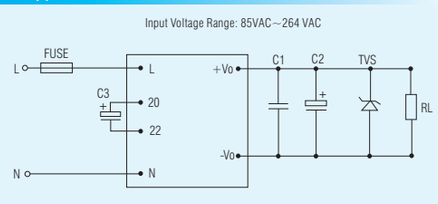
| Pin | Function |
|---|---|
| 1 | AC(L) |
| 3 | AC(N) |
| 14 | -Vo |
| 16 | +Vo |
| 20 | +V(CAP) |
| 22 | -V(CAP) |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

## EMC Solution-recommended Circuit




## Typical Application Circuit




# 300W Three Outputs Battery Charging MBP Series

RoHS

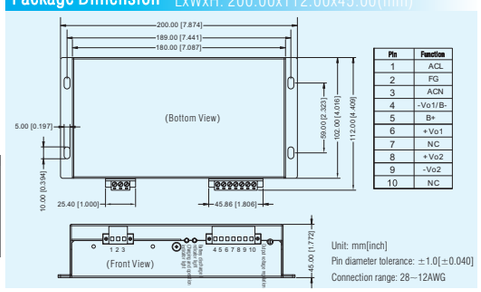
## Features

- Specialized for distribution automation system, power permanent magnet switch controller and power cabinets, etc.
- With 24V battery charging function and 220V capacitor charging function
- Operating temperature: -40℃ to +70℃
- Max. instantaneous power up to 300W at 220V
- Compact size
- Efficiency up to 80%
- Output short-circuit and over-voltage protections
- EFT/Surge: level 4
- Metal mask, terminal wiring, easy installation

## Product Program

| Model Number | Power | Transient power | Input Voltage Range | OutputVoltage/ Current(Vo/Io) | Load Voltage /Current | Certification |
|---|---|---|---|---|---|---|
| MBP300-2A27D27220 | 63W | 220V/1.36A（≤30S）<br>27Vd/6.0A（≤30S） | 165-264VAC | 27V/1A | 27V/0.5A<br>220V/0.1A | RoHS |

## Package Dimension LxWxH: 200.00x112.00x45.00(mm)




| Pin | Function |
|---|---|
| 1 | ACL |
| 2 | FG |
| 3 | ACN |
| 4 | -Vo1/B- |
| 5 | B+ |
| 6 | +Vo1 |
| 7 | NC |
| 8 | +Vo2 |
| 9 | -Vo2 |
| 10 | NC |

Unit: mm[inch]
Pin diameter tolerance: ±1.0[±0.040]
Connection range: 28—12AWG

- This catalog is used to introduce our latest products, for more information, please contact our sales department





# 5W Compact Size LD05-MU Series for Medical

cULus CE RoHS

## Features

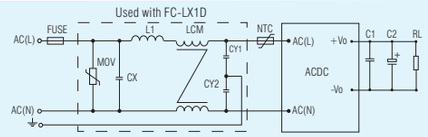
- EN60601-1, ANSI/AAMI ES60601-1 approval (2*MOPP)
- Input voltage range: 85-264VAC/100-370VDC
- Operating temperature: -25℃ to +70℃
- Isolation: 4000VAC
- Ripple & noise: 50mV(Typ.)
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protections

## Product Program

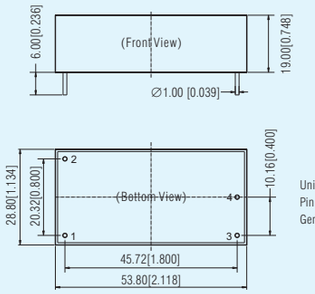
| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LD05-20B05MU | 5W | 85-264VAC | 5V/1000mA | 76 | cULus CE RoHS |
| LD05-20B12MU | | 85-264VAC | 12V/420mA | 80 | |
| LD05-20B15MU | | 85-264VAC | 15V/333mA | 81 | |
| LD05-20B24MU | 5.5W | 85-264VAC | 24V/230mA | 81 | |

Note: 1. LD05-20BxxMU series meet the requirements of ±1KV surge level. If the application requires ±2KV/4KV, our EMC solution-recommended circuit is available as follows;
2. If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, series with FC-LX1D reaches to ±2KV/4KV;
3. Detailed application please refer to datasheet.

## EMC Solution-recommended Circuit




## Package Dimension LxWxH: 53.80x28.80x19.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(N) |
| 2 | AC(L) |
| 3 | +Vo |
| 4 | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Note: A2S chassis mounting and A4S DIN-Rail mounting are available and please refer to datasheet for details. Further developing is also available if needed.

# 15-25W Low Power Consumption AC/DC LH-MU Series for Medical

CSA CE RoHS (pending)

## Features

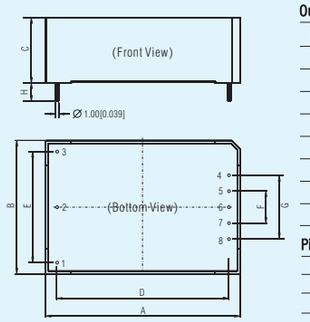
- Meet EN60601-1, ANSI/AAMI ES60601-1 (2*MOPP) standards (pending)
- Input voltage range: 85-264VAC/100-370VDC
- Operating Temperature: -40℃ to +70℃
- Isolation: 4000VAC
- Operating elevation: 5000m
- Low standby power consumption: <0.1W
- Low leakage current: <100uA
- Output short-circuit, over-current and over-voltage protections
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting

## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LH15-20B05MU | 15W | 85-264VAC | 5V/2800mA | 77 | CSA (pending) CE (pending) RoHS |
| LH15-20B12MU | | 85-264VAC | 12V/1250mA | 81 | |
| LH15-20B15MU | | 85-264VAC | 15V/1000mA | 81 | |
| LH15-20B18MU | | 85-264VAC | 18V/833mA | 82 | |
| LH15-20B24MU | | 85-264VAC | 24V/625mA | 84 | |
| LH25-20B05MU | 25W | 85-264VAC | 5V/4100mA | 79 | CSA (pending) CE (pending) RoHS |
| LH25-20B12MU | | 85-264VAC | 12V/2100mA | 83 | |
| LH25-20B15MU | | 85-264VAC | 15V/1600mA | 84 | |
| LH25-20B18MU | | 85-264VAC | 18V/1400mA | 84 | |
| LH25-20B24MU | | 85-264VAC | 24V/1100mA | 85 | |

Note: LH-MU series meet the requirements of ±1KV/2KV surge level (level three). If the application requires higher performance, our EMC solution-recommended circuit is available.

## Package Dimension




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

**Outline & Dimensions**

| NO. | LH15-20BxxMU | LH25-20BxxMU |
|---|---|---|
| A | 62.00 | 70.00 |
| B | 45.00 | 48.00 |
| C | 22.50 | 23.50 |
| D | 54.00 | 62.00 |
| E | 35.00 | 40.00 |
| F | 10.00 | 11.50 |
| G | 20.00 | 23.00 |
| H | 6.00 | 6.00 |

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | No Pin |
| 2 | AC(N) |
| 3 | AC(L) |
| 4 | +Vo |
| 5 | No Pin |
| 6 | No Pin |
| 7 | No Pin |
| 8 | -Vo |

Note: A2S chassis mounting and A4S DIN-Rail mounting are available and please refer to datasheet for details.

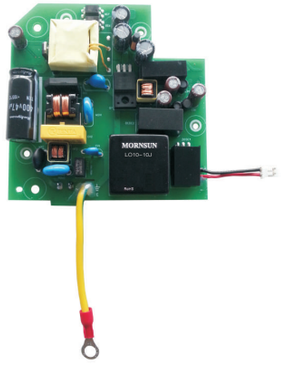
- This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 10W Seven outputs Open Frame LO Series Specialized for Flow meter

RoHS

## Features

- Seven outputs specialized for flow meter application, various outputs customization acceptable
- Input voltage range: 85-264VAC, 50/60HZ
- Isolation: 3000VAC
- Low ripple & noise
- EMC: Conduction/Radiation: CLASS B, Burst/Surge: Class 4
- Output short-circuit protection

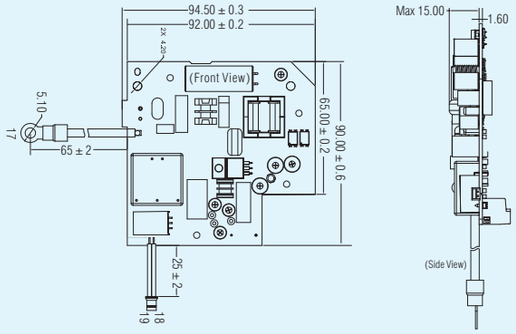



## Product Program

| Model Number | Power | Input Voltage Range | Output Available (Vo1/Vo2/Vo3) | Output Available (Vo4/Vo5) | Output Available (Vo6/Vo7) |
|---|---|---|---|---|---|
| LO10-10J | 10W | 85-264VAC/ 120-370VDC | Triple outputs (3.3V-24V) available | Positive and negative voltage (±5V to ±24V) available | Positive and negative voltage (±5V to ±70V) available |

Note: Seven or less outputs products customization is acceptable. For more information, please contract our sales department.

## Package Dimension LxWxH: 94.50x90.00x15.00(mm)








Unit: mm[inch]
General tolerance: ±0.50[±0.020]

**Pin-Out**

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | +Vo3 | 2 | -Vo3 |
| 3 | No Pin | 4 | No Pin |
| 5 | +Vo2 | 6 | -Vo2 |
| 7 | +Vo6 | 8 | COM |
| 9 | -Vo7 | 10 | COM |
| 11 | +Vo4 | 12 | COM |
| 13 | -Vo5 | 14 | COM |
| 15 | NC | 16 | NC |
| 17 | GND | 18 | -Vo1 |
| 19 | +Vo1 | 20 | AC(L) |
| 21 | AC(N) | | |

# 10W Open Frame LO Series Specialized for Electric Power

RoHS

## Features

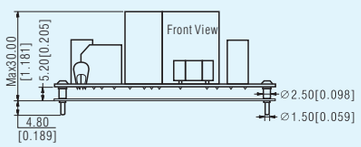
- Specialized for electric-meter application, EMI CLASS B with ±2KV surge
- Input voltage range: 30-280VAC/30-400VDC
- Isolation: 4000VAC
- High efficiency, high reliability
- Low ripple & noise, low standby power consumption
- Long-life, low-impedance electrolytic capacitors
- Output short-circuit and over-voltage protections
- Gild pin, customization acceptable

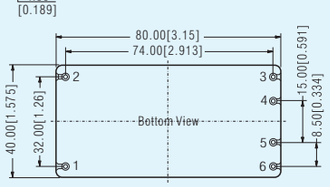
## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LO10-24B05K | 6W | 30-280VAC, 30-400VDC | 5V/1200mA | 71 | RoHS |
| LO10-24B12K | 6.6W | 30-280VAC, 30-400VDC | 12V/550mA | 77 | |
| LO10-24B13K | 6.5W | 30-280VAC, 30-400VDC | 13V/500mA | 77 | |

Note: 3.3～48V output customization is acceptable.

## Package Dimension LxWxH: 80.00x40.00x30.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | NC |
| 4 | No Pin |
| 5 | OUT1- |
| 6 | OUT1+ |

Unit: mm[inch]
General tolerance: ±0.50[±0.020]
RF-4, 1.6mm thick double sided glass fiber PCB
0.40mm black MYLAR insulating sheet material





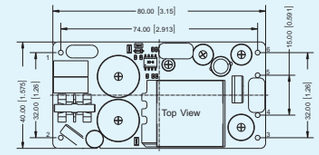
# 10W Dual Outputs 528V Input Voltage Open Frame LO Series Specialized for Electric Power

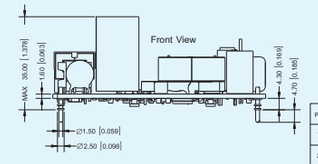
RoHS

## Features

- Specialized for three–phase four–wire system, any two–wire connection from three–phase
- four-wire system available
- Ultra-wide input voltage range: 57-528VAC/80-745VDC
- EMC: Conduction/Radiation: CLASS B, Burst/Surge: Class 4
- Output short-circuit, over-current and over-voltage protections
- Multiple outputs, customization acceptable

## Package Dimension LxWxH: 80.00x40.00x35.00(mm)




| Pin | Name | Function Define |
|---|---|---|
| 1 | AC(L) | AC voltage line wire(L wire) or DC voltage positive |
| 2 | AC(N) | AC voltage neutral wire(N wire) or DC voltage negative |
| 3 | +Vo2 | The second output positive(+) |
| 4 | -Vo2 | The second output negative(-) |
| 5 | -Vo1 | The first output voltage negative(-) |
| 6 | +Vo1 | The first output voltage positive (+) |

Unit: mm[inch]
General tolerance: ±0.50[±0.020]
RF-4, 1.6mm thick double sided glass fiber PCB
0.40mm black MYLAR insulating sheet material

## Product Program

| Model Number | Power | Output Voltage/ Current (Vo1/Io1) | Output Voltage/ Current (Voc/Ioc) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LO10-26D0512-04L | 10.92W | 5.1V/1.2A | 12V/0.4A | 78 | RoHS |

Note: 1. 05/24 and 05/15 outputs customization is acceptable.
2. If the application requires higher performance for EMC, our recommended peripheral circuit is available.

# 30W Four Outputs Metal Mask LM Series Specialized for Protective Relaying System

RoHS

## Features

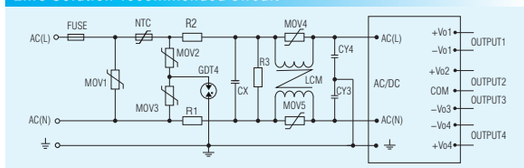
- EMC: EMI CLASS B; ±2KV/4KV surge (level four)
- Input voltage range: 85-264VAC/100-370VDC
- Isolation: 2000VAC
- Low standby power consumption, high efficiency
- Low ripple & noise
- Multiplexed outputs, metal mask
- Output short-circuit, over-current and over-voltage protections

## Product Program

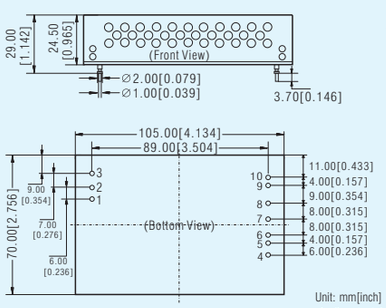
| Model Number | Power | Input Voltage Range | Output Voltage (VDC) | Certification |
|---|---|---|---|---|
| LM30-00J0512-03E | 30W | 85-264VAC, 100-370VDC | 5/±12/24 | RoHS |

Note: 1. LM series meet the requirements of ±2KV/4KV surge level(level four). If the application requires higher performance for surge, our recommended peripheral circuit for ±4KV/6KV is available;
2. If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, series with FC-L01D2 reaches to ±4KV/6KV;
3. Detailed application please refer to datasheet.

## EMC Solution-recommended Circuit




## Package Dimension LxWxH: 105.00x70.00x24.50(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | ⏚ |
| 4 | +Vo1 |
| 5 | -Vo1 |
| 6 | +Vo2 |
| 7 | COM |
| 8 | -Vo3 |
| 9 | -Vo4 |
| 10 | +Vo4 |

Unit: mm[inch]
pin diamater tolerance: ± 0.10[±0.004]
pin height tolerance: ±0.25[±0.010]
General tolerance: ±1.00[±0.039]

# 10-25W LH-ER2 Series Specialized for Electric Power

RoHS

## Features

- Specialized for electric power application, excellent EMS performance with ±2KV/±4KV surge(level four)
- Input voltage range: 85-264VAC/120-370VDC
- Isolation: 3000VAC
- Efficiency up to 85%
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Meet CLASS I, safety
- Output short-circuit and over-current protections

A2 Chassis Mounting

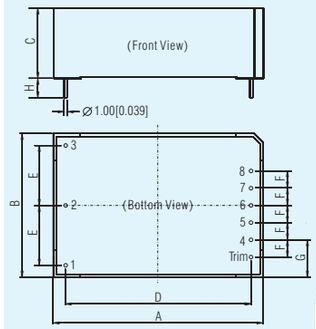

A4 DIN-Rail Mounting

## Product Program

| Model Number | Power | Output Voltage/ Current(Vo1/Io1) | Output Voltage/ Current(Vo2/Io2) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| LH10-10B12ER2 | 10W | 12V/900mA | | 79 | RoHS |
| LH10-10B24ER2 | | 24V/450mA | | 81 | |
| LH10-10D0505-02ER2 | | 5V/1800mA | 5V/200mA | 75 | |
| LH10-10D0512-02ER2 | | 5V/1500mA | 12V/200mA | 77 | |
| LH10-10D0524-02ER2 | | 5V/1000mA | 24V/200mA | 77 | |
| LH15-10B05ER2 | 15W | 5V/2800mA | | 76 | RoHS |
| LH15-10B12ER2 | | 12V/1250mA | | 80 | |
| LH15-10B24ER2 | | 24V/650mA | | 83 | |
| LH15-10D0512-04ER2 | | 5V/2000mA | 12V/400mA | 80 | |
| LH15-10D0524-02ER2 | | 5V/2000mA | 24V/200mA | 80 | |
| LH25-10B05ER2 | 25W | 5V/4100mA | | 74 | RoHS |
| LH25-10B12ER2 | | 12V/2100mA | | 81 | |
| LH25-10B15ER2 | | 15V/1600mA | | 82 | |
| LH25-10B24ER2 | | 24V/1100mA | | 85 | |

Note: 1. LHxx-10BxxER2 and LHxx-10DxxER2 series meet the requirements of ±2KV/4KV surge level (level four). If application requires for ±4KV/6KV,our EMC solution-recommended circuit is available as follows;
2. If the application requires higher performance for lightning protection, our matching EMC auxiliary devices are available. For example, series with FC-L01D2 reaches to ±4KV/6KV;
3. Detailed application please refer to datasheet.

## Package Dimension




Note: Trim**: only for LH20/25-13B Series.
A2 chassis mounting and A4 DIN-Rail mounting are available and please refer to datasheet for details.

**Pin-Out**

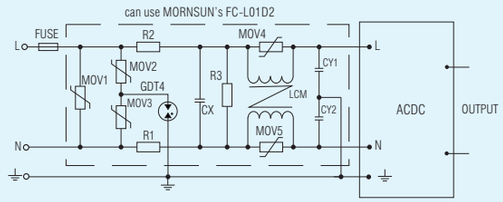
| Pin | LH-10B | LH-10D |
|---|---|---|
| 1 | ⏚ | ⏚ |
| 2 | AC(N) | AC(N) |
| 3 | AC(L) | AC(L) |
| 4 | -Vo | -Vo1 |
| 5 | No Pin | +Vo1 |
| 6 | No Pin | No Pin |
| 7 | No Pin | -Vo2 |
| 8 | +Vo | +Vo2 |
| Trim | Trim** | No Pin |

Unit: mm[inch]
Pin length(H): ≥6.00[0.236]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

**Outline & Dimensions**

| NO. | LH10 | LH15 | LH25 |
|---|---|---|---|
| A | 62.00 | 62.00 | 70.00 |
| B | 45.00 | 45.00 | 48.00 |
| C | 30.00 | 30.00 | 30.00 |
| D | 54.00 | 54.00 | 62.00 |
| E | 17.50 | 17.50 | 20.00 |
| F | 5.00 | 5.00 | 5.75 |
| G | 12.50 | 12.50 | 12.50 |

## EMC Solution-recommended Circuit




# 120W LM Series Cost-effective Great Power Caged Power Supply

RoHS

## Features

- Suitable for industrial control and charging station
- Input voltage range: 85-264VAC/100-370VDC
- AC and DC dual-use (input from the same terminal )
- Operating temperature: -40℃ to +70℃
- Low standby power consumption, high efficiency
- Isolation: 3750VAC
- Low ripple & noise, cost-effective
- Output short-circuit, over-current ,over-voltage and over-temperature protections
- Meet UL60950-1/EN60950-1 standards

## Product Program

| Model Number | Power | Input Voltage Range | Outpu Voltaget/Current (Vo/Io) | Effi(%)(typ) | Certification |
|---|---|---|---|---|---|
| LM120-10B12 | 120W | 85-264VAC | 12V/10A | 85% | RoHS |
| LM120-10B24 | 120W | 85-264VAC | 24V/5A | 89% | |





# 100W 165-265VAC Input Voltage Capacitor Charging MCP Series

RoHS

## Features

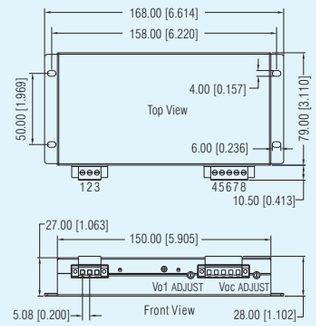
- Specialized for distribution automation system, power magnet switch controller, electric network cabinet and other electrical equipment applications; with ultra-capacitor charging function
- Operating temperature: -40℃ to +75℃
- Isolation: 3000VAC
- Efficiency up to 85%
- Continuous adjustable output voltage
- Chassis mounting
- MTBF＞100,000 H

## Product Program

| Model Number | Power | Output Voltage/Current (Vo1/Io1) | Output Voltage/Current (Voc/Ioc) | Certification |
|---|---|---|---|---|
| MCP100-2A27D27 | 100W | 27V/1.5A | 27V/3A | RoHS |

Note: customization is acceptable.

## Package Dimension LxWxH: 168.00x79.00x28.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 2 | ⏚ |
| 3 | AC(N) |
| 4 | K |
| 5 | +Vo1 |
| 6 | -Vo1 |
| 7 | -Voc |
| 8 | +Voc |

Unit: mm[inch]
General tolerance: ±1.00[±0.039]
Wire range:28-12AWG

# 350W/540W 165-264VAC Input Voltage Battery Charging MBP Series

RoHS

## Features

- Specialized for distribution automation system, power distribution automation system, intelligent power box-type substation and RMU applications; with lead-acid battery charging function
- Operating temperature: -40℃ to +70℃
- Efficiency up to 86%
- Low standby power consumption, meet DL/T721-2013 standard
- Chassis mounting
- Charging&discharging management function, bettery activation function
- Output over-current and over-voltage protections

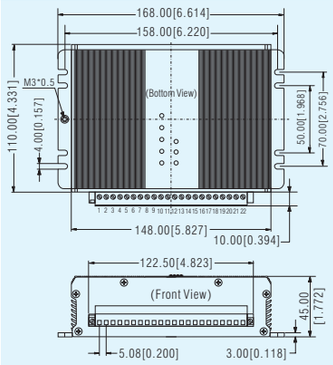
## Product Program

| Model Number | Long-Term Power | Transient power | Load Voltage /Current | Floating charging voltage/ Charging current | Certification |
|---|---|---|---|---|---|
| MBP300-2A27D27 | 108W | 350W/30s, 432W/1s | 27V/3A | 27V/1A | RoHS |
| MBP500-2A27D27 | 162W | 540W/30s, 702W/1s | 27V/4.5A | 27V/1.5A | |
| MBP500-2A54D54 | 135W | 540W/30s, 702W/1s | 54V/1A | 54V/1.5A | |

Note:48V output customization is acceptable.

Note: MBP Series without PFC is acceptable.

## Package Dimension LxWxH: 168.00x110.00x45.00(mm)




**Pin-Out**

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | ACL | 12 | BG |
| 2 | PE | 13 | RL |
| 3 | ACN | 14 | VG |
| 4 | NC | 15 | Vo- |
| 5 | VC | 16 | Vo- |
| 6 | POK | 17 | Vo+ |
| 7 | HOK | 18 | Vo+ |
| 8 | VL | 19 | B+ |
| 9 | VH | 20 | B+ |
| 10 | HK | 21 | B- |
| 11 | KG | 22 | B- |

Unit: mm[inch]
Pin diameter tolerance: ±1.00[±0.040]
Wire range: 28-12AWG

# DC/DC Converter





## 5-15W 100-1000VDC Ultra-wide Input Voltage Isolated & regulated output series

CE RoHS

### Features

- Ultra-wide input voltage, suitable for PV & HVC applications
- 10:1ultra-wide input voltage range: 100-1000VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 4000VAC
- Efficiency up to 80%
- High reliability, 3 years warranty
- Input reverse voltage, output over-voltage and short-circuit protections
- EN62109 approval


A2C Chassis Mounting

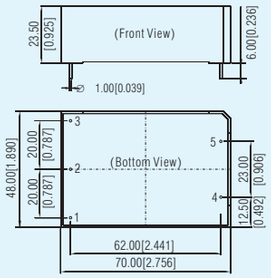

A4C DIN-Rail Mounting

**Product Program**

| Model Number | Power | Input Voltage Range | Output Voltage/Current (Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| PV05-27B05R2 | 5W | 100-1000VDC | 5V/1000mA | 72 | CE RoHS |
| PV10-27B05R2 | 10W | 100-1000VDC | 5V/2000mA | 72 | |
| PV10-27B09R2 | | | 9V/1110mA | 76 | |
| PV10-27B24R2 | | | 24V/420mA | 80 | |
| PV15-27B12R2 | 15W | 100-1000VDC | 12V/1250mA | 77 | |
| PV15-27B15R2 | | | 15V/1000mA | 78 | |
| PV15-27B24R2 | | | 24V/625mA | 80 | |

Note: Detailed application please refer to datasheet.

**Package Dimension** LxWxH: 70.00x48.00x23.50(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | NC |
| 2 | -Vin |
| 3 | +Vin |
| 4 | -Vo |
| 5 | +Vo |

NC: No connection.

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Note: A2 chassis mounting and A4 DIN-Rail mounting are available and please refer to datasheet for details.

## 40W 200-1200VDC Ultra-wide Input Voltageisolated & regulated output series

RoHS

### Features

- Ultra-wide input voltage, suitable for PV & HVC applications
- 6:1ultra-wide input voltage range: 200-1200VDC
- Operating temperature: -25℃ to +70℃
- Isolation: 4000VDC
- Efficiency up to 84%
- High efficiency, low ripple & noise
- Optional packages: chassis mounting, Din-Rail mounting
- Input under-voltage, reverse voltage, output over-voltage and short-circuit protections


A5 Chassis Mounting

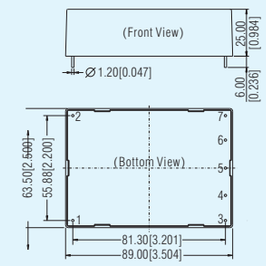

A6 DIN-Rail Mounting

**Product Program**

| Model Number | Power | Input Voltage Range | Output Voltage/Current (Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| PV40-27B12 | 40W | 200-1200VDC | 12V/3330mA | 83 | RoHS |
| PV40-27B15 | | | 15V/2670mA | 84 | |
| PV40-27B24 | | | 24V/1670mA | 84 | |

Note: Detailed application please refer to datasheet.

**Package Dimension** LxWxH: 89.00x63.50x25.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | -Vin |
| 2 | +Vin |
| 3 | +Vo |
| 4 | No pin |
| 5 | -Vo |
| 6 | No pin |
| 7 | NC |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Note: A5 chassis mounting and A6 DIN-Rail mounting are available and please refer to datasheet for details.

- This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 15-40W 200-1500VDC Ultra-wide Input Voltage Isolated Series

RoHS

A10 A8

## Features

- Ultra-wide input voltage, suitable for PV & HVC applications
- 7.5:1ultra-wide input voltage range: 200-1500VDC
- Isolation: 4000VDC
- Efficiency up to 80%
- High reliability, 3 years warranty
- Input under-voltage, reverse input voltage, output over-current and short-circuit protections
- UL 1741/CSA-C22.2 No.107.1, EN62109 approval
- Compact size and cost-effective PV15-29BxxL series available

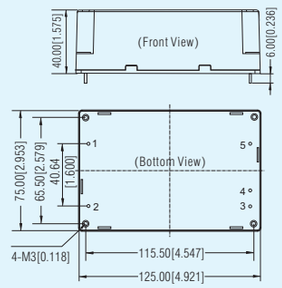
## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage/ Current(Vo/Io) | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| PV15-29B05 | 10W | 200-1500VDC | 5V/2000mA | 64 | CE RoHS |
| PV15-29B12 | 15W | 200-1500VDC | 12V/1250mA | 71 | |
| PV15-29B15 | | | 15V/1000mA | 72 | |
| PV15-29B24 | | | 24V/625mA | 74 | |
| PV40-29B12 | 40W | 200-1500VDC | 12V/3330mA | 76 | CE RoHS |
| PV40-29B15 | | | 15V/2670mA | 78 | |
| PV40-29B24 | | | 24V/1670mA | 80 | |
| PV15-29B05L | 10W | 200-1500VDC | 5V/2000mA | 64 | RoHS |
| PV15-29B12L | 15W | 200-1500VDC | 12V/1250mA | 71 | |
| PV15-29B15L | | | 15V/1000mA | 72 | |
| PV15-29B24L | | | 24V/625mA | 74 | |

Note: Series with suffix DIN-Rail A8 package offer built-in 1500VDC fuse and EMC circuit and with A10 are standard DIN-Rail package.

## Package Dimension

### PV15-29Bxx Series LxWxH: 125.00x75.00x40.00(mm)

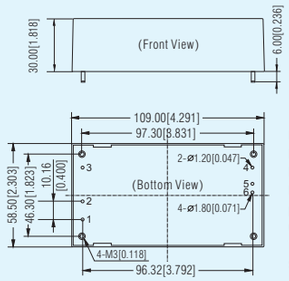



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | -Vin |
| 3 | +Vo |
| 4 | -Vo |
| 5 | NC |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
pin height tolerance: ±1.50[±0.059]
General tolerance: ±0.50[±0.020]
This series of products need to fix screws in the haid vibration

### PV15-29BxxL Series LxWxH: 109.00x58.50x30.00(mm)




**Pin-Out**

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | +Vin | 4 | NC |
| 2 | -Vin | 5 | -Vo |
| 3 | NC | 6 | +Vo |

Unit: mm[inch]
Pin 1,2,5,6`s diamater: 1.80[0.071],
Pin 3,4`s diamater: 1.20[0.047]
Pin diameter tolerance: ±0.10[±0.004]
pin height tolerance: ±1.50[±0.059]
General tolerance: ±0.50[±0.020]
This series of products need to be fixed with screws in vibration condition.

# 45W 150-1500VDC Ultra-wide Input Voltage Caged Power Supply Specialized for SVG

RoHS

## Features

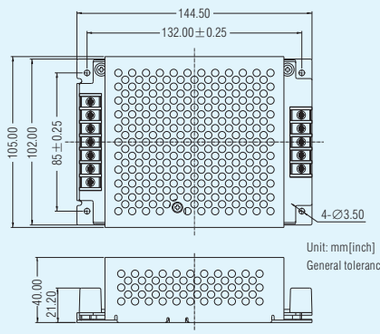
- Specialized for SVG application with input under-voltage, reverse input voltage,
- output short-circuit and over-voltage protections
- 10:1ultra-wide input voltage range: 150-1500VDC
- Operating temperature: -40℃ to +85℃
- Isolation: 4000VAC
- High reliability, 3 years warranty
- High 78% efficiency low ripple & noise
- Meet 5000m altitude requirements

## Product Program

| Model Number | Power | Input Voltage Range (Optional) | Output Voltage Range | Certification |
|---|---|---|---|---|
| PV45-29D | 45W | 150-1500VDC | 12V/15V/24V double outputs customization acceptable | RoHS |

Note: 1500VDC input with 12V/15V/24V double output customization is acceptable.

## Package Dimension LxWxH: 144.5.00x105.00x40.00(mm)




Unit: mm[inch]
General tolerance: ±0.50[±0.020]

• This catalog is used to introduce our latest products, for more information, please contact our sales department





# 1W Fixed Input Voltage, Isolated & Unregulated Output Series (Automotive)

RoHS

## Features

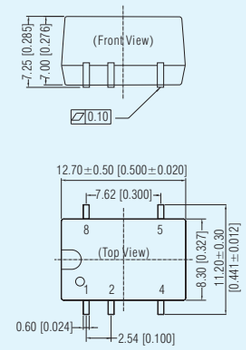
- Specialized for automotive application, components meet AEC-Q100 standard
- Operating temperature: -50℃ to +125℃
- Isolation: 3500VDC
- Compact SMD package
- Manufacturing process meets TS16949 standard
- Output short-circuit protection (self-recovery)

## Product Program

| Model Number | Power | Input Voltage Range (Nominal) | Output Voltage (VDC) | Output Current (mA) | Effi(%) (typ) |
|---|---|---|---|---|---|
| CF0505XT-1WR2 | 1W | 4.5-5.5 (5VDC) | 5 | 200 | 75 |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension LxWxH: 12.70x11.20x7.25(mm)




**Pin-Out**

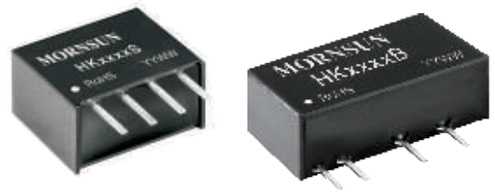
| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 4 | 0V |
| 5 | +Vo |
| 8 | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# HK Series Specialized for Intelligent Instrument

RoHS



## Features

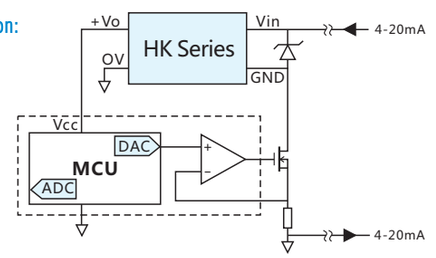
- Suitable for two-wire loop power application
- Operating temperature: -40℃ to +85℃
- High output current up to 5mA
- Ultra-miniature SIP package (HK_S Series)
- Excellent high and low temperature characteristics
- Isolation 1500VDC

## Product Program

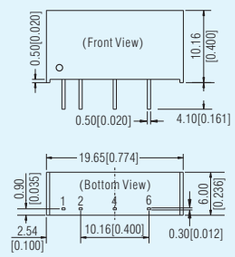
| Model Number | Input Voltage (VDC) | Input Current (mA) | Output Voltage (VDC) | Output Current (mA) | Isolation voltage (package) | Max.Capacitive Load (μF) |
|---|---|---|---|---|---|---|
| HK0503S | 5 | 3.5-20 | 3.3 | 2.5 | 1500VDC (SIP) | 10 |
| HK5S03B | | 4-20 | 3.3 | 3.2 | 1000VDC (SIP) | 10 |
| HK5S05B | | 4-20 | 5 | 2 | 1000VDC (SIP) | 10 |
| HK8S03B | 7.5 | 4-20 | 3.3 | 3.5 | 1000VDC (SIP) | 10 |
| HK8SX3B | | 4-20 | 3 | 5 | 1000VDC (SIP) | 10 |
| HK8S05IB | | 4-20 | 5 | 3.5 | 1000VDC (SIP) | 10 |
| HK0803S | 7-8 | 3.5-20 | 3.3 | 3.5 | 1500VDC (SIP) | 10 |
| HK0805S | 7-8 | 3.5-20 | 5 | 2 | 1500VDC (SIP) | 10 |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Application:




## Package Dimension LxWxH: 19.65x6.00x10.16(mm) HKxxxxB

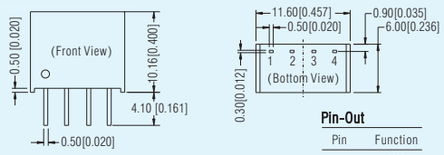



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 2 | GND |
| 4 | 0V |
| 6 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

## Package Dimension LxWxH: 19.65x6.00x10.16(mm) HKxxxxS




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 3 | 0V |
| 4 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

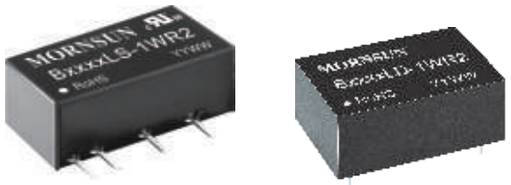
• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 1W Fixed Input Voltage, Isolated & Unregulated Output Series Specialized for BMS

RoHS

## Features

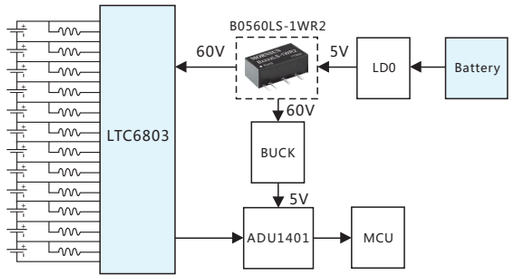
- Suitable for BMS application
- Isolation: 1500VDC
- High power density
- No external component required
- International standard pin-out
- Meet requirements of EMI CISPR25 CLASS 3 Standard
- Efficiency up to 79%



## Product Program

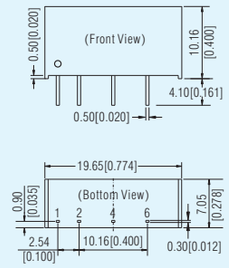
| Model Number | Input Voltage Range (Nominal) | Output Voltage (VDC) | Output Current (mA) | Effi(%) (typ) | Package |
|---|---|---|---|---|---|
| B0560LS-1WR2 | 4.5-5.5 (5VDC) | 60 | 17 | 77 | SIP |
| B0560LD-1WR2 | | | | 77 | DIP |
| B0550LD-1WR2 | | 50 | 20 | 79 | DIP |

## Application:




## Package Dimension

**B0560LS-1WR2** LxWxH: 19.65x7.05x10.16(mm)

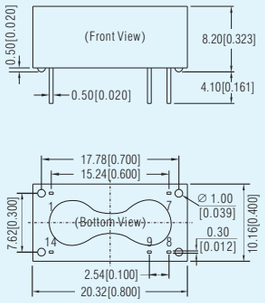



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 2 | GND |
| 4 | 0V |
| 6 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**B_LD-1WR2** LxWxH: 20.32x10.16x8.20(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 7 | NC |
| 8 | 0V |
| 9 | +Vo |
| 14 | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]





# 1-2W Fixed Input Voltage, Isolated & Unregulated Output Series Specialized for Medical

cULus CE RoHS

## Features

- EN60601-1, ANSI/AAMI ES60601-1 approval (3rd edition, 1xMOPP/2xMOOP)
- Operating temperature: -40℃ to +85℃
- Isolation: 4200VAC or 6000VDC
- Efficiency up to 84%
- International standard pin-out
- The patient leakage current: Max 2μA

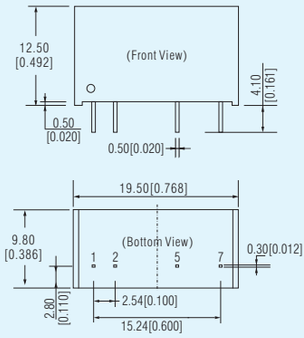
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| G0505S-1WR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 4200VAC (SIP) | cULus CE RoHS |
| G0509S-1WR2 | | | ±9V/±56mA | | |
| G0512S-1WR2 | | | ±12V/±42mA | | |
| G0515S-1WR2 | | | ±15V/±34mA | | |
| H0503S-1WR2 | | | 3.3V/303mA | | |
| H0505S-1WR2 | | | 5V/200mA | | |
| H0512S-1WR2 | | | 12V/84mA | | |
| H0515S-1WR2 | | | 15V/67mA | | |
| G1205S-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 4200VAC (SIP) | cULus CE RoHS |
| G1209S-1WR2 | | | ±9V/±56mA | | |
| G1212S-1WR2 | | | ±12V/±42mA | | |
| G1215S-1WR2 | | | ±15V/±34mA | | |
| H1205S-1WR2 | | | 5V/200mA | | |
| H1212S-1WR2 | | | 12V/84mA | | |
| H1215S-1WR2 | | | 15V/67mA | | |
| G2405S-1WR2 | 1W | 21.6-26.4 (24VDC) | ±5V/±100mA | 4200VAC (SIP) | cULus CE RoHS |
| G2409S-1WR2 | | | ±9V/±56mA | | |
| G2412S-1WR2 | | | ±12V/±42mA | | |
| G2415S-1WR2 | | | ±15V/±34mA | | |
| H2405S-1WR2 | | | 5V/200mA | | |
| H2412S-1WR2 | | | 12V/84mA | | |
| H2415S-1WR2 | | | 15V/67mA | | |
| G0505S-2WR2 | 2W | 4.5-5.5 (5VDC) | ±5V/±200mA | 4200VAC (SIP) | cULus CE RoHS |
| G0509S-2WR2 | | | ±9V/±111mA | | |
| G0512S-2WR2 | | | ±12V/±83mA | | |
| G0515S-2WR2 | | | ±15V/±67mA | | |
| H0505S-2WR2 | | | 5V/400mA | | |
| H0512S-2WR2 | | | 12V/167mA | | |
| H0515S-2WR2 | | | 15V/133mA | | |
| G1205S-2WR2 | 2W | 10.8-13.2 (12VDC) | ±5V/±200mA | 4200VAC (SIP) | cULus CE RoHS |
| G1209S-2WR2 | | | ±9V/±111mA | | |
| G1212S-2WR2 | | | ±12V/±83mA | | |
| G1215S-2WR2 | | | ±15V/±67mA | | |
| H1205S-2WR2 | | | 5V/400mA | | |
| H1212S-2WR2 | | | 12V/167mA | | |
| H1215S-2WR2 | | | 15V/133mA | | |
| G2405S-2WR2 | 2W | 21.6-26.4 (24VDC) | ±5V/±200mA | 4200VAC (SIP) | cULus CE RoHS |
| G2409S-2WR2 | | | ±9V/±111mA | | |
| G2412S-2WR2 | | | ±12V/±83mA | | |
| G2415S-2WR2 | | | ±15V/±67mA | | |
| H2405S-2WR2 | | | 5V/400mA | | |
| H2412S-2WR2 | | | 12V/167mA | | |
| H2415S-2WR2 | | | 15V/133mA | | |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

**H_S-1WR2, H_S-2WR2 Series** LxWxH: 19.50x9.80x12.50(mm)

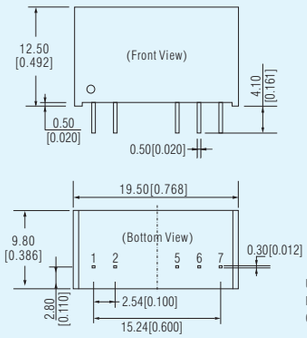



**Pin-Out**

| Pin | Single |
|---|---|
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 7 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**G_S-1WR2, G_S-2WR2 Series** LxWxH: 19.50x9.80x12.50(mm)




**Pin-Out**

| Pin | Dual |
|---|---|
| 1 | Vin |
| 2 | GND |
| 5 | -Vo |
| 6 | 0V |
| 7 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 1-2W Fixed Input Voltage, 1500VDC Isolated & Unregulated Output Series

CE RoHS

## Features

- Pin-out compatible with DCP01 series
- Operating temperature: -40℃ to +85℃
- Compact size, ultra-thin package
- International standard pin-out
- Continuous short-circuit protection

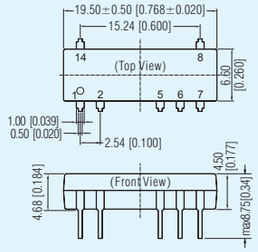
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Package |
|---|---|---|---|---|---|
| B0505RN-1WR2 | 1W | 4.5-5.5 (5VDC) | 5V/200mA | 1500VDC | DIP |
| B0505RT-1WR2 | | | | | SMD |
| F0505RN-1W | 1W | 4.5-5.5 (5VDC) | 5V/200mA | 3000VDC | DIP |
| F0505RT-1W | | | | | SMD |
| H0505RN-2W | 2W | 4.5-5.5 (5VDC) | 5V/400mA | 6000VDC | DIP |
| H0512RN-2W | | | 12V/167mA | | |
| H0515RN-2W | | | 15V/133mA | | |
| H0505LT-2W | | | 5V/400mA | | SMD |
| H1205RN-2W | 2W | 10.8-13.2 (12VDC) | 5V/400mA | 6000VDC | DIP |
| H1205LT-2W | | | 5V/400mA | | SMD |
| H2405RN-2W | 2W | 21.6-26.4 (24VDC) | 5V/400mA | 6000VDC | DIP |
| H2415RN-2W | | | 15V/133mA | | |
| H2405LT-2W | | | 5V/400mA | | |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

**B_RN-1WR2, F_RN-1W Series** LxWxH: 19.50x9.50x4.68(mm)

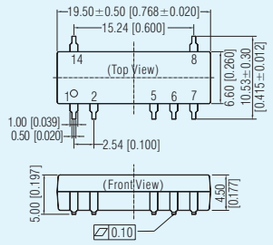



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| Others | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**B_RT-1WR2, F_RT-1W Series** LxWxH: 19.50x10.53x5.00(mm)



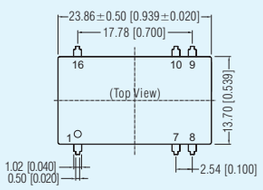

| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| Others | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

## Package Dimension

**H_RN-2W Series** LxWxH: 23.86x13.70x7.80(mm)

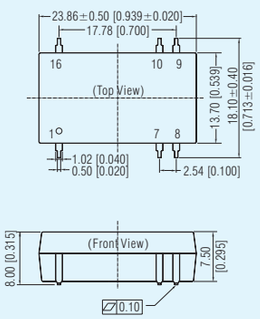



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | GND |
| 7 | NC |
| 8 | NC |
| 9 | +Vo |
| 10 | 0V |
| 16 | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**H_LT-2W Series** LxWxH: 23.86x18.10x8.00(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | GND |
| 7 | NC |
| 8 | NC |
| 9 | +Vo |
| 10 | 0V |
| 16 | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

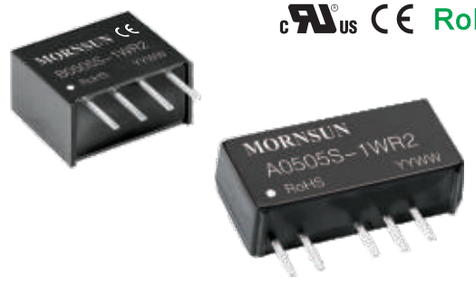


# 0.25-1W Fixed Input Voltage, 1500VDC Isolated & Unregulated Output Series

cULus CE RoHS

## Features

- Isolation: 1500VDC
- Operating temperature: -40℃ to +105℃
- Efficiency up to 80%
- High power density
- Miniature SIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection



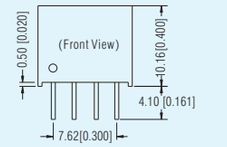

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| B0303S-W2R2 | 0.25W | 2.97-3.63 (3.3VDC) | 3.3V/76mA | 1500VDC (SIP) | cULus CE RoHS (pending) |
| B0305S-W2R2 | | | 5V/50mA | | |
| B0503S-W2R2 | | 4.5-5.5 (5VDC) | 3.3V/76mA | | |
| B0505S-W2R2 | | | 5V/50mA | | |
| B0512S-W2R2 | | | 12V/21mA | | |
| B1205S-W2R2 | | 10.8-13.2(12VDC) | 5V/50mA | | |
| B1505S-W2R2 | | 13.5-16.5(15VDC) | 5V/50mA | | |
| B2405S-W2R2 | | 21.6-26.4(24VDC) | 5V/50mA | | |
| B0303LS-1WR2* | 1W | 2.97-3.63 (3.3VDC) | 3.3V/303mA | 1500VDC (SIP) | RoHS |
| B0305LS-1WR2* | | | 5V/200mA | | |
| B0303S-1WR2* | | | 3.3V/303mA | 1500VDC (SIP) | cULus CE RoHS |
| B0305S-1WR2* | | | 5V/200mA | | |
| A0505S-1WR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 1500VDC (SIP) | cULus CE RoHS |
| A0512S-1WR2 | | | ±12V/±42mA | | |
| A0515S-1WR2 | | | ±15V/±34mA | | |
| B0503LS-1WR2 | | | 3.3V/303mA | | |
| B0505LS-1WR2 | | | 5V/200mA | | |
| B0512LS-1WR2 | | | 12V/84mA | | |
| B0515LS-1WR2 | | | 15V/67mA | | |
| B0524LS-1WR2* | | | 24V/42mA | | |
| B0503S-1WR2 | | | 3.3V/303mA | 1500VDC (SIP) | |
| B0505S-1WR2 | | | 5V/200mA | | |
| B0512S-1WR2 | | | 12V/84mA | | |
| B0515S-1WR2 | | | 15V/67mA | | |
| B0524S-1WR2* | | | 24V/42mA | | |
| A1205S-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 1500VDC (SIP) | cULus CE RoHS |
| A1212S-1WR2 | | | ±12V/±42mA | | |
| A1215S-1WR2 | | | ±15V/±34mA | | |
| B1205LS-1WR2 | | | 5V/200mA | | |
| B1212LS-1WR2 | | | 12V/84mA | | |
| B1215LS-1WR2 | | | 15V/67mA | | |
| B1224LS-1WR2 | | | 24V/42mA | | |
| B1205S-1WR2 | | | 5V/200mA | 1500VDC (SIP) | |
| B1212S-1WR2 | | | 12V/84mA | | |
| B1215S-1WR2 | | | 15V/67mA | | |
| B1224S-1WR2 | | | 24V/42mA | | |
| A1505S-1WR2 | 1W | 13.5-16.5 (15VDC) | ±5V/±100mA | 1500VDC (SIP) | cULus CE RoHS |
| A1512S-1WR2 | | | ±12V/±42mA | | |
| A1515S-1WR2 | | | ±15V/±34mA | | |
| B1505LS-1WR2 | | | 5V/200mA | | |
| B1512LS-1WR2 | | | 12V/84mA | | |
| B1515LS-1WR2 | | | 15V/67mA | | |
| B1505S-1WR2 | | | 5V/200mA | 1500VDC (SIP) | RoHS |
| B1512S-1WR2 | | | 12V/84mA | | |
| B1515S-1WR2 | | | 15V/67mA | | |
| A2405S-1WR2* | 1W | 21.6-26.4 (24VDC) | ±5V/±100mA | 1500VDC (SIP) | cULus CE RoHS |
| A2412S-1WR2* | | | ±12V/±42mA | | |
| A2415S-1WR2* | | | ±15V/±34mA | | |
| B2405LS-1WR2* | | | 5V/200mA | | |
| B2412LS-1WR2* | | | 12V/84mA | | |
| B2415LS-1WR2* | | | 15V/67mA | | |
| B2424LS-1WR2* | | | 24V/42mA | | |
| B2405S-1WR2* | | | 5V/200mA | 1500VDC (SIP) | |
| B2412S-1WR2* | | | 12V/84mA | | |
| B2415S-1WR2* | | | 15V/67mA | | |
| B2424S-1WR2* | | | 24V/42mA | | |

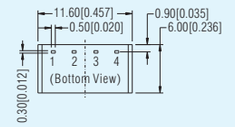
Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

**B_S-1WR2, B_S–W2R2 Series** LxWxH: 11.60x6.00x10.16(mm)

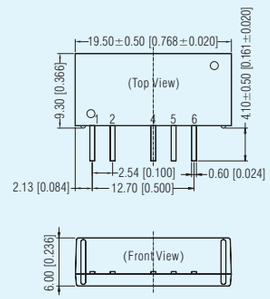



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | GND |
| 2 | Vin |
| 3 | 0V |
| 4 | +Vo |




Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**A_S-1WR2, B_LS-1WR2 Series** LxWxH: 19.50x6.00x9.30(mm)



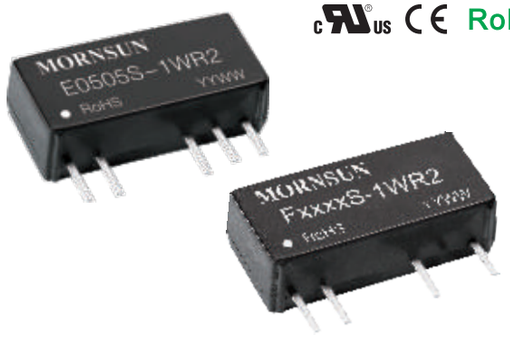

| Pin-Out | | |
|---|---|---|
| Pin | A_S–1WR2 | B_LS–1WR2 |
| 1 | Vin | Vin |
| 2 | GND | GND |
| 4 | -Vo | 0V |
| 5 | 0V | No Pin |
| 6 | +Vo | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 1W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Isolation: 3000VDC
- Operating temperature: -40℃ to +105℃
- Efficiency up to 81%
- High power density
- Miniature SIP package, automation packaged
- Anti-static protection: ±8KV
- Continuous short-circuit protection



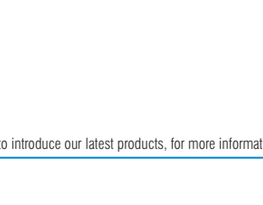

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| F0303S-1WR2* | 1W | 2.97-3.63 (3.3VDC) | 3.3V/303mA | 3000VDC (SIP) | RoHS |
| F0305S-1WR2* | | | 5V/200mA | | |
| E0505S-1WR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 3000VDC (SIP) | cULus CE RoHS |
| E0512S-1WR2 | | | ±12V/±42mA | | |
| E0515S-1WR2 | | | ±15V/±33mA | | |
| F0503S-1WR2 | | | 3.3V/303mA | | |
| F0505S-1WR2 | | | 5V/200mA | | |
| F0512S-1WR2 | | | 12V/83mA | | |
| F0515S-1WR2 | | | 15V/67mA | | |
| F0524S-1WR2* | | | 24V/42mA | | |
| E1205S-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 3000VDC (SIP) | cULus CE RoHS |
| E1212S-1WR2 | | | ±12V/±42mA | | |
| E1215S-1WR2 | | | ±15V/±33mA | | |
| F1205S-1WR2 | | | 5V/200mA | | |
| F1212S-1WR2 | | | 12V/83mA | | |
| F1215S-1WR2 | | | 15V/67mA | | |
| F1224S-1WR2 | | | 24V/42mA | | |
| E1505S-1WR2 | 1W | 13.5-16.5 (15VDC) | ±5V/±100mA | 3000VDC (SIP) | CE RoHS |
| E1515S-1WR2 | | | ±15V/±33mA | | |
| F1505S-1WR2 | | | 5V/200mA | | |
| F1512S-1WR2 | | | 12V/83mA | | |
| F1515S-1WR2 | | | 15V/67mA | | |
| E2405S-1WR2* | 1W | 21.6-26.4 (24VDC) | ±5V/±100mA | 3000VDC (SIP) | cULus CE RoHS |
| E2412S-1WR2* | | | ±12V/±42mA | | |
| E2415S-1WR2* | | | ±15V/±33mA | | |
| F2405S-1WR2* | | | 5V/200mA | | |
| F2412S-1WR2* | | | 12V/83mA | | |
| F2415S-1WR2* | | | 15V/67mA | | |
| F2424S-1WR2* | | | 24V/42mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

E_S-1WR2, F_S-1WR2 Series LxWxH: 19.50x6.00x9.30(mm)




**Pin-Out**

| Pin | E_S-1WR2 | F_S-1WR2 |
|---|---|---|
| 1 | Vin | Vin |
| 2 | GND | GND |
| 5 | -Vo | 0V |
| 6 | 0V | No Pin |
| 7 | +Vo | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]



# 0.25-1W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Operating temperature: -40℃ to +105℃
- Efficiency up to 82%
- High power density
- Miniature Compaet SMD package
- Anti-static protection: ±8KV
- Continuous short-circuit protection


## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| B0303XT-W2R2 | 0.25W | 2.97-3.63 (3.3VDC) | 3.3V/76mA | 1500VDC (SMD) | CE RoHS |
| B0305XT-W2R2 | | | 5V/50mA | | |
| B0503XT-W2R2 | | 4.5-5.5 (5VDC) | 3.3V/76mA | | |
| B0505XT-W2R2 | | | 5V/50mA | | |
| B0515XT-W2R2 | | | 15V/17mA | | |
| B1205XT-W2R2 | | 10.8-13.2 (12VDC) | 5V/50mA | | |
| B1212XT-W2R2 | | | 12V/21mA | | |
| B2405XT-W2R2 | | 21.6-26.4(24VDC) | 5V/50mA | | |
| F0505XT-W2R2 | 0.25W | 4.5-5.5(5VDC) | 5V/50mA | 3000VDC (SMD) | |
| F1205XT-W2R2 | | 10.8-13.2(12VDC) | 5V/50mA | | |
| B0303XT-1WR2* | 1W | 2.97-3.63 (3.3VDC) | 3.3V/303mA | 1500VDC (SMD) | cULus CE RoHS |
| B0305XT-1WR2* | | | 5V/200mA | | |
| A0505XT-1WR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 1500VDC (SMD) | |
| A0512XT-1WR2 | | | ±12V/±42mA | | |
| A0515XT-1WR2 | | | ±15V/±33mA | | |
| B0503XT-1WR2 | | | 3.3V/303mA | | |
| B0505XT-1WR2 | | | 5V/200mA | | |
| B0512XT-1WR2 | | | 12V/84mA | | |
| B0515XT-1WR2 | | | 15V/67mA | | |
| B0524XT-1WR2* | | | 24V/42mA | | |
| A1205XT-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 1500VDC (SMD) | cULus CE RoHS |
| A1212XT-1WR2 | | | ±12V/±42mA | | |
| A1215XT-1WR2 | | | ±15V/±33mA | | |
| B1205XT-1WR2 | | | 5V/200mA | | |
| B1212XT-1WR2 | | | 12V/84mA | | |
| B1215XT-1WR2 | | | 15V/67mA | | |
| B1224XT-1WR2 | | | 24V/42mA | | |
| A1515XT-1WR2 | 1W | 13.5-16.5 (15VDC) | ±15V/±33mA | 1500VDC (SMD) | CE RoHS |
| B1505XT-1WR2 | | | 5V/200mA | | |
| B1515XT-1WR2 | | | 15V/67mA | | |
| A2405XT-1WR2* | 1W | 21.6-26.4 (24VDC) | ±5V/±100mA | 1500VDC (SMD) | cULus CE RoHS |
| A2412XT-1WR2* | | | ±12V/±42mA | | |
| A2415XT-1WR2* | | | ±15V/±33mA | | |
| B2405XT-1WR2* | | | 5V/200mA | | |
| B2412XT-1WR2* | | | 12V/84mA | | |
| B2415XT-1WR2* | | | 15V/67mA | | |
| B2424XT-1WR2* | | | 24V/42mA | | |
| F0303XT-1WR2* | 1W | 2.97-3.63 (3.3VDC) | 3.3V/303mA | 3000VDC (SMD) | cULus CE RoHS |
| F0305XT-1WR2* | | | 5V/200mA | | |
| E0505XT-1WAR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 3000VDC (SMD) | |
| E0512XT-1WAR2 | | | ±12V/±42mA | | |
| E0515XT-1WAR2 | | | ±15V/±33mA | | |
| F0503XT-1WR2 | | | 3.3V/303mA | | |
| F0505XT-1WR2 | | | 5V/200mA | | |
| F0512XT-1WR2 | | | 12V/84mA | | |
| F0515XT-1WR2 | | | 15V/67mA | | |
| F0524XT-1WR2* | | | 24V/42mA | | |
| E1205XT-1WAR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 3000VDC (SMD) | cULus CE RoHS |
| E1212XT-1WAR2 | | | ±12V/±42mA | | |
| E1215XT-1WAR2 | | | ±15V/±33mA | | |
| F1205XT-1WR2 | | | 5V/200mA | | |
| F1212XT-1WR2 | | | 12V/84mA | | |
| F1215XT-1WR2 | | | 15V/67mA | | |
| F1224XT-1WR2 | | | 24V/42mA | | |
| E1515XT-1WAR2 | 1W | 13.5-16.5 (15VDC) | ±15V/±33mA | 3000VDC (SMD) | CE RoHS |
| F1515XT-1WR2 | | | 15V/67mA | | |

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| E2405XT-1WAR2* | 1W | 21.6-26.4 (24VDC) | ±5V/±100mA | 3000VDC (SMD) | cULus CE RoHS |
| E2412XT-1WAR2* | | | ±12V/±42mA | | |
| E2415XT-1WAR2* | | | ±15V/±33mA | | |
| F2405XT-1WR2* | | | 5V/200mA | | |
| F2415XT-1WR2* | | | 15V/67mA | | |
| F2424XT-1WR2* | | | 24V/42mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

A_XT-1WR2, E_XT-1WAR2 Series LxWxH: 15.24x11.20x7.25(mm)



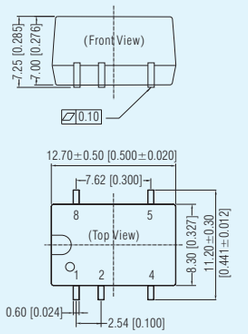

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 4 | 0V |
| 5 | -Vo |
| 7 | +Vo |
| 10 | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

B/F_XT-W2R2, B/F_XT-1WR2 Series LxWxH: 12.70x11.20x7.25(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 4 | 0V |
| 5 | +Vo |
| 8 | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 1W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Operating temperature: -40℃ to +105℃
- Efficiency up to 81%
- Miniature DIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection

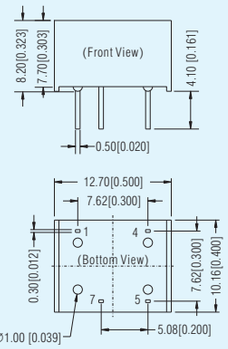
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| B0303D-1WR2* | 1W | 2.97-3.63 (3.3VDC) | 3.3V/303mA | 1500VDC (DIP) | cULus CE RoHS |
| B0305D-1WR2* | | | 5V/200mA | | |
| A0505D-1WR2 | 1W | 4.5-5.5 (5VDC) | ±5V/±100mA | 1500VDC (DIP-14) | |
| A0512D-1WR2 | | | ±12V/±42mA | | |
| A0515D-1WR2 | | | ±15V/±34mA | | |
| B0503D-1WR2 | | | 3.3V/303mA | 1500VDC (DIP) | |
| B0505D-1WR2 | | | 5V/200mA | | |
| B0512D-1WR2 | | | 12V/84mA | | |
| B0515D-1WR2 | | | 15V/67mA | | |
| B0524D-1WR2* | | | 24V/42mA | | |
| A1205D-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 1500VDC (DIP) | cULus CE RoHS |
| A1212D-1WR2 | | | ±12V/±42mA | | |
| B1205D-1WR2 | | | 5V/200mA | 1500VDC (DIP) | |
| B1212D-1WR2 | | | 12V/84mA | | |
| B1215D-1WR2 | | | 15V/67mA | | |
| B1505D-1WR2 | 1W | 13.5-16.5 (15VDC) | 5V/200mA | 1500VDC (DIP) | |
| B1515D-1WR2 | | | 15V/67mA | | |
| A2412D-1WR2* | 1W | 21.6-26.4 (24VDC) | ±12V/±42mA | 1500VDC (DIP) | cULus CE RoHS |
| A2415D-1WR2* | | | ±15V/±34mA | | |
| B2405D-1WR2* | | | 5V/200mA | 1500VDC (DIP) | |
| B2412D-1WR2* | | | 12V/84mA | | |
| B2415D-1WR2* | | | 15V/67mA | | |
| B2424D-1WR2* | | | 24V/42mA | | |
| F0303D-1WR2* | 1W | 2.97-3.63(3.3VDC) | 3.3V/303mA | 3000VDC (DIP) | cULus CE RoHS |
| E0505D-1WR2 | | 4.5-5.5 (5VDC) | ±5V/±100mA | | |
| E0512D-1WR2 | | | ±12V/±42mA | | |
| E0515D-1WR2 | | | ±15V/±34mA | | |
| F0503D-1WR2 | | | 3.3V/303mA | | |
| F0505D-1WR2 | | | 5V/200mA | | |
| F0512D-1WR2 | | | 12V/83mA | | |
| F0515D-1WR2 | | | 15V/67mA | | |
| E1205D-1WR2 | 1W | 10.8-13.2 (12VDC) | ±5V/±100mA | 3000VDC (DIP) | cULus CE RoHS |
| F1205D-1WR2 | | | 5V/200mA | | |
| F1212D-1WR2 | | | 12V/83mA | | |
| F1215D-1WR2 | | | 15V/67mA | | |
| F1515D-1WR2 | | 13.5-16.5(15VDC) | 15V/67mA | | |
| E2412D-1WR2* | 1W | 21.6-26.4 (24VDC) | ±12V/±42mA | 3000VDC (DIP) | |
| E2415D-1WR2* | | | ±15V/±34mA | | |
| F2405D-1WR2* | | | 5V/200mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

### B_D-1WR2 Series (DIP) LxWxH: 12.70x10.16x8.20(mm)

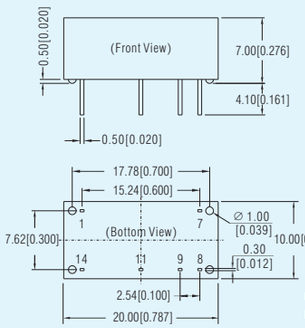



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 4 | Vin |
| 5 | +Vo |
| 7 | 0V |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### A_D-1WR2 Series (DIP) LxWxH: 20.00x10.00x7.00(mm)



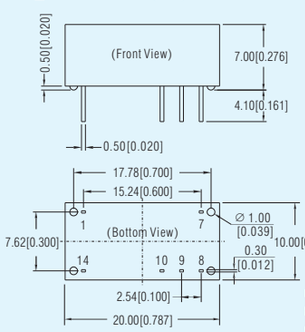

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 7 | NC |
| 8 | 0V |
| 9 | +Vo |
| 11 | -Vo |
| 14 | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### E/F_D-1WR2 Series (DIP) LxWxH: 20.00x10.00x7.00(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 7 | NC | NC |
| 8 | +Vo | +Vo |
| 9 | No Pin | 0V |
| 10 | 0V | -Vo |
| 14 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

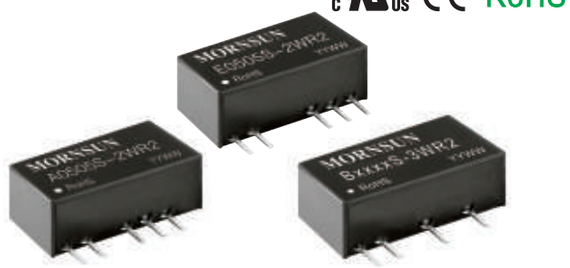




# 2-3W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Operating temperature: -40℃ to +105℃
- Efficiency up to 88%
- High power density
- Miniature SIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection



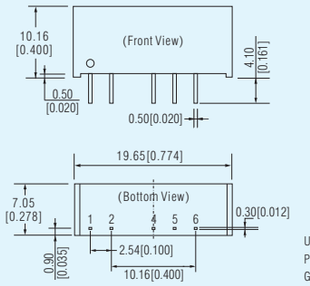
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| A0505S-2WR2 | 2W | 4.5-5.5 (5VDC) | ±5V/±200mA | 1500VDC (SIP) | cULus CE RoHS |
| A0512S-2WR2 | | | ±12V/±83mA | | |
| A0515S-2WR2 | | | ±15V/±67mA | | |
| B0503S-2WR2 | | | 3.3V/400mA | | |
| B0505S-2WR2 | | | 5V/400mA | | |
| B0512S-2WR2 | | | 12V/167mA | | |
| B0515S-2WR2 | | | 15V/133mA | | |
| B0524S-2WR2* | | | 24V/83mA | | |
| A1205S-2WR2 | 2W | 10.8-13.2 (12VDC) | ±5V/±200mA | 1500VDC (SIP) | cULus CE RoHS |
| A1212S-2WR2 | | | ±12V/±83mA | | |
| A1215S-2WR2 | | | ±15V/±67mA | | |
| B1205S-2WR2 | | | 5V/400mA | | |
| B1212S-2WR2 | | | 12V/167mA | | |
| B1215S-2WR2 | | | 15V/133mA | | |
| B1224S-2WR2 | | | 24V/83mA | | |
| A1505S-2WR2 | 2W | 13.5-16.5 (15VDC) | ±5V/±200mA | 1500VDC (SIP) | RoHS |
| A1515S-2WR2 | | | ±15V/±67mA | | |
| B1505S-2WR2 | | | 5V/400mA | | |
| B1515S-2WR2 | | | 15V/133mA | | |
| A2405S-2WR2* | 2W | 21.6-26.4 (24VDC) | ±5V/±200mA | 1500VDC (SIP-7) | cULus CE RoHS |
| A2412S-2WR2* | | | ±12V/±83mA | | |
| A2415S-2WR2* | | | ±15V/±67mA | | |
| B2405S-2WR2* | | | 5V/400mA | | |
| B2412S-2WR2* | | | 12V/167mA | | |
| B2415S-2WR2* | | | 15V/133mA | | |
| B2424S-2WR2* | | | 24V/83mA | | |
| E0505S-2WR2 | 2W | 4.5-5.5 (5VDC) | ±5V/±200mA | 3000VDC (SIP) | cULus CE RoHS |
| E0512S-2WR2 | | | ±12V/±83mA | | |
| E0515S-2WR2 | | | ±15V/±67mA | | |
| F0503S-2WR2 | | | 3.3V/400mA | | |
| F0505S-2WR2 | | | 5V/400mA | | |
| F0512S-2WR2 | | | 12V/167mA | | |
| F0515S-2WR2 | | | 15V/133mA | | |
| F0524S-2WR2* | | | 24V/83mA | | |
| E1205S-2WR2 | 2W | 10.8-13.2 (12VDC) | ±5V/±200mA | 3000VDC (SIP) | cULus CE RoHS |
| E1212S-2WR2 | | | ±12V/±83mA | | |
| E1215S-2WR2 | | | ±15V/±67mA | | |
| F1205S-2WR2 | | | 5V/400mA | | |
| F1212S-2WR2 | | | 12V/167mA | | |
| F1215S-2WR2 | | | 15V/133mA | | |
| F1224S-2WR2 | | | 24V/83mA | | |
| E1515S-2WR2 | 2W | 13.5-16.5 (15VDC) | ±15V/±67mA | 3000VDC (SIP) | RoHS |
| F1505S-2WR2 | | | 5V/400mA | | |
| F1512S-2WR2 | | | 12V/167mA | | |
| E2405S-2WR2* | 2W | 21.6-26.4 (24VDC) | ±5V/±200mA | 3000VDC (SIP) | cULus CE RoHS |
| E2412S-2WR2* | | | ±12V/±83mA | | |
| E2415S-2WR2* | | | ±15V/±67mA | | |
| F2405S-2WR2* | | | 5V/400mA | | |
| F2412S-2WR2* | | | 12V/167mA | | |
| F2415S-2WR2* | | | 15V/133mA | | |
| F2424S-2WR2* | | | 24V/83mA | | |
| B0505S-3WR2* | 3W | 4.5-5.5(5VDC) | 5V/600mA | 1500VDC (SIP) | RoHS |
| B1212S-3WR2* | | 10.8-13.2(12VDC) | 12V/250mA | | |
| F0505S-3WR2 | 3W | 4.5-5.5(5VDC) | 5V/600mA | 3000VDC (SIP) | RoHS |
| F1205S-3WR2 | | 10.8-13.2 (12VDC) | 5V/600mA | | |
| F1212S-3WR2 | | | 12V/250mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

### A_S-2WR2, B_S-2WR2 Series (SIP) LxWxH: 19.65x7.05x10.16(mm)



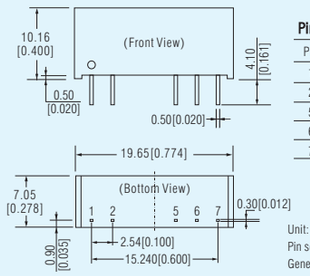

**Pin-Out**

| Pin | A_S-2WR2 | B_S-2WR2 |
|---|---|---|
| 1 | Vin | Vin |
| 2 | GND | GND |
| 4 | -Vo | 0V |
| 5 | 0V | No Pin |
| 6 | +Vo | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### E_S-2WR2, F_S-2WR2, F_S-3WR2 Series(SIP)

LxWxH: 19.65x7.05x10.16(mm)

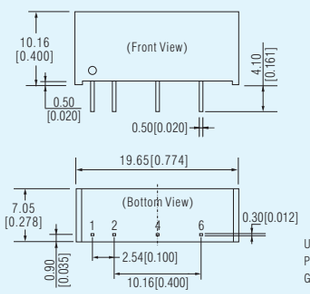



**Pin-Out**

| Pin | E_S-2WR2 | F_S-2WR2/3WR2 |
|---|---|---|
| 1 | Vin | Vin |
| 2 | GND | GND |
| 5 | -Vo | 0V |
| 6 | 0V | No Pin |
| 7 | +Vo | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10mm[±0.004]
General tolerance: ±0.25mm[±0.010]

### B_S-3WR2 Series (SIP) LxWxH: 19.65x7.05x10.16(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 2 | GND |
| 4 | 0V |
| 6 | +Vo |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 2-3W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Operating temperature: -40℃ to +105℃
- Efficiency up to 84%
- High power density
- Miniature SMD package
- Anti-static protection: ±8KV

CE RoHS

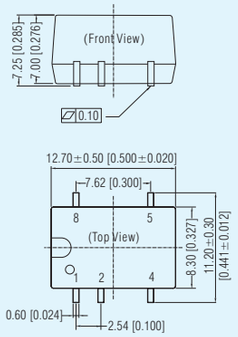

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| B0503XT-2WR2 | 2W | 4.5-5.5 (5VDC) | 3.3V/400mA | 1500VDC (SMD) | CE RoHS |
| B0505XT-2WR2 | | | 5V/400mA | | |
| B0512XT-2WR2 | | | 12V/167mA | | |
| B0515XT-2WR2 | | | 15V/133mA | | |
| B1205XT-2WR2 | 2W | 10.8-13.2 (12VDC) | 5V/400mA | 1500VDC (SMD) | CE RoHS |
| B1212XT-2WR2 | | | 12V/167mA | | |
| B1215XT-2WR2 | | | 15V/133mA | | |
| B1224XT-2WR2 | | | 24V/83mA | | |
| B1505XT-2WR2 | | 13.5-16.5 (15VDC) | 5V/400mA | | |
| B1515XT-2WR2 | | | 15V/133mA | | |
| B2405XT-2WR2 | 2W | 21.6-26.4 (24VDC) | 5V/400mA | 1500VDC (SMD) | CE RoHS |
| B2412XT-2WR2 | | | 12V/167mA | | |
| B2415XT-2WR2 | | | 15V/133mA | | |
| B2424XT-2WR2 | | | 24V/83mA | | |
| F0505XT-2WR2 | 2W | 4.5-5.5 (5VDC) | 5V/400mA | 3000VDC (SMD) | CE RoHS |
| F0512XT-2WR2 | | | 12V/167mA | | |
| F0515XT-2WR2 | | | 15V/133mA | | |
| F1205XT-2WR2 | 2W | 10.8-13.2 (12VDC) | 5V/400mA | 3000VDC (SMD) | CE RoHS |
| F1212XT-2WR2 | | | 12V/167mA | | |
| F1215XT-2WR2 | | | 15V/133mA | | |
| F1224XT-2WR2 | | | 24V/83mA | | |
| F1505XT-2WR2 | 2W | 13.5-16.5 (15VDC) | 5V/400mA | 3000VDC (SMD) | CE RoHS |
| F1515XT-2WR2 | | | 15V/133mA | | |
| F2405XT-2WR2 | 2W | 21.6-26.4 (24VDC) | 5V/400mA | 3000VDC (SMD) | CE RoHS |
| F2412XT-2WR2 | | | 12V/167mA | | |
| F2415XT-2WR2 | | | 15V/133mA | | |
| F2424XT-2WR2 | | | 24V/83mA | | |
| B0505T-3W | 3W | 4.5-5.5 (5VDC) | 5V/600mA | 1500VDC (SMD) | RoHS |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

**B/F_XT-2WR2 Series** LxWxH: 12.70x11.20x7.25(mm)

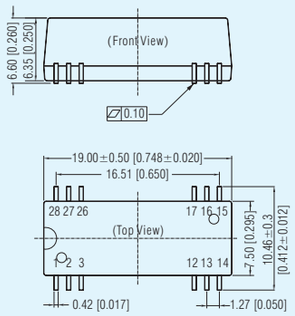



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | GND |
| 2 | Vin |
| 4 | 0V |
| 5 | +Vo |
| 8 | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**B0505T-3W** LxWxH: 19.00x10.46x6.60(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 3 | GND |
| 12 | 0V |
| 13 | Vo |
| Others | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]



# 2W Fixed Input Voltage, Isolated & Unregulated Output Series

## Features

- Operating temperature: -40℃ to +85℃
- Efficiency up to 85%
- Miniature DIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection

cULus CE RoHS

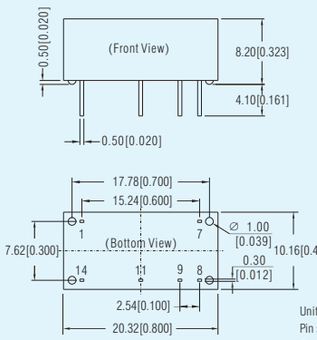

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| B0303D-2WR2* | 2W | 2.97-3.63 (3.3VDC) | 3.3V/400mA | 1500VDC (DIP) | RoHS |
| B0305D-2WR2* | | | 5V/400mA | | |
| A0505D-2WR2 | 2W | 4.5-5.5 (5VDC) | ±5V/±200mA | 1500VDC (DIP) | cULus CE RoHS |
| A0512D-2WR2* | | | ±12V/±83mA | | |
| A0515D-2WR2* | | | ±15V/±67mA | | |
| B0503D-2WR2 | | | 3.3V/400mA | | |
| B0505D-2WR2 | | | 5V/400mA | | |
| B0512D-2WR2 | | | 12V/167mA | | |
| B0515D-2WR2 | | | 15V/133mA | | |
| B0524D-2WR2* | | | 24V/83mA | | |
| A1205D-2WR2 | 2W | 10.8-13.2 (12VDC) | ±5V/±200mA | 1500VDC (DIP) | cULus CE RoHS |
| A1212D-2WR2 | | | ±12V/±83mA | | |
| A1215D-2WR2 | | | ±15V/±67mA | | |
| B1205D-2WR2 | | | 5V/400mA | | |
| B1212D-2WR2 | | | 12V/167mA | | |
| B1215D-2WR2 | | | 15V/133mA | | |
| B1224D-2WR2 | | | 24V/83mA | | |
| A1515D-2WR2 | 2W | 13.5-16.5(15VDC) | ±15V/±67mA | 1500VDC (DIP) | RoHS |
| A2405D-2WR2* | 2W | 21.6-26.4 (24VDC) | ±5V/±200mA | 1500VDC (DIP) | cULus CE RoHS |
| A2412D-2WR2* | | | ±12V/±83mA | | |
| A2415D-2WR2* | | | ±15V/±67mA | | |
| B2405D-2WR2* | | | 5V/400mA | | |
| B2412D-2WR2* | | | 12V/167mA | | |
| B2415D-2WR2* | | | 15V/133mA | | |
| B2424D-2WR2* | | | 24V/83mA | | |
| E0505D-2WR2 | 2W | 4.5-4.5 (5VDC) | ±5V/±200mA | 3000VDC (DIP) | cULus CE RoHS |
| E0512D-2WR2* | | | ±12V/±83mA | | |
| E0515D-2WR2* | | | ±15V/±67mA | | |
| F0505D-2WR2 | | | 5V/400mA | | |
| F0512D-2WR2 | | | 12V/167mA | | |
| F0515D-2WR2 | | | 15V/133mA | | |
| F0524D-2WR2* | | | 24V/83mA | | |
| E1205D-2WR2 | 2W | 10.6-13.2 (12VDC) | ±5V/±200mA | 3000VDC (DIP) | cULus CE RoHS |
| E1212D-2WR2 | | | ±12V/±83mA | | |
| E1215D-2WR2 | | | ±15V/±67mA | | |
| F1205D-2WR2 | | | 5V/400mA | | |
| F1212D-2WR2 | | | 12V/167mA | | |
| F1215D-2WR2 | | | 15V/133mA | | |
| F1224D-2WR2 | | | 24V/83mA | | |
| E1512D-2WR2 | 2W | 13.5-16.5 (15VDC) | ±12V/±83mA | 3000VDC (DIP) | RoHS |
| E1515D-2WR2 | | | ±15V/±67mA | | |
| F1505D-2WR2 | | | 5V/400mA | | |
| F1515D-2WR2 | | | 15V/133mA | | |
| E2405D-2WR2* | 2W | 21.6-26.4 (24VDC) | ±5V/±200mA | 3000VDC (DIP) | cULus CE RoHS |
| E2412D-2WR2* | | | ±12V/±83mA | | |
| F2405D-2WR2* | | | 5V/400mA | | |
| F2412D-2WR2* | | | 12V/167mA | | |
| F2415D-2WR2* | | | 15V/133mA | | |
| F2424D-2WR2* | | | 24V/83mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

**A/B_D-2WR2 Series (DIP)** LxWxH: 20.32x10.16x8.20(mm)

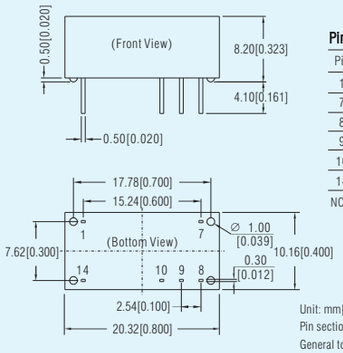



| Pin-Out | | |
|---|---|---|
| Pin | Single | Dual |
| 1 | GND | GND |
| 7 | NC | NC |
| 8 | 0V | 0V |
| 9 | +Vo | +Vo |
| 11 | No Pin | -Vo |
| 14 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

**E/F_D-2WR2 Series (DIP)** LxWxH: 20.32x10.16x8.20(mm)




| Pin-Out | | |
|---|---|---|
| Pin | Single | Dual |
| 1 | GND | GND |
| 7 | NC | NC |
| 8 | +Vo | +Vo |
| 9 | No Pin | 0V |
| 10 | 0V | -Vo |
| 14 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 1-2W Fixed Input Voltage, Isolated & Regulated Output Series

CE RoHS

## Features

- Suitable for high precise measurement application
- Operating temperature: -40℃ to +85℃
- Low ripple & noise: Min. 10mVp-p/Min. 50mVp-p
- Output voltage accuracy: ±3%
- International standard pin-out
- Continuous short-circuit protection

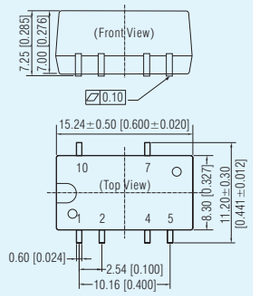
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| IB0503LS-1W | 1W | 4.75-5.25 (5VDC) | 3.3V/303mA | 1000VDC (SIP) | RoHS |
| IB0505LS-1W* | | | 5V/200mA | | |
| IB0512LS-1W | | | 12V/83mA | | |
| IB0515LS-1W | | | 15V/67mA | | |
| IB0524LS-1W* | | | 24V/42mA | | |
| IB1205LS-1W* | | 11.4-12.6 (12VDC) | 5V/200mA | | |
| IB1212LS-1W | | | 12V/83mA | | |
| IB1215LS-1W | | | 15V/67mA | | |
| IB1224LS-1W* | | | 24V/42mA | | |
| IB1505LS-1W* | | 14.25-15.75 (15VDC) | 5V/200mA | | |
| IB1515LS-1W | | | 15V/67mA | | |
| IB2405LS-1W* | | 22.8-25.2 (24VDC) | 5V/200mA | | |
| IB2412LS-1W | | | 12V/83mA | | |
| IB2415LS-1W | | | 15V/67mA | | |
| IB2424LS-1W* | | | 24V/42mA | | |
| IB0503XT-1WR2 | 1W | 4.75-5.25 (5VDC) | 3.3V/243mA | 1500VDC (SMD) | CE RoHS |
| IB0505XT-1WR2 | | | 5V/200mA | | |
| IB0512XT-1WR2 | | | 12V/84mA | | |
| IB0515XT-1WR2 | | | 15V/67mA | | |
| IB1205XT-1WR2 | | 11.4-12.6 (12VDC) | 5V/200mA | | |
| IB1212XT-1WR2 | | | 12V/84mA | | |
| IB1215XT-1WR2 | | | 15V/67mA | | |
| IB1505XT-1WR2 | | 14.25-15.75(15VDC) | 5V/200mA | | |
| IB2405XT-1WR2 | | 22.8-25.2 (24VDC) | 5V/200mA | | |
| IB2412XT-1WR2 | | | 12V/84mA | | |
| IB2415XT-1WR2 | | | 15V/67mA | | |
| IF0505XT-1WR2 | 1W | 4.75-5.25 (5VDC) | 5V/200mA | 3000VDC (SMD) | CE RoHS |
| IF0512XT-1WR2 | | | 12V/83mA | | |
| IF0515XT-1WR2 | | | 15V/67mA | | |
| IF1205XT-1WR2 | | 11.4-12.6 (12VDC) | 5V/200mA | | |
| IF1212XT-1WR2 | | | 12V/83mA | | |
| IF2405XT-1WR2 | | 22.8-25.2(24VDC) | 5V/200mA | | |
| IF0505S-1W* | 1W | 4.75-5.25 (5VDC) | 5V/200mA | 3000VDC (SIP) | RoHS |
| IF0512S-1W | | | 12V/83mA | | |
| IF0524S-1W* | | | 24V/42mA | | |
| IF1205S-1W* | | 11.4-12.6 (12VDC) | 5V/200mA | | |
| IF1212S-1W | | | 12V/83mA | | |
| IF1215S-1W | | | 15V/67mA | | |
| IF2405S-1W* | | 22.8-25.2 (24VDC) | 5V/200mA | | |
| IF2412S-1W | | | 12V/83mA | | |
| IF2415S-1W | | | 15V/67mA | | |
| IF0505RN-1W | 1W | 4.75-5.25(5VDC) | 5V/200mA | 3000VDC (DIP) | RoHS |
| IF1205RN-1W | | 11.4-12.6(12VDC) | | | |
| IF0505RT-1W | 1W | 4.75-5.25(5VDC) | 5V/200mA | 3000VDC (SMD) | RoHS |
| IF1205RT-1W | | 11.4-12.6(12VDC) | | | |
| IB0505S-2W | 2W | 4.75-5.25(5VDC) | 5V/400mA | 1000VDC (SIP) | RoHS |
| IB1205S-2W | | 11.4-12.6 (12VDC) | 5V/400mA | | |
| IB1212S-2W | | | 12V/150mA | | |
| IB1215S-2W | | | 15V/133mA | | |
| IB1505S-2W | | 14.25-15.75(15VDC) | 5V/400mA | | |
| IB2405S-2W | | 22.8-25.2(24VDC) | 5V/400mA | | |
| IF0505S-2W | 2W | 4.75-5.25(5VDC) | 5V/400mA | 3000VDC (SIP) | RoHS |
| IF1205S-2W | | 11.4-12.6(12VDC) | 5V/400mA | | |
| IF2405S-2W | | 22.8-25.2(24VDC) | 5V/400mA | | |

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

### IB_XT-1WR2, IF_XT-1WR2 Series LxWxH: 15.24x11.20x7.25(mm)

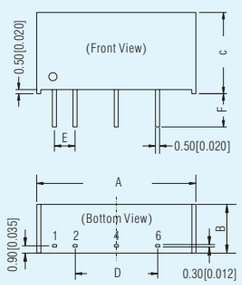



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | GND |
| 2 | Vin |
| 4 | 0V |
| 5 | 0V |
| 7 | +Vo |
| 10 | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### IF_S-1W, IB_LS-1W , IB_S-2W, IF_S-2W Series

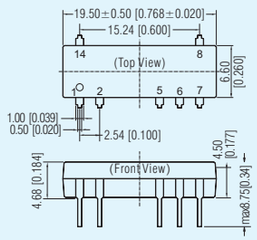



| Pin-Out | | | | |
|---|---|---|---|---|
| Pin | 1 | 2 | 4 | 6 |
| Function | Vin | GND | 0V | +Vo |

| Outline & Dimensions | | |
|---|---|---|
| NO. | IF_S-1W/IB_LS-1W | IB/IF_S-2W |
| A | 19.65 | 19.65 |
| B | 6.00 | 7.05 |
| C | 10.16 | 10.16 |
| D | 10.16 | 10.16 |
| E | 2.54 | 2.54 |
| F | 4.10 | 4.10 |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### IF_RN-1W Series LxWxH: 19.50x9.50x4.68(mm)

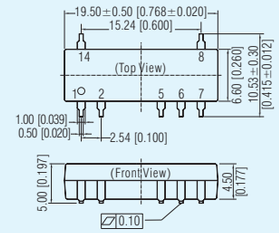



| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| Others | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### IF_RT-1W Series LxWxH: 19.50x10.53x5.00(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 5 | 0V |
| 6 | +Vo |
| Others | NC |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

• This catalog is used to introduce our latest products, for more information, please contact our sales department

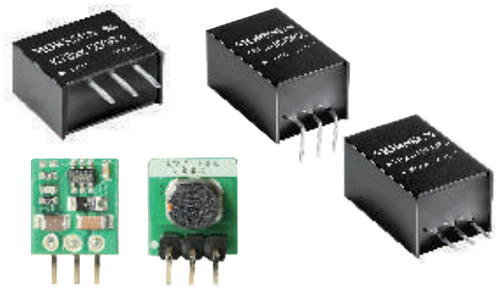


# 0.5-2A Non-isolated Switching Regulator

CB cULus CE RoHS

## Features

- Operating temperature: -40℃ to +85℃
- Efficiency up to 96%
- No-load input current as low as 0.1mA
- Negative output available: R3 series
- Pin-Out compatible with LM78XX Linear regulators
- Ultra wide input voltage range can up to 8:1(K78U-500 series)
- Continuous short-circuit protection



## Product Program

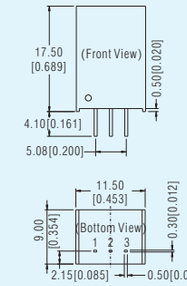
| Model Number | Input Voltage Range (Nominal) | Output Voltage (VDC) | Output Current (mA) | Certification |
|---|---|---|---|---|
| K78(L)03-500R3 | 4.75-36 (24VDC) | 3.3 | 500 | cULus CE RoHS CB |
| K78(L)05-500R3 | 6.5-36 (24VDC) | 5 | 500 | |
| | 7-31 (12VDC) | -5 | -300 | |
| K7809-500R3 | 12-36 (24VDC) | 9 | 500 | |
| K78(L)12-500R3 | 15-36 (24VDC) | 12 | 500 | |
| | 8-24 (12VDC) | -12 | -150 | |
| K78(L)15-500R3 | 19-36 (24VDC) | 15 | 500 | |
| | 8-21 (12VDC) | -15 | -150 | |
| K7803-1000R3(L) | 6-36(24VDC) | 3.3 | 1000 | cULus CE RoHS CB |
| K7805-1000R3(L) | 8-36 (24VDC) | 5 | 1000 | |
| | 8-27 (12VDC) | -5 | -500 | |
| K7809-1000R3(L) | 13-36(24VDC) | 9.0 | 1000 | |
| K7812-1000R3(L) | 16-36(24VDC) | 12 | 1000 | |
| | 8-20(12VDC) | -12 | -300 | |
| K7815-1000R3(L) | 20-36(24VDC) | 15 | 1000 | |
| | 8-18(12VDC) | -15 | -300 | |
| K78L03-1000R3 | 6-36 (24VDC) | 3.3 | 1000 | cULus CE RoHS CB |
| K78L05-1000R3 | 8-36 (24VDC) | 5 | 1000 | |
| | 8-27 (12VDC) | -5 | -500 | |
| K78L12-1000R3 | 16-36 (24VDC) | 12 | 1000 | |
| | 8-20 (12VDC) | -12 | -300 | |
| K78L15-1000R3 | 20-36 (24VDC) | 15 | 1000 | |
| | 8-18 (12VDC) | -15 | -300 | |

| K78U03-500(L) | 9-72(48VDC) | 3.3 | 500 | RoHS |
|---|---|---|---|---|
| K78U05-500(L) | 9-72(48VDC) | 5 | | |
| K78U12-500(L) | 17-72(48VDC) | 12 | | |
| K7803-1500(L) | 4.75-18 (12VDC) | 3.3 | 1500 | RoHS |
| K7805-1500(L) | 6.5-18 (12VDC) | 5.0 | | |
| K7803-2000(L) | 4.75-18 (12VDC) | 3.3 | 2000 | cULus CE RoHS |
| K7805-2000(L) | 7-18 (12VDC) | 5.0 | | |
| K78X6-2000(L) | 8.5-18 (12VDC) | 6.5 | | |

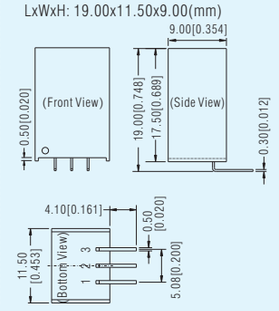
Note: 1. Series with suffix "L" are available for 90°pin-out;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

## Package Dimension

### K78-1000R3, K78U-500, K78-1500, K78-2000 Series
LxWxH: 11.50x9.00x17.50(mm)




### K78-1000R3L, K78U-500L, K78-1500L, K78-2000L Series
LxWxH: 19.00x11.50x9.00(mm)

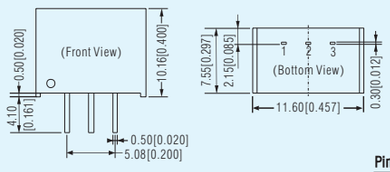



K78-1000R3(L) K78U-500(L)/K78-1500(L)/K78-2000(L)

| Pin-Out | | |
|---|---|---|
| Pin | Positive output | Negative output |
| 1 | Vin | Vin |
| 2 | GND | -Vo |
| 3 | +Vo | GND |

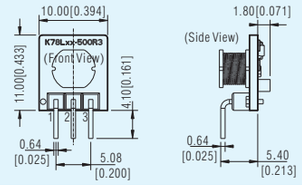
Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

### K78-500R3 Series (Potting) LxWxH:11.60x7.55x10.16(mm)




Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

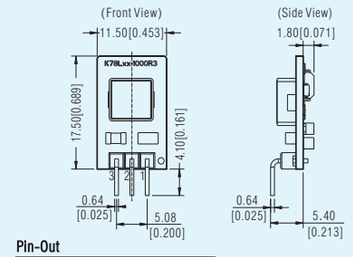
### K78L-500R3 Series (Open Frame)
LxWxH:10.00x7.20x11.00(mm)




| Pin-Out | | |
|---|---|---|
| Pin | Positive output | Negative output |
| 1 | Vin | Vin |
| 2 | GND | -Vo |
| 3 | +Vo | GND |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

### K78L-1000R3 Series (Open Frame)
LxWxH:11.50x7.20x17.50(mm)




| Pin-Out | | |
|---|---|---|
| Pin | Positive output | Negative output |
| 1 | Vin | Vin |
| 2 | GND | -Vo |
| 3 | +Vo | GND |

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 1W 2:1 Wide Input Voltage, Isolated & Regulated Output Series

CE RoHS

## Features

- Suitable for communication, instrumentation and industrial electronics applications
- Operating temperature: -40℃ to +85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 approval


## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRA0505S-1WR2 | 1W | 4.5-9 (5VDC) | ±5V/±100mA | 1500VDC (SIP) | CE RoHS |
| WRA0512S-1WR2 | | | ±12V/±42mA | | |
| WRA0515S-1WR2 | | | ±15V/±33mA | | |
| WRB0503S-1WR2 | | | 3.3V/303mA | | |
| WRB0505S-1WR2 | | | 5V/200mA | | |
| WRB0512S-1WR2 | | | 12V/83mA | | |
| WRB0515S-1WR2 | | | 15V/67mA | | |
| WRB0524S-1WR2 | | | 24V/42mA | | |
| WRA1205S-1WR2 | 1W | 9-18 (12VDC) | ±5V/±100mA | 1500VDC (SIP) | CE RoHS |
| WRA1212S-1WR2 | | | ±12V/±42mA | | |
| WRA1215S-1WR2 | | | ±15V/±33mA | | |
| WRB1203S-1WR2 | | | 3.3V/303mA | | |
| WRB1205S-1WR2 | | | 5V/200mA | | |
| WRB1209S-1WR2 | | | 9V/111mA | | |
| WRB1212S-1WR2 | | | 12V/83mA | | |
| WRB1215S-1WR2 | | | 15V/67mA | | |
| WRB1224S-1WR2 | | | 24V/42mA | | |
| WRA2405S-1WR2 | 1W | 18-36 (24VDC) | ±5V/±100mA | 1500VDC (SIP) | CE RoHS |
| WRA2409S-1WR2 | | | ±9V/±56mA | | |
| WRA2412S-1WR2 | | | ±12V/±42mA | | |
| WRA2415S-1WR2 | | | ±15V/±33mA | | |
| WRB2403S-1WR2 | | | 3.3V/303mA | | |
| WRB2405S-1WR2 | | | 5V/200mA | | |
| WRB2412S-1WR2 | | | 12V/83mA | | |
| WRB2415S-1WR2 | | | 15V/67mA | | |
| WRB2424S-1WR2 | | | 24V/42mA | | |
| WRA4805S-1WR2 | 1W | 36-75 (48VDC) | ±5V/±100mA | 1500VDC (SIP) | CE RoHS |
| WRA4812S-1WR2 | | | ±12V/±42mA | | |
| WRA4815S-1WR2 | | | ±15V/±33mA | | |
| WRB4803S-1WR2 | | | 3.3V/303mA | | |
| WRB4805S-1WR2 | | | 5V/200mA | | |
| WRB4812S-1WR2 | | | 12V/83mA | | |
| WRB4815S-1WR2 | | | 15V/67mA | | |

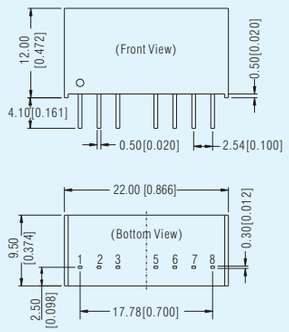
## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRE0505S-1WR2 | 1W | 4.5-9 (5VDC) | ±5V/±100mA | 3000VDC (SIP) | CE RoHS |
| WRE0512S-1WR2 | | | ±12V/±42mA | | |
| WRE0515S-1WR2 | | | ±15V/±33mA | | |
| WRF0505S-1WR2 | | | 5V/200mA | | |
| WRF0512S-1WR2 | | | 12V/83mA | | |
| WRF0515S-1WR2 | | | 15V/67mA | | |
| WRE1205S-1WR2 | 1W | 9-18 (12VDC) | ±5V/±100mA | 3000VDC (SIP) | CE RoHS |
| WRE1212S-1WR2 | | | ±12V/±42mA | | |
| WRE1215S-1WR2 | | | ±15V/±33mA | | |
| WRF1203S-1WR2 | | | 3.3V/303mA | | |
| WRF1205S-1WR2 | | | 5V/200mA | | |
| WRF1209S-1WR2 | | | 9V/111mA | | |
| WRF1212S-1WR2 | | | 12V/83mA | | |
| WRF1215S-1WR2 | | | 15V/67mA | | |
| WRE2405S-1WR2 | 1W | 18-36 (24VDC) | ±5V/±100mA | 3000VDC (SIP) | CE RoHS |
| WRE2412S-1WR2 | | | ±12V/±42mA | | |
| WRE2415S-1WR2 | | | ±15V/±33mA | | |
| WRF2403S-1WR2 | | | 3.3V/303mA | | |
| WRF2405S-1WR2 | | | 5V/200mA | | |
| WRF2412S-1WR2 | | | 12V/83mA | | |
| WRF2415S-1WR2 | | | 15V/67mA | | |
| WRF2424S-1WR2 | | | 24V/42mA | | |
| WRE4805S-1WR2 | 1W | 36-75 (48VDC) | ±5V/±100mA | 3000VDC (SIP) | CE RoHS |
| WRE4812S-1WR2 | | | ±12V/±42mA | | |
| WRE4815S-1WR2 | | | ±15V/±33mA | | |
| WRF4803S-1WR2 | | | 3.3V/303mA | | |
| WRF4805S-1WR2 | | | 5V/200mA | | |
| WRF4812S-1WR2 | | | 12V/83mA | | |
| WRF4815S-1WR2 | | | 15V/67mA | | |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

WRA/B_S-1WR2, WRE/F_S-1WR2 Series LxWxH: 22.00x9.50x12.00(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | Ctrl | Ctrl |
| 5 | NC | NC |
| 6 | +Vo | +Vo |
| 7 | 0V | 0V |
| 8 | CS | -Vo |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]



# 2W 2:1Wide Input Voltage,1500VDC Isolated & Regulated Output Series

RoHS

## Features

- Suitable for communication, instrumentation and industrial electronics applications
- Operating temperature: -40℃ to +85℃
- Low ripple & noise
- High power density, compact package
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery

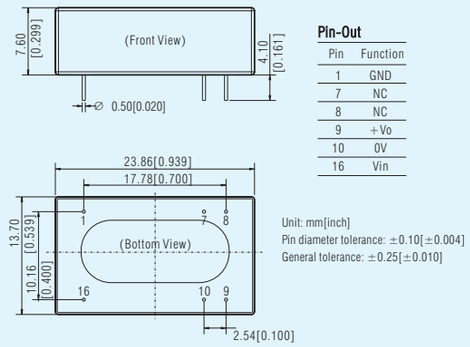

## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRB1205N-2W | 2W | 9-18 (12VDC) | 5V/400mA | 1500VDC (DIP) | RoHS |
| WRB1212N-2W | | | 12V/167mA | | |
| WRB1215N-2W | | | 15V/133mA | | |
| WRB2405N-2W | | 18-36 (24VDC) | 5V/400mA | | |
| WRB2412N-2W | | | 12V/167mA | | |
| WRB2415N-2W | | | 15V/133mA | | |

Note: 1. Series with suffix "N"are standard DIP16 packaged with plastic case and detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

WRB_N-2W Series LxWxH: 23.86x13.70x7.60(mm)



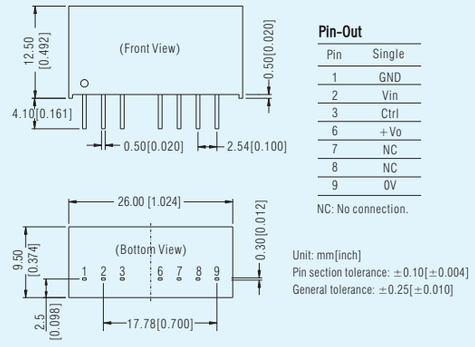

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 7 | NC |
| 8 | NC |
| 9 | +Vo |
| 10 | 0V |
| 16 | Vin |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

## Package Dimension

PWB_CS-2W Series LxWxH: 26.00x9.50x12.50(mm)




**Pin-Out**

| Pin | Single |
|---|---|
| 1 | GND |
| 2 | Vin |
| 3 | Ctrl |
| 6 | +Vo |
| 7 | NC |
| 8 | NC |
| 9 | 0V |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 3W 2:1 Wide Input Voltage, 1500VDC Isolated & Regulated Output Series

CE RoHS

## Features

- Suitable for communication, instrumentation and industrial electronics applications
- Operating temperature: -40℃ to +85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 approval

## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRA0505S-3WR2 | 3W | 4.5-9 (5VDC) | ±5V/±250mA | 1500VDC (SIP) | CE RoHS |
| WRA0512S-3WR2 | | | ±12V/±104mA | | |
| WRA0515S-3WR2 | | | ±15V/±83mA | | |
| WRA0524S-3WR2 | | | ±24V/±52mA | | |
| WRB0503S-3WR2 | | | 3.3V/758mA | | |
| WRB0505S-3WR2 | | | 5V/500mA | | |
| WRB0509S-3WR2 | | | 9V/278mA | | |
| WRB0512S-3WR2 | | | 12V/208mA | | |
| WRB0515S-3WR2 | | | 15V/167mA | | |
| WRB0524S-3WR2 | | | 24V/104mA | | |
| WRA1205S-3WR2 | 3W | 9-18 (12VDC) | ±5V/±300mA | 1500VDC (SIP) | CE RoHS |
| WRA1209S-3WR2 | | | ±9V/±167mA | | |
| WRA1212S-3WR2 | | | ±12V/±125mA | | |
| WRA1215S-3WR2 | | | ±15V/±100mA | | |
| WRB1203S-3WR2 | | | 3.3V/758mA | | |
| WRB1205S-3WR2 | | | 5V/600mA | | |
| WRB1206S-3WR2 | | | 6V/500mA | | |
| WRB1209S-3WR2 | | | 9V/333mA | | |
| WRB1212S-3WR2 | | | 12V/250mA | | |
| WRB1215S-3WR2 | | | 15V/200mA | | |
| WRB1224S-3WR2 | | | 24V/125mA | | |
| WRA2405S-3WR2 | 3W | 18-36 (24VDC) | ±5V/±300mA | 1500VDC (SIP) | CE RoHS |
| WRA2409S-3WR2 | | | ±9V/±167mA | | |
| WRA2412S-3WR2 | | | ±12V/±125mA | | |
| WRA2415S-3WR2 | | | ±15V/±100mA | | |
| WRB2403S-3WR2 | | | 3.3V/758mA | | |
| WRB2405S-3WR2 | | | 5V/600mA | | |
| WRB2409S-3WR2 | | | 9V/333mA | | |
| WRB2412S-3WR2 | | | 12V/250mA | | |
| WRB2415S-3WR2 | | | 15V/200mA | | |
| WRB2424S-3WR2 | | | 24V/125mA | | |
| WRA4805S-3WR2 | 3W | 36-75 (48VDC) | ±5V/±300mA | 1500VDC (SIP) | CE RoHS |
| WRA4812S-3WR2 | | | ±12V/±125mA | | |
| WRA4815S-3WR2 | | | ±15V/±100mA | | |
| WRB4803S-3WR2 | | | 3.3V/758mA | | |
| WRB4805S-3WR2 | | | 5V/600mA | | |
| WRB4812S-3WR2 | | | 12V/250mA | | |
| WRB4815S-3WR2 | | | 15V/200mA | | |
| WRB4824S-3WR2 | | | 24V/125mA | | |
| WRA0505ZP-3WR2 | 3W | 4.5-9 (5VDC) | ±5V/±300mA | 1500VDC (DIP) | CE RoHS |
| WRA0509ZP-3WR2 | | | ±9V/±166mA | | |
| WRA0512ZP-3WR2 | | | ±12V/±125mA | | |
| WRA0515ZP-3WR2 | | | ±15V/±100mA | | |
| WRB0505ZP-3WR2 | | | 5V/600mA | | |
| WRB0512ZP-3WR2 | | | 12V/250mA | | |
| WRB0515ZP-3WR2 | | | 15V/200mA | | |
| WRA1205ZP-3WR2 | 3W | 9-18 (12VDC) | ±5V/±300mA | 1500VDC (DIP) | CE RoHS |
| WRA1209ZP-3WR2 | | | ±9V/±166mA | | |
| WRA1212ZP-3WR2 | | | ±12V/±125mA | | |
| WRA1215ZP-3WR2 | | | ±15V/±100mA | | |
| WRB1203ZP-3WR2 | | | 3.3V/909mA | | |
| WRB1205ZP-3WR2 | | | 5V/600mA | | |
| WRB1212ZP-3WR2 | | | 12V/250mA | | |
| WRB1215ZP-3WR2 | | | 15V/200mA | | |
| WRB1224ZP-3WR2 | | | 24V/125mA | | |
| WRA2405ZP-3WR2 | 3W | 18-36 (24VDC) | ±5V/±300mA | 1500VDC (DIP) | CE RoHS |
| WRA2412ZP-3WR2 | | | ±12V/±125mA | | |
| WRA2415ZP-3WR2 | | | ±15V/±100mA | | |
| WRB2403ZP-3WR2 | | | 3.3V/909mA | | |
| WRB2405ZP-3WR2 | | | 5V/600mA | | |

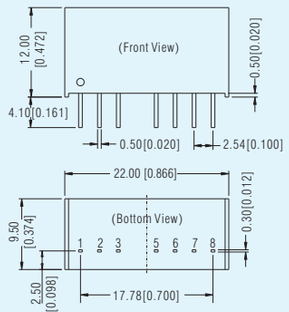
## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRB2409ZP-3WR2 | 3W | 18-36 (24VDC) | 9V/333mA | 1500VDC (DIP) | CE RoHS |
| WRB2412ZP-3WR2 | | | 12V/250mA | | |
| WRB2415ZP-3WR2 | | | 15V/200mA | | |
| WRB2424ZP-3WR2 | | | 24V/125mA | | |
| WRA4805ZP-3WR2 | 3W | 36-75 (48VDC) | ±5V/±300mA | 1500VDC (DIP) | CE RoHS |
| WRA4812ZP-3WR2 | | | ±12V/±125mA | | |
| WRA4815ZP-3WR2 | | | ±15V/±100mA | | |
| WRA4824ZP-3WR2 | | | ±24V/±625mA | | |
| WRB4803ZP-3WR2 | | | 3.3V/909mA | | |
| WRB4805ZP-3WR2 | | | 5V/600mA | | |
| WRB4812ZP-3WR2 | | | 12V/250mA | | |
| WRB4815ZP-3WR2 | | | 15V/200mA | | |
| WRB4824ZP-3WR2 | | | 24V/125mA | | |

Note: 1. Series with suffix "ZP" are standard DIP24 packaged with aluminum casing and detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

WRA/B_S-3WR2 Series LxWxH: 22.00x9.50x12.00(mm)



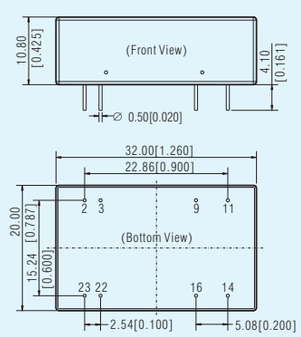

**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | Ctrl | Ctrl |
| 5 | NC | NC |
| 6 | +Vo | +Vo |
| 7 | 0V | 0V |
| 8 | CS | -Vo |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

WRA/B_ZP-3WR2 LxWxH: 32.00x20.00x10.80(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 2,3 | GND | GND |
| 9 | No Pin | 0V |
| 11 | NC | -Vo |
| 14 | +Vo | +Vo |
| 16 | 0V | 0V |
| 22,23 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]



# 3W 4:1 Wide Input Voltage, 1500VDC Isolated & Regulated Output Series

CE RoHS

## Features

- Suitable for communication, instrumentation and industrial electronics applications
- Operating temperature: -40℃ to +85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 approval

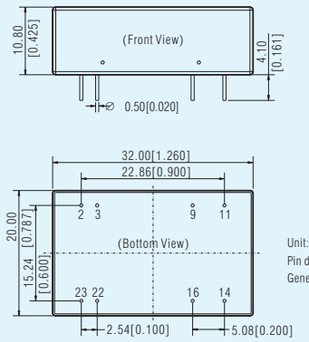
## Product Program 4:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| PWB2403ZP-3WR2 | 3W | 9-36 (24VDC) | 3.3V/909mA | 1500VDC (DIP) | CE RoHS |
| PWB2405ZP-3WR2 | | | 5V/600mA | | |
| PWB2409ZP-3WR2 | | | 9V/333mA | | |
| PWB2412ZP-3WR2 | | | 12V/250mA | | |
| PWB2415ZP-3WR2 | | | 15V/200mA | | |
| PWB2424ZP-3WR2 | | | 24V/125mA | | |
| PWB4803ZP-3WR2 | 3W | 18-75 (48VDC) | 3.3V/909mA | 1500VDC (DIP) | CE RoHS |
| PWB4805ZP-3WR2 | | | 5V/600mA | | |
| PWB4809ZP-3WR2 | | | 9V/333mA | | |
| PWB4812ZP-3WR2 | | | 12V/250mA | | |
| PWB4815ZP-3WR2 | | | 15V/200mA | | |
| PWB4824ZP-3WR2 | | | 24V/125mA | | |

Note: 1. Series with suffix "ZP" are standard DIP24 packaged with aluminum casing and detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

PWB_ZP-3WR2 Series LxWxH: 32.00x20.00x10.80(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 2,3 | GND |
| 9 | No Pin |
| 11 | NC |
| 14 | +Vo |
| 16 | 0V |
| 22,23 | Vin |

NC: No connection.

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

# 3W 4:1 Wide Input Voltage, 1500VDC Isolated & Regulated Output Series (SMD)

cULus CE CB RoHS

## Features

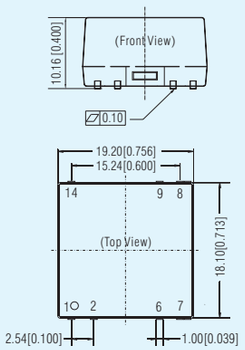
- Suitable for communication, instrumentation and control electric power applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 84%
- Standby power consumption as low as 0.10W
- International standard pin-out
- Input under-voltage, output short-circuit and over-current protections
- IEC/UL/EN60950 approval

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| URB2403MT-3WR3 | 3W | 9-36 (24VDC) | 3.3V/728mA | 1500VDC (SMD) | cULus CB CE RoHS |
| URB2405MT-3WR3 | | | 5V/600mA | | |
| URB2409MT-3WR3 | | | 9V/333mA | | |
| URB2412MT-3WR3 | | | 12V/250mA | | |
| URB2415MT-3WR3 | | | 15V/200mA | | |
| URB2424MT-3WR3 | | | 24V/125mA | | |
| URB4803MT-3WR3 | 3W | 18-75 (48VDC) | 3.3V/728mA | 1500VDC (SMD) | RoHS |
| URB4805MT-3WR3 | | | 5V/600mA | | |
| URB4812MT-3WR3 | | | 12V/250mA | | |
| URB4815MT-3WR3 | | | 15V/200mA | | |
| URB4824MT-3WR3 | | | 24V/125mA | | |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension LxWxH: 19.20x18.10x10.16(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Ctrl |
| 6 | NC |
| 7 | NC |
| 8 | +Vo |
| 9 | 0V |
| 14 | Vin |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

# 3W 2:1Wide Input Voltage,3000VDC Isolated & Regulated Output Series

CE RoHS

## Features

- Suitable for communication, instrumentation and industrial electronics applications
- Operating temperature: -40℃ to +85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 approval



## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRE0505S-3WR2 | 3W | 4.5-9 (5VDC) | ±5V/±250mA | 3000VDC (SIP) | CE RoHS |
| WRE0512S-3WR2 | | | ±12V/±104mA | | |
| WRE0515S-3WR2 | | | ±15V/±83mA | | |
| WRF0505S-3WR2 | | | 5V/500mA | | |
| WRF0509S-3WR2 | | | 9V/278mA | | |
| WRF0512S-3WR2 | | | 12V/208mA | | |
| WRF0515S-3WR2 | | | 15V/167mA | | |
| WRE1205S-3WR2 | 3W | 9-18 (12VDC) | ±5V/±300mA | 3000VDC (SIP) | CE RoHS |
| WRE1212S-3WR2 | | | ±12V/±125mA | | |
| WRE1215S-3WR2 | | | ±15V/±100mA | | |
| WRF1203S-3WR2 | | | 3.3V/758mA | | |
| WRF1205S-3WR2 | | | 5V/600mA | | |
| WRF1209S-3WR2 | | | 9V/333mA | | |
| WRF1212S-3WR2 | | | 12V/250mA | | |
| WRF1215S-3WR2 | | | 15V/200mA | | |
| WRF1224S-3WR2 | | | 24V/125mA | | |
| WRE2405S-3WR2 | 3W | 18-36 (24VDC) | ±5V/±300mA | 3000VDC (SIP) | CE RoHS |
| WRE2409S-3WR2 | | | ±9V/±167mA | | |
| WRE2412S-3WR2 | | | ±12V/±125mA | | |
| WRE2415S-3WR2 | | | ±15V/±100mA | | |
| WRF2403S-3WR2 | | | 3.3V/758mA | | |
| WRF2405S-3WR2 | | | 5V/600mA | | |
| WRF2409S-3WR2 | | | 9V/333mA | | |
| WRF2412S-3WR2 | | | 12V/250mA | | |
| WRF2415S-3WR2 | | | 15V/200mA | | |
| WRF2424S-3WR2 | | | 24V/125mA | | |
| WRE4805S-3WR2 | 3W | 36-75 (48VDC) | ±5V/±300mA | 3000VDC (SIP) | CE RoHS |
| WRE4812S-3WR2 | | | ±12V/±125mA | | |
| WRE4815S-3WR2 | | | ±15V/±100mA | | |
| WRF4803S-3WR2 | | | 3.3V/758mA | | |
| WRF4805S-3WR2 | | | 5V/600mA | | |
| WRF4812S-3WR2 | | | 12V/250mA | | |
| WRF4815S-3WR2 | | | 15V/200mA | | |
| WRE0505P-3WR2 | 3W | 4.5-9 (5VDC) | ±5V/±300mA | 3000VDC (DIP) | CE RoHS |
| WRE0512P-3WR2 | | | ±12V/±125mA | | |
| WRE0515P-3WR2 | | | ±15V/±100mA | | |
| WRF0505P-3WR2 | | | 5V/600mA | | |
| WRF0512P-3WR2 | | | 12V/250mA | | |
| WRF0515P-3WR2 | | | 15V/200mA | | |
| WRE1205P-3WR2 | 3W | 9-18 (12VDC) | ±5V/±300mA | 3000VDC (DIP) | CE RoHS |
| WRE1209P-3WR2 | | | ±9V/±166mA | | |
| WRE1212P-3WR2 | | | ±12V/±125mA | | |
| WRE1215P-3WR2 | | | ±15V/±100mA | | |
| WRF1203P-3WR2 | | | 3.3V/909mA | | |
| WRF1205P-3WR2 | | | 5V/600mA | | |
| WRF1212P-3WR2 | | | 12V/250mA | | |
| WRF1215P-3WR2 | | | 15V/200mA | | |
| WRF1224P-3WR2 | | | 24V/125mA | | |
| WRE2405P-3WR2 | 3W | 18-36 (24VDC) | ±5V/±300mA | 3000VDC (DIP) | CE RoHS |
| WRE2412P-3WR2 | | | ±12V/±125mA | | |
| WRE2415P-3WR2 | | | ±15V/±100mA | | |
| WRF2403P-3WR2 | | | 3.3V/909mA | | |
| WRF2405P-3WR2 | | | 5V/600mA | | |
| WRF2412P-3WR2 | | | 12V/250mA | | |
| WRF2415P-3WR2 | | | 15V/200mA | | |
| WRF2424P-3WR2 | | | 24V/125mA | | |

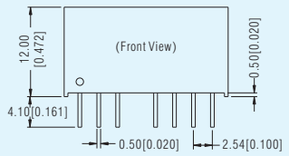
## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| WRE4803P-3WR2 | 3W | 36-75 (48VDC) | ±3.3V/±454mA | 3000VDC (DIP) | CE RoHS |
| WRE4805P-3WR2 | | | ±5V/±300mA | | |
| WRE4812P-3WR2 | | | ±12V/±125mA | | |
| WRE4815P-3WR2 | | | ±15V/±100mA | | |
| WRF4803P-3WR2 | | | 3.3V/909mA | | |
| WRF4805P-3WR2 | | | 5V/600mA | | |
| WRF4812P-3WR2 | | | 12V/250mA | | |
| WRF4815P-3WR2 | | | 15V/200mA | | |

Note: 1. Series with suffix "P" are standard DIP24 packaged with plastic casing and detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

WRE/F_S-3WR2 Series LxWxH: 22.00x9.50x12.00(mm)



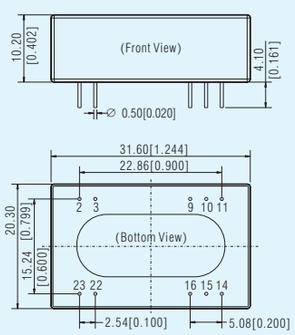

**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | Ctrl | Ctrl |
| 5 | NC | NC |
| 6 | +Vo | +Vo |
| 7 | 0V | 0V |
| 8 | CS | -Vo |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

WRE/F_P-3WR2 Series LxWxH: 31.60x20.30x10.20(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 2,3 | GND | GND |
| 9 | NC | 0V |
| 10,15 | NC | NC |
| 11 | NC | -Vo |
| 14 | +Vo | +Vo |
| 16 | 0V | 0V |
| 22,23 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]



# 3W 2:1Wide Input Voltage, 4300VDC Isolated & Regulated Output Series (Automotive)

RoHS

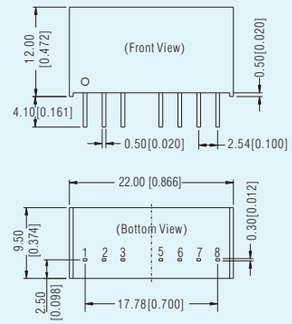
## Features

- Suitable for automotive application
- Operating temperature: -40℃ to +105℃
- Efficiency up to 82%
- Isolation: 4300VDC
- Materials meet AEC-Q standards
- Internal surface mounted design
- International standard pin-out


## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| CWRF1215S-3W | 3W | 7-18 (12VDC) | 15V/200mA | 4300VDC | RoHS |

## Package Dimension LxWxH: 22.00x9.50x12.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 3 | NC |
| 5 | NC |
| 6 | +Vo |
| 7 | 0V |
| 8 | CS |

NC: No connection.

Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# 6W 2:1Wide Input Voltage, 6000VDC High Isolated & Regulated Output Series (Medical)

CE RoHS

## Features

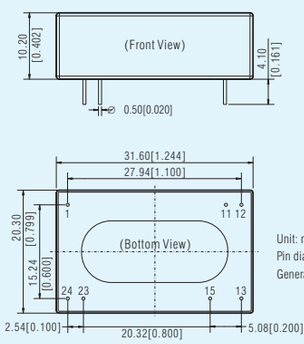
- 4:1Ultra wide input voltage range
- Highe fficiency up to 85%
- Standby power consumption as low as 0.12W
- Isolation:6000VDC(Enhanced)
- Operating temperature range:-40°C to +85°C
- International standard pin-out
- Input under-voltage,output over-voltage,over-current and short-circuit protections


## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| URH2405P-6WR3 | 6W | 9-36 (24VDC) | 5V/1200mA | 6000VDC | CE RoHS |
| URH2409P-6WR3 | | | 9V/667mA | | |
| URH2412P-6WR3 | | | 12V/500mA | | |
| URH2415P-6WR3 | | | 15V/400mA | | |
| URH2424P-6WR3 | | | 24V/250mA | | |
| URH4805P-6WR3 | 6W | 18-75 (48VDC) | 5V/1200mA | 6000VDC | CE RoHS |
| URH4809P-6WR3 | | | 9V/667mA | | |
| URH4812P-6WR3 | | | 12V/500mA | | |
| URH4815P-6WR3 | | | 15V/400mA | | |
| URH4824P-6WR3 | | | 24V/250mA | | |

Note: If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension LxWxH: 31.60x20.30x10.20(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 11 | No pin |
| 12 | 0V |
| 13 | +Vo |
| 15 | No pin |
| 23 | GND |
| 24 | GND |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

# 6W 2:1 Wide Input Voltage, 1500VDC Isolated & Regulated Output Series

## Features

- Suitable for industrial control, electric power, instrumentation and communication applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 87%
- Standby power consumption as low as 0.12W
- International standard pin-out
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting



A4S DIN-Rail Mounting

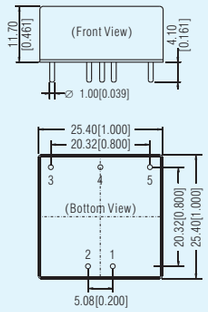
## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| VRA1205YMD-6WR3 | 6W | 9-18 (12VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CE CB RoHS |
| VRA1212YMD-6WR3 | | | ±12V/±250mA | | |
| VRB1205YMD-6WR3 | | | 5V/1200mA | | |
| VRB1212YMD-6WR3 | | | 12V/500mA | | |
| VRA2405YMD-6WR3 | 6W | 18-36 (24VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA2412YMD-6WR3 | | | ±12V/±250mA | | |
| VRA2415YMD-6WR3 | | | ±15V/±200mA | | |
| VRB2403YMD-6WR3 | | | 3.3V/1500mA | | |
| VRB2405YMD-6WR3 | | | 5V/1200mA | | |
| VRB2412YMD-6WR3 | | | 12V/500mA | | |
| VRB2415YMD-6WR3 | | | 15V/400mA | | |
| VRB2424YMD-6WR3 | | | 24V/250mA | | |
| VRA1205ZP-6WR3 | 6W | 9-18 (12VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA1212ZP-6WR3 | | | ±12V/±250mA | | |
| VRA1215ZP-6WR3 | | | ±15V/±200mA | | |
| VRB1205ZP-6WR3 | | | 5V/1200mA | | |
| VRB1212ZP-6WR3 | | | 12V/500mA | | |
| VRB1215ZP-6WR3 | | | 15V/400mA | | |
| VRA2405ZP-6WR3 | 6W | 18-36 (24VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA2412ZP-6WR3 | | | ±12V/±250mA | | |
| VRA2415ZP-6WR3 | | | ±15V/±200mA | | |
| VRB2405ZP-6WR3 | | | 5V/1200mA | | |
| VRB2412ZP-6WR3 | | | 12V/500mA | | |
| VRB2415ZP-6WR3 | | | 15V/400mA | | |
| VRB2424ZP-6WR3 | | | 24V/250mA | | |
| VRA4805ZP-6WR3 | 6W | 36-75 (48VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA4812ZP-6WR3 | | | ±12V/±250mA | | |
| VRA4815ZP-6WR3 | | | ±15V/±200mA | | |
| VRB4803ZP-6WR3 | | | 3.3V/1500mA | | |
| VRB4805ZP-6WR3 | | | 5V/1200mA | | |
| VRB4812ZP-6WR3 | | | 12V/500mA | | |
| VRB4815ZP-6WR3 | | | 15V/400mA | | |

Note: 1. Series with suffix "ZP" are standard DIP24 packaged with aluminum alloy casing, with suffix "YMD" are 1*1 packaged with aluminum alloy casing. And detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

**VRA/B_YMD-6WR3 Series** LxWxH: 25.40x25.40x11.70(mm)

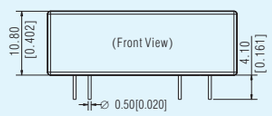



**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | +Vo | +Vo |
| 4 | No Pin | 0V |
| 5 | 0V | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

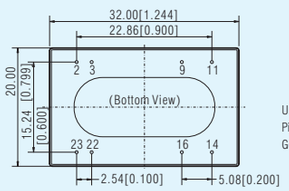
**VRA/B_ZP-6WR3 Series** LxWxH: 32.00x20.00x10.80(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 2,3 | GND | GND |
| 9 | No Pin | 0V |
| 11 | NC | -Vo |
| 14 | +Vo | +Vo |
| 16 | 0V | 0V |
| 22,23 | Vin | Vin |

NC: No connection.




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]



# 6W 4:1 Wide Input Voltage, Isolated & Regulated Output Series

## Features

- Suitable for industrial control, electric power, instrumentation and communication applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 88%
- Standby power consumption as low as 0.12W
- International standard pin-out
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting

A4S DIN-Rail Mounting

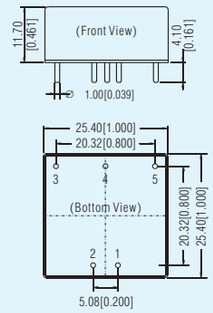
## Product Program 4:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| URA2405YMD-6WR3 | 6W | 9-36 (24VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA2412YMD-6WR3 | | | ±12V/±250mA | | |
| URA2415YMD-6WR3 | | | ±15V/±200mA | | |
| URA2424YMD-6WR3 | | | ±24V/±125mA | | |
| URB2403YMD-6WR3 | | | 3.3V/1500mA | | |
| URB2405YMD-6WR3 | | | 5V/1200mA | | |
| URB2409YMD-6WR3 | | | 9V/667mA | | |
| URB2412YMD-6WR3 | | | 12V/500mA | | |
| URB2415YMD-6WR3 | | | 15V/400mA | | |
| URB2424YMD-6WR3 | | | 24V/250mA | | |
| URA4805YMD-6WR3 | 6W | 18-75 (48VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA4812YMD-6WR3 | | | ±12V/±250mA | | |
| URA4815YMD-6WR3 | | | ±15V/±200mA | | |
| URB4803YMD-6WR3 | | | 3.3V/1500mA | | |
| URB4805YMD-6WR3 | | | 5V/1200mA | | |
| URB4812YMD-6WR3 | | | 12V/500mA | | |
| URB4815YMD-6WR3 | | | 15V/400mA | | |
| URB4824YMD-6WR3 | | | 24V/250mA | | |
| URA2405ZP-6WR3 | 6W | 9-36 (24VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA2412ZP-6WR3 | | | ±12V/±250mA | | |
| URA2415ZP-6WR3 | | | ±15V/±200mA | | |
| URA2424ZP-6WR3 | | | ±24V/±125mA | | |
| URB2403ZP-6WR3 | | | 3.3V/1500mA | | |
| URB2405ZP-6WR3 | | | 5V/1200mA | | |
| URB2409ZP-6WR3 | | | 9V/667mA | | |
| URB2412ZP-6WR3 | | | 12V/500mA | | |
| URB2415ZP-6WR3 | | | 15V/400mA | | |
| URB2424ZP-6WR3 | | | 24V/250mA | | |
| URA4805ZP-6WR3 | 6W | 18-75 (48VDC) | ±5V/±600mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA4812ZP-6WR3 | | | ±12V/±250mA | | |
| URA4815ZP-6WR3 | | | ±15V/±200mA | | |
| URB4803ZP-6WR3 | | | 3.3V/1500mA | | |
| URB4805ZP-6WR3 | | | 5V/1200mA | | |
| URB4812ZP-6WR3 | | | 12V/500mA | | |
| URB4815ZP-6WR3 | | | 15V/400mA | | |
| URB4824ZP-6WR3 | | | 24V/250mA | | |
| URE2405P-6WR3 | 6W | 9-36 (24VDC) | ±5V/±600mA | 3000VDC (DIP) | cULus CB CE RoHS |
| URE2412P-6WR3 | | | ±12V/±250mA | | |
| URE2415P-6WR3 | | | ±15V/±200mA | | |
| URF2403P-6WR3 | | | 3.3V/1500mA | | |
| URF2405P-6WR3 | | | 5V/1200mA | | |
| URF2409P-6WR3 | | | 9V/667mA | | |
| URF2412P-6WR3 | | | 12V/500mA | | |
| URF2415P-6WR3 | | | 15V/400mA | | |
| URF2424P-6WR3 | | | 24V/250mA | | |
| URF4803P-6WR3 | 6W | 18-75 (48VDC) | 3.3V/1500mA | 3000VDC (DIP) | cULus CB CE RoHS |
| URF4805P-6WR3 | | | 5V/1200mA | | |
| URF4812P-6WR3 | | | 12V/500mA | | |
| URF4815P-6WR3 | | | 15V/400mA | | |
| URF4824P-6WR3 | | | 24V/250mA | | |

Note: 1. Series with suffix"P" are standard DIP24 packaged with plastic casing, with suffix "ZP" are standard DIP24 packaged with aluminum alloy casing, with suffix "YMD" are 1*1 packaged with aluminum alloy casing. And detailed dimension please refer to illustration;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

**URA/B_YMD-6WR3 Series** LxWxH: 25.40x25.40x11.70(mm)

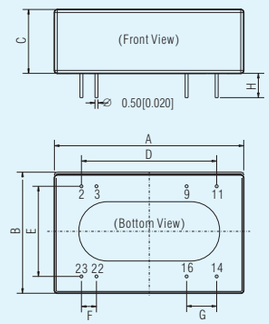



**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | +Vo | +Vo |
| 4 | No Pin | 0V |
| 5 | 0V | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

**URA/B_ZP-6WR3, URE/F_P-6WR3 Series**




**Pin-Out**

| | URA/B_ZP-6WR3 | |
|---|---|---|
| Pin | Single | Dual |
| 2,3 | GND | GND |
| 9 | No Pin | 0V |
| 11 | NC | -Vo |
| 14 | +Vo | +Vo |
| 16 | 0V | 0V |
| 22,23 | Vin | Vin |

NC: No connection.

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

**Outline & Dimensions**

| NO. | URA/B_ZP-6WR3 | URE/F_P-6WR3 |
|---|---|---|
| A | 32.00 | 31.60 |
| B | 20.00 | 20.30 |
| C | 10.80 | 10.20 |
| D | 22.86 | 22.86 |
| E | 15.24 | 15.24 |
| F | 2.54 | 2.54 |
| G | 5.08 | 5.08 |
| H | 4.10 | 4.10 |

**Pin-Out**

| | URE_P-6WR3 | URF_P-6WR3 |
|---|---|---|
| Pin | Function | Function |
| 2,3 | GND | GND |
| 9 | 0V | No Pin |
| 11 | -Vo | NC |
| 14 | +Vo | +Vo |
| 16 | 0V | 0V |
| 22,23 | Vin | Vin |

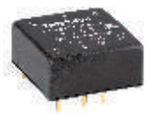
# 10W 2:1/4:1Wide Input Voltage, Isolated & Regulated Output Series

cULus CE CB RoHS

## Features

- Suitable for industrial control, electric power, instrumentation and communication applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 88%
- Standby power consumption as low as 0.12W
- International standard pin-out
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting



A4S DIN-Rail Mounting

## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| VRB2405YMD-10WR3 | 10W | 18-36 (24VDC) | 5V/2000mA | 1500VDC (DIP) | RoHS |
| VRB2412YMD-10WR3 | | | 12V/833mA | | |
| VRB2415YMD-10WR3 | | | 15V/667mA | | |
| VRB2424YMD-10WR3 | | | 24V/416mA | | |

## Product Program 4:1 Input series

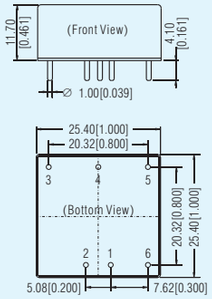
| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| URA2405YMD-10WR3 | 10W | 9-36 (24VDC) | ±5V/±1000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA2409YMD-10WR3 | | | ±9V/±555mA | | |
| URA2412YMD-10WR3 | | | ±12V/±416mA | | |
| URA2415YMD-10WR3 | | | ±15V/±333mA | | |
| URA2424YMD-10WR3 | | | ±24V/±208mA | | |
| URB2403YMD-10WR3 | | | 3.3V/2400mA | | |
| URB2405YMD-10WR3 | | | 5V/2000mA | | |
| URB2409YMD-10WR3 | | | 9V/1111mA | | |
| URB2412YMD-10WR3 | | | 12V/833mA | | |
| URB2415YMD-10WR3 | | | 15V/667mA | | |
| URB2424YMD-10WR3 | | | 24V/416mA | | |
| URA4805YMD-10WR3 | 10W | 18-75 (48VDC) | ±5V/±1000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA4812YMD-10WR3 | | | ±12V/±416mA | | |
| URA4815YMD-10WR3 | | | ±15V/±333mA | | |
| URA4824YMD-10WR3 | | | ±24V/±208mA | | |
| URB4803YMD-10WR3 | | | 3.3V/2400mA | | |
| URB4805YMD-10WR3 | | | 5V/2000mA | | |
| URB4812YMD-10WR3 | | | 12V/833mA | | |
| URB4815YMD-10WR3 | | | 15V/667mA | | |
| URB4824YMD-10WR3 | | | 24V/416mA | | |
| URE2405LP-10WR3 | 10W | 9-36 (24VDC) | ±5V/±1000mA | 3000VDC (DIP) | RoHS |
| URE2412LP-10WR3 | | | ±12V/±416mA | | |
| URE2415LP-10WR3 | | | ±15V/±333mA | | |
| URF2403LP-10WR3 | | | 3.3V/2400mA | | cULus CB CE RoHS |
| URF2405LP-10WR3 | | | 5V/2000mA | | |
| URF2409LP-10WR3 | | | 9V/1111mA | | |
| URF2412LP-10WR3 | | | 12V/833mA | | |
| URF2415LP-10WR3 | | | 15V/667mA | | |
| URF2424LP-10WR3 | | | 24V/416mA | | |
| URE4805LP-10WR3 | 10W | 18-75 (48VDC) | ±5V/±1000mA | 3000VDC (DIP) | RoHS |
| URE4812LP-10WR3 | | | ±12V/±416mA | | |
| URE4815LP-10WR3 | | | ±15V/±333mA | | |
| URF4803LP-10WR3 | | | 3.3V/2400mA | | cULus CB CE RoHS |
| URF4805LP-10WR3 | | | 5V/2000mA | | |
| URF4812LP-10WR3 | | | 12V/833mA | | |
| URF4815LP-10WR3 | | | 15V/667mA | | |
| URF4824LP-10WR3 | | | 24V/416mA | | |

Note: 1. Chassis mounting and DIN-Rail mounting are available and please contact our sales department or refer to datasheet for details. Series have input reverse voltage protection;
2. Series with suffix "LP" are 2"×1" packaged with plastic casing, with suffix "YMD" are 1"*1 packaged with aluminum alloy casing. And detailed dimension please refer to illustration;
3. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

### URA/B_YMD-10WR3, VRB_YMD-10WR3 Series

LxWxH: 25.40x25.40x11.70(mm)

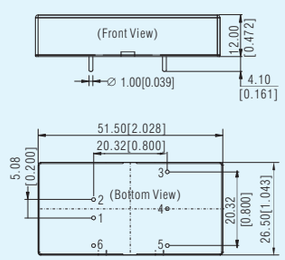



**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | +Vo | +Vo |
| 4 | No Pin | 0V |
| 5 | 0V | -Vo |
| 6 | Ctrl | Ctrl |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

### URE/F_LP-10WR3 Series LxWxH: 51.50x26.50x12.00(mm)




**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | +Vo | +Vo |
| 4 | No Pin | 0V |
| 5 | 0V | -Vo |
| 6 | Ctrl | Ctrl |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

• This catalog is used to introduce our latest products, for more information, please contact our sales department





# 15-20W 2:1/4:1 Wide Input Voltage, Isolated & Regulated Output Series

cULus CE CB RoHS

## Features

- Suitable for DCS, battery-powered device, communication, distributed power system, D/A hybrid system, RTU and industrial robot system applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 90%
- Standby power consumption as low as 0.15W
- International standard pin-out
- six-sided metal shielding package
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting

A4S DIN-Rail Mounting

## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| VRB2405LD-15WR3 | 15W | 18-36 (24VDC) | 5V/3000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRB2412LD-15WR3 | | | 12V/1250mA | | |
| VRB2415LD-15WR3 | | | 15V/1000mA | | |
| VRB2424LD-15WR3 | | | 24V/625mA | | |
| VRB4805LD-15WR3 | | 36-75 (48VDC) | 5V/3000mA | | |
| VRB4812LD-15WR3 | | | 12V/1250mA | | |
| VRB4815LD-15WR3 | | | 15V/1000mA | | |
| VRB4824LD-15WR3 | | | 24V/625mA | | |
| VRA2405LD-20WR3 | 20W | 18-36 (24VDC) | ±5V/±2000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA2409LD-20WR3 | | | ±9V/±1111mA | | |
| VRA2412LD-20WR3 | | | ±12V/±834mA | | |
| VRA2415LD-20WR3 | | | ±15V/±667mA | | |
| VRB2403LD-20WR3 | | | 3.3V/5000mA | | |
| VRB2405LD-20WR3 | | | 5V/4000mA | | |
| VRB2409LD-20WR3 | | | 9V/2222mA | | |
| VRB2412LD-20WR3 | | | 12V/1667mA | | |
| VRB2415LD-20WR3 | | | 15V/1333mA | | |
| VRB2424LD-20WR3 | | | 24V/834mA | | |
| VRA4805LD-20WR3 | 20W | 36-75 (48VDC) | ±5V/±2000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRA4812LD-20WR3 | | | ±12V/±834mA | | |
| VRA4815LD-20WR3 | | | ±15V/±667mA | | |
| VRB4803LD-20WR3 | | | 3.3V/5000mA | | |
| VRB4805LD-20WR3 | | | 5V/4000mA | | |
| VRB4809LD-20WR3 | | | 9V/2222mA | | |
| VRB4812LD-20WR3 | | | 12V/1667mA | | |
| VRB4815LD-20WR3 | | | 15V/1333mA | | |
| VRB4824LD-20WR3 | | | 24V/834mA | | |

## Product Program 4:1 Input series

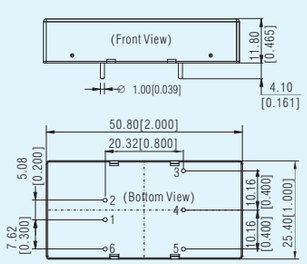
| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| URA2405LD-20WR3 | 20W | 9-36 (24VDC) | ±5V/±2000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA2409LD-20WR3 | | | ±9V/±1111mA | | |
| URA2412LD-20WR3 | | | ±12V/±834mA | | |
| URA2415LD-20WR3 | | | ±15V/±667mA | | |
| URB2403LD-20WR3 | | | 3.3V/5000mA | | |
| URB2405LD-20WR3 | | | 5V/4000mA | | |
| URB2409LD-20WR3 | | | 9V/2222mA | | |
| URB2412LD-20WR3 | | | 12V/1667mA | | |
| URB2415LD-20WR3 | | | 15V/1333mA | | |
| URB2424LD-20WR3 | | | 24V/834mA | | |
| URA4805LD-20WR3 | 20W | 18-75 (48VDC) | ±5V/±2000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URA4812LD-20WR3 | | | ±12V/±834mA | | |
| URA4815LD-20WR3 | | | ±15V/±667mA | | |
| URB4803LD-20WR3 | | | 3.3V/5000mA | | |
| URB4805LD-20WR3 | | | 5V/4000mA | | |
| URB4809LD-20WR3 | | | 9V/2222mA | | |
| URB4812LD-20WR3 | | | 12V/1667mA | | |
| URB4815LD-20WR3 | | | 15V/1333mA | | |
| URB4824LD-20WR3 | | | 24V/834mA | | |
| URF2403LP-20WR3 | 20W | 9-36 (24VDC) | 3.3V/5000mA | 3000VDC (DIP) | cULus CB CE RoHS |
| URF2405LP-20WR3 | | | 5V/4000mA | | |
| URF2409LP-20WR3 | | | 9V/2222mA | | |
| URF2412LP-20WR3 | | | 12V/1667mA | | |
| URF2415LP-20WR3 | | | 15V/1334mA | | |
| URF2424LP-20WR3 | | | 24V/833mA | | |
| URF4803LP-20WR3 | 20W | 18-75 (48VDC) | 3.3V/5000mA | 3000VDC (DIP) | cULus CB CE RoHS |
| URF4805LP-20WR3 | | | 5V/4000mA | | |
| URF4812LP-20WR3 | | | 12V/1667mA | | |
| URF4815LP-20WR3 | | | 15V/1334mA | | |
| URF4824LP-20WR3 | | | 24V/833mA | | |

Note: 1. Chassis mounting and DIN-Rail mounting are available and please contact our sales department or refer to datasheet for details. Series have input reverse voltage protection;
2. Series with suffix "LD" are 2"*1 packaged with aluminum alloy casing, with suffix "LP" are 2"x1" packaged with plastic casing. And detailed dimension please refer to illustration;
3. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## Package Dimension

### VRB_LD-15WR3, VRA/B_LD-20WR3, URA/B_LD-20WR3 Series

LxWxH: 50.80x25.40x11.80(mm)



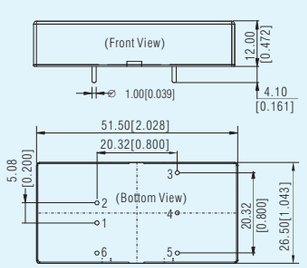

**Pin-Out**

| Pin | Single | Dual |
|---|---|---|
| 1 | GND | GND |
| 2 | Vin | Vin |
| 3 | +Vo | +Vo |
| 4 | Trim | 0V |
| 5 | 0V | -Vo |
| 6 | Ctrl | Ctrl |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

### URF_LP-20WR3 Series

LxWxH: 51.50x26.50x12.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | GND |
| 2 | Vin |
| 3 | +Vo |
| 4 | Trim |
| 5 | 0V |
| 6 | Ctrl |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 30-50W 2:1/4:1 Wide Input Voltage, 1500VDC Isolated & Regulated Output Series

cULus CE CB RoHS

## Features

- Suitable for DCS, battery-powered device, communication, distributed power system, D/A hybrid system, RTU and industrial robot system applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 93%
- Standby power consumption as low as 0.15W
- International standard pin-out
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- IEC/UL/EN60950 approval

A2S Chassis Mounting

A4S DIN-Rail Mounting

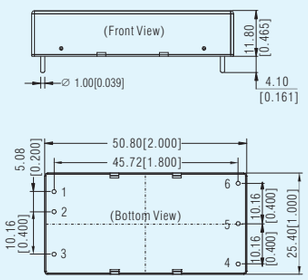
## Product Program 2:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| VRB2403LD-30WR3 | 30W | 18-36 (24VDC) | 3.3V/6000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRB2405LD-30WR3 | | | 5V/6000mA | | |
| VRB2409LD-30WR3 | | | 9V/3333mA | | |
| VRB2412LD-30WR3 | | | 12V/2500mA | | |
| VRB2415LD-30WR3 | | | 15V/2000mA | | |
| VRB2424LD-30WR3 | | | 24V/1250mA | | |
| VRB4803LD-30WR3 | 30W | 36-75 (48VDC) | 3.3V/6000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| VRB4805LD-30WR3 | | | 5V/6000mA | | |
| VRB4812LD-30WR3 | | | 12V/2500mA | | |
| VRB4815LD-30WR3 | | | 15V/2000mA | | |
| VRB4824LD-30WR3 | | | 24V/1250mA | | |
| VRB2403LD-50W | 50W | 18-36 (24VDC) | 3.3V/10000mA | 1500VDC (DIP) | RoHS |
| VRB2405LD-50W | | | 5V/10000mA | | |
| VRB2412LD-50W | | | 12V/4167mA | | |
| VRB2415LD-50W | | | 15V/3333mA | | |
| VRB2424LD-50W | | | 24V/2083mA | | |
| VRB4803LD-50W | 50W | 36-75 (48VDC) | 3.3V/10000mA | 1500VDC (DIP) | RoHS |
| VRB4805LD-50W | | | 5V/10000mA | | |
| VRB4812LD-50W | | | 12V/4167mA | | |
| VRB4815LD-50W | | | 15V/3333mA | | |
| VRB4824LD-50W | | | 24V/2083mA | | |

## Package Dimension

URA_LD-30WR3 Series LxWxH: 50.80x25.40x11.80(mm)

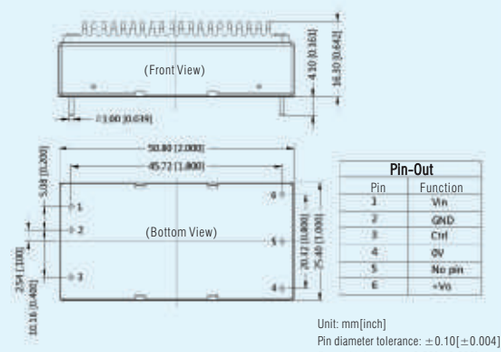
URB_LD-30WR3, VRB_LD-30WR3, VRB_LD-50W Series LxWxH: 50.80x25.40x11.80(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 3 | Ctrl |
| 4 | -Vo/Trim |
| 5 | 0V |
| 6 | +Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

URA_LD-30WR3 Series LxWxH: 50.80x25.40x16.30(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 3 | Ctrl |
| 4 | 0V |
| 5 | No pin |
| 6 | +Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

## Product Program 4:1 Input series

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation (Package) | Certification |
|---|---|---|---|---|---|
| URA2405LD-30WR3 | 30W | 9-36 (24VDC) | ±5V/±3000mA | 1500VDC (DIP) | RoHS |
| URA2412LD-30WR3 | | | ±12V/±1250mA | | |
| URA2415LD-30WR3 | | | ±15V/±1000mA | | |
| URA2424LD-30WR3 | | | ±24V/±625mA | | |
| URB2403LD-30WR3 | 30W | 9-36 (24VDC) | 3.3V/6000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URB2405LD-30WR3 | | | 5V/6000mA | | |
| URB2409LD-30WR3 | | | 9V/3333mA | | |
| URB2412LD-30WR3 | | | 12V/2500mA | | |
| URB2415LD-30WR3 | | | 15V/2000mA | | |
| URB2424LD-30WR3 | | | 24V/1250mA | | |
| URA4805LD-30WR3 | 30W | 18-75 (48VDC) | ±5V/±3000mA | 1500VDC (DIP) | RoHS |
| URA4812LD-30WR3 | | | ±12V/±1250mA | | |
| URA4815LD-30WR3 | | | ±15V/±1000mA | | |
| URB4803LD-30WR3 | 30W | 18-75 (48VDC) | 3.3V/6000mA | 1500VDC (DIP) | cULus CB CE RoHS |
| URB4805LD-30WR3 | | | 5V/6000mA | | |
| URB4812LD-30WR3 | | | 12V/2500mA | | |
| URB4815LD-30WR3 | | | 15V/2000mA | | |
| URB4824LD-30WR3 | | | 24V/1250mA | | |

Note: 1. Chassis mounting and DIN-Rail mounting are available and please contact our sales department or refer to datasheet for details. Series have input reverse voltage protection;
2. Series with suffix "LD" are 2"1 packaged with aluminum alloy casing, and detail dimension please refer to illustration;
3. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

• This catalog is used to introduce our latest products, for more information, please contact our sales department



# 100W 4:1Wide Input Voltage, 2250VDC Isolated & Regulated URF-100W Series

RoHS

## Features

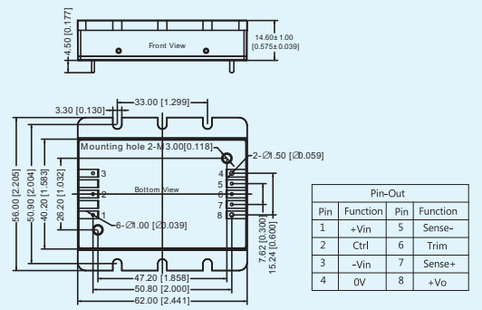
- 4:1 wide input voltage range
- Efficiency up to 94%
- Isolation: 2250VDC
- Input under-voltage, output over-voltage, over short-circuit, over-temperature and over -current protections
- Operating temperature: -40℃ to +85℃
- Metal mask, international standard package
- Meet railway standard EN50155

## Product Program

| Series | power | Input Voltage (VDC) | Outpu Voltaget/current (Vo/Io) | Isolation voltage | Certification |
|---|---|---|---|---|---|
| URF4805QB-100WR3 | 100W | 18-75(48VDC) | 5V/20000mA | 2250VDC | RoHS |
| URF4812QB-100WR3 | 100W | 18-75(48VDC) | 12V/8333mA | 2250VDC | |
| URF4815QB-100WR3 | 100W | 18-75(48VDC) | 15V/6667mA | 2250VDC | |
| URF4824QB-100WR3 | 100W | 18-75(48VDC) | 24V/4167mA | 2250VDC | |
| URF4848QB-100WR3 | 100W | 18-75(48VDC) | 48V/2083mA | 2250VDC | |

Note: Special input, output and package customization is acceptable.

## Package Dimension LxWxH: 62.00x9.50x14.60(mm)




| Pin-Out | | | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1 | +Vin | 5 | Sense- |
| 2 | Ctrl | 6 | Trim |
| 3 | -Vin | 7 | Sense+ |
| 4 | 0V | 8 | +Vo |

Note:
Unit: mm[inch]
Pin1, 2, 3, 5, 6, 7's diameter: 1.00[0.039]
Pin4, 8's diameter: 1.50[0.059]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]
Mounting hole screwing torque: Max 0.4 N·m

# 20W Ultra-wide Input Voltage,1500VDC Isolated & Regulated Output Series

RoHS

## Features

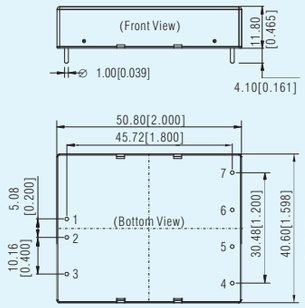
- Suitable for automotive application
- Operating temperature: -40℃ to +85℃
- Efficiency up to 82%
- Input voltage as low as 6VDC
- Standby power consumption as low as 0.4W
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| UW2405D-20W-TK | 20W | 6-50 (24VDC) | 5V/4000mA | 1500VDC | RoHS |

Note: Special input, output and power such as series less than 4.5VDC input customization is acceptable.

## Package Dimension LxWxH: 22.00x9.50x12.00(mm)




| Pin-Out | |
|---|---|
| Pin | Function |
| 1 | Vin |
| 2 | GND |
| 3 | No Pin |
| 4 | 0V |
| 5 | +Vo |
| 6 | No Pin |
| 7 | No Pin |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# 6-20W 4:1 Wide Input Voltage, 2250VDC Isolated & Regulated Output Series for Railway

RoHS

## Features

- Suitable for railway application
- Wide input voltage range: 40-160VDC
- Operating temperature: -40℃ to +85℃
- Efficiency up to 90%
- Isolation: 2250VDC
- International standard brick package
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- Meet railway standard EN50155

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| URB1D05YMD-6WR3 | 6W | 40-160 (110VDC) | 5V/1200mA | 2250VDC | RoHS |
| URB1D12YMD-6WR3 | | | 12V/500mA | | |
| URB1D15YMD-6WR3 | | | 15V/400mA | | |
| URB1D24YMD-6WR3 | | | 24V/250mA | | |
| URB1D03LMD-10WR3 | 10W | 40-160 (110VDC) | 3.3V/2400mA | 2250VDC | RoHS |
| URB1D05LMD-10WR3 | | | 5V/2000mA | | |
| URB1D12LMD-10WR3 | | | 12V/833mA | | |
| URB1D15LMD-10WR3 | | | 15V/667mA | | |
| URB1D24LMD-10WR3 | | | 24V/417mA | | |
| URB1D03LMD-15WR3 | 15W | 40-160 (110VDC) | 3.3V/4000mA | 2250VDC | RoHS |
| URB1D05LMD-15WR3 | | | 5V/3000mA | | |
| URB1D12LMD-15WR3 | | | 12V/1250mA | | |
| URB1D15LMD-15WR3 | | | 15V/1000mA | | |
| URB1D15LMD-15WR3 | | | 24V/625mA | | |
| URB1D03LMD-20WR3 | 20W | 40-160 (110VDC) | 3.3V/5000mA | 2250VDC | RoHS |
| URB1D05LMD-20WR3 | | | 5V/4000mA | | |
| URB1D12LMD-20WR3 | | | 12V/1667mA | | |
| URB1D15LMD-20WR3 | | | 15V/1333mA | | |
| URB1D24LMD-20WR3 | | | 24V/833mA | | |

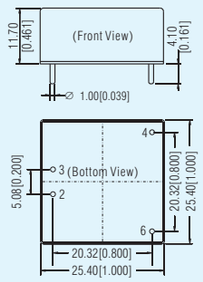
Note: Heat sink is available.

## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| URB1D03LD-20WR3 | 20W | 40-160 (110VDC) | 3.3V/5000mA | 2250VDC | RoHS |
| URB1D05LD-20WR3 | | | 5V/4000mA | | |
| URB1D12LD-20WR3 | | | 12V/1667mA | | |
| URB1D15LD-20WR3 | | | 15V/1333mA | | |
| URB1D24LD-20WR3 | | | 24V/833mA | | |

## Package Dimension

**URB1D_YMD-6WR3 Series** LxWxH: 25.40x25.40x11.70(mm)



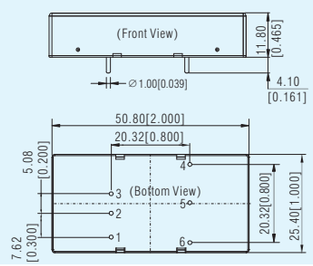

**Pin-Out**

| Pin | Function |
|---|---|
| 2 | GND |
| 3 | Vin |
| 4 | +Vo |
| 6 | 0V |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

## Package Dimension

**URB1D-LMD-10WR3\URB1D-LMD-15WR3\URB1D-LMD-20WR3**
LxWxH: 50.80x25.40x11.80(mm)

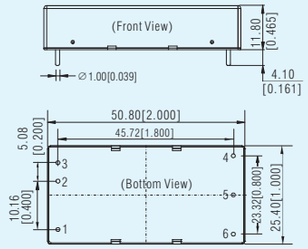



**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Ctrl |
| 2 | GND |
| 3 | Vin |
| 4 | +Vo |
| 5 | Trim |
| 6 | 0V |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]
Note: URB1D-LMD-10WR3non pin1、5

**URB1D-LD-20WR3 Series**
LxWxH: 50.80x25.40x11.80(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Ctrl |
| 2 | GND |
| 3 | Vin |
| 4 | +Vo |
| 5 | 0V |
| 6 | Trim |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

# DC/DC Converter Specialized for Super-capacitor and Lithium Battery-powered

RoHS

## Features

- Suitable for super-capacitor and lithium battery-powered applications
- Constant voltage & current output
- Adjustable output voltage
- Internal SMD construction
- Remote ON/OFF
- Output over-voltage and short-circuit protections

## Product Program

| Series | Input Voltage (VDC) Nominal (Range) | Output | | Effi(%) (typ) | Certification |
|---|---|---|---|---|---|
| | | Output Voltage (VDC) | Constant Current (mA) | | |
| URB24R3D-10A series | 9-24 (18VDC) | 0-2.7 | 10000 | 80 | RoHS |
| URF2428LP-700 series | 9-36 (24VDC) | 0-28.5 | 700 | 86/88 | |
| URB24A5YMD-1000 series | 9-36 (24VDC) | 0-4.8 | 1000 | 76/78 | |

Note: Special input, output and package customization is acceptable.

- This catalog is used to introduce our latest products, for more information, please contact our sales department



# 50-150W Wide Input Voltage, 3000VDC Isolated & Regulated Output Series for Railway

RoHS

## Features

- Suitable for railway application
- Wide input voltage range: 66-160VDC
- Operating temperature: -40℃ to +100℃
- Isolation: 3000VDC
- International standard brick package
- Input under-voltage, output over-voltage, over-current and short-circuit protections
- Meet railway standard EN50155

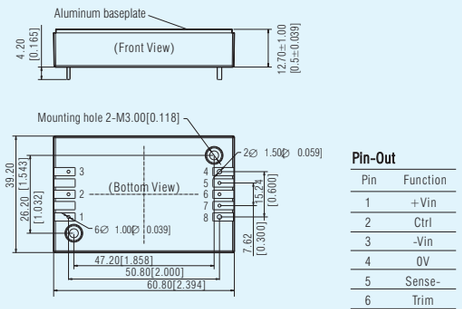
## Product Program

| Model Number | Power | Input Voltage (Nominal) | Output Voltage/Current (Vo/Io) | Isolation | Certification |
|---|---|---|---|---|---|
| URF1D05QB-50W | 50W | 66-160 (110VDC) | 5V/10000mA | 3000VDC | RoHS |
| URF1D12QB-50W | | | 12V/4167mA | | |
| URF1D15QB-50W | | | 15V/3333mA | | |
| URF1D24QB-50W | | | 24V/2083mA | | |
| URF1D05QB-75W | 75W | 66-160 (110VDC) | 5V/15000mA | 3000VDC | RoHS |
| URF1D12QB-75W | | | 12V/6250mA | | |
| URF1D15QB-75W | | | 15V/5000mA | | |
| URF1D24QB-75W | | | 24V/3125mA | | |
| URF1D12QB-100W | 100W | 66-160 (110VDC) | 12V/8333mA | 3000VDC | RoHS |
| URF1D15QB-100W | | | 15V/6667mA | | |
| URF1D24QB-100W | | | 24V/4167mA | | |
| URF1D12HB-150W | 150W | 66-160(110VDC) | 12V/12500mA | 3000VDC | RoHS |
| | | 50-66 | 12V/10000mA | | |
| URF1D15HB-150W | | 66-160(110VDC) | 15V/10000mA | | |
| | | 50-66 | 15V/8000mA | | |
| URF1D24HB-150W | | 66-160(110VDC) | 24V/6250mA | | |
| | | 50-66 | 24V/5000mA | | |

Note: 1. Heat sink is available;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D are available. For more information, please contact our sales department.

## URF1D24QB Series Package Dimension

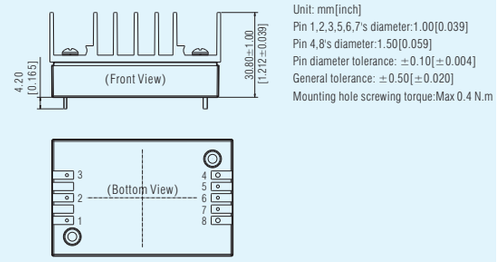
**Without heat sink** LxWxH: 60.80x39.20x12.70(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | Ctrl |
| 3 | -Vin |
| 4 | 0V |
| 5 | Sense- |
| 6 | Trim |
| 7 | Sense+ |
| 8 | +Vo |

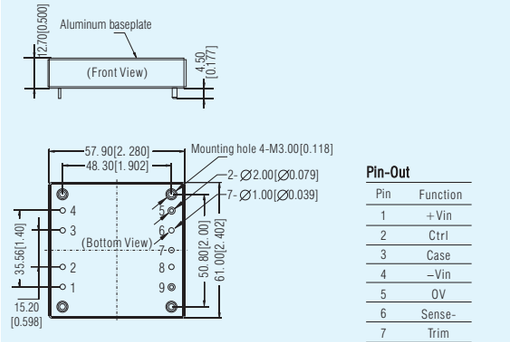
**With heat sink** LxWxH: 62.00x39.20x30.80(mm)




Unit: mm[inch]
Pin 1,2,3,5,6,7's diameter:1.00[0.039]
Pin 4,8's diameter:1.50[0.059]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]
Mounting hole screwing torque:Max 0.4 N.m

## URF1D24HB Series Package Dimension

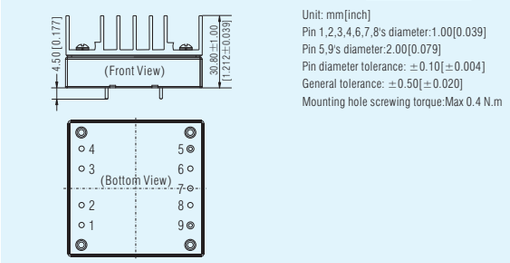
**Without heat sink** LxWxH: 57.90x61.00x12.70(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | Ctrl |
| 3 | Case |
| 4 | -Vin |
| 5 | 0V |
| 6 | Sense- |
| 7 | Trim |
| 8 | Sense+ |
| 9 | +0V |

**With heat sink** 57.90x62.00x30.80(mm)




Unit: mm[inch]
Pin 1,2,3,4,6,7,8's diameter:1.00[0.039]
Pin 5,9's diameter:2.00[0.079]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]
Mounting hole screwing torque:Max 0.4 N.m

- This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# EMC Auxiliary Device





## EMC Filter Specialized for AC/DC Converter

RoHS

### Features

- Greatly improve EMS performance of LD/LH/LH-ER2/LM30
- Enable EMI performance to meet requirements of CISPR22/EN 55022 Class B standard
- Input voltage range: 85-305VAC
- Operating temperature: -40℃ to+85℃
- Compact size, cost-effective
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting

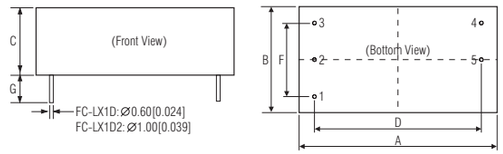

A2S Chassis Mounting Package　　A4S DIN-Rail Mounting Package

### Product Program

| Model Number | Input Voltage Range (VAC) | Nominal Current (A)(max) | Outstanding Features | Certification |
|---|---|---|---|---|
| FC-LX1D | 85-305 | 1.5 | Surge: ± 2KV/ ± 4KV | RoHS |
| FC-LX1D2 | 85-305 | 1.5 | Surge: ± 4KV/ ± 6KV | |
| FC-L01DV1 | 85-305 | 0.3 | Surge: ± 1KV/ ± 2KV | |

Note: Series with suffix "A2S" are chassis mounting, with suffix "A4S" are DIN-Rail mounting.

### PCB Mounting Package Dimension




Outline & Dimensions

| NO | FC-LX1D | FC-LX1D2 | FC-L01DV1 |
|---|---|---|---|
| A | 33.70 | 53.80 | 33.70 |
| B | 22.20 | 28.80 | 22.20 |
| C | 18.00 | 19.00 | 18.00 |
| D | 28.00 | 45.72 | 28.00 |
| F | 15.24 | 20.32 | 15.24 |
| G | 6.00 | 6.00 | 6.00 |

Pin-Out

| Pin | Function |
|---|---|
| 1 | ⏚ |
| 2 | IN(N) |
| 3 | IN(L) |
| 4 | OUT(L) |
| 5 | OUT(N) |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

## EMC Filter Specialized for DC/DC Converter

RoHS

### Features

- Greatly improve EMS & EMI performance of 2:1/4:1 wide input voltage DC/DC converter
- Efficiency up to 98%
- Compact size, cost-effective
- Slow start-up function
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Meet IEC/EN61000-4 series standard and CISPR22/ En55022
- Reverse voltage protection

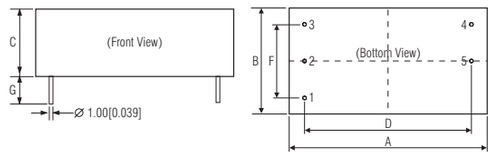

A2S Chassis Mounting Package　　A4S DIN-Rail Mounting Package

### Product Program

| Model Number | Input Voltage Range (VDC) | Max. Output Power(W)/ Nominal Current(A) | Outstanding Features | Certification |
|---|---|---|---|---|
| FC-AX3D | 10-36 | 30W | Reverse voltage protection and slow start-up function | RoHS |
| FC-B02D | 18-75 | 30W | | |
| FC-D03D | 18-36 | 50W | | |
| FC-E03D | 36-75 | 75W | | |
| FC-A01D | 9-36 | 1A | Small volume | |
| FC-B01D | 18-75 | 1A | | |

Note: Series with suffix"A2S" are chassis mounting, with suffix"A4S" are DIN-Rail mounting.

### PCB Mounting Package Dimension




Outline Dimensions

| No | FC-AX3D | FC-B02D | FC-D03D | FC-E03D | FC-A01D | FC-B01D |
|---|---|---|---|---|---|---|
| A | 53.80 | 53.80 | 53.80 | 53.80 | 37.00 | 37.00 |
| B | 28.80 | 28.80 | 28.80 | 28.80 | 23.00 | 23.00 |
| C | 19.00 | 19.00 | 19.00 | 19.00 | 15.00 | 15.00 |
| D | 45.72 | 45.72 | 45.72 | 45.72 | 30.48 | 30.48 |
| F | 20.32 | 20.32 | 20.32 | 20.32 | 17.78 | 17.78 |
| G | 6.00 | 6.0 | 6.0 | 6.0 | 4.10 | 4.10 |

Pin-Out

| Pin | Function |
|---|---|
| 1 | ⏚ |
| 2 | –Vin |
| 3 | +Vin |
| 4 | +Vo |
| 5 | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

- This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# EMC Filter Specialized for Railway Power Supply

RoHS

## Features

- Improve EMI & EMS performance of 10-100W Railway power supply
- Enable the railway power supply to meet requirements of EN50155 standard
- Efficiency up to 98%
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Meet railway industry EN50155 standard
- Meet IEC/EN61000-4 series standard and CISPR22/EN55022
- Reverse voltage protection

A2S Chassis Mounting Package

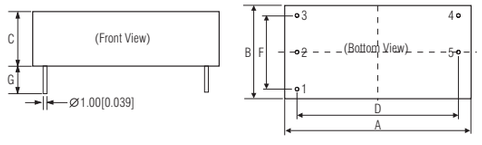

A4S DIN-Rail Mounting Package

## Product Program

| Model Number | Input Voltage Range (VDC) | Max. Output Power (W) | Outstanding Features | Certification |
|---|---|---|---|---|
| FC-C01D | 40-160 | 10 | Reverse voltage protection | RoHS |
| FC-CX1D | 40-160 | 30 | | |
| FC-C03D | 40-160 | 50 | | |
| FC-CX3D | 66-160 | 100 | Input over-voltage protection | |

Note: 1. Used with AC/DC converter. 2. Series with suffix "A2S" are chassis mounting, with suffix "A4S" are DIN-Rail mounting.

## PCB Mounting Package Dimension




**Outline & Dimensions**

| No | FC-C01D | FC-CX1D | FC-C03D | FC-CX3D |
|---|---|---|---|---|
| A | 50.80 | 53.80 | 53.80 | 53.80 |
| B | 25.40 | 28.80 | 28.80 | 28.80 |
| C | 15.16 | 19.00 | 19.00 | 23.50 |
| D | 45.72 | 45.72 | 45.72 | 45.72 |
| F | 20.32 | 20.32 | 20.32 | 20.32 |
| G | 6.00 | 6.00 | 6.00 | 6.00 |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004] General tolerance: ±0.25[±0.010] Unmarked Tolerance: ±0.50[±0.020]

**Pin-Out**

| Pin | Function |
|---|---|
| 1 | ⏚ |
| 2 | −Vin |
| 3 | +Vin |
| 4 | +Vo |
| 5 | -Vo |

# EMI Filter Specialized for DC/DC Converter

RoHS

## Features

- Improve EMI performance of 0-80V wide input voltage DC/DC converter with under 3A input current
- Enable MORNSUN DC/DC converter to meet requirements of EN 55022 Class B standard
- Attenuation rate up to 20dB
- Low temperature rise
- Restrain the EMI with DC input circuit
- Compact size, cost-effective
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting

A2S Chassis Mounting Package

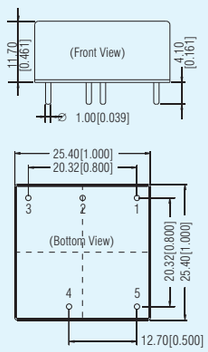

A4S DIN-Rail Mounting Package

## Product Program

| Model Number | Input Voltage Range (VDC) | Nominal Current (A)(max) | Outstanding Features | Certification |
|---|---|---|---|---|
| FI-B03D | 0-80 | 3 | Meet EMI requirements of Class B standard | RoHS |

Note: Series with suffix"A2S" are chassis mounting, with suffix"A4S" are DIN-Rail mounting.

## Package Dimension LxWxH: 25.40x25.40x11.70(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | +Vin |
| 2 | -Vin |
| 3 | ⏚ |
| 4 | -Vo |
| 5 | +Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

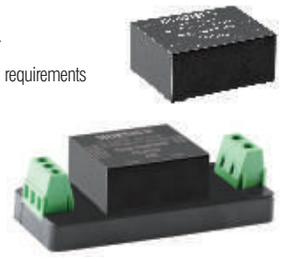


# Surge Suppressor Specialized for DC/DC Converter

RoHS

## Features

- Improve surge handling capability of 0-40V wide input DC/DC converter
- Enable MORNSUN DC/DC converter to meet ±2KV/±4KV(Grade Four) requirements of IEC/EN61000-4-5
- Attenuation rate up to 30dB
- Low temperature rise
- Compact size, cost-effective
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Designed to suppress the DC power surge to achieve primary protection



A2S Chassis Mounting Package

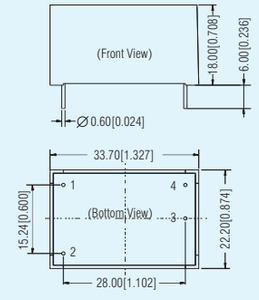

A4S DIN-Rail Mounting Package

## Product Program

| Model Number | Input Voltage Range (VDC) | Nominal Current (A)(max) | Outstanding Features | Certification |
|---|---|---|---|---|
| FS-A01D | 0-40 | 0.6 | Surge: ±2KV/±4KV | RoHS |

Notes: 1. Being used with surge suppressor can meet surge level of IEC/EN61000-4-5 ±2KV (2Ω internal resistance)/±4KV(12Ω internal resistance).
2. Series with suffix "A2S" are chassis mounting, with suffix "A4S" are DIN-Rail mounting.

## Package Dimension LxWxH: 33.70x22.20x18.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | -Vin |
| 2 | +Vin |
| 3 | +Vo |
| 4 | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

# Pulse Group Suppressor Specialized for DC/DC Converter

RoHS

## Features

- Improve pulse group suppressor performance of 0-80V wide input DC/DC converter
- Enable MORNSUN DC/DC converter to meet meet ±4KV requirements of IEC/EN61000-4-4
- Attenuation rate up to 30dB
- Low temperature rise
- Compact size, cost-effective
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Desiged to suppress the DC power interference

A2S Chassis Mounting Package

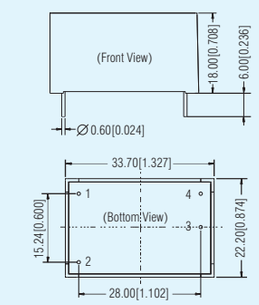

A4S DIN-Rail Mounting Package

## Product Program

| Model Number | Input Voltage Range (VDC) | Nominal Current (A)(max) | Outstanding Features | Certification |
|---|---|---|---|---|
| FT-BX1D | 0-80 | 1.5 | meet ±4KV requirements of pulse group suppressor | RoHS |

Note: Series with suffix"A2S" are chassis mounting, with suffix"A4S" are DIN-Rail mounting.

## Package Dimension LxWxH: 33.70x22.20x18.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | -Vin |
| 2 | +Vin |
| 3 | +Vo |
| 4 | -Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

# 485-AB Bus Surge Protection Module

RoHS

## Features

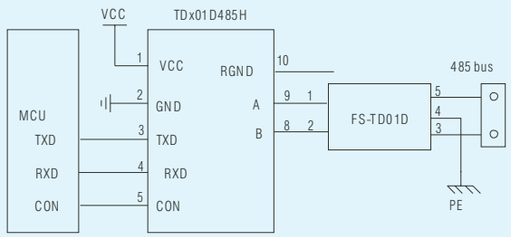
- Suppress signal port lightning surge
- Impact anti - current: ≤1KA (8/20μs simulated lightning waveforms)
- Compact size, cost-effective
- Meet ±2KV/±4KV surge level of IEC/EN61000-4-5


## Product Program

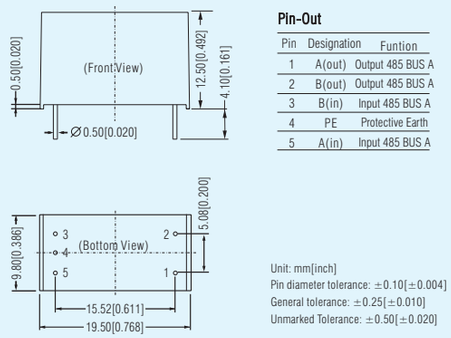
| Model Number | Operating Voltage (VDC) | Clamping Voltage (VDC) | Nominal Current (A) | Data Rate (max) | Certification |
|---|---|---|---|---|---|
| FS-TD01D | 0-5 | 15 | ≤0.1 | ≤115.2kbs | RoHS |

Notes:
1. Enable 485 modules to meet surge level of IEC/EN61000-4-5 ±2KV (2Ω internal resistance)/±4KV(12Ω internal resistance).
2. Customization is acceptable.

## Typical application




## Package Dimension




**Pin-Out**

| Pin | Designation | Funtion |
|---|---|---|
| 1 | A(out) | Output 485 BUS A |
| 2 | B(out) | Output 485 BUS A |
| 3 | B(in) | Input 485 BUS A |
| 4 | PE | Protective Earth |
| 5 | A(in) | Input 485 BUS A |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

# Common Mode Filter

RoHS

## Features

- Low temperature rise
- Compact size

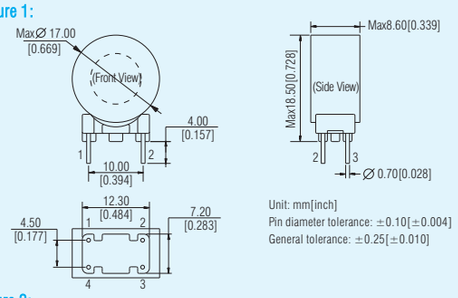
## Product Program

| Model Number | Inductance (μH) | Nominal Current (A) | DCR (mΩ) | Weight (g) | Certification |
|---|---|---|---|---|---|
| FL2D-Z5-103 | 10000*2 | 0.5 | 500*2 | 3.5 | RoHS |
| FL2D-Z5-153 | 15000*2 | 0.5 | 600*2 | 3.5 | |
| FL2D-10-102 | 1000*2 | 1 | 50*2 | 3.5 | |
| FL2D-10-222 | 2200*2 | 1 | 60*2 | 3.5 | |
| FL2D-10-332 | 3300*2 | 1 | 80*2 | 3.5 | |
| FL2D-10-472 | 4700*2 | 1 | 140*2 | 6.5 | |
| *FL2D-10-682 | 6800*2 | 1 | 160*2 | 6.5 | |
| *FL2D-10-822 | 8200*2 | 1 | 180*2 | 6.5 | |
| FL2D-30-102 | 1000*2 | 3 | 40*2 | 3.5 | |
| FL2D-30-222 | 2200*2 | 3 | 42*2 | 3.5 | |

Note: Dimension of model number marked with * please refer to Fig. 2.

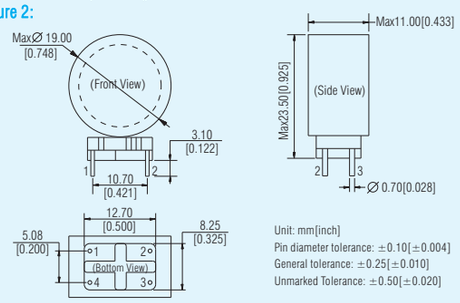
## Package Dimension

Figure 1:




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

Figure 2:




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]



# Isolation Transmitter
# LED Driver
# IGBT Driver

# Single Economical/High Rate/High Isolated RS485 Transceiver Module

RoHS

## Features

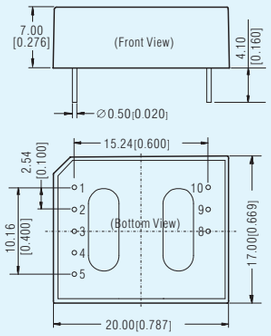
- Operating temperature:-40℃ to +85℃
- Isolation: 2500VDC ( single economical/high rate module)
  3750VAC ( high rate/high isolated module)
- Two-terminal isolation ( input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxD485xx compatible with the UART port of +3.3V
  TD5xxD485xx compatible with the UART port of +5V
- Low power consumption,static current low to 35mA
- ESD protection: IEC/EN61000-4-2 Contact ±4KV perf. Criteria B


## Product Program

| Model Number | Power Supply (VDC) | Data Rate (max) | Nodes | Characteristics | Certification |
|---|---|---|---|---|---|
| TD301D485 | 3.17-3.45 | 0-9.6Kbps | 32 | Economical | RoHS |
| TD501D485 | 4.75-5.25 | 0-9.6Kbps | 32 | Economical | |
| TD301D485H | 3.17-3.45 | 0-200Kbps | 32 | High rate | RoHS CB cULus CE |
| TD501D485H | 4.75-5.25 | 0-200Kbps | 32 | High rate | |
| TD301D485H-A | 3.17-3.45 | 0-115.2Kbps | 32 | Automatic switch | RoHS CE |
| TD501D485H-A | 4.75-5.25 | 0-115.2Kbps | 32 | to send and receive | |
| TD301D485H-E | 3.17-3.45 | 0-500Kbps | 256 | High rate, | RoHS CB cULus CE |
| TD501D485H-E | 4.75-5.25 | 0-500Kbps | 256 | enhanced version | |
| TDH301D485H | 3.17-3.45 | 0-115.2Kbps | 32 | High rate high | RoHS |
| TDH501D485H | 4.75-5.25 | 0-115.2Kbps | 32 | isolated 3750VAC | CE |

Note: 1.If the application requires higher performance for surge, our matching FS-TD01D is available.
2.Customization is acceptable.

## Package Dimension LxWxH: 20.00x17.00x7.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1(VCC) | Input Power+ |
| 2(GND) | GND |
| 3(TXD) | TD_D485H Send Pin |
| 4(RXD) | TD_D485H Receiving Pin |
| 5(CON) | Send & Receiving Control Pin |
| 8(B) | B Pin |
| 9(A) | A Pin |
| 10(RGND) | Isolation Power Output RGND |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

Note:1.TDx01D485H-A has no pin 5(CON).
2.TDHx01D485H Height: 12.80mm.

# Duplex Economical/High Rate Dual Isolation RS485 Transceiver Module

RoHS

## Features

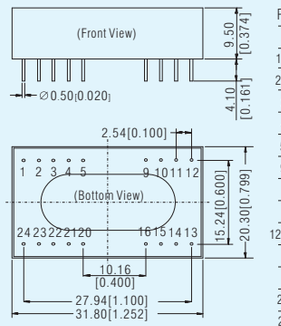
- Operating temperature:-40℃ to +85℃
- Isolation: 2500VDC
- Two-terminal isolation ( input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxP485x compatible with the UART port of +3.3V
  TD5xxP485x compatible with the UART port of +5V
- Low power consumption, low to 30mA
- ESD protection: IEC/EN61000-4-2 Contact ±4KV perf. Criteria B


## Product Program

| Model Number | Power Supply (VDC) | Data Rate (max) | Nodes | Characterisitcs | Certification |
|---|---|---|---|---|---|
| TD312P485 | 3.17-3.45 | 0-9.6Kbps | 32 | Economical | RoHS |
| TD512P485 | 4.75-5.25 | 0-9.6Kbps | 32 | Economical | |
| TD312P485H | 3.17-3.45 | 0-115.2Kbps | 32 | High rate | |
| TD512P485H | 4.75–5.25 | 0-115.2Kbps | 32 | High rate | |
| TD31IP485H | 3.17-3.45 | 0-115.2Kbps | 32 | Channel isolated | |
| TD51IP485H | 4.75-5.25 | 0-115.2Kbps | 32 | Channel isolated | |

Note:1.If the application requires higher performance for surge, our matching FS-TD01D is available
2.Customization is acceptable.

## Package Dimension LxWxH: 31.80x20.30x9.50(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1,24(VCC) | Input Power+ |
| 2,23(GND) | GND |
| 3(TXD1) | Channel1 TD_P485 Send Pin |
| 4(RXD1) | Channel1 TD_P485 Receiving Pin |
| 5(CON1) | Channel 1 Send&Receiving Control Pin |
| 9,16(Vo) | Isolation Power Output +5V |
| 10(A1) | Channel 1 A Pin |
| 11(B1) | Channel 1 B Pin |
| 12,13(RGND) | Isolation Power Output RGND |
| 14(B2) | Channel 2 B Pin |
| 15(A2) | Channel 2 A Pin |
| 20(CON2) | Channel1 Send&Receiving Control Pin |
| 21(RXD2) | Channel2 TD_P485 Receiving Pin |
| 22(TXD2) | Channel1 TD_P485 Send Pin |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

Note:TDx1IP485H output terminals(9,16) are mutually isolated each other.



# Single Economical/ Universal/High Rate CAN Transceiver Module

RoHS

## Features

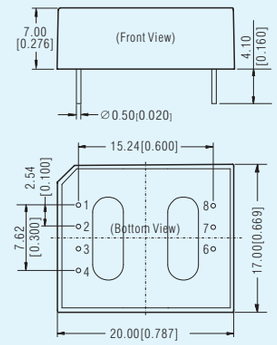
- Operating temperature: -40℃ to +105℃
- Isolation: 2500VDC
- Integrate power isolation, electric isolation, CAN interface and bus protection in one module
- TD3xxDCANxx compatible with the CAN control port of +3.3V
  TD3xxDCANxx compatible with the CAN control port of +5V
- Low power consumption, low to 30mA
- ESD protection(human body discharge:±4KV), complete EMC recommended circuit


## Product Program

| Model Number | Power Supply (VDC) | Data Rate (max) | Nodes | Characterisitcs | Certification |
|---|---|---|---|---|---|
| TD301DCANH3 | 3.0-3.6 | 0-1Mbps | 110 | Economical | RoHS |
| TD501DCANH3 | 4.5-5.5 | 0-1Mbps | 110 | Economical | |
| TD301DCAN | 3.0-3.6 | 0-1Mbps | 110 | Universal | |
| TD501DCAN | 4.5-5.5 | 0-1Mbps | 110 | Universal | |

Note: Customization is acceptable.

## Package Dimension LxWxH: 20.00x17.00x7.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1(VCC) | Input Power+ |
| 2(GND) | GND |
| 3(TXD) | TD_DCAN Send Pin |
| 4(RXD) | TD_DCAN Receiving Pin |
| 6(CANH) | TD_DCAN H Pin |
| 7(CANL) | TD_DCAN L Pin |
| 8(CANG) | Isolation Power Output CANG |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

# Duplex Universal CAN Transceiver Module

RoHS

## Features

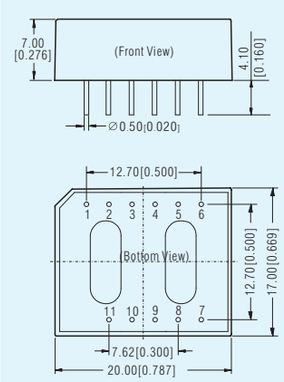
- Operating temperature: -40℃ to +105℃
- Isolation: 2500VDC
- Integrate power isolation,electric isolation, CAN interface and bus protection in one module
- TD3xxDCANxx compatible with the CAN control port of +3.3V
  TD5xxDCANxx compatible with the CAN control port of +5V
- Low power consumption,static current: TD302DCAN≤80mA/TD502DCAN≤50mA
- ESD protection(human body discharge:±4KV), complete EMC recommended circuit


## Product Program

| Model Number | Power Supply (VDC) | Data Rate (max) | Nodes | Certification | Certification |
|---|---|---|---|---|---|
| TD302DCAN | 3.0-3.6 | 0-1Mbps | 110 | Universal | RoHS |
| TD502DCAN | 4.5-5.5 | 0-1Mbps | 110 | Universal | |

Note: Customization is acceptable.

## Package Dimension LxWxH: 20.00x17.00x7.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1(VCC) | Input Power + |
| 2(GND) | GND |
| 3(RXD1) | TD-CAN1 Receiving Pin |
| 4(TXD1) | TD-CAN1 Send Pin |
| 5(RXD2) | TD-CAN2 Receiving Pin |
| 6(TXD2) | TD-CAN2 Send Pin |
| 7(CANH2) | TD-CANH2 Pin |
| 8(CANL2) | TD-CANL2 Pin |
| 9(CANG) | Isolation Power Output CANG |
| 10(CANH1) | TD-CANH1 Pin |
| 11(CANL1) | TD-CANL1 Pin |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

# Single/Duplex High Rate RS232 Transceiver Module

RoHS

## Features

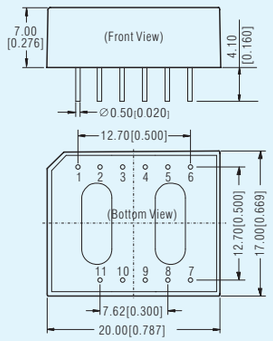
- Operating temperature: -40℃ to +85℃
- Isolation: 2500VDC
- Integrated high effciency isolated power supply
- TD30xD232H compatible with the UART port of +3.3V
- TD50xD232H compatible with the UART port of +5V
  Low power consumption, low to 35mA
- ESD protection(human body discharge:±4KV), complete EMC recommended circuit
- Meet EIA/TIA-232-F standard

## Product Program

| Model Number | Power Supply (VDC) | Data Rate (max) | Nodes | Certification | Certification |
|---|---|---|---|---|---|
| TD302D232H | 3.0-3.6 | 0-115.2Kbps | 2 | High rate | RoHS |
| TD502D232H | 4.5-5.5 | 0-115.2Kbps | 2 | High rate | |
| TD301D232H | 3.0-3.6 | 0-115.2Kbps | 1 | High rate | |
| TD501D232H | 4.5-5.5 | 0-115.2Kbps | 1 | High rate | |

Note: Customization is acceptable.

## Package Dimension LxWxH: 20.00x17.00x7.00(mm) TDx02D232H

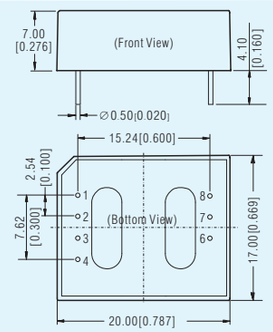



**Pin-Out**

| Pin | Function |
|---|---|
| 1(VCC) | Input Power + |
| 2(GND) | GND |
| 3(TXD1) | TTL/CMOS Input |
| 4(RXD1) | TTL/CMOS Output |
| 5(TXD2) | TTL/CMOS Input |
| 6(RXD2) | TTL/CMOS Output |
| 7(R2IN) | Rs-232 Input |
| 8(T2OUT) | Rs-232 Output |
| 9(R1IN) | Rs-232 Input |
| 10(T1OUT) | Rs-232 Output |
| 11(RGND) | Isolation Power Output RGND |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

## Package Dimension LxWxH: 20.00x17.00x7.00(mm) TDx01D232H




**Pin-Out**

| Pin | Function |
|---|---|
| 1(VCC) | Input Power+ |
| 2(GND) | GND |
| 3(TXD) | TTL/CMOS Input |
| 4(RXD) | TTL/CMOS Output |
| 6(RIN) | Rs-232 Input |
| 7(TOUT) | Rs-232 Output |
| 8(RGND) | Isolation Power Output RGND |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

# Single High Rate CAN Transceiver Module

RoHS

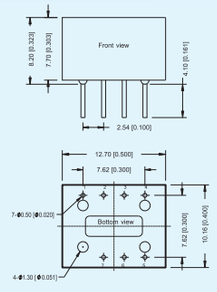
## Features

- Operating temperature: -40℃ to +105℃
- Isolation: 2500VDC
- TD3xxDCANxx compatible with the CAN control port of +3.3V
- TD5xxDCANxx compatible with the CAN control port of +5V
- Low power consumption,static current ≤30mA
- ESD protection(human body discharge: ±4KV), complete EMC recommended circuit
- Ultra small volume standard DIP8 package
- Baud rate up to 5Mbps
- Meet ISO11898-2. ISO11898-5 Standards

## Product Program

| Model Number | Input power (VDC) | Data Baud (bps) | Quiescent current(mA) | Operating current(max) | Bus voltage (max) | Nodes | Certification |
|---|---|---|---|---|---|---|---|
| TD301MCAN | 3.15~3.45V | 40K~1M | 30 | 60 | ±58V | 110 | RoHS |
| TD501MCAN | 4.75~5.25V | 40K~1M | 24 | 50 | ±58V | 110 | |
| TD301MCANFD | 3.15~3.45V | 40K~5M | 30 | 60 | ±58V | 110 | |
| TD501MCANFD | 4.75~5.25V | 40K~5M | 24 | 50 | ±58V | 110 | |

## Package Dimension LxWxH: 12.70x10.16x7.70(mm)




| Pin | Designation | Function |
|---|---|---|
| 1 | RXD | Receiving Pin |
| 2 | TXD | Send Pin |
| 3 | GND | GND |
| 4 | VCC | Input Power+ |
| 5 | CANG | Isolation Power Output CANG |
| 6 | CANL | CANL Pin |
| 7 | CANH | CANH Pin |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

• This catalog is used to introduce our latest products, for more information, please contact our sales department



# Active High Precision Positive Signal Conditioning Module

CE RoHS

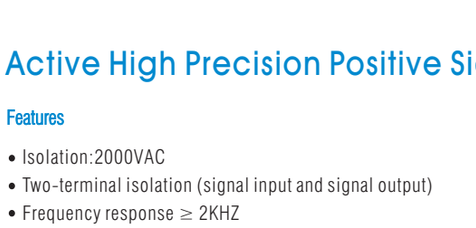
## Features

- Isolation:2000VAC
- Two-terminal isolation (signal input and signal output)
- Frequency response ≥ 2KHZ
- Gain adjustment and zero adjustment function
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃(within -40℃ to +85℃)

## Product Program

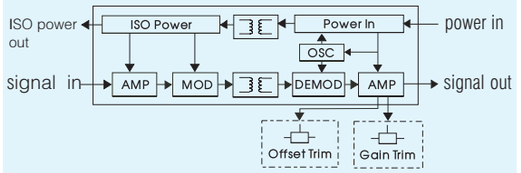
| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TE1530N | 24 | 4-20mA | 0-10V | None | RoHS CE |
| TE1533N | 24 | 4-20mA | 0-10V | 24V | |
| TE1550N | 12 | 4-20mA | 0-10V | None | |
| TE1630N | 24 | 4-20mA | 0-5V | None | |
| TE1633N | 24 | 4-20mA | 0-5V | 24V | |
| TE1660N | 5 | 4-20mA | 0-5V | None | |
| TE5534N | 24 | 0-10V | 0-10V | 15V | |
| TE5544N | 15 | 0-10V | 0-10V | 15V | |
| TE5634N | 24 | 0-10V | 0-5V | 15V | |
| TE6634N | 24 | 0-5V | 0-5V | 15V | |
| TE6654N | 12 | 0-5V | 0-5V | 15V | |
| TE6664N | 5 | 0-5V | 0-5V | 15V | |
| TE5530AN | 24 | ±10V | 0-10V | None | |
| TE5650AN | 12 | ±10V | 0-5V | None | |
| TE6630AN | 24 | ±5V | 0-5V | None | |

## Wiring Diagram TE_AN//CN Series




Note:
1. Pin 16, 17 and 18 are internal test ones and cannot have any electrical connection to an external circuit.

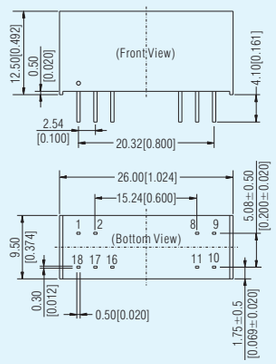
## Schematic diagram TE_N Series




## Product Program

| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TE5540CN | ±15 | ±10V | ±10V | None | RoHS CE |
| TE5550CN | ±12 | ±10V | ±10V | None | |
| TE6640CN | ±15 | ±5V | ±5V | None | |
| TE6650CN | ±12 | ±5V | ±5V | None | |
| TEM5630AN | 24 | ±75mV | 0-5VDC | None | |
| TEM6650AN | 12 | ±75mV | 0-5VDC | None | |
| TEM6640AN | 15 | ±100mV | 0-5VDC | None | |
| TEM4540CN | 15 | ±50mV | ±10VDC | None | |
| TEM6540CN | 15 | ±100mV | ±10VDC | None | |
| TEM6640CN | 15 | ±100mV | ±5VDC | None | |
| TEM7650CN | 12 | ±200mV | ±5VDC | None | |

## Package Dimension LxWxH: 26.00x9.50x12.50(mm) TE_AN/CN Series

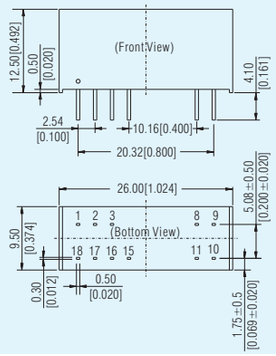



**Pin-Out**

| Designation | Function |
|---|---|
| 1(Sin+) | Signa input(+) |
| 2(Sin-) | Signa intput(-) |
| 8(Sout−) | Signal output(-) |
| 9(Sout+) | Signal output(+) |
| 10(Pin+) | Power supply(+) |
| 11(GND) | Distribution GND |
| | Others:NC |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

## Package Dimension LxWxH: 26.00x9.50x12.50(mm) TE_N Series




**Pin-Out**

| Designation | Function |
|---|---|
| 1(Sout+) | Signa output(+) |
| 2(Sout-) | Signa output(-) |
| 3(SG) | Gain regulation |
| 8(Sin-) | Singnal input(-) |
| 9(Sin+) | Singnal input(+) |
| 10(Pout+) | Isolation power output(+) |
| 11(Pout-) | Isolation power output(-) |
| *15(ZR) | Zero auxiliary regulation |
| 16(SZ) | Zero regulation |
| 17(Pin-) | Power input(-) |
| 18(Pin+) | Power input(+) |

*Note:the power supply of 24V withou 15 Pin
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# Active High Precision Output Signal Conditioning Module

RoHS

## Features

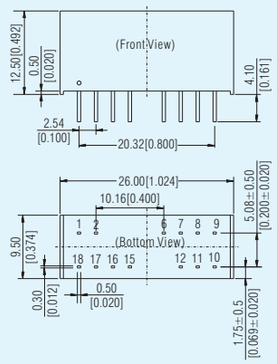
- Isolation: 2000VAC
- Two-terminal isolation (signal input and signal output)
- Frequency response ≥ 2KHZ
- Gain adjustment and zero adjustment function
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃(within −40℃ to +85℃)

## Product Program

| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TF5134N | 24 | 0-10V | 4-20mA | 15V | RoHS CE |
| TF5234N | 24 | 0-10V | 0-20mA | 15V | |
| TF5534N | 24 | 0-10V | 0-10V | 15V | |
| TF5554N | 12 | 0-10V | 0-10V | 15V | |
| TF5634N | 24 | 0-10V | 0-5V | 15V | |
| TF6134N | 24 | 0-5V | 4-20mA | 15V | |
| TF6234N | 24 | 0-5V | 0-20mA | 15V | |
| TF6254N | 12 | 0-5V | 0-20mA | 15V | |
| TF6664N | 5 | 0-5V | 0-5V | 15V | |
| TF6550GN | 12 | 0-5V | -10V～+10V | / | |

Note:customization is acceptable.

## Package Dimension LxWxH: 26.00x9.50x12.50(mm)

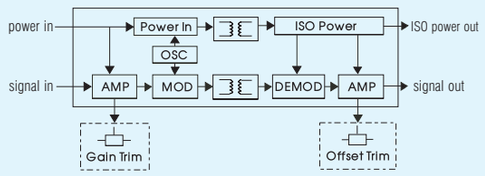



**Pin-Out**

| Pin | Function |
|---|---|
| 1(Sout+) | Signal output(+) |
| 2(Sout-) | Signal output(-) |
| 6(GR) | Gain auxiliary regulation |
| 7(SG) | Gain regulation |
| 8(Sin-) | Singnal input(-) |
| 9(Sin+) | Singnal input(+) |
| 10(Pin+) | Power input(+) |
| 11(Pin-) | Power input(-) |
| 12 | No connection |
| 15(ZR) | Zero auxiliary regulation |
| 16(SZ) | Zero regulation |
| 17(Pout-) | Isolation power output(-) |
| 18(Pout+) | Isolation power output(+) |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

## Schematic diagram




# Active High Precision PWM input Signal Conditioning Module

CE RoHS

## Features

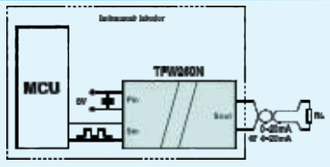
- Two-terminal isolation (signal input and signal output)
- High linearity (0.1% F.S.)
- Isolation voltage (2KVAC/60s)
- Low ripple & noise: (≤30mVpp.TYP, 20MHz)
- Compact size: DIP18 (26*9.5*12.5mm)
- ESD protection (IEC/EN61000-4-2 Contact ±4KVperf. Criteria B)

## Product Program

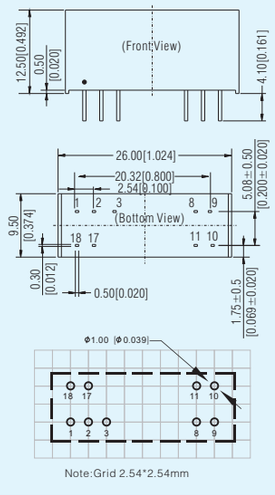
| Model Number | Power Supply (VDC) | Input Signal(%) | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TFW260N | 5V | 0-100 | 0-20mA | None | CE |
| TFW560N | 5V | 0-100 | 0-10V | None | RoHS |

Note: Over nominal loop power voltage may damage modules.

## Application Circuit Diagram




## Package Dimension LxWxH: 26.00x9.50x12.50(mm)




Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

Pin-out

| Pin | Function |
|---|---|
| 1(Sout+) | Signal output(+) |
| 2(Sout−) | Signal output(-) |
| 3(NC) | No Connection |
| 8(Sin−) | Signal input(-) |
| 9(Sin+) | Signal input (+) |
| 10(Pin+) | Power input(+) |
| 11(Pin-) | Power input(-) |
| 17(NC) | No Connection |
| 18(NC) | No Connection |



# Active High Precision (mV-class input) Signal Conditioning Module

RoHS

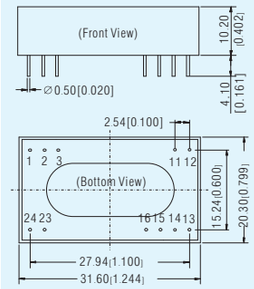
## Features

- Three-terminal isolation
- High precision & linearity: 0.1%F.S
- Isolation: 2500VDC
- Extremely low temperature coefficient: 50PPM/℃(within -25℃to+71℃)
- Low cost, compact package, high reliability , convenient to use

## Product Program

| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TM1130P | 24 | 0-10 mV | 4-20mA | None | RoHS |
| TM3130P | 24 | 0-30mV | 4-20mA | None | |
| TM4150P | 12 | 0-50mV | 4-20mA | None | |
| TM3650P | 12 | 0-30mV | 0-5V | None | |
| TM4530P | 24 | 0-50mV | 0-10V | None | |
| TM4630P | 24 | 0-50mV | 0-5V | None | |
| TM4650P | 12 | 0-50mV | 0-5V | None | |
| TM4660P | 5 | 0-50mV | 0-5V | None | |
| TM4S50P-2.5 | 12 | 0-50mV | 0-2.5V | None | |
| TM5530P | 24 | 0-75mV | 0-10V | None | |
| TM5630P | 24 | 0-75mV | 0-5V | None | |
| TM5650P | 12 | 0-75mV | 0-5V | None | |
| TM6530P | 24 | 0-100mV | 0-10V | None | |
| TM6630P | 24 | 0-100mV | 0-5V | None | |
| TM2130AP | 24 | ±20mV | 4-20mA | None | |
| TM4130AP | 24 | ±50mV | 4-20mA | None | |
| TM1630AP | 24 | ±10mV | 0-5V | None | |
| TM5630AP | 24 | ±75mV | 0-5V | None | |
| TM6660AP | 5 | ±100mV | 0-5V | None | |
| TM6S6AP-3 | 5 | ±100mV | 0-3V | None | |
| TM7530AP | 24 | ±200mV | 0-10V | None | |
| TM6650AP | 12 | ±100mV | 0-5V | None | |
| TM6S50AP-3.3 | 12 | ±100mV | 0-3.3V | None | |
| TM1630CP | 24 | ±10mV | ±5V | None | |
| TM2630CP | 24 | ±20mV | ±5V | None | |
| TM4530CP | 24 | ±50mV | ±10V | None | |
| TM4630CP | 24 | ±50mV | ±5V | None | |
| TM5530CP | 24 | ±75mV | ±10V | None | |
| TM5630CP | 24 | ±75mV | ±5V | None | |
| TM6530CP | 24 | ±100mV | ±10V | None | |
| TM6630CP | 24 | ±100mV | ±5V | None | |
| TM7650CP | 12 | ±200mV | ±5V | None | |

## Package Dimension LxWxH: 31.60x20.30x10.20(mm)

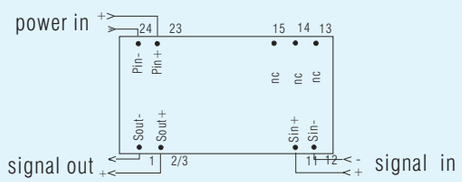



Pin-Out

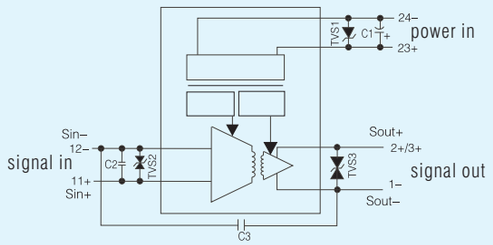
| Pin | Vo | Io | Function |
|---|---|---|---|
| 1 | Sout- | Sout- | Signal output(-) |
| 2 | NC | Sout+ | Signal output(+) |
| 3 | Sout+ | NC | Signal output(+) |
| 11 | Sin+ | Sin+ | Singnal input(+) |
| 12 | Sin- | Sin- | Singnal input(-) |
| 13,14 | NC | NC | no connection |
| 15,16 | NC | NC | no connection |
| 23 | Pin+ | Pin+ | Power supply(+) |
| 24 | Pin- | Pin- | Power supply(-) |

NC: no connection.
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

## Wiring Diagram




## EMC solution-recommended ciruit TM_P Series



## Active High Precision Signal Conditioning Module

RoHS

### Features

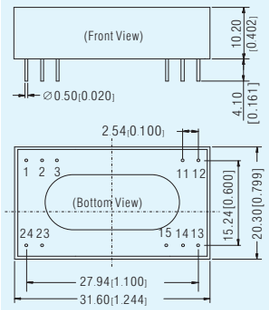
- Isolation: 2500VDC
- Four-terminal isolation
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃ (within -40℃ to +85℃)
- Low cost, compact package, high reliability , convenient to use

### Product Program

| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| T1130P | 24 | 4-20mA | 4-20mA | None | RoHS |
| T1133P | 24 | 4-20mA | 4-20mA | 24V | |
| T1533P | 24 | 4-20mA | 0-10V | 24V | |
| T2233P | 24 | 0-20mA | 0-20mA | 24V | |
| T5133P | 24 | 0-10V | 4-20mA | 24V | |
| T5530P | 24 | 0-10V | 0-10V | None | |
| T6130P | 24 | 0-5V | 4-20mA | None | |
| T5130AP | 24 | ±10V | 4-20mA | None | |
| T5530AP | 24 | ±10V | 0-10V | None | |
| T5533AP | 24 | ±10V | 0-10V | 24V | |
| T5650AP | 12 | ±10V | 0-5V | None | |
| T6130AP | 24 | ±5V | 4-20mA | None | |
| T6630AP | 24 | ±5V | 0-5V | None | |
| T6633AP | 24 | ±5V | 0-5V | 24V | |

Note: Customization is acceptable.

### Package Dimension LxWxH: 31.60x20.30x10.20(mm)

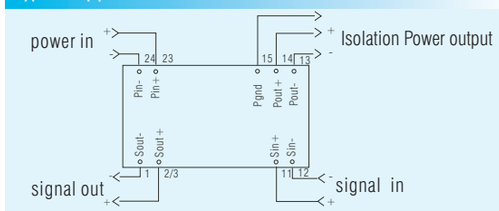



Pin-Out

| Pin | Vo | Io | Function |
|---|---|---|---|
| 1 | Sout- | Sout- | Signal output(-) |
| 2 | No Pin | Sout+ | Signal output(+) |
| 3 | Sout+ | No Pin | Signal output(+) |
| 11 | Sin+ | Sin+ | Singnal input(+) |
| 12 | Sin- | Sin- | Singnal input(-) |
| 13 | Pout- | Pout- | Isolation power output- |
| 14 | Pout+ | Pout+ | Isolation power output+ |
| 15 | NC | NC | No Connection |
| 23 | Pin+ | Pin+ | Power supply(+) |
| 24 | Pin- | Pin- | Power supply(-) |

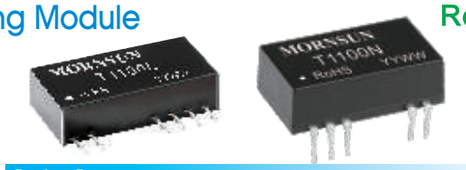
NC: No function pin.
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

### Typical application




## Passive High Precision Signal Conditioning Module

RoHS



### Features

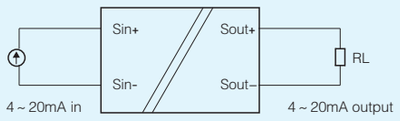
- Isolation: 3000VDC
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 35PPM/℃
- Low voltage-drop: ≤ 3V (20mA input)
- High reliability(MTBF>500,000 hours)

### Product Program

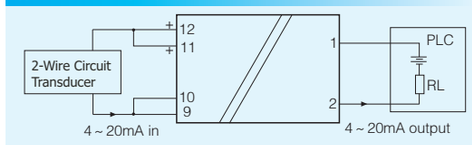
| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Channel | Certification |
|---|---|---|---|---|---|---|
| T1100L | None | 4-20mA | 4-20mA | None | 1 | RoHS |
| T1100N | None | 4-20mA | 4-20mA | None | 1 | |
| T1100NS | None | 4-20mA | 4-20mA | None | 1 | |
| T1100L-F | None | 4-20mA | 4-20mA | None | 1 | |

Note: Over nominal loop power voltage may damage modules.

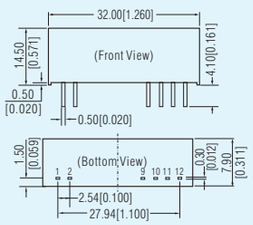
### Application Circuit Diagram T1100L/ N Series




### Application Circuit Diagram(Loop Power) T1100L–F Series




### Product Program LxWxH: 32.00x7.90x14.50(mm) T1100L/L-F

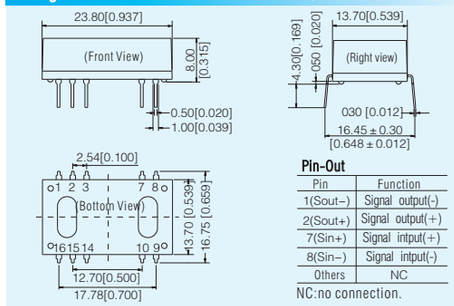



Pin-Out

| Pin | Function |
|---|---|
| 1(Iin+) | Signal intput(+) |
| 2(Iin-) | Signal intput(-) |
| 9,10(Iout-) | Signal output(-) |
| 11,12(Iout+) | Signal output(+) |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

### Package Dimension LxWxH: 23.80×16.75×8.00((mm) T1100N




Pin-Out

| Pin | Function |
|---|---|
| 1(Sout-) | Signal output(-) |
| 2(Sout+) | Signal output(+) |
| 7(Sin+) | Signal intput(+) |
| 8(Sin-) | Signal intput(-) |
| Others | NC |

NC:no connection.

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004] General tolerances: ±0.25[±0.010]

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## Two-wire Loop Power Supply Signal Conditioning Module(with HART)

RoHS

### Features

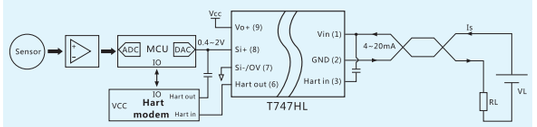
- 4-20mA output loop stealing, 3.3V regulated output(loop power)
- Isolation: 2000VAC/1mA/60s
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃
- Convert digital signal(PWM) into 4-20mA
- HART compatible

### Product Program

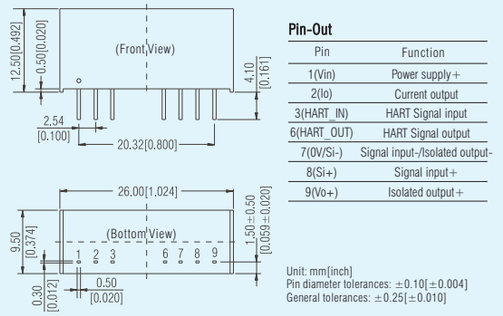
| Model Number | Loop Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| T797HL | 15-24V | 0-2.5V | 3.7-22mA | 3.3V | RoHS CE |
| T747HL | 10-24V | 0-2.5V | 3.7-22mA | 3.3V | |
| T747L | 10-24V | 0-2.5V | 3.7-22mA | 3.3V | |
| TW147HL | 10-24V | 0-100% | 4-20mA | 3.3V | |

Note: Customization is acceptable.

### Application with HART




### Package Dimension LxWxH: 26.00x9.50x12.50(mm)




Pin-Out

| Pin | Function |
|---|---|
| 1(Vin) | Power supply+ |
| 2(Io) | Current output |
| 3(HART_IN) | HART Signal input |
| 6(HART_OUT) | HART Signal output |
| 7(0V/Si-) | Signal input-/Isolated output- |
| 8(Si+) | Signal input+ |
| 9(Vo+) | Isolated output+ |

Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

## Active Detection Type RTD Signal Conditioning Module

RoHS

### Features

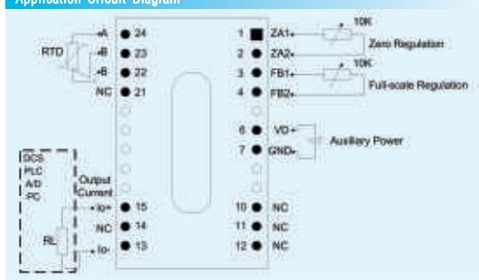
- Two-wire, three-wire, four-wire pt100 RTD signal
- Isolation: 2000VAC
- High precision & linearity: 0.2%F.S
- Extremely low temperature drift: 50PPM/℃(Typ., within -40℃ to +85℃)
- International standard signal output: 4-20mA/0-5V/0-10V etc.
- Low cost, compact package, high reliability , convenient to use

### Product Program

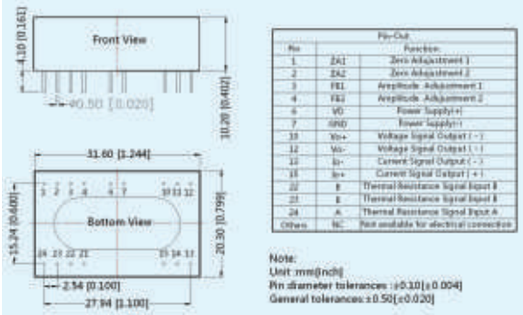
| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TRP16130P | 24 | Pt100(0-200℃) | 4-20mA | None | RoHS CE |
| TRP15130P | 24 | Pt100(0-100℃) | 4-20mA | None | |
| TRP18130P | 24 | Pt100(–50-150℃) | 4-20mA | None | |
| TRP16150P | 12 | Pt100(0-200℃) | 4-20mA | None | |

Note: Customization is acceptable.

### Application Cricuit Diagram




### Package Dimension LxWxH: 31.60×20.30×10.20(mm)




Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

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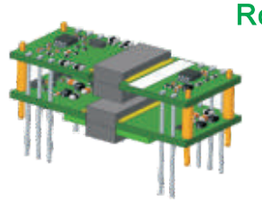
# Active High Precision High Isolation Signal Conditioning Module

RoHS

## Features

- Suitable for eletric power and railway applications
- Planar transformer bare board technology
- Isolation: 4000VAC/60s
- Two-terminal isolation (signal input and signal output)
- Low ripple & noise: ⩽35mVpp (20MHz)
- Extremely low temperature drift: ⩽50PPM/℃(within -40℃ to +85℃)



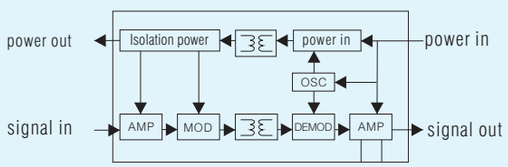
Note:design sketch for your reference.

## Product Program

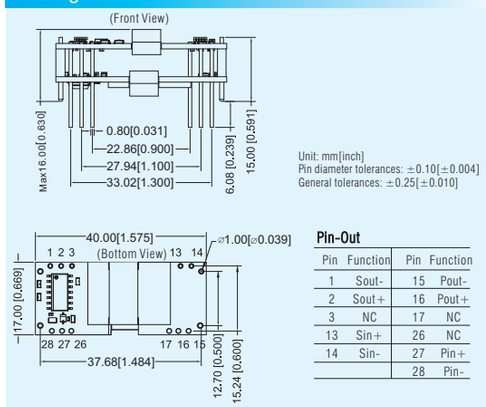
| Model Number | Power Supply (VDC) | Input Signal | Output Signal | Isolation Power Output | Certification |
|---|---|---|---|---|---|
| TE6650HN | 12 | 0-5V | 0-5V | None | RoHS |

Note: Customization is acceptable.

## Schematic diagram




## Package Dimension




Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

**Pin-Out**

| Pin | Function | Pin | Function |
|---|---|---|---|
| 1 | Sout- | 15 | Pout- |
| 2 | Sout+ | 16 | Pout+ |
| 3 | NC | 17 | NC |
| 13 | Sin+ | 26 | NC |
| 14 | Sin- | 27 | Pin+ |
| | | 28 | Pin- |

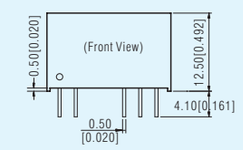
# DC/DC Converter Specialized for SiC MOSFET Driver

RoHS

## Features

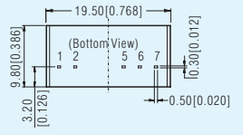
- Operating temperature:-40℃ to +105℃
- Isolation: 3500VAC/6000VDC
- Efficiency up to 83%
- Extremely low isolation capacitance: 3.5pF
- Continuous short-circuit protection
- DC/DC converter for SiC MOSFET Driver
- International standand pinout
- UL/EN/IEC 60950 approval

## Package Dimension LxWxH: 19.50x9.80x12.50(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 2 | GND |
| 5 | -Vo |
| 6 | 0V |
| 7 | +Vo |




Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

## Product Program

| Model Number | Nominal Input Voltage (VDC) | Nominal(Range) | Positive Output (VDC) | Negative Output (VDC) | Output current(mA) | Efficiency | Isolation(VAC) |
|---|---|---|---|---|---|---|---|
| QA01C | 15 | 13.5-16.5 | +20 | -4 | +100/-100 | 83% | 3500 |
| QA1201C-20 | 12 | 10.8-13.2 | +20 | -4 | +100/-100 | 80% | 3500 |



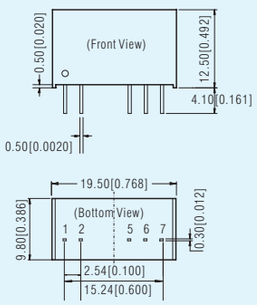
# DC/DC Converter for IGBT Driver

CB RoHS

## Features

- Operating temperature:-40℃ to +105℃
- Efficiency up to 81%
- Isolation: 3000VAC
- Low isolation capacitance
- No-load operation allowed
- Ultra-miniature SIP package

## Package Dimension LxWxH: 19.50x9.80x12.50(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Vin |
| 2 | GND |
| *5 | -Vo |
| 6 | 0V |
| 7 | +Vo |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

## Product Program

| Model Number | Nominal Input Voltage(VDC) | Input Voltage Range (VDC) | Positive Output (VDC) | Negative Output (VDC) | Output current(mA) | Efficiency | Max. Capacitive Load( μ F) | Certification |
|---|---|---|---|---|---|---|---|---|
| QA01 | 15 | 14.5-15.5 | +15 | -8.7 | +80/-40 | 80% | 220 | CB RoHS |
| QA02 | 12 | 11.6-12.4 | +15 | -8.7 | +80/-40 | 80% | 220 | |
| QA03 | 24 | 23.3-24.7 | +15 | -8.7 | +80/-40 | 80% | 220 | |
| QA04 | 12 | 9-15 | +15 | -8 | +100/-80 | 80% | 220 | |
| QA121 | 12 | 11.4-12.6 | +15 | -8 | +120/-120 | 81% | 1000 | RoHS |
| QA151 | 15 | 14.25-15.75 | +15 | -8 | +120/-120 | 81% | 1000 | |
| QA241 | 24 | 22.8-25.2 | +15 | -8 | +120/-120 | 81% | 1000 | |

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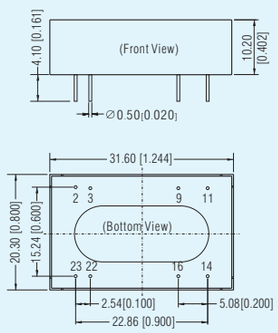
# Great Power DC/DC Converter Specialized for IGBT Driver

RoHS

## Features

- Operating temperature:-40℃ to +85℃
- High isolation:12000VDC
- Extremely low isolation capacitance:3pF
- Efficiency up to 87%
- 2:1Wide input voltage range(QAW series)
- DIP package
- Continuous short-circuit and input under-voltage protection, self-recovery

## Package Dimension LxWxH: 31.60x20.30x10.20(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 2,3 | GND |
| 9 | 0V |
| 11 | -Vo |
| 14 | +Vo |
| 16 | 0V |
| 22,23 | Vin |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

## Product Program

| Model Number | Input Voltage(VDC) | Nominal(Range) | Positive Output (VDC) | Negative Output (VDC) | Output current(mA) | Efficiency | Isolation | Certification |
|---|---|---|---|---|---|---|---|---|
| QAW01 | 12 | 9-18 | +15 | -9 | +200/-200 | 85% | 3000VDC | RoHS |
| QAW02 | 24 | 18-36 | +15 | -9 | +200/-200 | 85% | 3000VDC | |
| QA152D | 15 | 13.5-16.5 | +15 | -9 | +200/-200 | 87% | 4000VAC | |
| QA156D-24 | 15 | 13.5-16.5 | +24 | / | 150/15 | 80% | 12000VDC | |

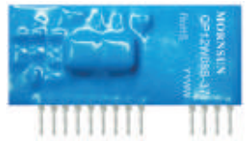
• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# Hybrid Integrated IGBT Driver(Built-in Isolated DC/DC Converter)

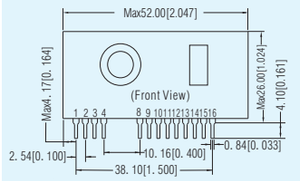
RoHS

## Features

- Built-in DC/DC isolated power supply, single power supply required
- Isolation: 3750VAC
- Switching frequency up to 20KHz
- Short-circuit and fault feedback function
- Output cut-off after short circuit protection occurs and timing reset
- Adjustable fault detection rejection time (dead zone)
- Adjustable soft-off time



## Product Program LxWxH: 52.00x26.00x15.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Power supply+ |
| 2 | Power supply- |
| 3 | Drive signal input+ |
| 4 | Drive signal input- |
| 8 | DC/DC converter output+ |
| 9 | DC/DC converter output(COM) |
| 10 | DC/DC converter output- |
| 11 | Drive output |
| 12 | Collector of internal power tube |
| 13 | Detect of short circuit |
| 14 | Adjustment of Soft turn-off time |
| 15 | Fault signal output |
| 16 | Adjustment of short-circuit detection time delay |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

## Product Program

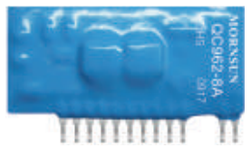
| Model Number | Nominal Input Voltage (VDC) | Input Voltage Range(VDC) | VOH(VDC) | VOL(VDC) | Output Peak Current(A) | Switching Frequency (Max.) (KHz) | Isolation(VAC) | Certification |
|---|---|---|---|---|---|---|---|---|
| QP12W08S-37 | 15 | 14.5-15.5 | 15 | -9 | ±8 | 20 | 3750 | RoHS |

# Hybrid Integrated IGBT Driver

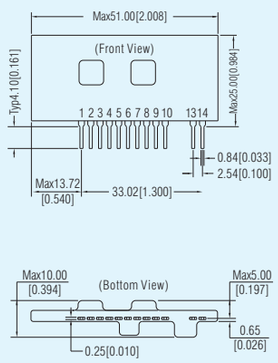
RoHS

## Features

- Built-in high CMRR opto-coupler(CMRR: Typ: 30KV/μs, Min.: 15KV/μs)
- High isolation (3750VRMS/min)
- Short-circuit and fault out function
- Output soft-off when over current occurs and timing reset
- Adjustable short-circuit detection rejection time (dead zone)
- Switching frequency up to 40KHz
- Suitable for 600V/600A,1200V/400A and 1700V/200A series of IGBT modules
- Pin and characteristics compatible with M57962AL



## Product Program LxWxH: 51.00x25.00x10.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | Fault detect |
| 2 | Reaction time |
| 4 | Power supply+ |
| 5 | Drive output |
| 6 | Power supply- |
| 7 | Potective threshold adjustment |
| 8 | Fault signal output |
| 13 | Drive signal input- |
| 14 | Drive signal input+ |
| 3,9,10 | NC |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

## Product Program

| Series | Positive input Voltage(VDC) | Negative input Voltage(VDC) | Output High-level Voltage VOH(VDC) | Output Low-level Voltage VOL(VDC) | Max. Driving Current (A) | Max.Frequency (KHz) | Isolation | Certification |
|---|---|---|---|---|---|---|---|---|
| QC962-8A | 15 | -10 | +14 | -9 | ±8 | 40 | 3750VAC | RoHS |



# Ultra-thin Analog Signal Isolator

## Features

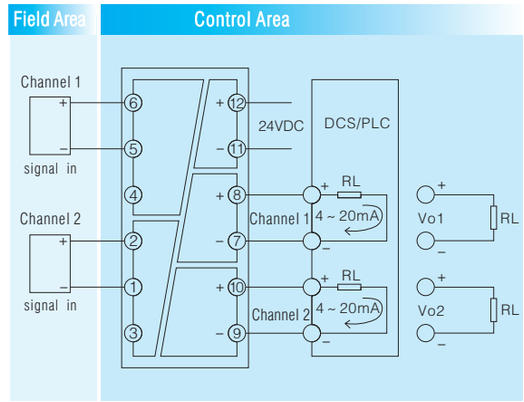
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Isolation: 2000VAC/3000VDC(testing for 1Min, humidity＜70%, leakage current ＜1mA)
- Input, output and power supply are mutually isolated from each other
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

Bottom power supply port

## Product Program

| Model Number | Input Voltage Range(VDC) | Input Signal | Output Signal | Channel |
|---|---|---|---|---|
| TA100W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, | 1 in 1 out |
| TA140W-XX | | 0/1-5V; 0/2-10V | 0/1-5V; 0/2-10V | |
| TA600W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, | 1 in 2 out |
| TA640W-XX | | 0/1-5V; 0/2-10V | 0/1-5V; 0/2-10V | |
| TA200W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, | 2 in 2 out |
| TA240W-XX | | 0/1-5V; 0/2-10V | 0/1-5V; 0/2-10V | |

Wiring Diagram




Note: above is wiring diagram of 2-wire circuit. Series with 1 in 2 out only connect input terminal with Channel 1, with 1 in 1 out connect input terminal and output terminal with Channel 1.

# Ultra-thin Analog Signal Isolator

## Features

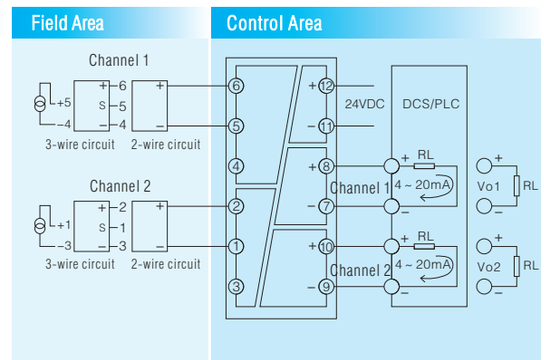
- Operating temperature: -25℃ to +71℃
- Input, output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Isolation: 2000VAC(testing for 1Min, humidity ＜70%, leakage current＜1mA)
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

Bottom power supply port

## Product Program

| Model Number | Input Voltage Range(VDC) | Input Signal | Output Signal | Channel |
|---|---|---|---|---|
| TA105W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, 0/1-5V; 0/2-10V | 1 in 1 out |
| TA605W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, 0/1-5V; 0/2-10V | 1 in 2 out |
| TA205W-XX | 18-30VDC | 0/4-20mA | 0/4-20mA, 0/1-5V; 0/2-10V | 2 in 2 out |

Wiring Diagram




Note: above is wiring diagram of 2-wire circuit. Series with 1 in 2 out only connect input terminal with Channel 1, with 1 in 1 out connect input terminal and output terminal with Channel 1.

# Ultra-thin Passive Signal Isolator

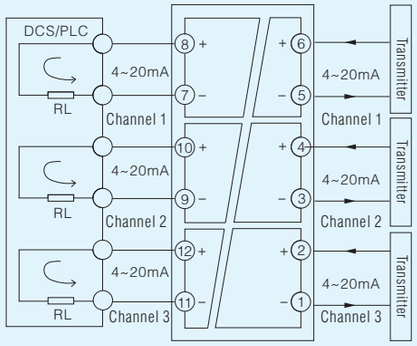
## Features

- Operating temperature:-25℃ to +71℃
- Isolation: 3000VAC/3000VDC(testing for 1Min, humidity<70%, leakage current<5mA)
- Precision: 0.1% F.S.
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

## Product Program

| Model Number | Input Signal | Output Signal | Channel |
|---|---|---|---|
| TA106W-11 | 4-20mA | 4-20mA | 1 in 1 out |
| TA206W-11 | 4-20mA | 4-20mA | 2 in 2 out |
| TA306W-11 | 4-20mA | 4-20mA | 3 in 3 out |

## Wiring Diagram for Current Source Application



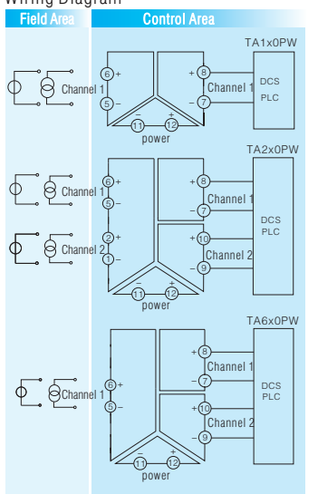

# Ultra-thin Programmable Analog Signal Isolator

Bottom power supply port

## Features

- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC/3000VDC(1Min, humidity<70%, leakage current<5mA)
- Input,output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Temperature drift: 35PPM/℃(within -25℃ to +71℃ )
- Radiated immunity: 10V/m

## Wiring Diagram




## Product Program

| 1 in 1 out | 2 in 2 out | 1 in 2 out | Input Voltage Range | Input Signal | Output Signal |
|---|---|---|---|---|---|
| TA100PW | TA200PW | TA600PW | 18-30VDC | 0/4-20mA(Programmable) | 0/4-20mA(Programmable) |
| TA120PW | TA220PW | TA620PW | 18-30VDC | 0/4-20mA(Programmable) | 0/1-5V, 0/2-10V(Programmable) |
| TA130PW | TA230PW | TA630PW | 18-30VDC | 0/1-5V, 0/2-10V(Programmable) | 0/1-5V, 0/2-10V(Programmable) |
| TA140PW | TA240PW | TA640PW | 18-30VDC | 0/1-5V, 0/2-10V(Programmable) | 0/4-20mA(Programmable) |

Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable for special requirements.
2. The ancillary USB adapter model is T-01, please contact our sales department.



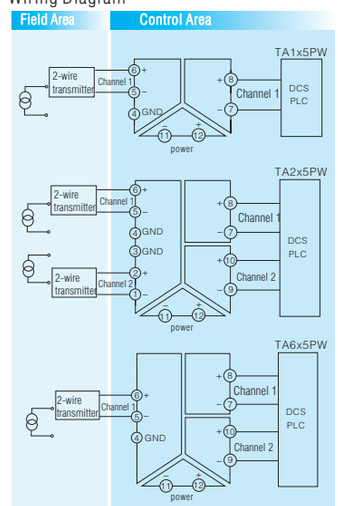
# Ultra-thin Programmable Analog Signal Isolator

Bottom power supply port

## Features

- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC/3000VDC(testing for 1Min, humidity<70%,leakage current<5mA)
- Input,output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

## Wiring Diagram




## Product Program

| 1 in 1 out | 2 in 2 out | 1 in 2 out | Input Voltage Range | Input Signal | Output Signal |
|---|---|---|---|---|---|
| TA105PW | TA205PW | TA605PW | 18-30VDC | 0-20mA(Programmable)<br>4-20mA(Programmable) | 0-20mA(Programmable)<br>4-20mA(Programmable) |
| TA125PW | TA225PW | TA625PW | 18-30VDC | 0-20mA(Programmable)<br>4-20mA(Programmable) | 0-5V(Programmable)<br>0-10V(Programmable)<br>1-5V(Programmable)<br>2-10V(Programmable) |

Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable for special requirements.
2. The ancillary USB adapter model is T-01, please contact our sales department.

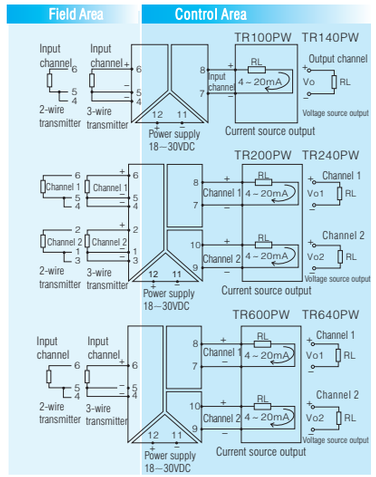
# Ultra-thin Programmable RTD Signal Isolator

Bottom power supply port

## Features

- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current <5mA)
- Input,output and power supply are mutually isolated from each other
- Precision: 0.1% F.S./Max.(0.5℃)
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

## Wiring Diagram




## Product Program

| TR1x0PW<br>TR6x0PW<br>TR2x0PW | Descriptions | | |
|---|---|---|---|
| | Type of Signal | Measuring Range | Measuring(Min.) |
| Input Signal | Pt100 | -200 to +850℃ | 50℃ |
| | Cu50 | -50 to+150℃ | 50℃ |
| | Cu100 | -50 to+150℃ | 50℃ |
| output signal | Output Current | 0/4 to 20mA(Programmable) | |
| | Output Voltage | 0/1 to 5V; 0/2 to 10V(Programmable) | |

Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable.
2. The ancillary USB adapter model is T-01, please contact our sales department.

# Ultra-thin Programmable RTD Signal Isolator with Perfect EMC Performance

## Features

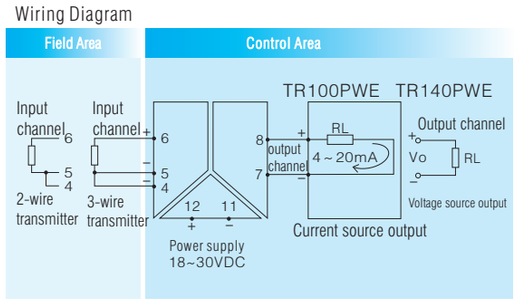
- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current <1mA)
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃ (within -25℃ to +71℃)
- Radiated immunity: 10V/m

## Product Program

| TR100x0PWE TR140x0PWE | Descriptions | | |
|---|---|---|---|
| | Type of Signal | Measuring Range | Measuring(Min.) |
| Input Signal | Pt100 | -200 to +850℃ | 50℃ |
| | Cu50 | -50 to +150℃ | 50℃ |
| | Cu100 | -50 to +150℃ | 50℃ |
| output signal | Output Current | 0/4-20mA(Programmable) | |
| | Output Voltage | 0/1-5V; 0/2-10V(Programmable) | |

Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable.
2. The ancillary USB adapter model is T-01, please contact our sales department.

Wiring Diagram




# Ultra-thin Programmable Thermocouple Signal Isolator

## Features

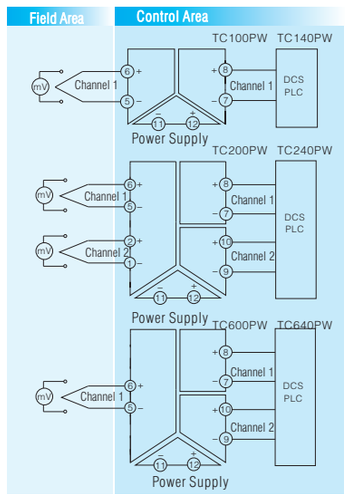
- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC/3000VDC(testing for 1Min, humidity<70%,leakage current <5mA)
- Input,output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

## Product Program

| Type of Output | 1 in 1 out | 2 in 2 out | 1 in 2 out |
|---|---|---|---|
| Model Number | TC100PW | TC200PW | TC600PW |
| | TC140PW | TC240PW | TC640PW |
| Input Signal | Type of Signal | Measuring Range | Measuring(Min.) |
| | R | -40 to +1700℃ | 600℃ |
| | S | -40 to +1700℃ | 600℃ |
| | K | -150 to +1370℃ | 120℃ |
| | J | -80 to +900℃ | 100℃ |
| | T | -160 to +390℃ | 100℃ |
| | B | 320 to +1820℃ | 780℃ |
| | E | -80 to +700℃ | 500℃ |
| | mV | -60 to +60mV | 10mV |
| output signal | Output Current | 0-20mA(Programmable) 4-20mA(Programmable) | |
| | Output Voltage | 0-5V(Programmable), 0-10V(Programmable) 1-5V(Programmable), 2-10V(Programmable) | |

Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable.
2. The ancillary USB adapter model is T-01, please contact our sales department.

Wiring Diagram Bottom power supply port






# Ultra-thin Analog Signal Isolation Barrier

Bottom power supply port

## Features

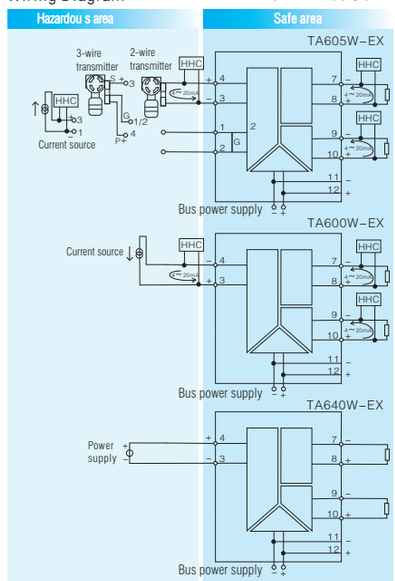
- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current ≤1mA)
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity:10V/m
- [Exia Ga] IIC approval

## Product Program

| Model Number | Voltage(Typ.) | Power supply | Input Signal | Output Signal | Channel |
|---|---|---|---|---|---|
| TA100W-EX-xx | 24VDC | 18-30VDC | 4-20mA | 4-20mA | 1 in 1 out |
| TA105W-EX-xx | 24VDC | 18-30VDC | 4-20mA | 4-20mA | 1 in 1 out |
| TA600W-EX-xx | 24VDC | 18-30VDC | 4-20mA | 4-20mA | 1 in 2 out |
| TA605W-EX-xx | 24VDC | 18-30VDC | 4-20mA | 4-20mA | 1 in 2 out |
| TA640W-EX-xx | 24VDC | 18-30VDC | 0-10VDC | 0-20mA | 1 in 2 out |
| TA140W-EX-xx | 24VDC | 18-30VDC | 0-10VDC | 0-10VDC | 1 in 1 out |

Note: Over nominal loop power voltage may damage modules.

Wiring Diagram




# Ultra-thin Analog Signal Isolation Barrier

Bottom power supply port

## Features

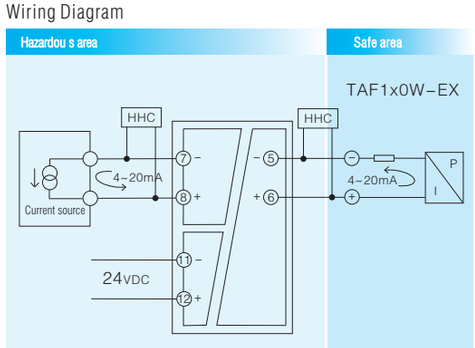
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Isolation: 2000VAC(testing for 1Min, humidity<70%, leakage current <1mA)
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m
- [Exia Ga] IIC approval

## Product Program

| Model Number | Voltage(Typ.) | Voltage Range | Input Signal | Output Signal | Channel |
|---|---|---|---|---|---|
| TAF100W-EX-11 | 24VDC | 18-30VDC | 4-20mA | 4-20mA | 1 in 1 out |

Note: customers need to determine the type of input signal and form of output signal while placing an order. Customization is acceptable for special requirements.

Wiring Diagram

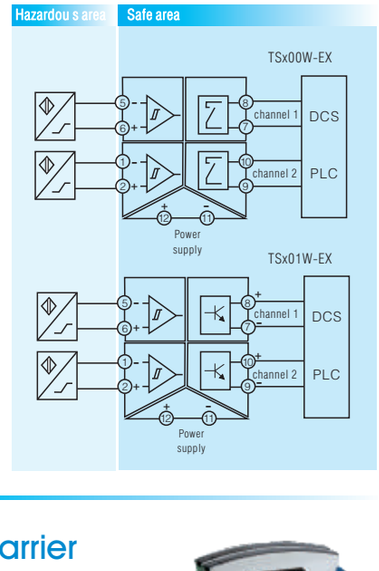


# Ultra-thin Detection Type Switch Signal Isolation Barrier

## Features

- Operating temperature: -25℃ to +71℃
- Isolation: 2500VAC/1500VDC(testing for 1Min, humidity<70%, leakage current≤5mA)
- Switch input such as NAMUR sensor and mechanical contact
- Recovery time: ≤10mS
- Driving capability: 250VAC/2A, 30VDC/2A
- [Exia Ga] IIC approval

Wiring Diagram




## Product Program

| Model Number | Voltage(Typ.) | Power supply | Input Signal | Output Signal | Channel |
|---|---|---|---|---|---|
| TS100W-EX | 24VDC | 18-30VDC | Switch input | Relay output | 1 in 1 out |
| TS200W-EX | 24VDC | 18-30VDC | Switch input | Relay output | 2 in 2 out |
| TS101W-EX | 24VDC | 18-30VDC | Switch input | Transistor output | 1 in 1 out |
| TS201W-EX | 24VDC | 18-30VDC | Switch input | Transistor output | 2 in 2 out |

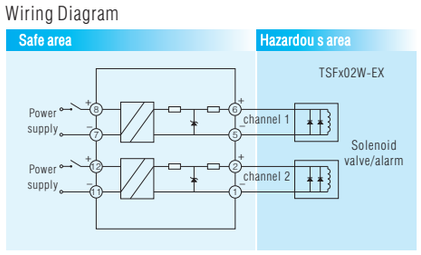
Note: Special input and output custmization is acceptable

# Ultra-thin Output Type Switch Signal Isolation Barrier

## Features

- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%, leakage current <1mA)
- Dry contact input
- Recovery time: ≤5mS
- Driving capability: 12VDC/44mA
- [Exia Ga] IIC approval

Wiring Diagram




## Product Program

| Model Number | Voltage(Typ.) | Power supply | Input Signal | Output Signal | Channel |
|---|---|---|---|---|---|
| TSF102W-EX | 24VDC | 18-30VDC | Switch input | 12VDC/44mA | 1 in 1 out |
| TSF202W-EX | 24VDC | 18-30VDC | Switch input | 12VDC/44mA | 2 in 2 out |

Note: Special input and output custmization is acceptable.

Note: Note: above is wiring diagram of 2-wire circuit(2 in 2 out).
Series with 1 in 1 out connect input terminal and output terminal with Channel 1.



# Ultra-thin Programmable Detection Type Thermocouple Isolation Barrier

Bottom power supply port

## Features

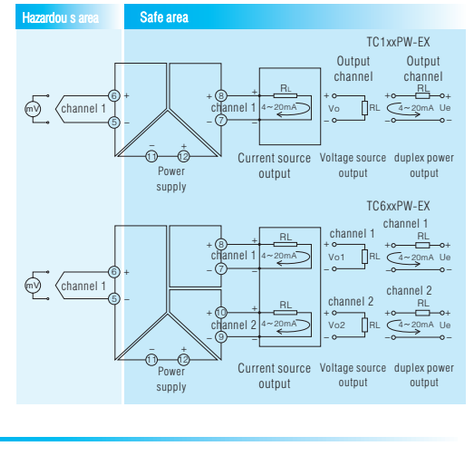
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Radiated immunity: 10V/m
- Cold junction compensation:
  compensation range: -25℃ to +75℃(≤1℃ error for every 20℃)
- method of compensation: internal compensation
- High reliability(MTBF>500,000 hours)
- [Exia Ga] IIC approval

## Product Program

| TC1x0PW-EX TC6x0PW-EX | Descriptions | | |
|---|---|---|---|
| | Type of Signal | Measuring Range | Measuring(Min.) |
| Input Signal | R | -40 to +1700℃ | 600℃ |
| | S | -40 to +1700℃ | 600℃ |
| | K | -150 to +1370℃ | 120℃ |
| | J | -80 to +900℃ | 100℃ |
| | T | -160 to +390℃ | 100℃ |
| | B | +320 to +1820℃ | 780℃ |
| | E | -80 to +700℃ | 500℃ |
| | mV | -60 to +60mV | 10mV |
| Output Signal | Output Current | 0/4-20mA (Programmable) | |
| | Output Voltage | 0/1–5V; 0/2–10V (Programmable) | |

Note: 1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable .
2. The ancillary USB adapter model is T-01, please contact our sales department.
3. Defaults: type of input signal: mV measuring range: -60 to +60mV; type of output signal: 4-20mA.

Wiring Diagram



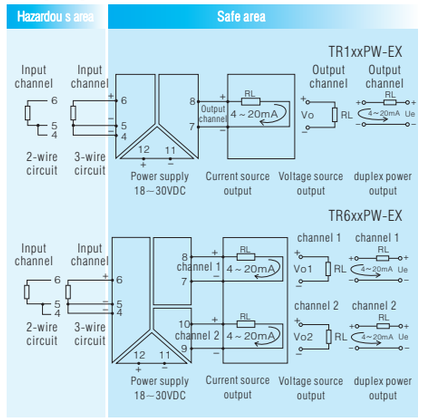

# Ultra-thin Programmable Detection Type RTD Isolation Barrier

Bottom power supply port

## Features

- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current<1mA)
- Precision: 0.1% F.S./Max.(0.5℃)
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m
- [Exia Ga] IIC approval

Wiring Diagram




## Product Program

| TR1xxPW-EX TR6xxPW-EX | Descriptions | | |
|---|---|---|---|
| | Type of Signal | Measuring Range | Measuring(Min.) |
| Input Signal | Pt100 | -200 to +850℃ | 50℃ |
| | Cu50 | -50 to +150℃ | 50℃ |
| | Cu100 | -50 to +150℃ | 50℃ |
| Out signal | Output Current | 0/4-20mA(Programmable) | |
| | Output Voltage | 0/1–5V; 0/2–10V(Programmable) | |

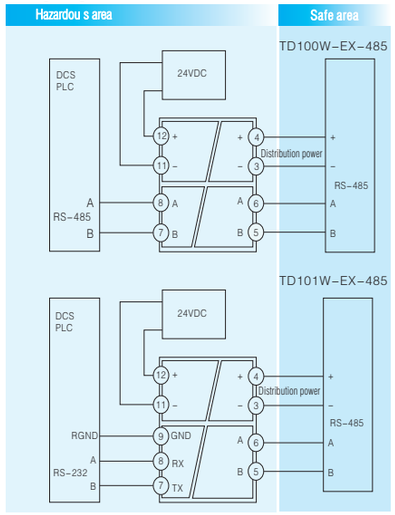
Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable.
2. The ancillary USB adapter model is T-01, please contact our sales department.

# Ultra–thin RS485 Detection Type Isolation Barrier(Half–Duplex)

## Features

- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(intrinsically safe and no-intrinsically safe, testing for 1Min, humidity<70%,leakage current <5mA)
- Radiated immunity:10V/m
- Input: RS-485 digital signal(TD100W-EX-485-xx)
  RS-232 digital signal(TD101W-EX-485-xx)
- High baud rate up to 56000bps
  High reliability(MTBF>500,000 hours)
- [Exia Ga] IIC approval

Wiring Diagram




## Product Program

| Model Number | Hazardous Area Signal | Safety Area Signal | Field Power Supply |
|---|---|---|---|
| TD100W-EX-485-00 | Half-duplex RS485 | Safety Area Signal RS485 | None |
| TD100W-EX-485-05 | Half-duplex RS485 | Safety Area Signal RS485 | 5V current≤140mA |
| TD100W-EX-485-06 | Half-duplex RS485 | Safety Area Signal RS485 | 6V current≤140mA |
| TD100W-EX-485-08 | Half-duplex RS485 | Safety Area Signal RS485 | 8V current≤140mA |
| TD100W-EX-485-09 | Half-duplex RS485 | Safety Area Signal RS485 | 9V current≤140mA |
| TD100W-EX-485-12 | Half-duplex RS485 | Safety Area Signal RS232 | 12V current≤100mA |
| TD101W-EX-485-00 | Half-duplex RS485 | Safety Area Signal RS232 | None |
| TD101W-EX-485-05 | Half-duplex RS485 | Safety Area Signal RS232 | 5V current≤140mA |
| TD101W-EX-485-06 | Half-duplex RS485 | Safety Area Signal RS232 | 6V current≤140mA |
| TD101W-EX-485-08 | Half-duplex RS485 | Safety Area Signal RS232 | 8V current≤140mA |
| TD101W-EX-485-09 | Half-duplex RS485 | Safety Area Signal RS232 | 9V current≤140mA |
| TD101W-EX-485-12 | Half-duplex RS485 | Safety Area Signal RS232 | 12V current≤100mA |

# 60W AC/DC Converter Specialized for LED

RoHS

## Features

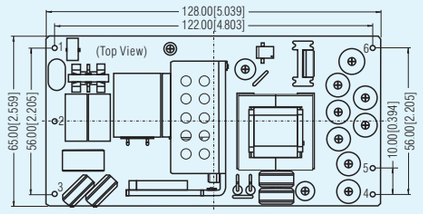
- Constant current operation, suitable for LED application
- Operating temperature: -40℃ to +70℃
- Input voltage vange: 200-400VAC/280-560VDC
- Isolation: 4000VAC
- Output short-circuit and over-voltage protections

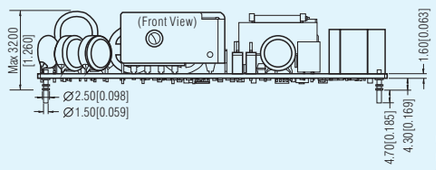
## Product Program

| Model Number | Power | Input Voltage Range | Output Voltage Range | Output Current | Certification |
|---|---|---|---|---|---|
| LO60-26B | 60W | 200-400VAC/280-560VDC | 0-60V available | 0.9A(constant current) | RoHS |

Note: Less than 60W input customization is acceptable.

## Package Dimension LxWxH: 128.00x65.00x32.00(mm)




**Pin-Out**

| Pin | Function |
|---|---|
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | ⏚ |
| 4 | Vo- |
| 5 | Vo+ |
| 6 | NC |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

• This catalog is used to introduce our latest products, for more information, please contact our sales department



# Constant current Great Power LED Driver

RoHS

## Features

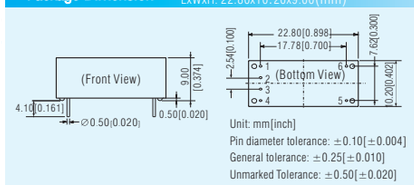
- Efficiency up to 97%
- Constant current mode, great power output
- Analogue dimming+PWM dimming
- Remote ON/OFF
- Continusous short-circuit protection


## KC24H–R Series

### Product Program

| Model Number | Input Voltage (Nominal) | Output Voltage (VDC) | Output Current (mA) | Efficiency(%, Typ), Full Load |
|---|---|---|---|---|
| KC24H-300R(X1/X2/X3) | 5.5-46 (24VDC) | 3.3-36 | 0-300 | 95% |
| KC24H-350R(X1/X2/X3) | | | 0-350 | 95% |
| KC24H-500R(X1/X2/X3) | | | 0-500 | 95% |
| KC24H-600R(X1/X2/X3) | | | 0-600 | 95% |
| KC24H-700R(X1/X2/X3) | | | 0-700 | 95% |

### Package Dimension LxWxH: 22.80x10.20x9.00(mm)




**PIN CONNECTION**

| Pin | Function | Comment |
|---|---|---|
| 1 | GND | Do not connect to-Vout |
| 2 | ON/OFF/PWM | Leave open if not use |
| 3 | Analog dimming | Leave open if not use |
| 4 | Vin | DC Supply |
| 5 | +Vout | LED Anode connection |
| 6 | -Vout | LED Cathode connection |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

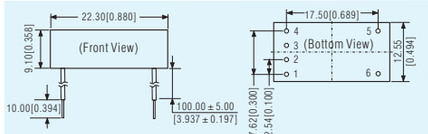
Notes:1. Series without a suffix such as KC24H-300R, this product is a four-pin product without the functions of analogue dimming and PWM dimming.
2. Series with a suffix X1 such as KC24H-300RX1, this product is a five-pin product only with the function of analogue dimming.
3. Series with a suffix X2 such as KC24H-300R X2, this product is a five-pin product only with the function of PWM dimming.
4. Series with a suffix X3 such as KC24H-300R X3, this product is a six-pin product with the functions of analogue dimming and PWM dimming.

## KC24W Series

### Product Program

| Model Number | Input Voltage (Nominal) | Output Voltage (VDC) | Output Current (mA) | Efficiency(%, Typ), Full Load |
|---|---|---|---|---|
| KC24W-300 (X1/X2/X3) | 5.5-48 (24VDC) | 3.3-36 | 0-300 | 96 |
| KC24W-350 (X1/X2/X3) | | | 0-350 | 96 |
| KC24W-500 (X1/X2/X3) | | | 0-500 | 96 |
| KC24W-600 (X1/X2/X3) | | | 0-600 | 96 |
| KC24W-700 (X1/X2/X3) | | | 0-700 | 96 |

### Package Dimension LxWxH: 22.30x12.55x9.10(mm)




**PIN CONNECTION**

| Pin | Function | Comment |
|---|---|---|
| 1(red) | +Vin | DC Supply |
| 2(yellow) | AnalogDimming | Leave open if nou use |
| 3(white) | ON/OFF/PWM | Leave open if nou use |
| 4(black) | GND | Do not commect to-Vout |
| 5(white) | -Vout | LED Cathode connection |
| 6(yellow) | +Vout | LED Anode connection |

Unit: mm[inch]
Lead internal diameter: 0.76[0.030];
Lead external diameter: 1.60[0.063];
Lead wire spec: UL1569 300V 105℃
Unmarked Tolerance: ±0.25[±0.010]

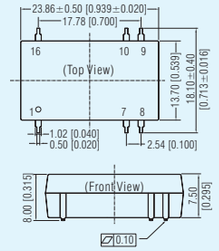
Note:1.Series without suffix such as KC24W-300 are four-wire products without analogue dimming+PWM dimming.
2.Series with suffix X1 such as KC24W-300X1 are five-wire products with analogue dimming only.
3.Series with suffix X2 such as KC24W-300X2 are five-wire products with PWM dimming only.
4.Series with suffix X3 such as KC24W-300X3 are six-wire products with analogue dimming+PWM dimming.

## KC24RT Series

### Product Program

| Model Number | Input Voltage Range (Nominal) | Output Voltage (VDC) | Output Current (mA) | Effi(%) (Max) |
|---|---|---|---|---|
| KC24RT-300 | 5.5-48 (24VDC) | 3.3-36 | 0-300 | 96 |
| KC24RT-350 | | | 0-350 | 96 |
| KC24RT-500 | | | 0-500 | 96 |
| KC24RT-600 | | | 0-600 | 96 |
| KC24RT-700 | | | 0-700 | 96 |

### Package Dimension LxWxH: 23.86x18.10x8.00(mm)




**Pin-Out**

| Pin | Function | Comment |
|---|---|---|
| 1 | GND | Do not connect to -Vout |
| 7 | ON/OFF/PWM | Leave open if not use |
| 8 | -Vout | LED Cathode connection |
| 9 | +Vout | LED Anode connection |
| 10 | Analogue dimming | Leave open if not use |
| 16 | Vin | DC Supply |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

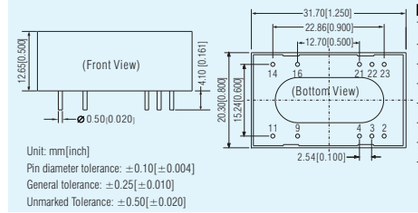
## KC24H–1000 & KC24H–1200 Series

### Product Program

| Model Number | Input Voltage Range (Nominal) | Output Voltage (VDC) | Output Current (mA) | Effi(%) (Max) |
|---|---|---|---|---|
| KC24H-1000(X1/X2/X3) | 5.5-48 (24VDC) | 3.3-36 | 1000 | 97 |
| KC24H-1200(X1/X2/X3) | | | 1200 | 97 |

Note:
1. Series without suffix, such as KC24H-1000 are eight-pin products without analogue dimming+PWM dimming function.
2. Series with suffix X1,such as KC24H-1000X1 are nine-pin products with analogue dimming function only.
3. Series with suffix X2,such as KC24H-1000X2 are nine-pin products with PWM dimming function only.
4. Series with suffix X3,such as KC24H-1000X3 are ten-pin products with analogue dimming+PWM dimming function.

### Package Dimension LxWxH: 31.70x20.30x12.65(mm)




**Pin-Out**

| Pin | Function | Comment |
|---|---|---|
| 2,3 | GND | Do not connect to -LED |
| 4 | ON/OFF/PWM | Leave open if not use |
| 9,11 | -LED | LED Cathode connection |
| 14,16 | +LED | LED Anode connection |
| 21 | Analogue dimming | Leave open if not use |
| 22,23 | +Vin | DC Supply |

Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

# Caution

## Purpose:

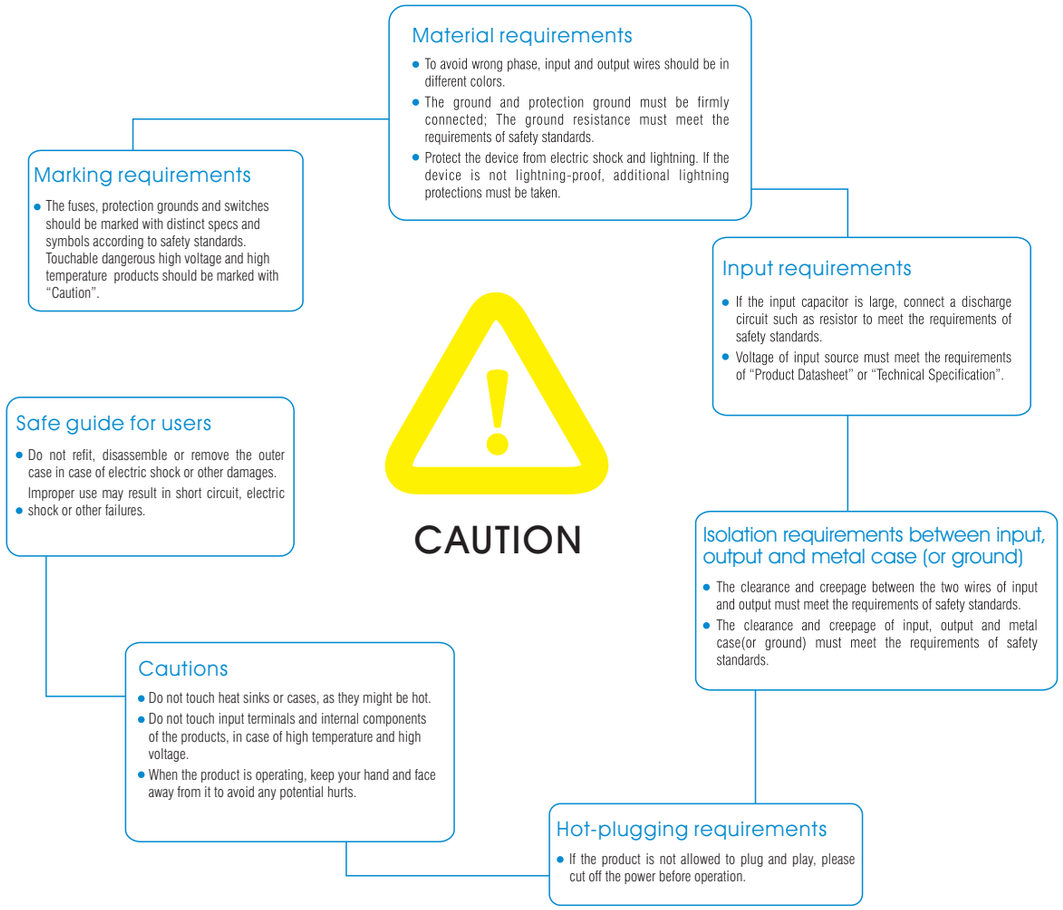
To prevent potential safety problems while using the products.

## Scope:

AC/DC, DC/DC, EMC Auxiliary Device, Isolation Transmitter, LED Driver and IGBT Driver manufactured by Mornsun Guangzhou Science & Technology Co., Ltd.

## Contents:

Users should comply to all the contents of Product Datasheet carefully before selection, design, or production, and design and use the products according the requirements of Product Datasheet.




More information about application, please contact us.

Tel: 020-38601850 E-mail: fae@mornsun.cn

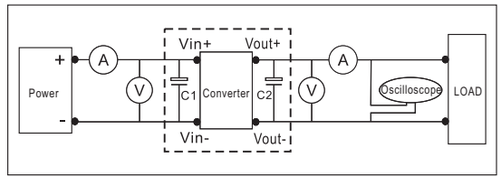


# Power Supply Testing

## DC/DC Converter testing suggestions

After selecting the right converter based on input and output requirements, the correct testing method must be used to ensure and verify specified performance parameters. The following are suggested test methods and test equipment requirements.

Test conditions: ambient temperature TA=25℃ humidity<75%, rated input and rated load.




The model contains:

a) DC adjustable regulated power supply : output voltage range is suitable for DC/DC converter under testing.

b) current meter A : accuracy 0.001A

c) voltage meter V: accuracy 0.001V

d) load resistance: rated load: U*U/P
light load: 10*U*U/P

e) wire: less wire loss is required. It is recommended to use 1mm multistand copper wire, which avoids over voltage drop.

Test:

### A: Wire

The proper wire shall be selected as described above. Smaller wire will result in potential errors in measuring the actual efficiency and regulation parameters. Ensure all mechanical and solder connections are sound as this will also result in errors.

### B: Grounding

Improper grounding may cause unintended noise to the circuit. When testing ripple and noise, it is recommended to use a single pole test method to obverse the actual value. (please refer to the figure "**r**ipple and noise" in page 95)

### C: Load

To ensure valid test data, the testing load of regulated products should be within 10～100% of the rated output current/power. It can test unregulated products at no load, but should be aware that the voltage accuracy is not specified at this load level.

### 1) Input voltage accuracy:

Set input voltage at nominal value and output at rated load, then mark the testing output voltage as Vout and the nominal output voltage as Vnom. The formula:

$$\frac{V_{OUT}-V_{NOM}}{V_{NOM}} \times 100\%$$

e.g: For regulated products IB1212LS-1W, the nominal input voltage is 12V, and rated load is 144Ω. The output voltage reads 12.039V.

$$\frac{12.039VDC-12.000VDC}{12.000VDC} \times 100\% = 0.325\%$$

### 2) Line regulation:

Isolated regulated series:

Line regulation equals difference ratio between max. and min. output voltage, when adjusting input voltage within its limitation at full load:

$$\text{Line regulation} = \frac{V_{OUTN}-V_{MDEV}}{V_{OUTN}} \times 100\%$$

$V_{OUTN}$-- output voltage at nominal input voltage and rated load

$V_{OUTH}$-- output voltage when input voltage at its upper limit

$V_{OUTL}$-- output voltage when input voltage at its lower limit

$V_{MDEV}$-- $V_{OUTH}$ or $V_{OUTL}$ Which is deviated from $V_{OUTN}$ more

Fixed input, isolated unregulated series:

$$\text{Line regulation} = \left|\frac{\Delta V_{OUT}}{\Delta V_{IN}}\right|$$

$$\Delta V_{OUT} = \frac{V_{OUT+10\%}-V_{OUT-10\%}}{V_{OUTNOM}} \times 100\%$$

$$\Delta V_{IN} = \frac{V_{IN+10\%}-V_{IN-10\%}}{V_{INNOM}} \times 100\%$$

In the formula:

$V_{IN+10\%}$--nominal input voltage and add 10% as its upper limit

$V_{IN-10\%}$--nominal input voltage and minus 10% as its lower limit

$V_{OUT+10\%}$--output voltage at full load when input voltage at its upper limit

$V_{OUT-10\%}$--output voltage at full load when input voltage at its lower limit

$V_{INNOM}$--nominal input voltage

$V_{OUTNOM}$--output voltage at full load and nominal input voltage

e.g.: If B0505LS-1W connects a 25Ω resistive load, input voltage range will be±10% (4.5V～5.5V).

$V_{IN+10\%}$=5.5 V; $V_{IN-10\%}$=4.5 V ; $V_{INNOM}$=5V

$V_{OUT+10\%}$=5.32V; $V_{OUT-10\%}$=4.2V; $V_{OUTNOM}$=4.77V

Then: $\Delta V_{OUT} = \frac{5.32VDC-4.2VDC}{4.77VDC} \times 100\% = 23.5\%$

$\Delta V_{IN} = \frac{5.5VDC-4.5VDC}{5VDC} \times 100\% = 20\%$

$\text{Line regulation} = \left|\frac{\Delta V_{OUT}}{\Delta V_{IN}}\right| = 1.174$

### 3) Load regulation:

Isolated regulated series:

As the input voltage is rated, connect 10% and 100% constant resistance load and then test the values at 10% load and full load. Next, compare the two values with the rated value and calculate the differences.

$$\text{Load regulation} = \frac{V_{b1}(V_{b2})-V_{bo}}{V_{bo}} \times 100\%$$

$V_{bo}$--setting value of output voltage;
$V_{b1}$--output voltage at minimum output current;
$V_{b2}$--output voltage at nominal output current;

Fixed input, isolated unregulated series:

$$\text{Load regulation} = \frac{V_{OUTNL} - V_{OUTFL}}{V_{OUTFL}} \times 100\%$$

$V_{OUTNL}$--output voltage at 10% load
$V_{OUTFL}$--output voltage at full load

e.g: Fxed input product B0505XD-1W offers rated load $U^2/P = 25\ \Omega$. At 10%~100% load, they read

$V_{OUTNL}$= 5.29 V; $V_{OUTFL}$= 4.77 V

$$\text{load regulation} = \frac{5.29VDC - 4.77VDC}{4.77VDC} \times 100\% = 10.9\%$$

### 4)Efficiency:

The ratio between input power and output power at rated input and rated load.

$$\text{Efficiency} = \frac{I_{OUT} \times V_{OUT}}{I_{IN} \times V_{IN}} \times 100\%$$

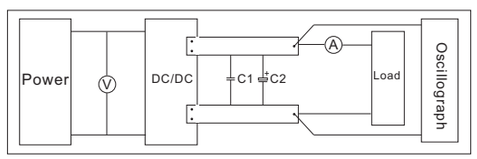
e.g.: IB1212LS-1W offers 12V rated input and 12.039V output at full load. When current is 83.3mA, input current is 115.0mA.

$$\text{Efficiency} = \frac{0.0833A \times 12.039V}{0.1150A \times 12.000V} \times 100\% = 73\%$$

### 5)Ripple and noise:

Ripple and noise is the AC component at the DC output, which affects output accuracy, we usually measure ripple and noise with a peak to peak value(mVp-p). The most common method is parellel measurement.

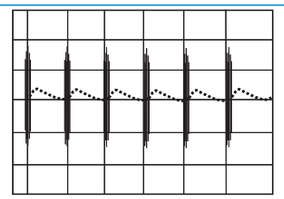
As the figure shows:




Notes: 1. C1 is a ceramic capacitor.
2. C2 is a capacitor suitable for the fixed input product.

Please refer to datasheet for details. For wide input product, C2 should be 10uF electrolytic capacitor that has a higher withstanding voltage than module's output voltage.

As the DC/DC converter output end/side may contain high-frequency harmonics, and the common mode rejection ratio of most scopes is not so good, it is best to not use the ground wire provided on most probes. Attach the ground sleeve as shown in the figure above.



Tall, high frequency spikes are normally noise, and smaller lower frequency plots are generally ripple.

### 6)Start-up time:

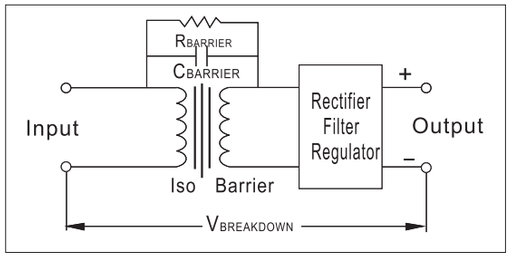
Start-up time is the time once the input voltage is present and within the specified range, the time it takes for the output of the converter to rise between 10% and 90% of its nominal value. This is usually tested and specified with a resistive load only. Other factors such as additional output capacitance added by the customer may effect this time.

### 7)Isolation and insulation characters:

Isolation is one of the most important parameters of a DC/DC converter. Depending on the application, isolation are typically between 1KV and 6KV depending on the DC/DC converter series.

Here is isolation circuit drawing.

Isolation equivalent circuit:




$$I_{LEAKAGE} = \frac{V_{BREAKDOWN}}{R_{BARRIER}} = 2\pi(60Hz)(C_{BARRIER})(240V)$$

CBARRIER: Isolation capacitance; coupled between primary and secondary windings

RBARRIER: Isolation resistance: DC resistance between input and output.

ILEAKAGE: Leakage current; the current as a result of the input/output capacitance.

VBREAKDOWN: Test voltage. It is usually 240VAC/60HZ.

$$Z_f = \frac{1}{J\,2\pi f C_{IS}} \qquad I_L = \frac{V_{test}}{Z_f}$$

$C_{IS}$: Isolation capacitance f: frequency Vtest: test signal voltage

In general, DC/DC converters are constructed to minimize Isolation Capacitance, and therefore minimize Leakage Current. For isolation testing,

Isolation, dielectric strength test: test 1 min., input/output (at AC/DC specified peak value)

Insulation resistance test: the value should be above 1GOhm when applying 500VDC from input/output

Note: MORNSUN's G and H series products offer extremely low isolation capacitance (TYP: 10PF) and they are suitable for medical application.





## 1.Foreword

The following guidelines should be carefully read prior to converter use. Improper use may result in the risk of electric shock, damaging the converter, or fire.

### 1) Risk of Injury

A. Do not touch the heat sink or the converter's case To avoid the risk of burns,
B. Do not touch the input terminals or open the case and touch internal components, which may result in electric shock or burns.
C. keep hands and face at a distance to avoid potential injury during improper operation, when the converter is in operation.

### 2)Installation Advice

A. Please make sure the input terminals and signal terminals are properly connected in accordance with the stated datasheet requirements.
B. Install a slow blow fuse at input of the converter to ensure safe operation and meet safety standard requirements.
C: Installation and use of AC/DC converters should be handled by a qualified professional.
D: AC/DC converters should be installed in compliance with certain safety standard in the primary transmission stage of a design.
E: Please ensure that the input and output of the converter are incorporated into the design out of the reach of the end user. The end product manufacturer should also ensure that the converter is protected from being shorted by any service en gineer or any metal filings.
F: The application circuits and parameters shown are for reference only. All parameters and circuits should be verified before completing the circuit design.
G: These guidelines are subject to change without notice; please visit our website for details.
H: It is a normal phenomenon if there is slight noise when the module operates under no-load and light-load conditions.
I: Please refer to AC/DC Converter Common faults Analysis for other questions.

## 2. Selection guide of AC/DC converter

Firstly confirm the specifications of power supply, select the module according to the required parameters, and determine to use standard module or require customization.

### Step 1: Confirm the type of power supply input.

Check that the input is AC source or DC source; AC source should use AC/DC converters, and DC source should use DC/DC converters.

### Step 2: Select the standard module voltage according to the input voltage range.

### Step 3: Select the power and package type of the product according to the load.

Optional packages: Single in-line (SIP), double in-line (DIP),common chassis mounting, mini-type chassis mounting and DIN-Rail (DIN). LD/LB/LH series (except for LH40,LH60) suffixed with A2 indicates the chassis mounting, and with A4 indicates the Din-Rail mounting. For example, LH15-10B05A2 is in chassis mounting package .

### Step 4: Select the suitable output voltage according to the load type.

The output voltages of MORNSUN products are usually 3.3 V, 5 V, 9 V, 12 V, 15 V, 24 V, ±5 V, ±12 V and ±15 V.

### Step 5: Select the isolation voltage.

The isolation of the module separates the input and output into two isolated circuits (separate ground connection).

In industrial power bus system. Isolation ensures the safety in harsh circumstances (lightning, arc interference), also eliminate ground loops. in hybrid circuits, the noise isolation between sensitive analog circuit and digital circuit can be achieved. In the multi-voltage power supply system, the voltage conversion can be implemented. The isolated voltage of MORNSUN AC/DC converters are 2500VAC, 3000VAC and 4000VAC.

In conclusion, standard converters are suitable for cost-effective, mature technology, lower development resistance and less development time, etc. For high isolation, extra wide voltage input range, high temperature environment, EMC certification, UL certification and other special requirements, it would be better to consult the technicians.

## 3.General AC/DC Converter Applications

### Basic Application Circuit

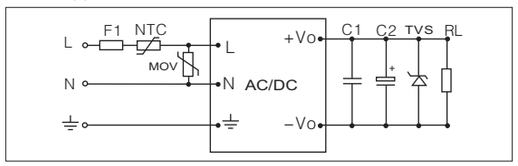



Figure 1. General AC/DC converter applications circuit

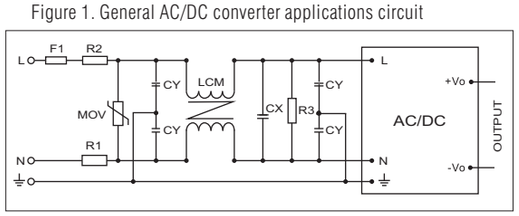



Figure 2. Typical input EMC filtering circuit

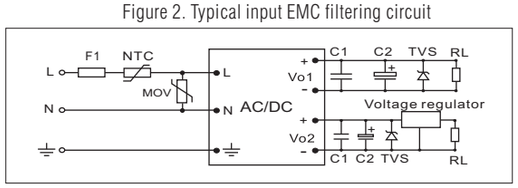



Figure 3. Typical application circuit

1)F1: refers to the input fuse. Proper fuse selection should be a safety agency approved, slow blow fuse. Selection of the proper fuse rating is necessary to ensure power converter and system protection (potential failure if the rating is too high) and prevent false fuse blowing (which could happen if the rating is too low). Below is the formula to calculate the proper rating:

$$I = 3 \times Vo1 \times Io1 / \eta / Vin(min.)$$

Vo1--output voltage; Io1--output current;

$\eta$--the converter's efficiency;

Vin(min)--the minimum input voltage.

2) NTC: a thermistor. It is suitable for AC/DC converter modules, and is optional. If the application is sensitive to surge current, a winding resistor at 5～10Ω is recommended.

3) R1 & R2: 2Ω/3W winding resistance is applied to the power modules under 25W,2Ω/5W winding resistance is applied to the power modules more than 25W.; R3: 1MΩ/3W winding resistor.

4) MOV: dependent resistor, protects the converter from damage of lighting or surge current.

5) CX & CY: safety capacitors.

6) LCM: common-mode inductor, is recommended to 10mH～30mH.

7) C1: a high frequency ceramic capacitor or polyester capacitor, 0.1μF/50V.

8) C2: an output filtering high frequency electrolytic capacitor. Output-filtration high-frequency aluminum electrolytic capacitor, please refer to datasheet for details.

9) TVS: is recommended to protect back-end circuit in case of the module abnormality.

For dual or triple output converters, the circuit of input side remains the same and the outputs should be considered independently in component selection. The application circuit shown in Figure 1 is typical application circuit. If the place that is strict with EMC, such as electricity or outdoor applications, more filtering measures are needed. Therefore, the product in Figure 2 (for your reference) is suitable for a typical input EMC filtering circuit.

For multi-output converters, the main output is typically a fully regulated output. If the end application requires critical regulation on the auxiliary output, a linear regulator or other regular should be added after the converters. As shown in Figure 3. (Note: MORNSUN partial products have built-in linear regulators, please contact our technical department for details)

## 4. Safety design for application of AC/DC converter

### 1) Marking requirements

The fuse, protection ground terminal and switch shall be marked symbols in accordance with SAFETY REQUIREMENT, and the danger warning signs shall be affixed to the accessible dangerous voltage and energy.

### 2)Material requirements

The L, N and ⏚ wires of input shall be in brown, blue and chartreuse respectively. For the equipment which prevents the electric shock through basic insulation and protection ground terminal (Class I equipment), the ground wire in chartreuse must be grounded well, and the grounding resistance shall be lower than 0.1 Ω.

### 3) Clearance and Creepage distance

Make sure that in Class I and Class II application environment, the clearance of L and N before fuse must be in accordance with the reinforced insulation requirement of SAFETY REQUIREMENT; and after fuse, it must meet the basic insulation requirement of SAFETY REQUIREMENT.

### 4) Capacitance on the input terminal

If CX capacitance of input terminal is too high, the discharge resistor shall be connected to make sure when the plugs or the connectors disconnected, the retention voltage between L and N input terminal shall drop to less than 37% of the maximum within 1s.

## 5. Common questions

### 1) Grounding – input and output

Input grounding: Normally there are three pins on the input terminal of AC/DC Converter: Live wire L, neutral wire N and protection ground terminal ⏚; ⏚ is usually connected to the equipment casing or the ground wire in the power grid.

Output grounding: In the actual application, some customers connect the output ground terminal with the protection ground terminal directly, as shown in Fig. 4 below. Such connection may result in abnormal output or damage of the module because of lightning, surge and group pulse, etc., so it is recommended to connect the output ground terminal with the protection ground terminal through a Y capacitor (1000 pF/400 V is normally recommended), as shown in Figure. 1.

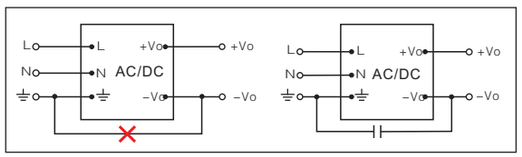



Figure. 1. Connecting method of output and protection grounding

### 2) Surge current

The surge current is classified into the spike current at start time and the current formed by the high surge voltage sensed during operation. For the spike current, we mainly add protective apparatus as thermistor or wire wound resistor on the input terminal to reduce the surge current; for the surge current produced by the high voltage, we mainly use the piezoresistor for protection and to release the energy.

### 3) Leakage current

There are two kinds of leakage currents: 1. the leakage current between the input terminal and the protection ground terminal when the product operates normally; 2. the leakage current between the isolation belts when the product is in the pressure withstanding test.

### 4)AC/DC input

Usually the full-bridge rectifier is used on the input terminal of AC/DC power supply to meet the AC and DC power supply requirements.

### 5) Relations between the Class I, II equipments and the protection ground terminal FG

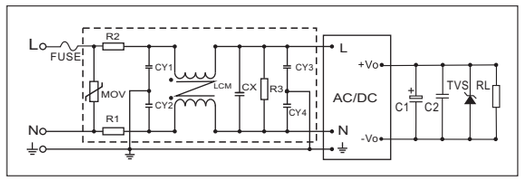
EN60950 clearly defines the Class I and II equipments:

Class I equipment is provided with the basic insulation and a connecting device capable of connecting the conductive part with dangerous voltage to the protection grounding conductor in case of the basic insulation failure. Class I equipment is also equipped with the protection ground terminal FG pin, such as LH-series product.

Class II equipment means the equipment which electric shock prevention depends on both the basic insulation and the additional safety protection measure (for example the equipment with dual insulation or enhanced insulation). Such equipment does not rely on the protection grounding or the protection measures of mounting condition. Class II equipment has no protection ground terminal FG pin, such as LS/LD-series product.

### 6)Transient change of input

The transient voltage change of the input power wire may destroy the power converter. If the transient voltage change on the input terminal is higher than the top limit of the input of the module, the protection circuit as shown in fig. 5 must be connected at the input terminal.




### 7)No-load use of output

For the multi-output product, output voltage may be 20% or more higher than the nominal at no-load. In actual application, it is recommended to ensure the minimum load (10% load).

### 8)Operating temperature

When the product operates in a high temperature environment, the temperature of its internal components will be much higher than the ambient temperature. In order to ensure the reliable operation of the module, the maximum operating ambient temperature of the conventional product is 70℃, and derating is required when the ambient temperature is 55℃. When the product operates in a low temperature environment, the power derating is also required because of the low-temperature characteristics of internal electrolytic capacitor and other components. .Moreover, the output ripple and the noise are higher than that of constant-temperature value. For the specific contents of derating curve, please refer to datasheet for details.

### 9) Voltage marked on product's screen print

The mark on the product's screen print is 100VAC-240VAC. But why it is 85VAC-264VAC on the datasheet? It is mainly because of the consideration of safety certification. During test, the certification authority usually tests the product performance according to the input voltage on the product's screen print ±10% and ±15%. So in this industry, the input voltage on the screen print usually is 100VAC-240VAC.



AC/DC Converter Application Guidelines

## 1.Selection guide of DC/DC Converter

### 1) Confirmation of specifications of power supply module

Firstly confirm the specifications of power supply, select the module according to the required parameters, and determine to use standard module or require customization.

### Step 1: Select the package size

Sufficient space is required for power module's radiating, which affects the interference of signal acquisition and performances of other circuit components. The volume, cost, and reliability of the modules should be taken into overall consideration.

### Step 2: Select the isolation voltage.

The isolation of the module separates the input and output into two isolated circuits (separate ground connection). In industrial power bus system, isolation ensures the safety in harsh circumstances (lightning, arc interference), and eliminates ground loops; in hybrid circuits, the noise isolation between sensitive analog circuit and digital circuit can be achieved; in the multi-voltage power supply system, the voltage conversion can be implemented. Selecting appropriate isolation products according to different applications ensures the operation and avoids the budget waste in over-design.

### Step 3: Confirm the type of power supply input

Check yhat the input source is AC source or DC source ; AC source should use AC/DC converters, and DC source should use DC/DC converters.

### Step 4: Confirm the output current

After the load is selected, the output current is basically determined; the magnitude of load current is the key to the determination of power and directly affects the reliability and price of the module. The power converter is preferably applied under 30%-80% power condition; selecting appropriate output current is one of the key factors for successful design, excessively large and small current will result in low reliability and high cost.

In general application, it is to be noted that: if the application is for supplying power to optical coupler and relay or for voltage reference of RS232/485 and CAN (Controller Area Network) buses, light load or no load application may exist, in such case, it is recommended to add appropriate dummy load. In case the load is extremely unstable or the load variation is relatively large, the selection of dummy load shall be within the range of 10%-100%, in order to avoid under-load or over-load application.

Under high temperature condition, the power converters shall be used in derating. Please refer to the Temperature Derating Curve. As for the application under high temperature condition or poor heat dissipation condition, the converter with large volume is preferred; as for the case of long term operation above 70℃, please consult our technicians to select the suitable power converters for the exact operation.

### Step 5: Confirm the input voltage range

1) As for input voltages 3.3V, 5V, 9V, 12V, 15V and 24V with variation range of±10%, A, B, D, E, F, G and H series products with unregulated voltage outputs are available. As for input voltages with variation range of ±5%, IA, IB, IE and IF series products with regulated voltage outputs are available. Others are switching power supplies, linear voltage stabilizers, voltage stabilizing diodes and other power supplies with relatively stable outputs.

2) As for input voltages 5V (4.5-9V), 12V (9-18V), 24V (18-36V) and 48V (36-75V) with variation range of 2:1, WR and VR series products are available. As for input voltages of 24V (9-36V), 48V (18-75V) and 110V (40-160V) with variation range of 4:1, PW and UR series products are available. For example, in the cases of 24V industrial bus power supply, 48V communication bus power supply, 110V railway power supply, 220V transformer rectifier output and various types of storage battery, accumulator, lithium battery, dry battery, remote transmission, etc. with large output voltage variations, PW and UR series modules with wide voltage outputs are available. As for the output powers above 3W, it is recommended to select VR or UR input series power converters in order to improve the overall efficiency.

### Step6: Confirm the load type

1) The output voltage depends on the type of load circuit, for example: in the cases of ordinary digital circuits, amplified direct current or low-frequency signal operational amplifiers, RS232/485 and CAN buses, etc. which without high requirements on accuracy of power supplies, the converters with unregulated voltage outputs are available. (e.g. A, B, D, E, F, G and H series modules). As for the sensors, high-accuracy operational amplifiers, A/D and D/A chips and other devices which are more sensitive to the accuracy and ripple of power supplies, the products with regulated voltage outputs (e.g. IA, IB, IE and IF series products, or VR, WR, PW and UR series products) are available.

2) In the case where both the cost and efficiency shall be taken into consideration, combined use of unregulated voltage output converters (e.g. A, B, D, E, F, G and H series modules) and linear regulator can be considered; when the load has positive/negative voltage or multi-voltage supply demand, the module with positive/negative voltage or using dual-circuit/multi-circuit outputs can be considered; the number of circuits shall be minimized; in the application, the circuit with large output power and high accuracy requirement shall be used as main output, and the secondary voltage accuracy requirement shall be determined, in order to allow the converter design to meet the requirements more reliably.

3) The common specifications of output voltage are 3.3V, 5V, 9V, 12V, 15V, 24V, ±5V, ±12V and ±15V, etc.

4) Excessively high requirements on output accuracy and ripple may cause significant rise of the cost of converters.

In conclusion, standard converters are suitable for cost-effective, mature technology, lower development resistance and less development time, etc. For high isolation, extra wide voltage input range, high temperature environment, EMC certification, UL certification and other special requirements, it would be better to consult the technicians.

### 2) System Power Distribution Design

The design of system power distribution usually has to be optimized for several times according to product characteristics and circuit demands. Accurate measurement of actual circuit operation parameter and environment change range is helpful for us to select the most suitable power converter.

### Step 1: External factors

Ambient temperature has certain effects on power converters and the external components. In the application, the power converters may be in an environment with cyclic changes of high temperature, low temperature or high and low temperatures (e.g. engine room, cabin, etc.). Therefore, we shall have a detailed understanding of the changes of relevant parameters of power converters during changes of environmental conditions, in order to ensure that the requirements of power converters are satisfied in actual environment. It is to be noted the ambient temperature for operation of power converters is not the air temperature at that time but the spatial temperature in the casing of equipment. As there are many heating devices, the temperature in the casing is usually higher than the air temperature. The temperature range is required to be 0～70℃ for commercial products, -40～85℃ for industrial products, -40～105℃ for vehicle onboard equipment , -55～85℃ for field operation equipment and -55～125℃ for military domain. Sufficient margin shall be considered in design, especially for the converter which is greatly derated in high temperature. And it is preferred to select the electrolytic capacitor with better high/low temperature characteristics. Under high temperature condition, the withstanding voltage of capacitor will reduce significantly, and the capacitor shall be used correctly according to its Specification Manual.

In the environment with interferences such as electric arc, electrostatic discharge, unstabilized alternating current grid, starting switch, relay and lightning stroke, the input voltage and current may far exceed the withstanding capacity of module, causing permanent damage of module and breakdown of load circuit. In this case, protective circuit shall be provided to ensure the safe operation of power supply.

Transmission distance also has effects on the power supply of system, so following points shall be paid attention to during the model selection:

1) Small temperature difference and small interference, non-isolation or small power converter is generally used in the case of short indoor wire,

2) The transmission loss shall be accurately calculated, and the isolation power converter with wide voltage input and sufficient power are available, in addition to considering the lightning-protection isolation, in the case of extramural remote transmission.

3)The power converter must have enough power to ensure its normal operation in the case of excessively long transmission distance and relatively large loss. Considering of the starting current of converter, it is generally recommended that the current provided by power supply shall be 1.3-1.6 times of the starting current of converter.

4) Connect a large capacitor to the pins of the power converter (higher capacitance is suggested) to improve the starting performance.

### Step 2: Operating environment

All the power conversion products will have a certain power consumption convert into their own heat energy which make them emit heat and affects the ambient environment by temperature rise, resulting in data interference (thermo-sensitive sensing devices) and device performance reduction, and even causes short circuit and fire. Therefore, there must be sufficient air flow space, or increasing heat radiating area in the layout to reduce the temperature rise to ensure the safety.

As the switching power supply uses switch technology, thus, its switch oscillating circuit and internal magnetic element will produce electromagnetic interference and pollution to surrounding devices in conduction and radiation mode. Electromagnetic interference (EMI) is the pollution to environment caused by electromagnetic energies transmitted by electromagnetic radiation and conducted by signal wires and power wires. The electromagnetic interference can't be completely eliminated, but certain methods can be adopted to reduce it to safe level in order to comply with electromagnetic compatibility.

### Step 3: Circuit interference

Unreasonable ground connection and power supply layouts always cause instability, high noise and other bad phenomena of system.

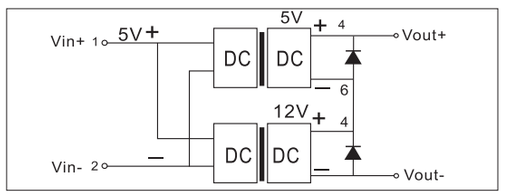
In many applications, the digital circuit and analog circuit share the same power supply; in this kind of design, it is very important that the analog circuit and digital circuit are used

separately or the power supply and ground loop are completely isolated, in order to avoid the interferences with sensitive analog circuit caused by digital DC level changes and logical transient processes.
At the same time in high speed or dynamic analog circuit and digital circuit, when the power is distributed to the loads through relatively long line, the distributed resistance and inductance of power distribution wire will become obvious and easy to cause noise spikes due to rapid changes of load In this case, the loads need to be decoupled and the resonances caused by series impedances and distribution parameters on the line shall be eliminated.

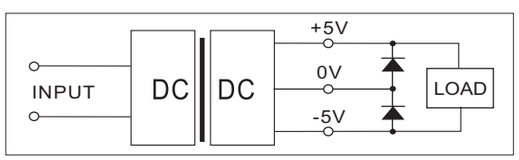
## 2.Additional converter applications

### 1) DC/DC converters used in series

Isolated DC/DC converters allow the connections of their outputs in series to create higher voltages if necessary. Please refer to below figure for proper series connection.

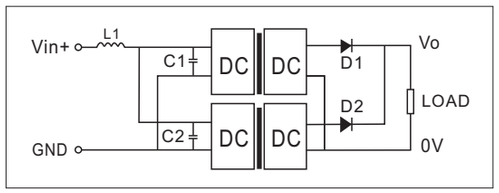



Converter 1 is 5Vout, and Converter 2 is 12Vout. As you can see a unconventional 17VDC voltage can be created by applying the 5V and 12V converters in series. Be careful not to exceed the rated current either of the converters, normally the ripple voltages of two modules will not be synchronized while operation in series results in additional ripples and louder output noise. More filtering measures shall be taken in application. In the figure the output of each module is connected to a back biased diode in parallel (generally Schottky diode with voltage drop down to approximately 0.3V is used as excessive voltage drop may cause damage to the products) to prevent reverse voltage being applied to the other.
We can get high output voltage through the dual output products , the following figure shows 10V output.

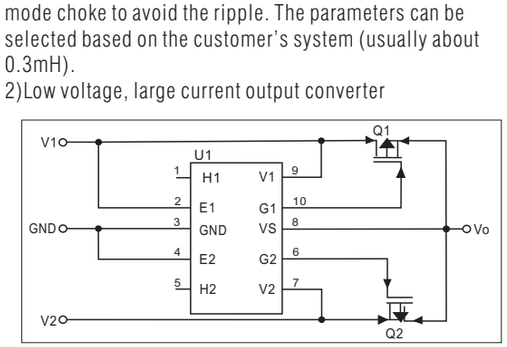



### 2) DC/DC converters connected in parallel

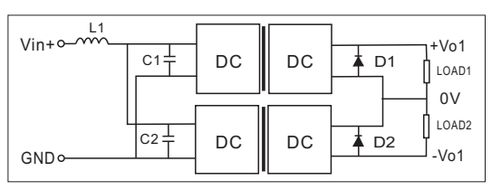
Redundant design can improve the system reliability. MOSFET of the time, engineers connect several same converters in parallel. And if one of the converters fails, the others could operate instead. However, connecting the converters in parallel to improve the efficiency is not advisable, because the output voltage of two converters can not be exactly equal, and the converter with higher output voltage would provide all load current. In addition, suppose the output voltage of the two converters is set to the same value, the different output impedance, temperature drift and time drift would cause the unbalance of load current and lead to the damage of one of the converters resulted form over load.
Redundant design:
1)high voltage, low current output converter




Low voltage drop Schottky diode can avoid that one of the converters starts ahead and cause inverse voltage to other convert. At the same time, the withstand voltage of the diode should be higher than the output voltage. This solution will cause extra ripple and noise, thus it needs to connect an external capacitor or filter circuit to reduce the ripple and noise.
When multiple converters are connected to a same input end and the output is connected to different load, the converters might produce a reflect ripple to the input end and lead to an exception of preceding stage power supply. Therefore, it is necessary to connect a $\pi$-type filter formed by common mode choke to avoid the ripple. The parameters can be selected based on the customer's system (usually about 0.3mH).
2)Low voltage, large current output converter




As the redundant design of diode produces high power consumption, it is not applicable for low voltage and large current situation. Therefore, we may use high power MOSFET and chip as the alternative solution. The MOSFET lowers the voltage drop and reduces the device loss at large current, which ensures that the converter operates effectively.
3) Single ±output, parallel converter



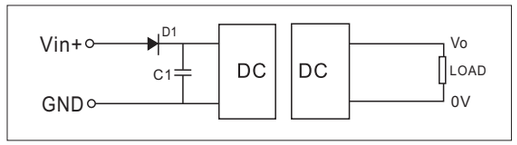





In practical application, if the load difference between the primary output and secondary output is significant, the voltage accuracy will be out of limits and leads to application anomaly. Selecting two converters according to the actual load is advisable (please refer to the diagram). If multiple converters share the same power supply, it is recommended to connect a LC filter circuit at each input ends of the converters in order to avoid the reflect ripple.

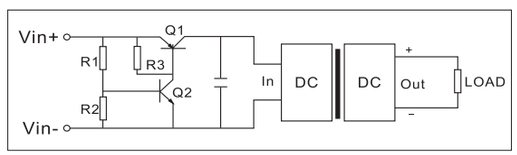
### 3) Reverse voltage protection

The diagram shows the reverse voltage protection circuit. When connecting a negative voltage power supply (e.g. -48VDC communication power supply), the "0V" is connected to the "Vin+" of the converter; the "-48V" is connected to "GND".
Positive-going electric potential difference of the input end ensures the normal operation of the converter. In order to avoid the converter damage from mis-connecting the input voltage, it is recommended to apply reverse voltage protection. Simply, connecting a positive-going diode at the input terminal. If the voltage is inversely connected, the diode will be not conducted and protect the converter. The lower voltage drop of diode ensures fewer effects to the application efficiency. In addition, the backward voltage of diode can tolerate must be higher (twice recommended) than power supply voltage.




### 4) Input under voltage protection

When the DC/DC converter is sharing the same power source with other circuits, a large input voltage drop caused by external circuits or over load may lead to an input voltage that is below the minimum input voltage specified by the converter. So it is recommended to adopt an under voltage protection circuit to cut off the DC input when the input voltage drops below the minimum specified for the converter.

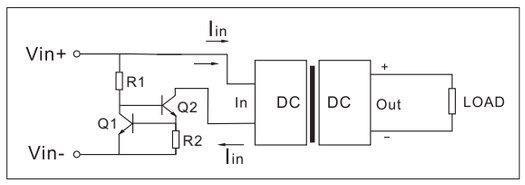



Low voltage turn-off circuit

Where R1,R2 set as low voltage switching limit, PNP transistor can be used, or a p-channel MOSFET. Please contact our sales department.
Note: For low voltage input products, the above circuit will produce a 0.7V voltage drop.

### 5) Output short circuit protection

Most unregulated DC/DC converters with RCC open loop circuit have no short-circuit protection. It is recommended the following circuit to implement short circuit protection.




R2=0.6V / Iin (rated input current)

### 6) Over current and over voltage protection

The permitted input voltage and input current is restricted to be within the range specified in the datasheet to prevent damage to the DC/DC converter. Here are some techniques to add the additional over voltage protection and over current protection on a standard DC/DC converter. As the figure shown below:

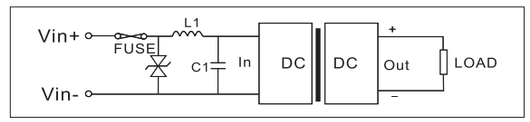



Figure 1: instant over voltage and over current protection circuit

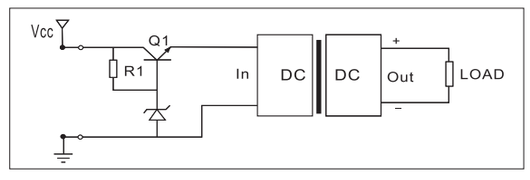



Figure 2: Continuous over voltage protection circuit

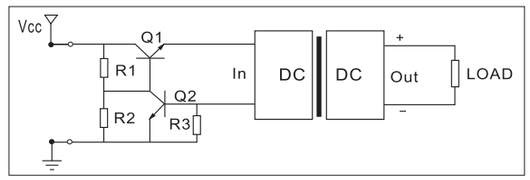



Figure 3: Continuous over current protection circuit

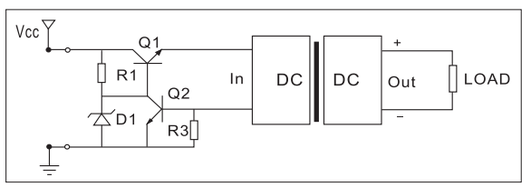
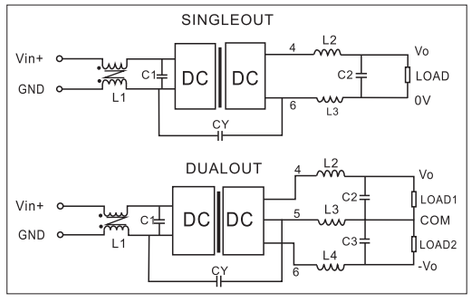



Figure 4: Continuous over voltage and over current protection circuit

### 7) Input and output filtering circuit

Most MORNSUN converters do not require additional components for filtering, etc. However, if further noise and ripple voltage reduction are required, here are some techniques. Ceramic capacitor has better filtering effects, which is suitable for the application that the frequency is higher than 100KHz.

For the product without over-current protection, it is not recommended to use tantalum capacitor as filtering capacitor. Tantalum capacitor features low equivalent series resistance and sleep mode, therefore, when the converter starts, the instant large current shock will damage the product. MORNSUN fixed input, unregulated output converters are not suggested to connect tantalum capacitor.




L2/L3/L4, C2/C3: forming the LC filter network to reduce the input ripple (the parameters of the devices are based on the ripple, but they can not exceed the maximum capacitive load)

L1, CY: L1 is the common mode choke to restrain the common mode interferences; Y1 is the 100-1000pF Y capacitor.

For some devices of filter circuit, the frequency selected should be 1/10 of the switching frequency of the converter (refer to the formula).

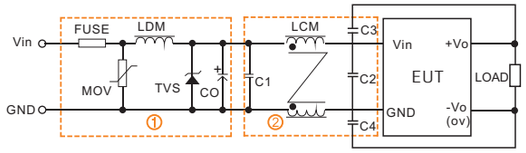
$$f C = \frac{1}{2\ \pi\sqrt{L\,C}}$$

There are differences in the results because of the application design and load condition, thus the final parameters should be adjusted according to the field application. When selecting the parameters of filtering capacitor, it can not exceed the maximum capacitive load referring to the datasheet. And the maximum capacitive load is for the backend of the whole power supply, It is not just connected at end of the power supply. For example, the regulator chip is powered by the converter and connected to a 10uF capacitor, which is included in the capacitive load.

### 8) Electromagnetic compatibility

According to IEC 61000-6-X, the input terminal of DC/DC Converter should meet the corresponding EMC requirements when it connects to DC distribution network or supplies power in long distance. Here is a typical application circuit of EMC filter as required for MORNSUN modules. ① is used for EMS protection and ② for EMI filter. More details please refer to datasheet.

And please note that EMC performance relies on not only the modules but also circuit design, PCB layout and structure.



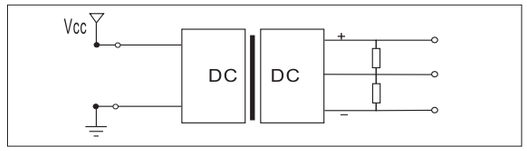

### 9) Capacitive load

Generally the switching power supply has limit of maximum capacitive load, it is recommended to connect an external electrolytic capacitor at the output end. However, the excess capacitance and low ESR (Equivalent Series Resistance) will cause the operating instability and starting failure of the converter (please refer to the datasheet for the External-connecting Capacitance List). Selecting the capacitor according to field application ensures the best performance and efficiency (tantalum capacitor is not recommended).

### 10) Output low load and overload protection

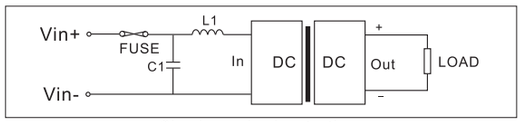
#### ① Low load prevention circuit

Most isolated DC/DC converters have minimum load requirement to guarantee proper operation and regulation. Typically, this it is 10% (non-isolated series can stand continuous unload). The output voltage will increase above stated spec for unregulated, For example, when converter is supplying power to a relay, MOSFET or IC of low power consumption(such as 485), it is recommended to guarantee a 10% load under worst case conditions. As the figure shows:




#### ② Overload prevention circuit

Though some current can be limited by a filter, when overload and/or short circuit conditions occur, a high current can cause damage to DC/DC converters. It is recommended that one installs a slow blow type fuse of rating 3 times max input current on the input as shown. Contact factory for details.

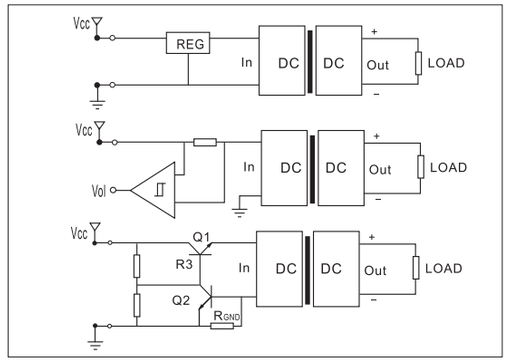



Simple overload protection

(1) It is recommended to add a fuse to the input terminal, which has the tolerance of 2-3 times of the input current, so as to achieve protection in very short time. Auto-recovery fuse can also be used, but it is relatively slow.








Input over current protection

(2) A circuit breaker can be used.

(3) Overload is avoided by limiting the input current shown as above:

A: Utilize a pre-regulator to limit the input current, but the overall efficiency will be reduced.

B: A series resistor network may be placed before the converter to limit current, but in all but a few cases, this is usually impractical.

C: To limit input current by setting $R_{GND}$, $0.7V = R_{GND} * I_{LIMIT}$ .

### 3) Remote transmission

When the power source is long-distance transmitted via cable, it will bring more ripple and electromagnetic interferences than PCB circuit. Using isolation modules at the two ends of the cable can eliminate interferences of the MOSFET by common-mode signal. In outdoor environments (high mountain or reservoir), the over voltage caused by lightning will damage the modules and even lead to end devices explosion, therefore, the lightning protections should be higher than level 2. For long-distance transmission, it is best to use high isolation voltage and low current modules to reduce the losses and interferences. At the receiving end, the losses and interferences cause the voltage reduction and instability. Thus, it is recommended to use wide-input modules to ensure the sufficient input power and avoid starting failure.

### 11) Special function pin explanation

#### ① Output voltage trimming range

Through adding a resistor at the TRIM terminal, the user can adjust the output voltage ±10% around its rated value. The total output power of the converter should be within its maximum specified one.

Figure 1 shows how to connect the external trim resistors.

If only to adjust to higher (or lower) voltage, the resistor could be connected only between TRIM terminal and negative output (or positive output). The general rules are, to increase output voltage, adding resistor between TRIM terminal and negative output is all that is needed; to decrease output voltage, then adding resistor between TRIM terminal and positive output is all that is needed. If TRIM is not needed, just leave it open circuit.

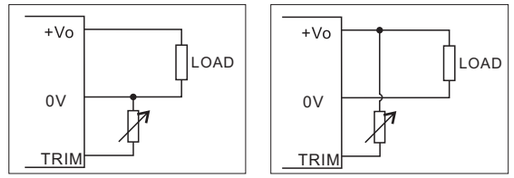
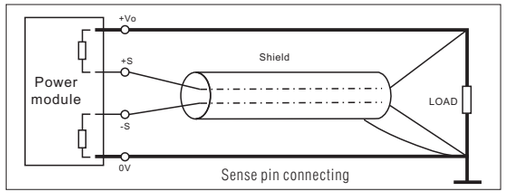



Figure 1: How to connect resistors for trimming

#### ② Remote compensation (Sense Pin)




In remote transmission, remote voltage compensation can raise the input voltage to achieve work load. The +SENSE and –SENSE remote compensation pins transmit the input voltage for the remote load, and customers can use wires for remote connecting according to the applications. However, the long wires will cause large EMI. Therefore, in practical application, it is recommended to shield the wires or use twisted-pair wires for connecting. (As shown in the figure)

#### ③ Remote on/off control

Remote ON/OFF control refers to the turning on or off the converter by external means. Remote on/off control pin is usually called CTL terminal, CNT terminal or REM terminal. There're two standard remote control models.

Positive Logic: CTL terminal connected directly to -VIN, output OFF; CTL terminal open or connected to up level (TTL High) output ON. Negative Logic: CTL terminal connected directly to -VIN, output ON; CTL terminal open, output OFF.

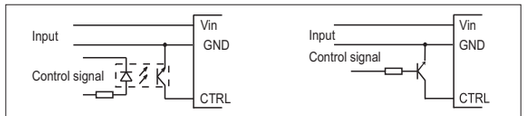



Figure 1: isolated control method  Figure 2: general control method

## 3.Common questions

In special applications, isolated control method is required. Please refer to fig. 1.

### 1) Can the module support hot plug?

Generally speaking, “hot plug” is to plug the power supply module into or out of the system directly without switching off the power supply.

Hot plug is not allowed when the module is in operation. As a huge current and voltage spike will be generated at the moment of hot plug, and it may be dozens of times of the input voltage and current of module, which may damage the module in severe conditions.

### 2) Can the module be applied at no-load and light-load conditions?

The converters can be applied at no-load or light-load conditions, but the conversion efficiency are relatively low. When the product operates at no-load, the loop is unstable. Thus, oscillations may occur and some parameters may not meet the values in datasheet. To ensure reliability, applications at no-load or light-load conditions shall be avoided. The minimum operating output current of the module shall be no less than 10% of rated current (minimum 5% load for products suffixed with R2 ). It is recommended that the module shall be applied at 30-80% load conditions or the module with smaller power shall be selected and applied.

### 3) Possible causes for poor starting of module

Cause 1: in the actual application, if the capacitive load exceeds the maximum capacitive load in datasheet and the input capacitance is too large, a very large starting current will be required at start-up time and may cause poor starting of the module; it is recommended to reduce the capacitance connected to output terminal or provide a buffer circuit at output terminal to improve the module's capability of carrying the capacitive load.

Cause 2: as limited by the maximum starting current of intrinsic safety power supply, the maximum power provided by power supply cannot meet the starting power requirement of module (relatively large starting power is required). It is recommended to select the module with small starting current or connect a small resistance or induction in series at input terminal of converter to reduce the starting current.

Cause 3: the winding of inductive load (generally the motor winding) fails to form induced electromotive force at the moment of starting, and only the internal resistance of winding is operating in the whole circuit. As the internal resistance of winding is very small (generally mΩ～Ω level), the current generated at start-up time will be very large and exceed the over-current protection point of module, causing protection phenomenon and poor starting of module. As for the module with small power, it is recommended to connect a small resistance in series at he output terminal or select a power converter with larger power.

### 4) Will the input terminal and output terminal of module be affected when a tantalum capacitor is connected?

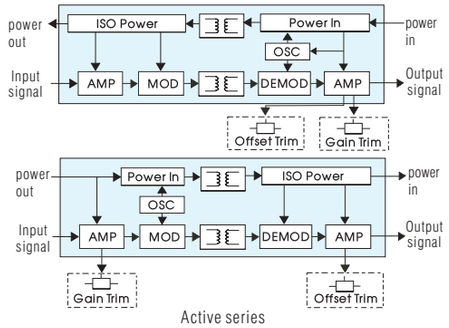
In the application of module, it is recommended to use ceramic capacitor or electrolytic capacitor at input and output terminal for the filtering circuit, rather than tantalum capacitor. On one hand, tantalum capacitor with poor surge protection is quite likely to breakdown and cause short circuit due to relatively large instantaneous current or a very high surge voltage generated at start-up time. On the other hand, the withstanding voltage of tantalum capacitor will be reduced in high temperature environment.





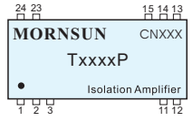
## The basic composition

Signal conditioning module is used to isolate and amplify the analog signal according to certain proportion. During this progress, the distortion of output signal must be under control, and the parameters on linearity, precision, bandwidth and isolation voltage should all meet the operation requirements. Measured objects and data collection system must be isolated to enhance the common-mode rejection ratio and to protect the safety of electronic facilities and that of the operators as well. MORNSUN isolation amplifier applies the technology of magnetoelectricity isolation. The figure is as follows:




Active series

MORNSUN Isolation amplifier module pins functions is as follows:
(Take T_P series as an example):

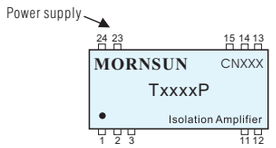



| Footprint | | | |
|---|---|---|---|
| Pin | Function | Pin | Function |
| 1(Sout-) | Signal output- | 13(Pout-) | Distribution output- |
| 2(Iout+) | Current output+ | 14(Pout+) | Distribution output+ |
| 3(Vout+) | Voltage output+ | 15(Pgnd) | Distribution output GND |
| 11(Sin+) | Signal input+ | 23(Pin+) | Power supply+ |
| 12(Sin-) | Signal input- | 24(Pin-) | Power supply- |

Remark:
This pins functions are available to DIP24/SMD24 general series, SIP16/DIP16/SMD16 small size series is different from this. The actual functions are subject to technical manual.

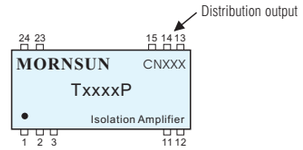
### 1. Power supply

Pin 23 is a positive electrode of power supply and pin 24 is a negative one with ±5% voltage precision. The actual voltage should be within ±105% nominal voltage. Extremely low supply voltage will not damage the isolation amplifier module but cannot ensure the driving capacity. If within 115% nominal voltage, the module could work normally but cannot ensure long-term stability. If over 115% nominal voltage, the internal components may be damaged. Please note that the polar of input signal should have reverse voltage protection to avoid damaging components. It is recommended to connect a TVS at the input terminal.




### 2. Isolation power

Pin 13 is a positive electrode of isolation power output, and pin 14 is a negative one. MORNSUN isolation power output offer 25mA output current, suitable to the power supply of input sensor or front processing circuit. Isolation power output can also be connected with current loop to meet the requirement of two-wire translator. The output of this isolation power is non-regulated. No need to connect external capacitor if there is no highly requirement of isolation power output. If the front circuit requires regulation and low ripple, please connect an external LDO or three-port regulator and the external capacitance(within 4.7μF). Besides, the specification of isolated output must match the power specification of instruments to avoid the damage to the field instruments.

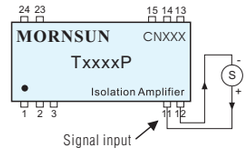



### 3. Signal input

Pin 11 is a positive electrode of input signal, Pin 12 is a negative one.

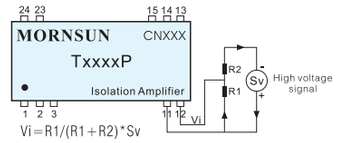
#### 1) The actual signal input range within the nominal range

Here is the connection. S is voltage signal or current signal source, which can access the input signal directly.

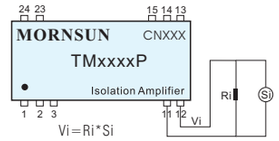



#### 2) The actual input signal range beyond the nominal range

a. The solution of high voltage signal source is as below: Sv is high voltage signal source, which can access the input signal end by a divide resistance, because the input independence is very high(larger than 10MΩ), so the connection will not effect the module's input signal.

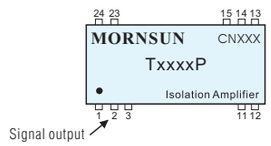



b. The solution of large current signal source is as below: Si is current signal source, which can series a shunt resistance Ri in the circuit to sampling mV signal, then amplify it to standard industrial signal through our module.



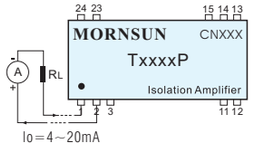

### 4. Signal output

Pin 1 is a negative electrode of output signal. Pin 2 is a positive output of constant current signal. Pin 3 is a positive output of voltage signal. Usually, pin 2 offer a constant current signal and the load capacity is less than 500Ω. If the load is less than 500Ω, the correspondent output only depends on the input signal, not the load. This characteristic urges that constant current signal is suitable for remote transmission. Only connecting a sampling resistance with constant current loop at the remote terminal, the voltage of the sampling resistance is linear to input signal.

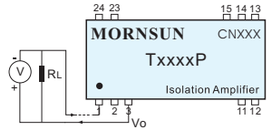


# DC/DC Converter Application Guidelines

a.Current signal output
As below, the current output is from pin 2, and pin 3 is no connection .



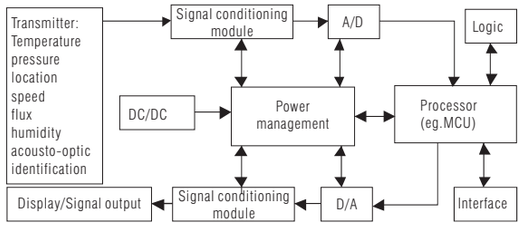

b: Voltage signal output
As below, voltage output is from the pin 3, and pin 2 is no connection. When the voltage output is maximum, load capacity is higher than 1KΩ.




## Typical application

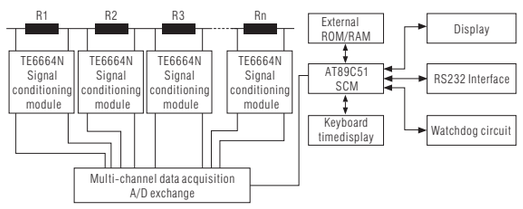
### 1. Signal acquisition: measurement and control instruments

In most applications of automatic measurement and control instruments, transmitters are widely used to convert the signals, which can't be measured directly by MCU, into electrical analog signal which can be processed by MCU easily, such as current transmitter, press transmitter, location transmitter, speed transmitter, temperature transmitter, flow rate transmitter, humidity transmitter, acousto-optic transmitter and image identification transmitter, etc. The figure is as follows:




Typical application structure of signal conditioning module

Example: Specific application of the signal conditioning module based on embedded metro stray current monitoring instrument.
Most metro traction power supply is DC power supply. When DC large current flows along the rail on the ground, leakage current flows to the ground and to all kinds of metal on the ground, and then back to the power system. This leakage current is called stray current, which erodes the metal under the ground. Serious erosion of stray current and natural corrosion will lead to the accelerating of subway electrochemical corrosion. So it's necessary to monitor stray current. Please refer to CJJ49-92 standard for details.
Here is a recommended solution circuit:

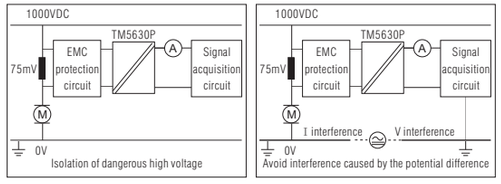



Application of signal conditioning module on metro stray current monitoring

### 2. Isolating anti-interference: the system of coulometric monitoring

In modern electric measurement and controlling, usually, low-voltage instrument is used to measure and control high-voltage, heavy current and something like analog signals. If there is no isolation between the digital signal and those analog signals, high-voltage and heavy current will easily damage modules and even cause accidents in serious situation.

Example: (1) In the industrial factory, in order to guarantee safety and to get the optimal signal quality in industrial factory, the measurement and control of signal always call for the electrical isolation of it.
(2) In the areas of high voltage or the one that has the danger of explosion, there are different ground potentials. If the plant areas are far away from the central control room, the high common-mode voltage between them will not allow the measuring signal being connected directly to the equipment in the factory. Under such circumstances, electrical isolation transmit signal is definitely necessary. The following figure shows the current monitoring of motor to prevent the operation error of the motor.

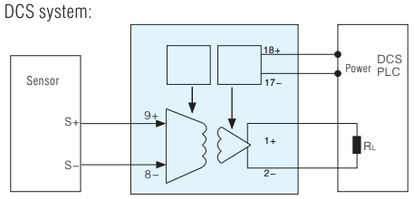



Application of signal conditioning module on coulometric monitoring system

signal conditioning module is mainly used to control the transmit of the signal under the situation of high common-mode voltage and isolate the measured objects and data collection system so as to improve the common-mode voltage ratio and protect the safety of electronic facility and that of the operator as well. It is widely used in the fields of measuring equipment, medical electronic equipment and power equipment applications.

### 3. Signal Conversion & Long Distance Transmission: PLC & DCS System

In PLC & DCS system, various non-standard signal gathered by sensors and amplifiers of front need to be converted into standard signal, and sometimes conversion among standard signal is necessary for interface matching. There is attenuation in the transmission of voltage signal but not in the constant current output. It is recommended to convert the voltage signal into current for signal remote transmission. In case, there is interference of potential difference between the grounds of sensors and transmitters, and the grounds of control room where PLC and DCS system is, external interference signal will be coupled into the signal through transmission circuits and lead to unstable signal output. Isolation amplifiers are recommended to isolate and convert signals to reduce interferences. Here shows the typical application of isolation amplifier in PLC or DCS system:




Application of signal conditioning module on DCS & PLS system

Besides signal acquisition, isolation anti-interference, signal conversion and remote transmission, signal conditioning module is suitable for signal interface matching, load capacity increase, signal distribution output, more reliable regional isolation and differential signal input applications.