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

MORNSUN Power

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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.

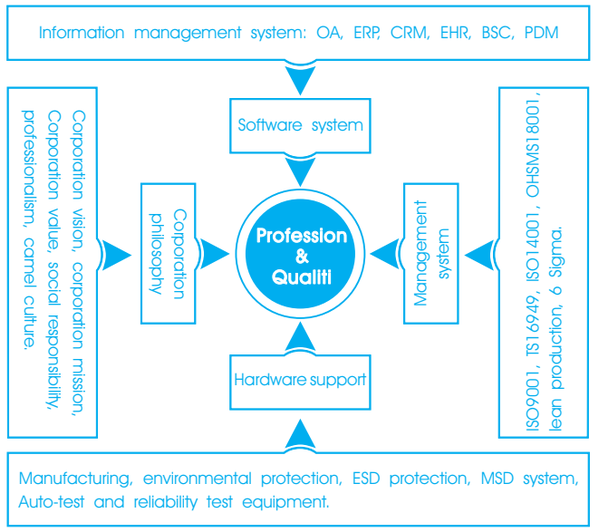
Meanwhile, the reliability of products depends on not only design and manufacturing but also customers' proper operation. Therefore, MORNSUN FAE team are ready to offer professional technical support to customers to enhance the reliability.

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

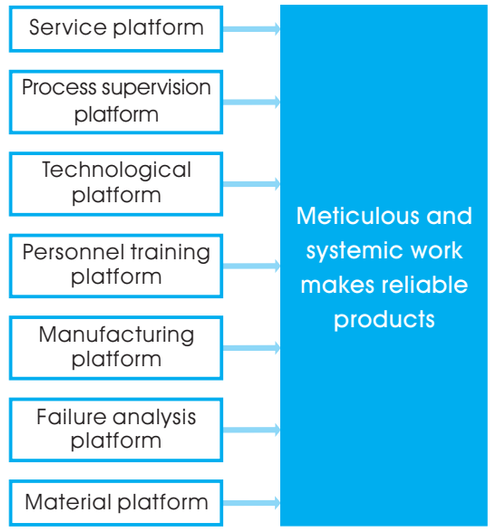
To meet customers demand and expectation, MORNSUN spends much time and money to improve the power supply reliability. In 2007, MORNSUN established the power supply reliability system project and brought in 7 platforms to improve the reliability of MORNSUN products in the following 7 years, including 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	81
QA02	12	11.6-12.4	+15	-8.7	+80/-40	80%	3000VAC	RoHS	81
QA03	24	23.3-24.7	+15	-8.7	+80/-40	80%	3000VAC	RoHS	81
QA04	12	9-15	+15	-8	+100/-80	80%	3000VAC	RoHS	81
QA01C	15	13.5-16.5	+20	-4	+100/-100	83%	3500VAC	RoHS	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	22
LS03-SR2S(-F)	3W	85-264VAC/70-400VDC	3.3,5,9,12,15,24	RoHS	22
LS03-16BxxSS	3W	90-528VAC/100-745VDC	3.3,5,9,12,15,24	RoHS	23
LS05-SS	5W	85-264VAC/100-400VDC	3.3,5,9,12,15,24	RoHS	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	27-28
LH-13B	5W,10W,15W,20W,25W	85-305VAC/100-430VDC	3.3,5,9,12,15,24,48	RoHS	26
LH40	40W	85-264VAC/100-370VDC	3.3,5,9,12,15,24	RHS	29
LH60-20B	60W	90-264VAC/122-370VDC	5,9,12,15,24,48	RoHS	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	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	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	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	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/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	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,0-2.5/3.3/5/10V	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	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

Instrumentation

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

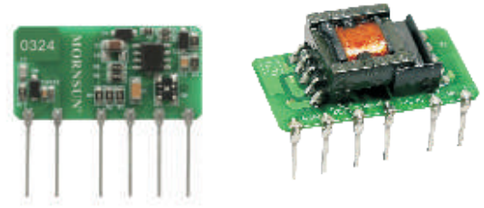
AC/DC Converter

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



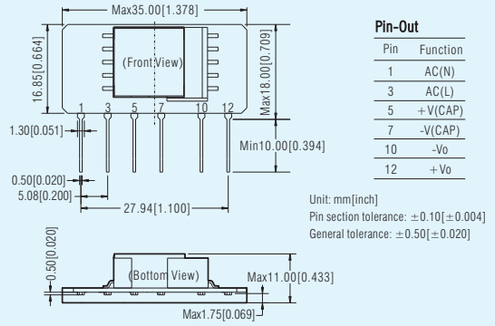
Product Program

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)

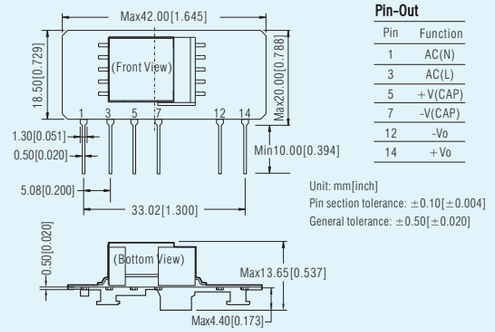


Pin-Out

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)



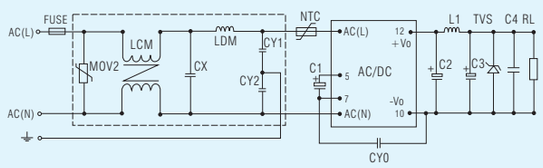
Pin-Out

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]

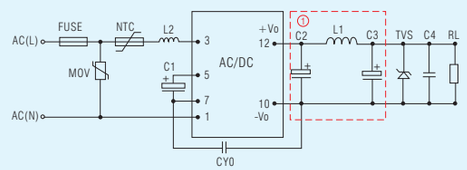
EMC Solution-recommended Circuit

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

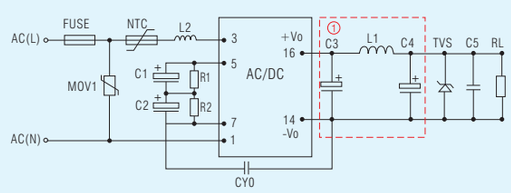
- Suitable for various applications, especially for limited dimension application
- Suitable for electric power and instrumentation applications
- Input voltage range: 90-528VAC/100-745VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 4000VAC (SIP) / 3000VAC (DIP)
- Output short-circuit and over-current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

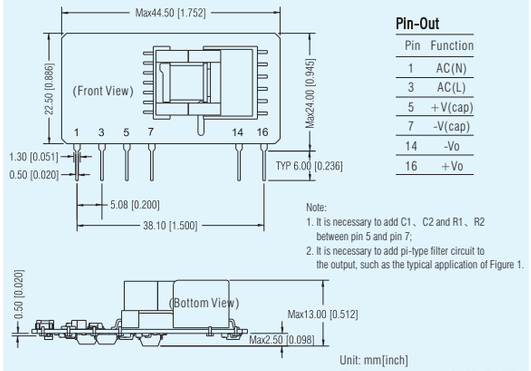
Typical Application Circuit



Note: ① is Pi filter circuit

Package Dimension

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



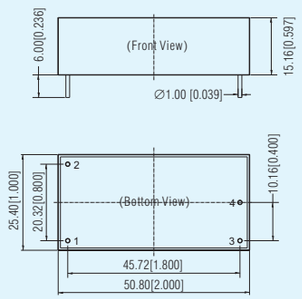
Pin-Out

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)



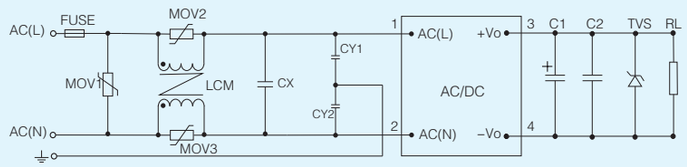
Pin-Out

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

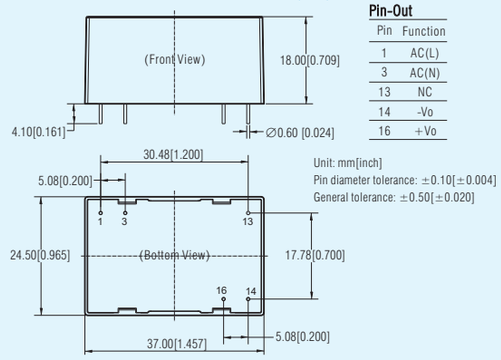
A4S DIN-Rail Mounting

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)

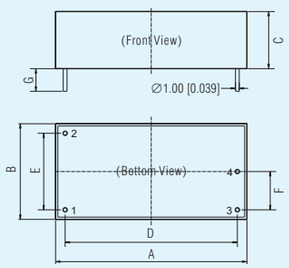


Pin-Out

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

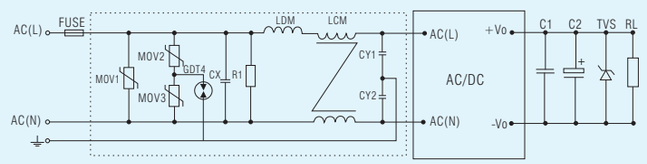
	LD05	LD10	LD12	LD20
1	AC(N)	AC(N)	AC(N)	AC(N)
2	AC(L)	AC(L)	AC(L)	AC(L)
3	+Vo	+Vo	+Vo	+Vo
4	-Vo	-Vo	-Vo	-Vo

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

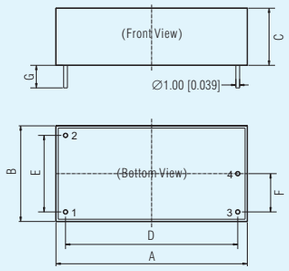
A4S DIN-Rail Mounting

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

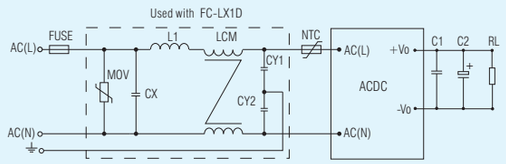
Pin-Out

	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

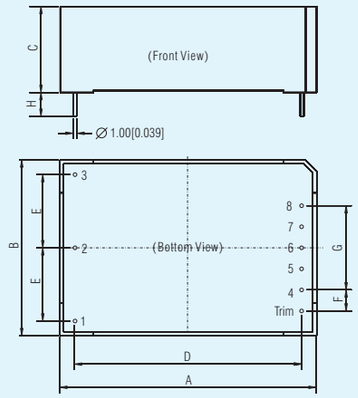
A2 Chassis Mounting

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

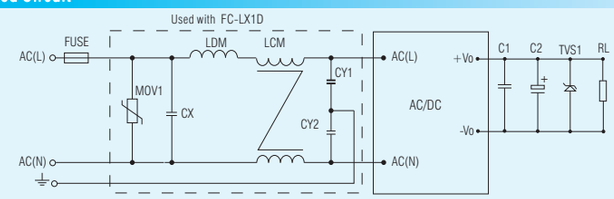
Pin	LH-13B	Pin	LH-13B
1	⏚	6	No Pin
2	AC(N)	7	No Pin
3	AC(L)	8	+Vo
4	-Vo	Trim	Trim**
5	No Pin		

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

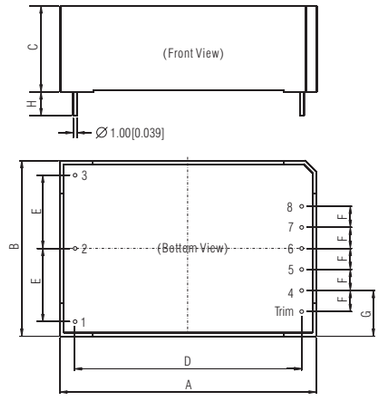
Model Number	Power	Output Voltage/ Current(Vo1/Io1)	Output Voltage/ Current(Vo2/Io2)	Effi(%) (typ)	Certification
LH05-10B03	4W	3.3V/1250mA		70	
LH05-10B05		5V/1000mA		75	
LH05-10B09		9V/550mA		77	
LH05-10B12		12V/420mA		79	
LH05-10B15		15V/330mA		80	
LH05-10B24		24V/230mA		82	
LH05-10A05		+5V/500mA	−5V/500mA	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

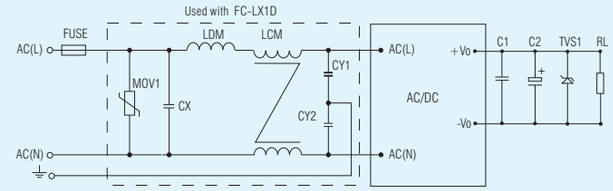
NO.	LH05	LH10	LH15	LH20	LH25
A	48.50	55.00	62.00	70.00	70.00
B	36.00	45.00	45.00	48.00	48.00
C	20.50	21.00	22.50	23.50	23.50
D	40.50	47.00	54.00	62.00	62.00
E	12.50	17.50	17.50	20.00	20.00
F	4.00	5.00	5.00	5.75	5.75
G	10.00	12.50	12.50	12.50	12.50

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

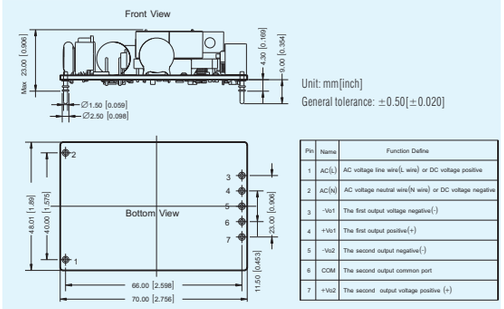
Features

- 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)



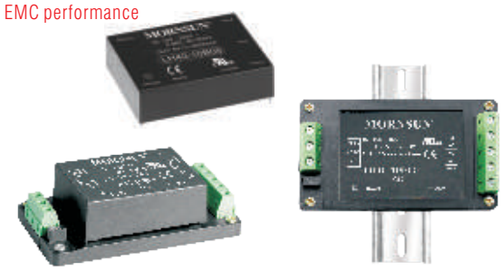
Pin	Name	Function Define
1	AC(L)	AC voltage line wire(L wire) or DC voltage positive
2	AC(N)	AC voltage neutral wire(N wire) or DC voltage negative
3	-Vo1	The first output voltage negative(-)
4	+Vo1	The first output positive(+)
5	-Vo2	The second output negative(-)
6	COM	The second output common port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

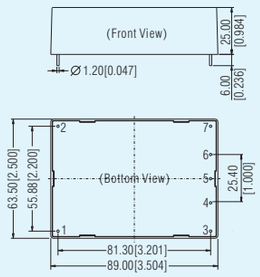
Model Number	Power	Output Voltage/ Current(Vo1/Io1)	Output Voltage/ Current(Vo2/Io2)	Isolation	Certification
LH40-10B03	26.4W	3.3V/8000mA		3000VAC	cULus CE RoHS
LH40-10B05	40W	5V/8000mA			
LH40-10B09		9V/4444mA			
LH40-10B12		12V/3333mA			
LH40-10B15		15V/2666mA			
LH40-10B24		24V/1667mA			
LH40-10D0512-13	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)



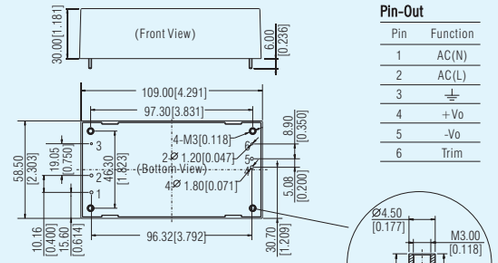
Pin-Out

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)



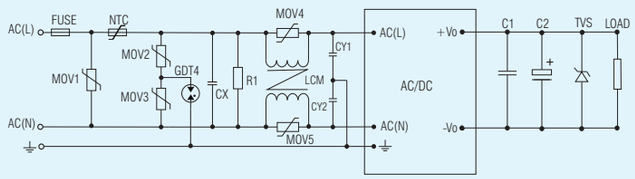
Pin-Out

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

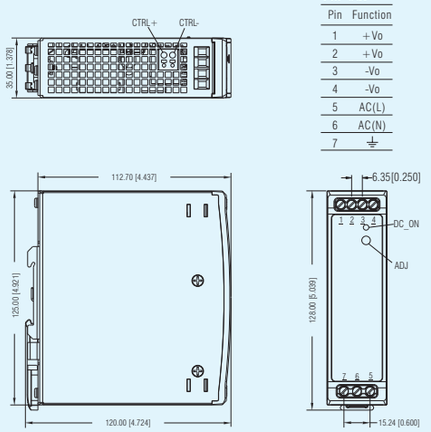
- Great power DIN-Rail power supply, suitable for industrial control, instrumentation and railway applications
- Input voltage range: 85-264VAC/120-370VDC
- Operating temperature: -25℃ to +70℃
- Isolation: 3000VAC
- Active PFC
- Input under-voltage, output short-circuit, over-current, over-voltage and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

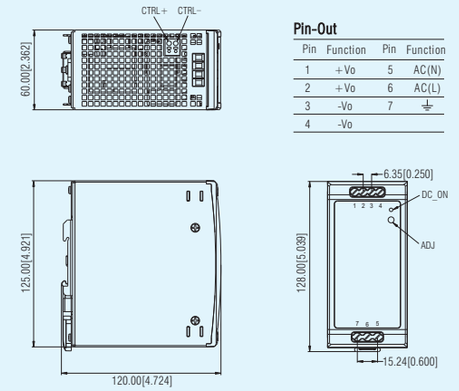


Pin-Out

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

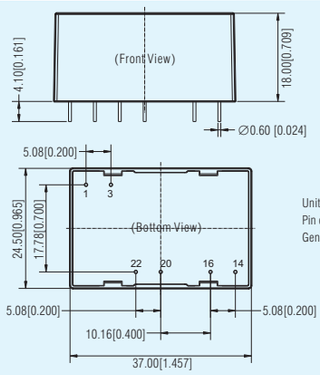
- No electrolytic capacitor, especially suitable for harsh environment and higher requirements for reliability and long life applications
- Input voltage range: 165-264VAC/233-370VDC
- Operating temperature: -40℃ to +70℃
- Isolation: 3000VAC
- 5 years warranty
- EMI Meets CLASS B, anti surge capacity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

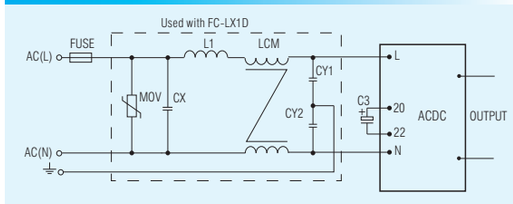


Pin-Out

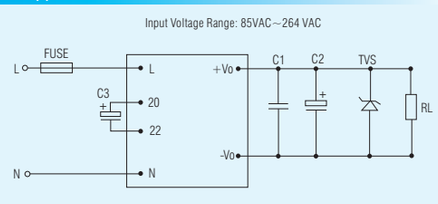
Pin	Function
1	AC(L)
3	AC(N)
14	-Vo
16	+Vo
20	+V(CAP)
22	-V(CAP)

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

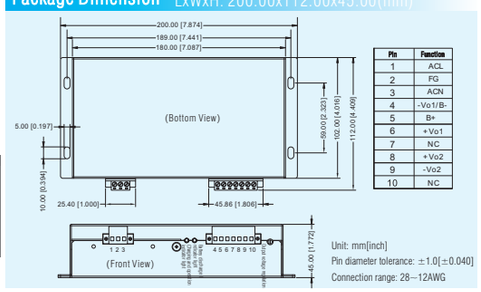
Features

- 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） 27Vd/6.0A（≤30S）	165-264VAC	27V/1A	27V/0.5A 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

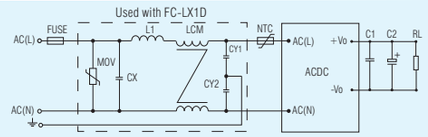
- EN60601-1, ANSI/AAMI ES60601-1 approval (2*MOPP)
- Input voltage range: 85-264VAC/100-370VDC
- Operating temperature: -25℃ to +70℃
- Isolation: 4000VAC
- Ripple & noise: 50mV(Typ.)
- Optional packages: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage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

Product Program

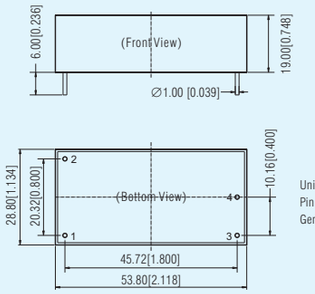
Model Number	Power	Input Voltage Range	Output Voltage/ Current(Vo/Io)	Effi(%) (typ)	Certification
LD05-20B05MU	5W	85-264VAC	5V/1000mA	76	cULus CE RoHS
LD05-20B12MU		85-264VAC	12V/420mA	80	
LD05-20B15MU		85-264VAC	15V/333mA	81	
LD05-20B24MU	5.5W	85-264VAC	24V/230mA	81	

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

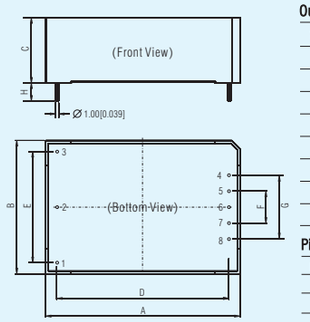
- Meet EN60601-1, ANSI/AAMI ES60601-1 (2*MOPP) standards (pending)
- Input voltage range: 85-264VAC/100-370VDC
- Operating Temperature: -40℃ to +70℃
- Isolation: 4000VAC
- Operating elevation: 5000m
- Low standby power consumption: <0.1W
- Low leakage current: <100uA
- Output short-circuit, over-current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

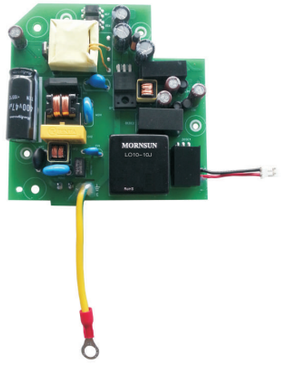
- This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

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

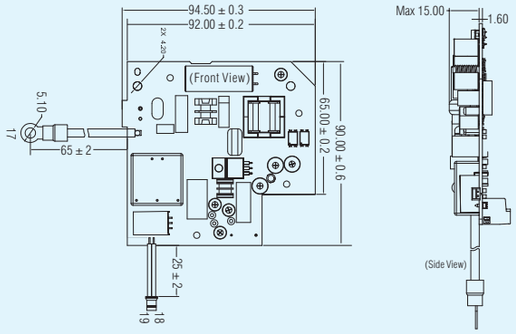


Product Program

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

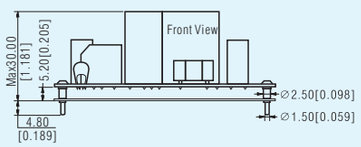
- Specialized for electric-meter application, EMI CLASS B with ±2KV surge
- Input voltage range: 30-280VAC/30-400VDC
- Isolation: 4000VAC
- High efficiency, high reliability
- Low ripple & noise, low standby power consumption
- Long-life, low-impedance electrolytic capacitors
- Output short-circuit and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

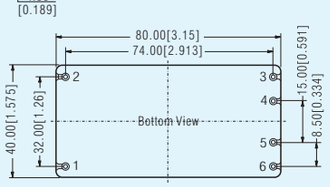
Product Program

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

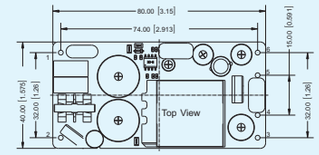
10W Dual Outputs 528V Input Voltage Open Frame LO Series Specialized for Electric Power

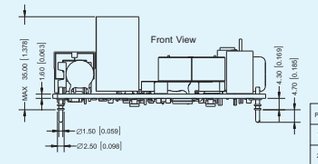
RoHS

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

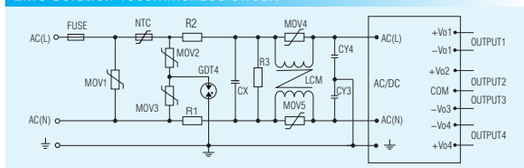
- EMC: EMI CLASS B; ±2KV/4KV surge (level four)
- Input voltage range: 85-264VAC/100-370VDC
- Isolation: 2000VAC
- Low standby power consumption, high efficiency
- Low ripple & noise
- Multiplexed outputs, metal mask
- Output short-circuit, over-current and over-voltage protections

Product Program

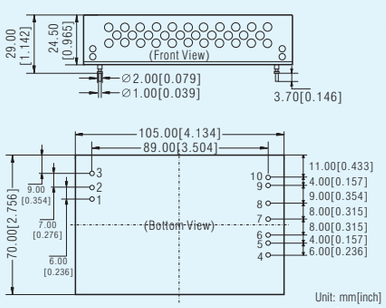
Model Number	Power	Input Voltage Range	Output Voltage (VDC)	Certification
LM30-00J0512-03E	30W	85-264VAC, 100-370VDC	5/±12/24	RoHS

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

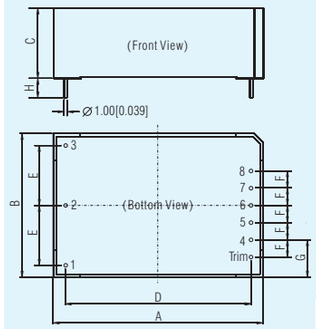
A4 DIN-Rail Mounting

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

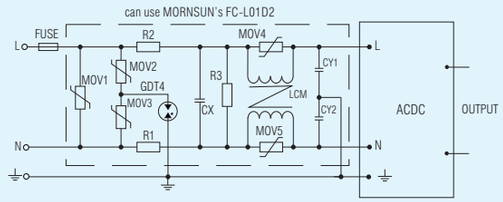
Pin	LH-10B	LH-10D
1	⏚	⏚
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-Vo	-Vo1
5	No Pin	+Vo1
6	No Pin	No Pin
7	No Pin	-Vo2
8	+Vo	+Vo2
Trim	Trim**	No Pin

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

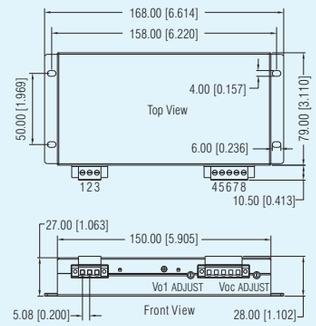
- Specialized for distribution automation system, power magnet switch controller, electric network cabinet and other electrical equipment applications; with ultra-capacitor charging function
- Operating temperature: -40℃ to +75℃
- Isolation: 3000VAC
- Efficiency up to 85%
- Continuous adjustable output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

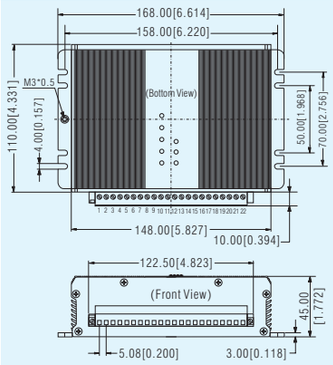
Product Program

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

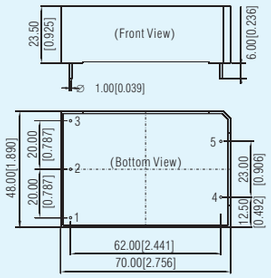
A4C DIN-Rail Mounting

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

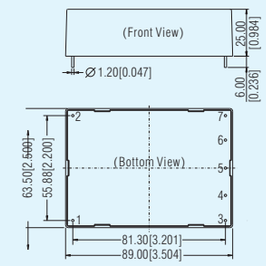
A6 DIN-Rail Mounting

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

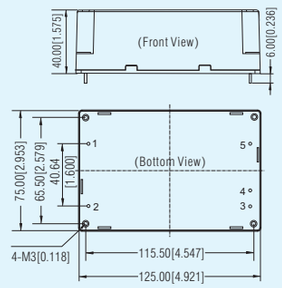
Product Program

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)

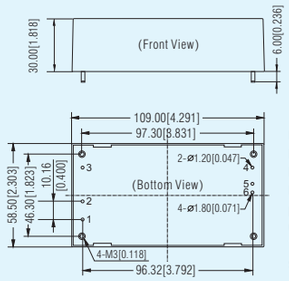


Pin-Out

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

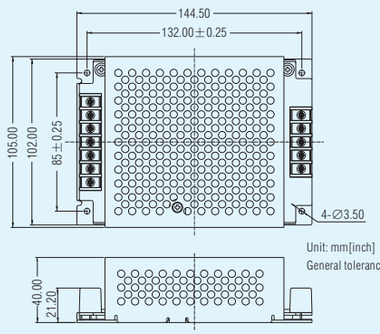
- Specialized for SVG application with input under-voltage, reverse input voltage,
- output short-circuit and over-voltage protections
- 10:1ultra-wide input voltage range: 150-1500VDC
- Operating temperature: -40℃ to +85℃
- Isolation: 4000VAC
- High reliability, 3 years warranty
- High 78% efficiency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

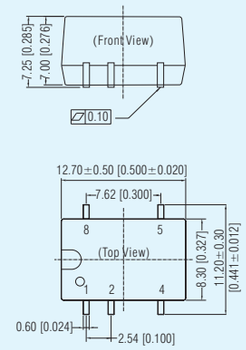
- Specialized for automotive application, components meet AEC-Q100 standard
- Operating temperature: -50℃ to +125℃
- Isolation: 3500VDC
- Compact SMD package
- Manufacturing process meets TS16949 standard
- Output short-circuit protection (self-recovery)

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

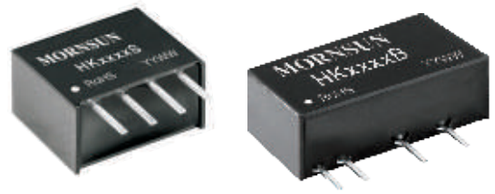
Pin	Function
1	GND
2	Vin
4	0V
5	+Vo
8	NC

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

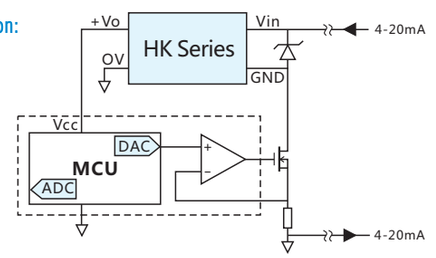
- Suitable for two-wire loop power application
- Operating temperature: -40℃ to +85℃
- High output current up to 5mA
- Ultra-miniature SIP package (HK_S Series)
- Excellent high and low temperature characteristics
- Isolation 1500VDC

Product Program

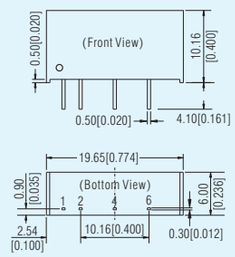
Model Number	Input Voltage (VDC)	Input Current (mA)	Output Voltage (VDC)	Output Current (mA)	Isolation voltage (package)	Max.Capacitive Load (μF)
HK0503S	5	3.5-20	3.3	2.5	1500VDC (SIP)	10
HK5S03B		4-20	3.3	3.2	1000VDC (SIP)	10
HK5S05B		4-20	5	2	1000VDC (SIP)	10
HK8S03B	7.5	4-20	3.3	3.5	1000VDC (SIP)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

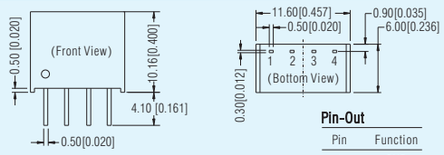


Pin-Out

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]

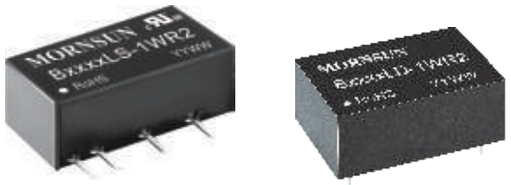
• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

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

RoHS

Features

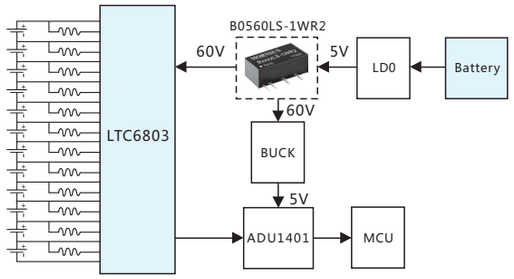
- Suitable for BMS application
- Isolation: 1500VDC
- High power density
- No external component required
- International standard pin-out
- Meet requirements of EMI CISPR25 CLASS 3 Standard
- Efficiency up to 79%



Product Program

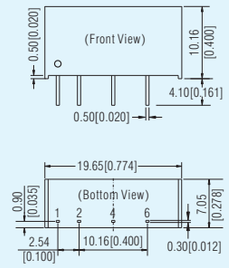
Model Number	Input Voltage Range (Nominal)	Output Voltage (VDC)	Output Current (mA)	Effi(%) (typ)	Package
B0560LS-1WR2	4.5-5.5 (5VDC)	60	17	77	SIP
B0560LD-1WR2				77	DIP
B0550LD-1WR2		50	20	79	DIP

Application:



Package Dimension

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

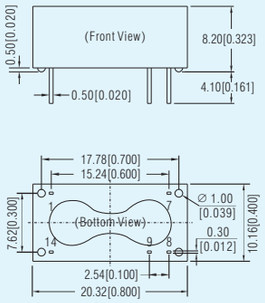


Pin-Out

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

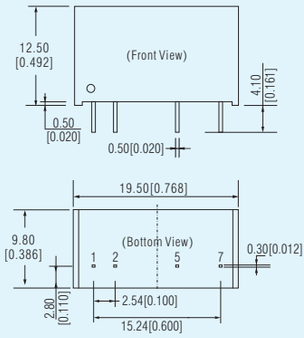
Product Program

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)

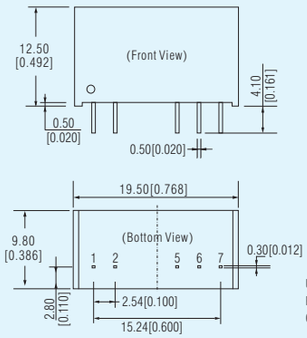


Pin-Out

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

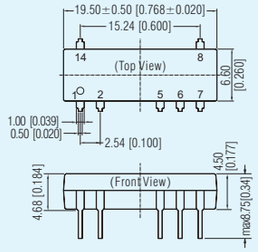
Product Program

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)

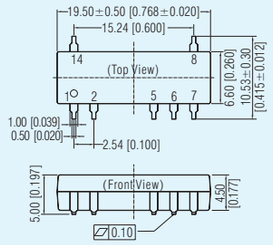


Pin-Out	
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

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)



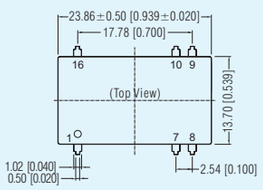
Pin-Out	
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

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)

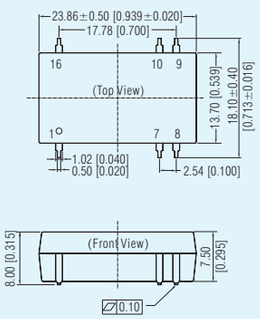


Pin-Out	
Pin	Function
1	GND
7	NC
8	NC
9	+Vo
10	0V
16	Vin

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.

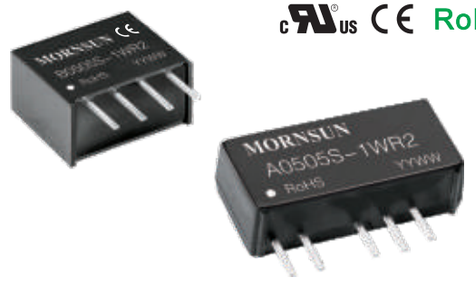
Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

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



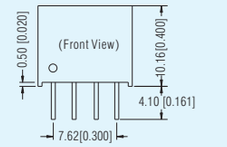
Product Program

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		

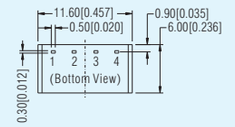
Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

Package Dimension

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

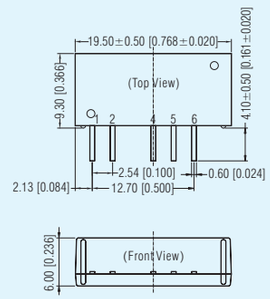


Pin-Out	
Pin	Function
1	GND
2	Vin
3	0V
4	+Vo



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)



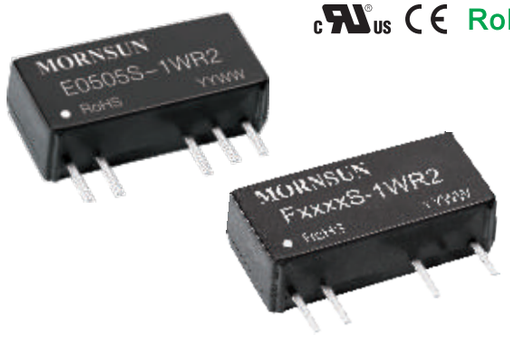
Pin-Out		
Pin	A_S–1WR2	B_LS–1WR2
1	Vin	Vin
2	GND	GND
4	-Vo	0V
5	0V	No Pin
6	+Vo	+Vo

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



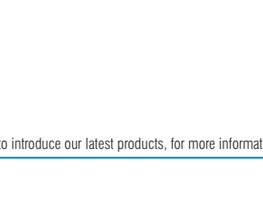
Product Program

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)

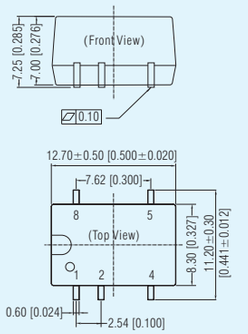
Pin-Out

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

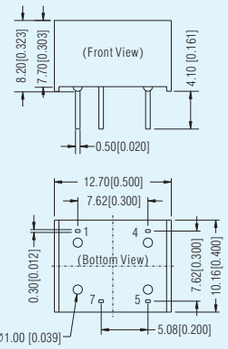
Product Program

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)

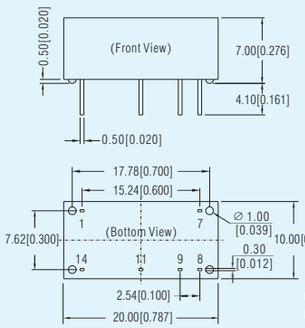


Pin-Out

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)



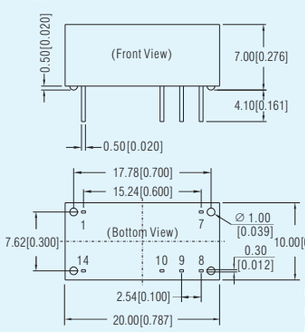
Pin-Out

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

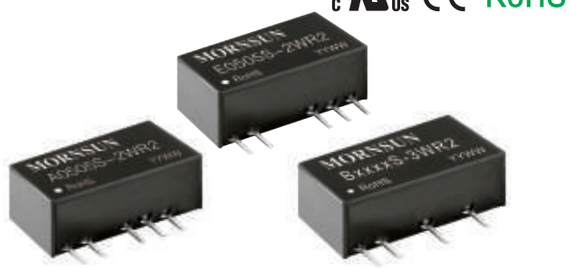
NC: No connection.

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



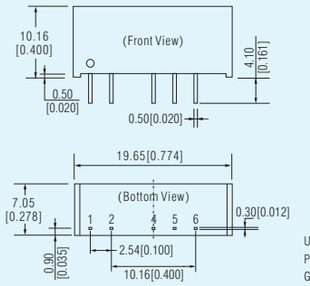
Product Program

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)



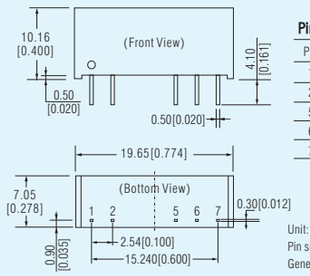
Pin-Out

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)

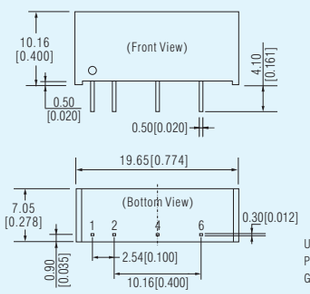


Pin-Out

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

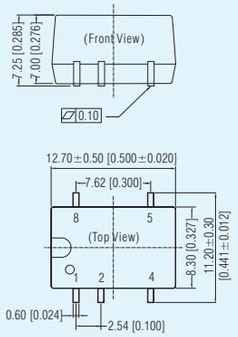
Product Program

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)

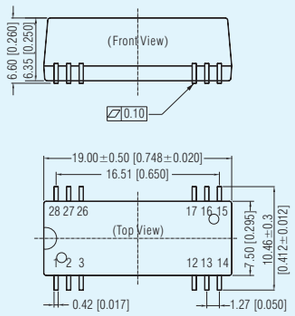


Pin-Out	
Pin	Function
1	GND
2	Vin
4	0V
5	+Vo
8	NC

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

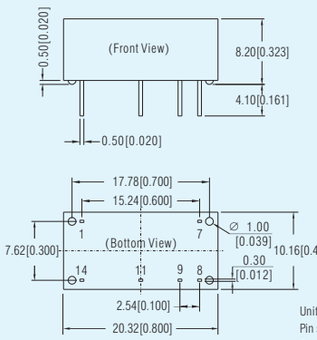
Product Program

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)

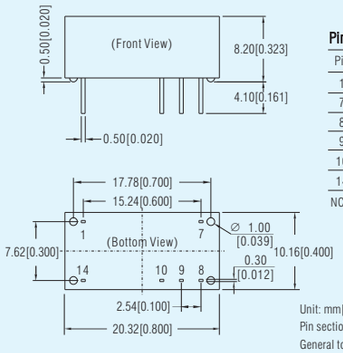


Pin-Out		
Pin	Single	Dual
1	GND	GND
7	NC	NC
8	0V	0V
9	+Vo	+Vo
11	No Pin	-Vo
14	Vin	Vin

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

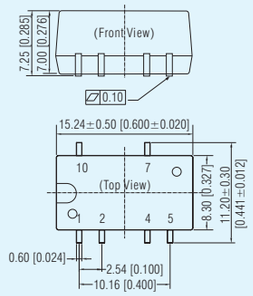
Product Program

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)

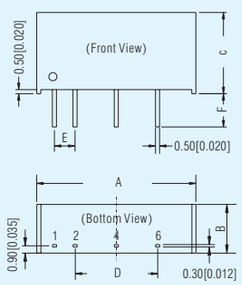


Pin-Out	
Pin	Function
1	GND
2	Vin
4	0V
5	0V
7	+Vo
10	NC

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

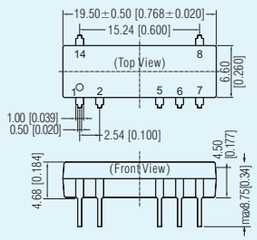


Pin-Out				
Pin	1	2	4	6
Function	Vin	GND	0V	+Vo

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)

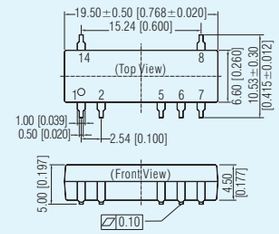


Pin-Out	
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

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]

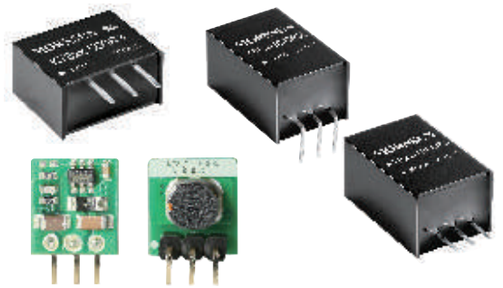
• This catalog is used to introduce our latest products, for more information, please contact our sales department

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



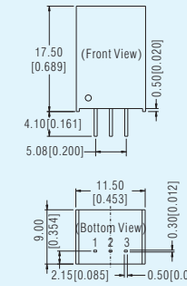
Product Program

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		

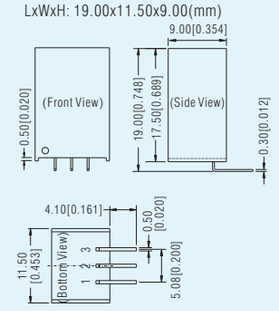
Note: 1. Series with suffix "L" are available for 90°pin-out;
2. If the application requires higher performance for EMC, our matching EMC auxiliary devices are available.

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)

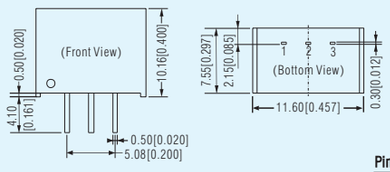


K78-1000R3(L) K78U-500(L)/K78-1500(L)/K78-2000(L)

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

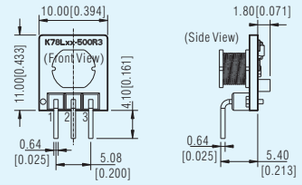
Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

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]

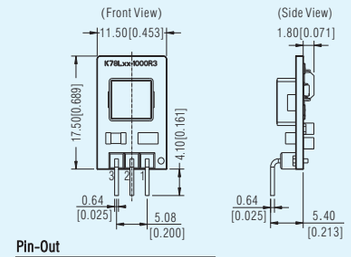
K78L-500R3 Series (Open Frame)
LxWxH:10.00x7.20x11.00(mm)



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		

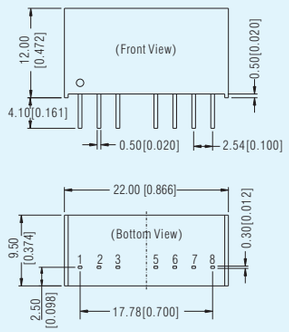
Product Program 2:1 Input series

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

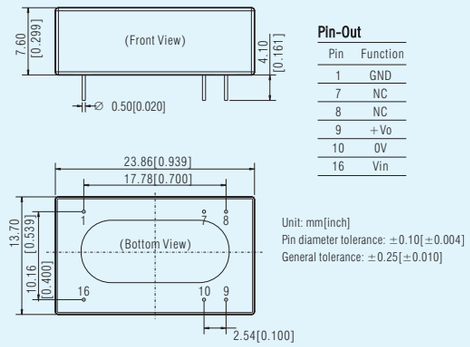
Product Program 2:1 Input series

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)



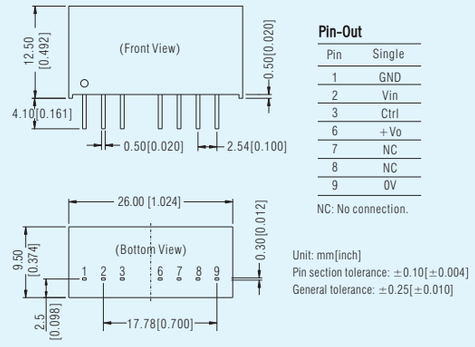
Pin-Out

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		

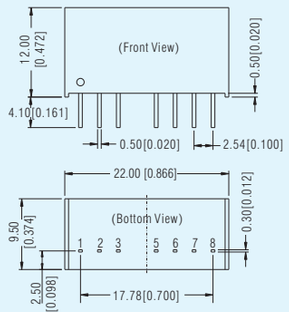
Product Program 2:1 Input series

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)



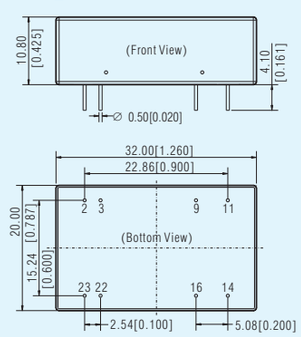
Pin-Out

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

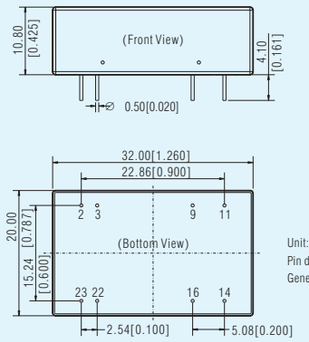
Product Program 4:1 Input series

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

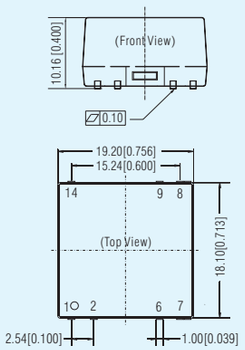
- Suitable for communication, instrumentation and control electric power applications
- Operating temperature: -40℃ to +85℃
- Efficiency up to 84%
- Standby power consumption as low as 0.10W
- International standard pin-out
- Input under-voltage, output short-circuit and over-current protections
- IEC/UL/EN60950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

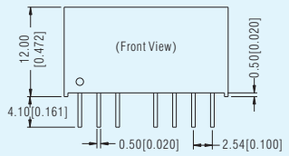
Product Program 2:1 Input series

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)



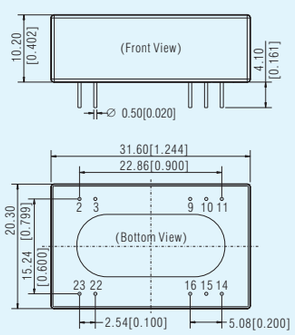
Pin-Out

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

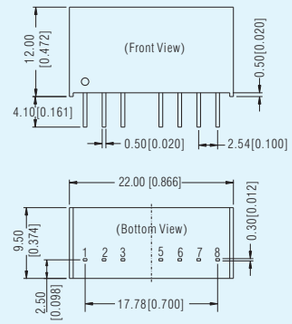
Features

- 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

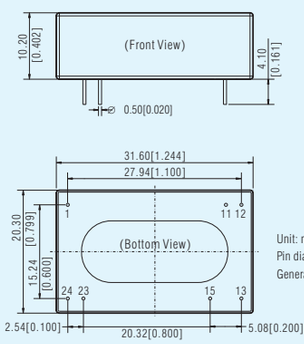
- 4:1Ultra wide input voltage range
- Highe fficiency up to 85%
- Standby power consumption as low as 0.12W
- Isolation:6000VDC(Enhanced)
- Operating temperature range:-40°C to +85°C
- International standard pin-out
- Input under-voltage,output over-voltage,over-current and short-circuit protections

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

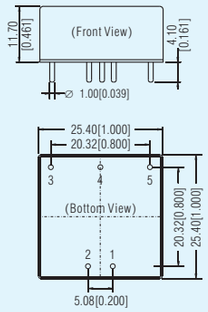
Product Program 2:1 Input series

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)

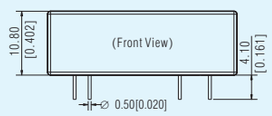


Pin-Out

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]

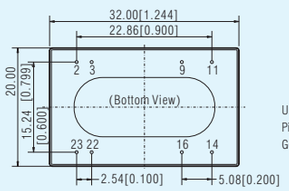
VRA/B_ZP-6WR3 Series LxWxH: 32.00x20.00x10.80(mm)



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

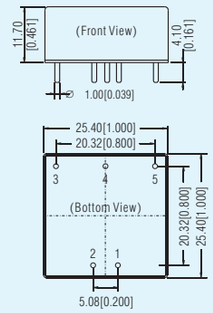
Product Program 4:1 Input series

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)

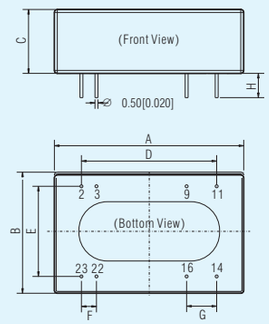


Pin-Out

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

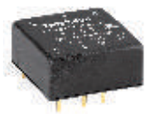
10W 2:1/4:1Wide Input Voltage, Isolated & Regulated Output Series

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

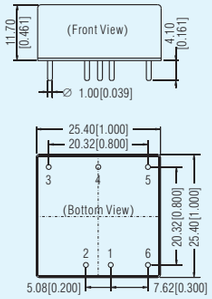
Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
URA2405YMD-10WR3	10W	9-36 (24VDC)	±5V/±1000mA	1500VDC (DIP)	cULus CB CE RoHS
URA2409YMD-10WR3			±9V/±555mA		
URA2412YMD-10WR3			±12V/±416mA		
URA2415YMD-10WR3			±15V/±333mA		
URA2424YMD-10WR3			±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)

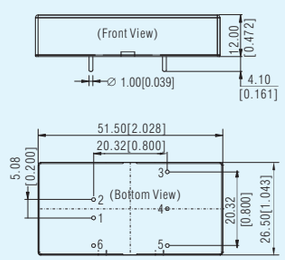


Pin-Out

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

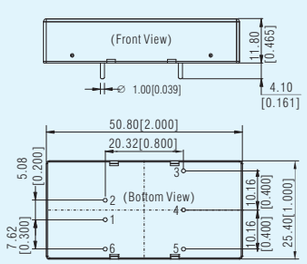
Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
URA2405LD-20WR3	20W	9-36 (24VDC)	±5V/±2000mA	1500VDC (DIP)	cULus CB CE RoHS
URA2409LD-20WR3			±9V/±1111mA		
URA2412LD-20WR3			±12V/±834mA		
URA2415LD-20WR3			±15V/±667mA		
URB2403LD-20WR3			3.3V/5000mA		
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)



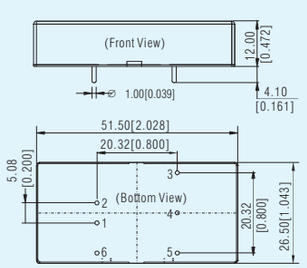
Pin-Out

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

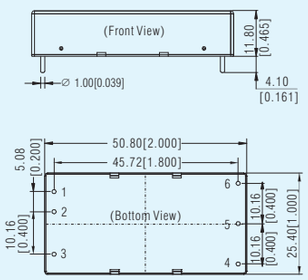
Product Program 2:1 Input series

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)

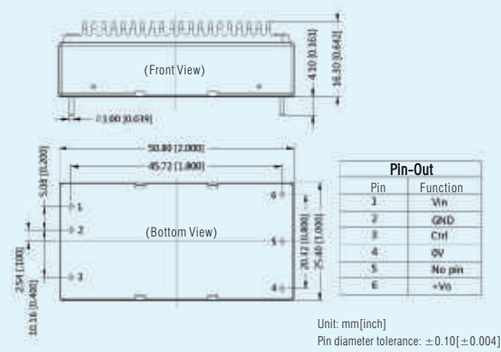
URB_LD-30WR3, VRB_LD-30WR3, VRB_LD-50W Series LxWxH: 50.80x25.40x11.80(mm)



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

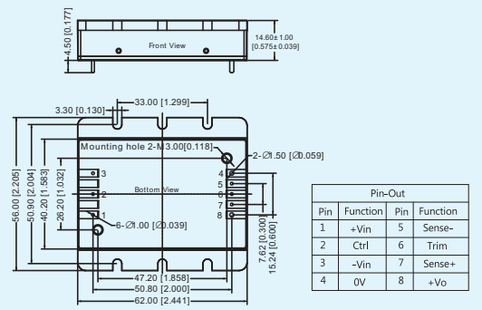
- 4:1 wide input voltage range
- Efficiency up to 94%
- Isolation: 2250VDC
- Input under-voltage, output over-voltage, over short-circuit, over-temperature and over -current protections
- Operating temperature: -40℃ to +85℃
- Metal mask, international standard package
- Meet railway standard EN50155

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

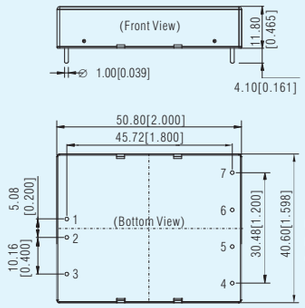
- Suitable for automotive application
- Operating temperature: -40℃ to +85℃
- Efficiency up to 82%
- Input voltage as low as 6VDC
- Standby power consumption as low as 0.4W
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current and short-circuit protections

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		

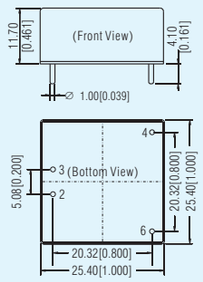
Note: Heat sink is available.

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)



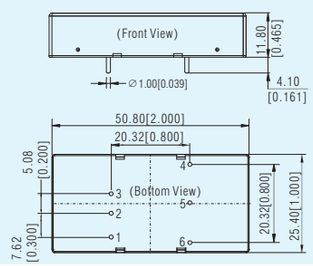
Pin-Out

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)

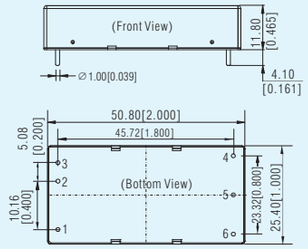


Pin-Out

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

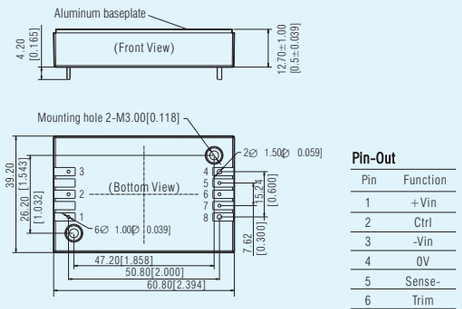
Product Program

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

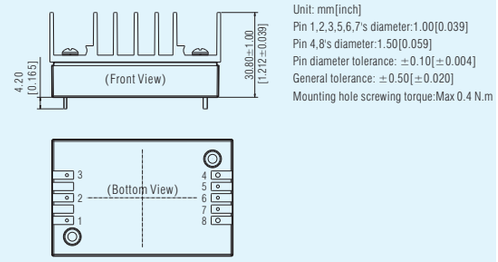
Without heat sink LxWxH: 60.80x39.20x12.70(mm)



Pin-Out

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

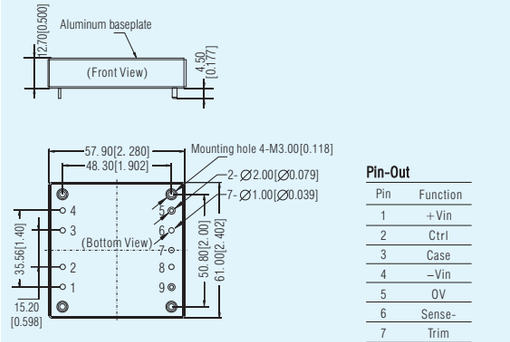
With heat sink LxWxH: 62.00x39.20x30.80(mm)



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

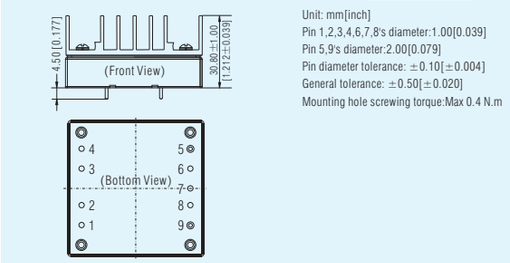
Without heat sink LxWxH: 57.90x61.00x12.70(mm)



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

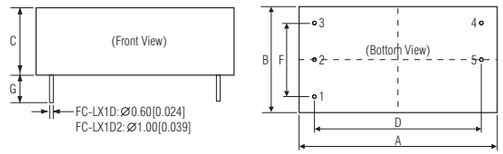
A2S Chassis Mounting Package　　A4S DIN-Rail Mounting Package

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

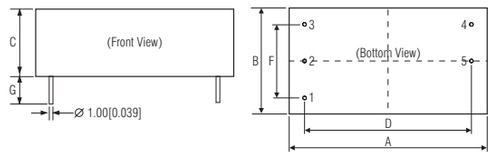
A2S Chassis Mounting Package　　A4S DIN-Rail Mounting Package

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

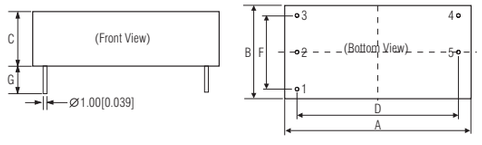
A4S DIN-Rail Mounting Package

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

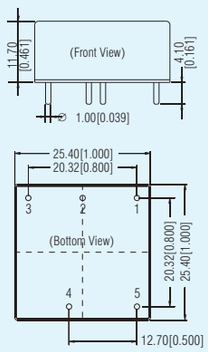
A4S DIN-Rail Mounting Package

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

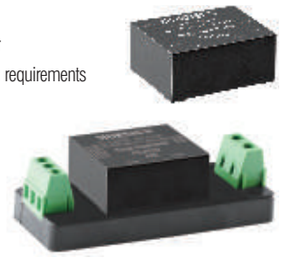
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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

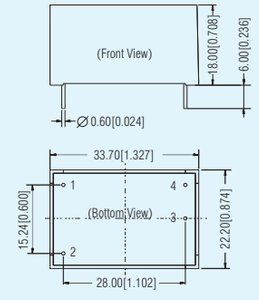
A4S DIN-Rail Mounting Package

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

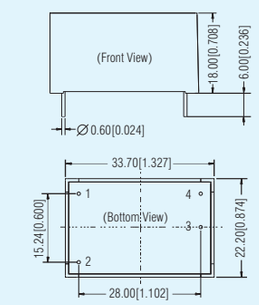
A4S DIN-Rail Mounting Package

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

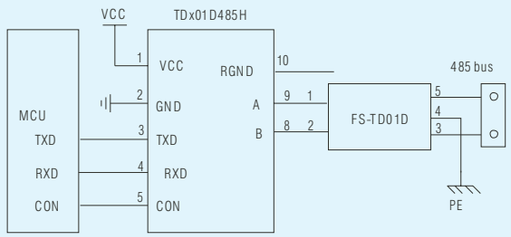
- Suppress signal port lightning surge
- Impact anti - current: ≤1KA (8/20μs simulated lightning waveforms)
- Compact size, cost-effective
- Meet ±2KV/±4KV surge level of IEC/EN61000-4-5

Product Program

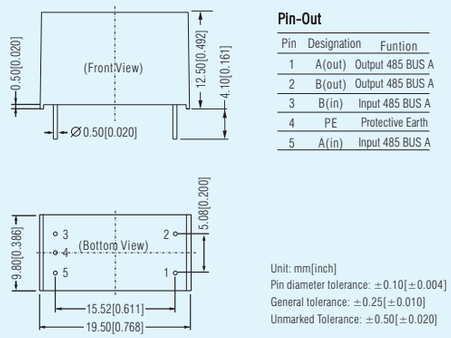
Model Number	Operating Voltage (VDC)	Clamping Voltage (VDC)	Nominal Current (A)	Data Rate (max)	Certification
FS-TD01D	0-5	15	≤0.1	≤115.2kbs	RoHS

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

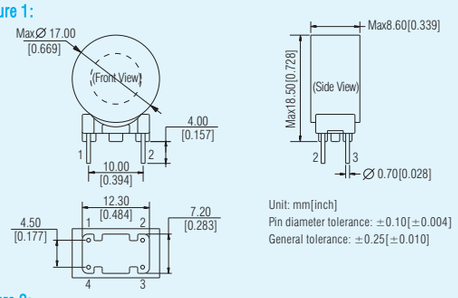
Product Program

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.

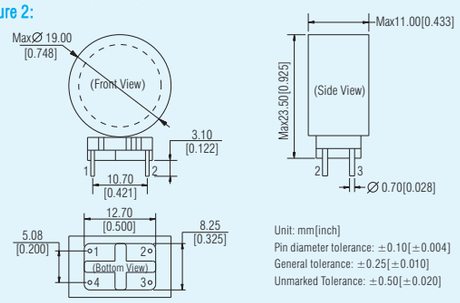
Package Dimension

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

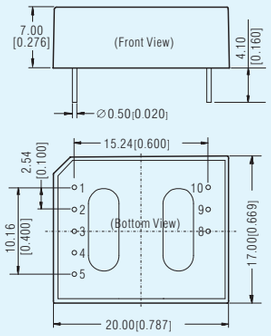
- Operating temperature:-40℃ to +85℃
- Isolation: 2500VDC (single economical/high rate module)
  3750VAC (high rate/high isolated module)
- Two-terminal isolation (input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxD485xx compatible with the UART port of +3.3V
  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

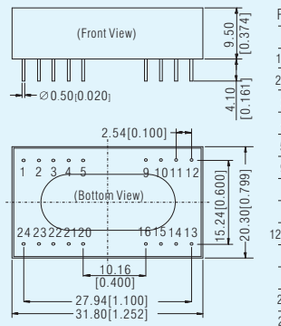
- Operating temperature:-40℃ to +85℃
- Isolation: 2500VDC
- Two-terminal isolation (input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxP485x compatible with the UART port of +3.3V
  TD5xxP485x compatible with the UART port of +5V
- Low power consumption, low 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

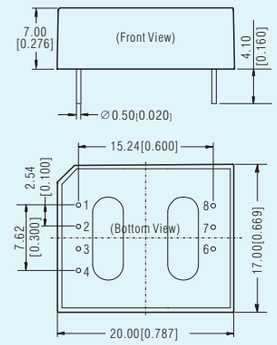
- Operating temperature: -40℃ to +105℃
- Isolation: 2500VDC
- Integrate power isolation, electric isolation, CAN interface and bus protection in one module
- TD3xxDCANxx compatible with the CAN control port of +3.3V
  TD3xxDCANxx compatible with the CAN control port of +5V
- Low power consumption, low 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

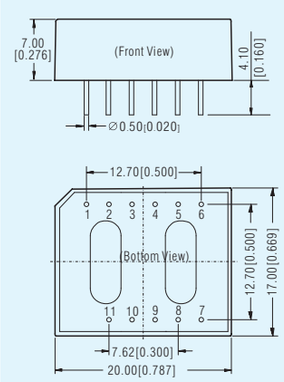
- Operating temperature: -40℃ to +105℃
- Isolation: 2500VDC
- Integrate power isolation,electric isolation, CAN interface and bus protection in one module
- TD3xxDCANxx compatible with the CAN control port of +3.3V
  TD5xxDCANxx compatible with the CAN control port of +5V
- Low power consumption,static 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

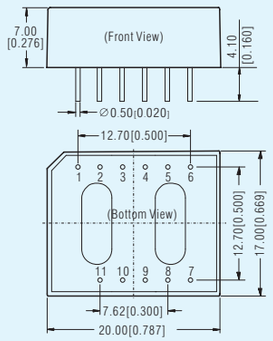
- Operating temperature: -40℃ to +85℃
- Isolation: 2500VDC
- Integrated high effciency isolated power supply
- TD30xD232H compatible with the UART port of +3.3V
- TD50xD232H compatible with the UART port of +5V
  Low power consumption, low to 35mA
- ESD protection(human body discharge:±4KV), complete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

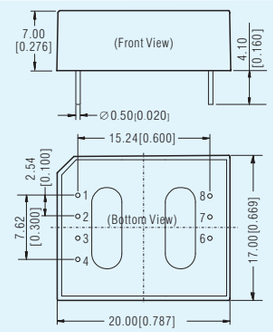


Pin-Out

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

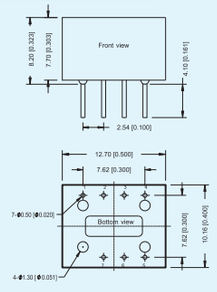
Features

- 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

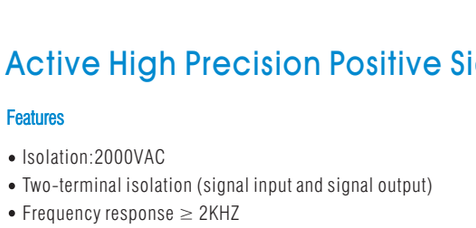
Features

- 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

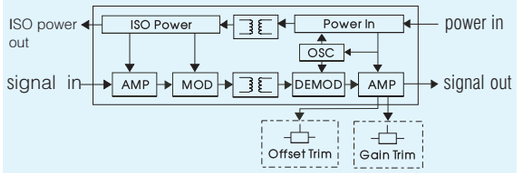
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TE1530N	24	4-20mA	0-10V	None	RoHS CE
TE1533N	24	4-20mA	0-10V	24V	
TE1550N	12	4-20mA	0-10V	None	
TE1630N	24	4-20mA	0-5V	None	
TE1633N	24	4-20mA	0-5V	24V	
TE1660N	5	4-20mA	0-5V	None	
TE5534N	24	0-10V	0-10V	15V	
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.

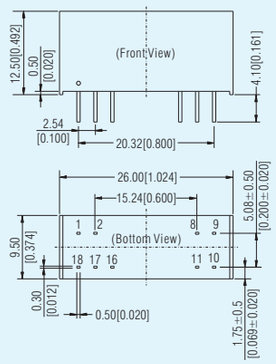
Schematic diagram TE_N Series



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

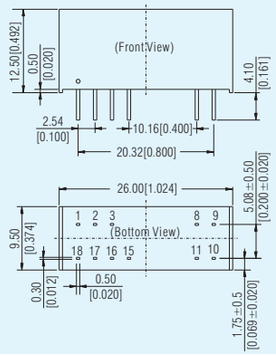


Pin-Out

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

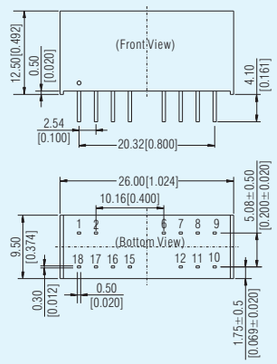
- Isolation: 2000VAC
- Two-terminal isolation (signal input and signal output)
- Frequency response ≥ 2KHZ
- Gain adjustment and zero adjustment function
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃(within −40℃ to +85℃)

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)

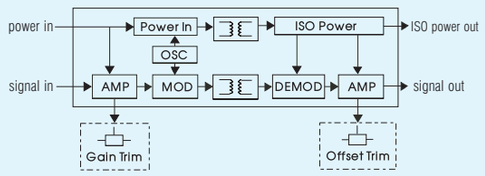


Pin-Out

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

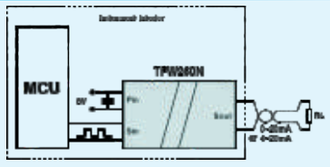
- Two-terminal isolation (signal input and signal output)
- High linearity (0.1% F.S.)
- Isolation voltage (2KVAC/60s)
- Low ripple & noise: (≤30mVpp.TYP, 20MHz)
- Compact size: DIP18 (26*9.5*12.5mm)
- ESD protection (IEC/EN61000-4-2 Contact ±4KVperf. Criteria B)

Product Program

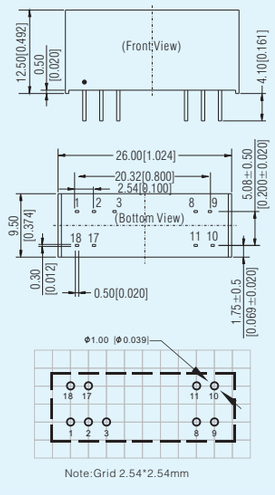
Model Number	Power Supply (VDC)	Input Signal(%)	Output Signal	Isolation Power Output	Certification
TFW260N	5V	0-100	0-20mA	None	CE
TFW560N	5V	0-100	0-10V	None	RoHS

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

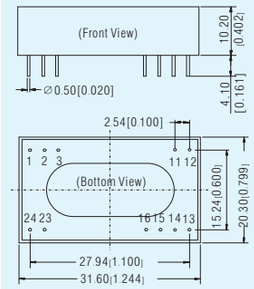
Features

- 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)

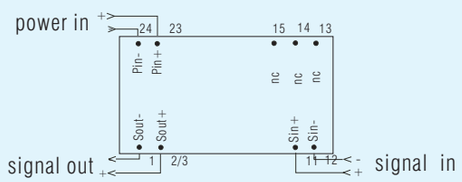


Pin-Out

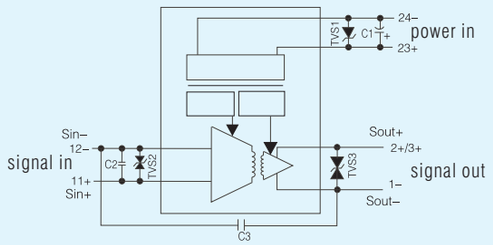
Pin	Vo	Io	Function
1	Sout-	Sout-	Signal output(-)
2	NC	Sout+	Signal output(+)
3	Sout+	NC	Signal output(+)
11	Sin+	Sin+	Singnal input(+)
12	Sin-	Sin-	Singnal input(-)
13,14	NC	NC	no connection
15,16	NC	NC	no connection
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

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

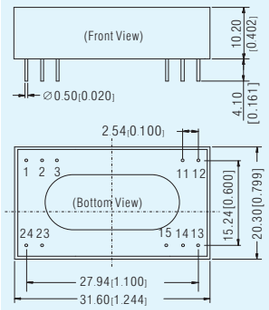
- Isolation: 2500VDC
- Four-terminal isolation
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃ (within -40℃ to +85℃)
- Low cost, compact package, high reliability , convenient to use

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)

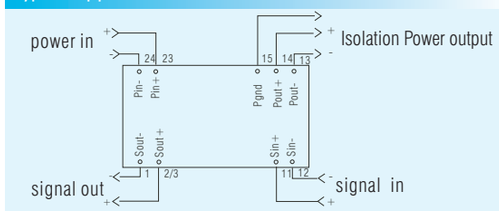


Pin-Out

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(-)

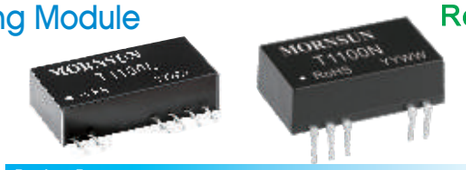
NC: No function pin.
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]

Typical application



Passive High Precision Signal Conditioning Module

RoHS



Features

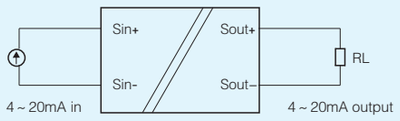
- Isolation: 3000VDC
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 35PPM/℃
- Low voltage-drop: ≤ 3V (20mA input)
- High reliability(MTBF>500,000 hours)

Product Program

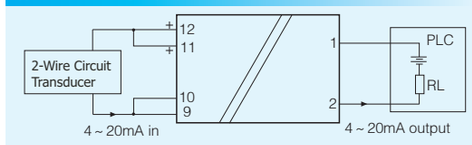
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Channel	Certification
T1100L	None	4-20mA	4-20mA	None	1	RoHS
T1100N	None	4-20mA	4-20mA	None	1	
T1100NS	None	4-20mA	4-20mA	None	1	
T1100L-F	None	4-20mA	4-20mA	None	1	

Note: Over nominal loop power voltage may damage modules.

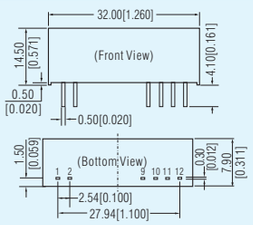
Application Circuit Diagram T1100L/ N Series



Application Circuit Diagram(Loop Power) T1100L–F Series



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

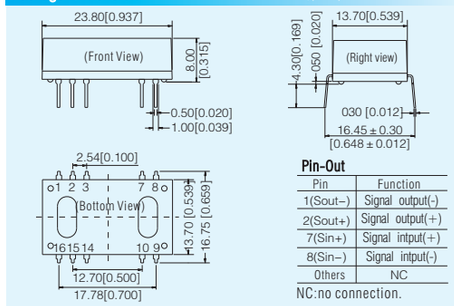


Pin-Out

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

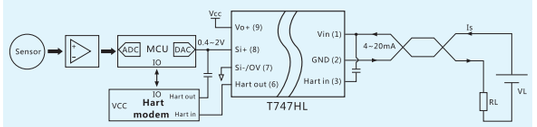
- 4-20mA output loop stealing, 3.3V regulated output(loop power)
- Isolation: 2000VAC/1mA/60s
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃
- Convert digital signal(PWM) into 4-20mA
- HART compatible

Product Program

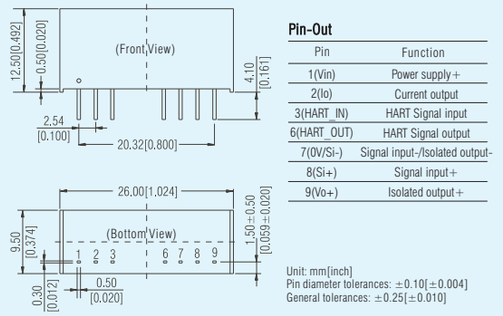
Model Number	Loop Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
T797HL	15-24V	0-2.5V	3.7-22mA	3.3V	RoHS CE
T747HL	10-24V	0-2.5V	3.7-22mA	3.3V	
T747L	10-24V	0-2.5V	3.7-22mA	3.3V	
TW147HL	10-24V	0-100%	4-20mA	3.3V	

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

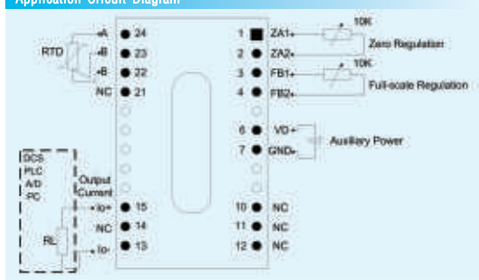
- Two-wire, three-wire, four-wire pt100 RTD signal
- Isolation: 2000VAC
- High precision & linearity: 0.2%F.S
- Extremely low temperature drift: 50PPM/℃(Typ., within -40℃ to +85℃)
- International standard signal output: 4-20mA/0-5V/0-10V etc.
- Low cost, compact package, high reliability , convenient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

Product Program

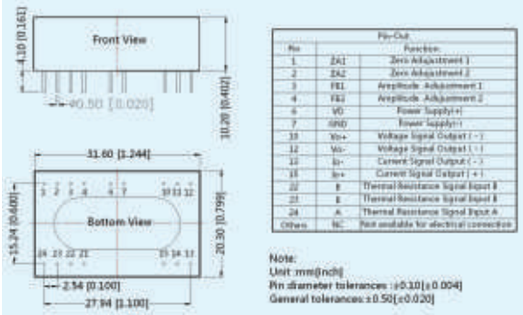
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TRP16130P	24	Pt100(0-200℃)	4-20mA	None	RoHS CE
TRP15130P	24	Pt100(0-100℃)	4-20mA	None	
TRP18130P	24	Pt100(–50-150℃)	4-20mA	None	
TRP16150P	12	Pt100(0-200℃)	4-20mA	None	

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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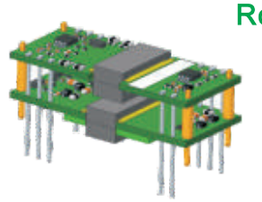
Active High Precision High Isolation Signal Conditioning Module

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℃)



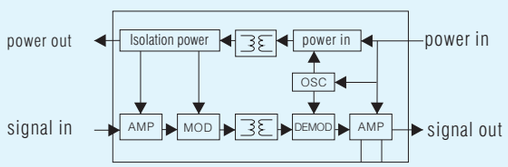
Note:design sketch for your reference.

Product Program

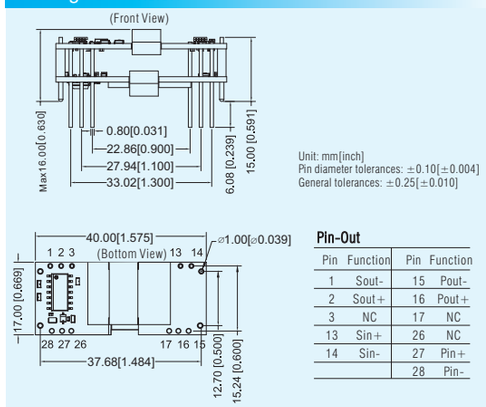
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TE6650HN	12	0-5V	0-5V	None	RoHS

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-

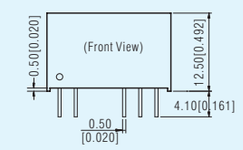
DC/DC Converter Specialized for SiC MOSFET Driver

RoHS

Features

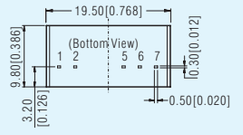
- Operating temperature:-40℃ to +105℃
- Isolation: 3500VAC/6000VDC
- Efficiency up to 83%
- Extremely low isolation capacitance: 3.5pF
- Continuous short-circuit protection
- DC/DC converter for SiC MOSFET Driver
- International standand pinout
- UL/EN/IEC 60950 approval

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

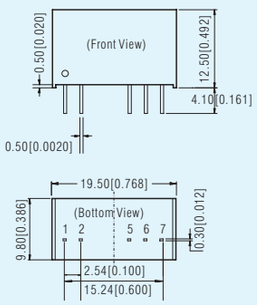
DC/DC Converter for IGBT Driver

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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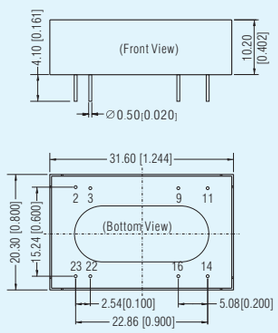
Great Power DC/DC Converter Specialized for IGBT Driver

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	

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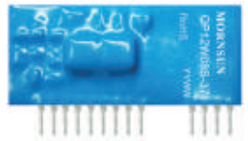
Hybrid Integrated IGBT Driver(Built-in Isolated DC/DC Converter)

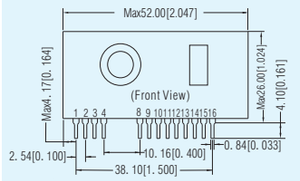
RoHS

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

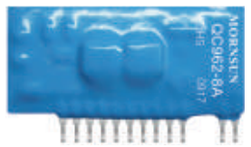
Model Number	Nominal Input Voltage (VDC)	Input Voltage Range(VDC)	VOH(VDC)	VOL(VDC)	Output Peak Current(A)	Switching Frequency (Max.) (KHz)	Isolation(VAC)	Certification
QP12W08S-37	15	14.5-15.5	15	-9	±8	20	3750	RoHS

Hybrid Integrated IGBT Driver

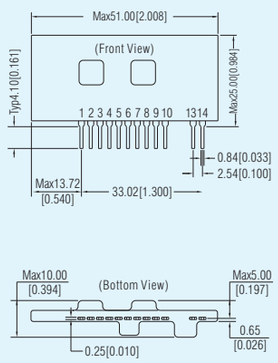
RoHS

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

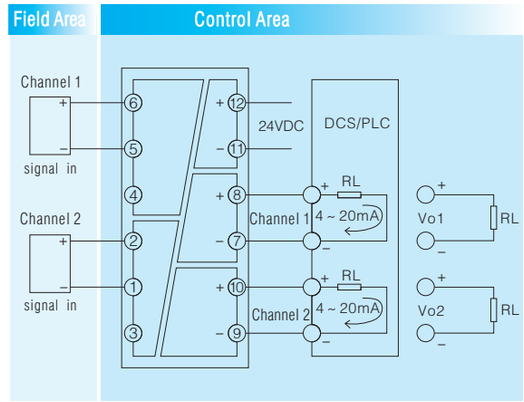
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Isolation: 2000VAC/3000VDC(testing for 1Min, humidity＜70%, leakage current ＜1mA)
- Input, output and power supply are mutually isolated from each other
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

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

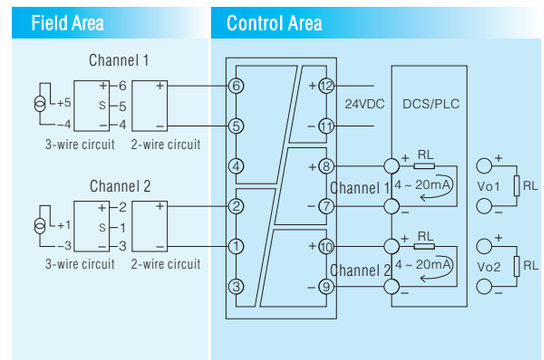
- Operating temperature: -25℃ to +71℃
- Input, output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Isolation: 2000VAC(testing for 1Min, humidity ＜70%, leakage current＜1mA)
- Temperature drift: 35PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

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

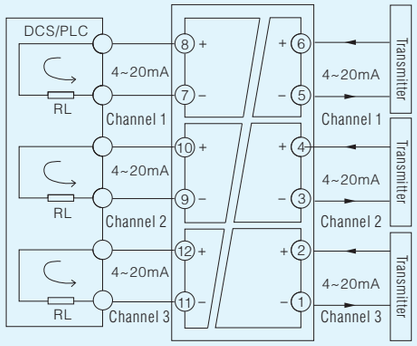
Features

- 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



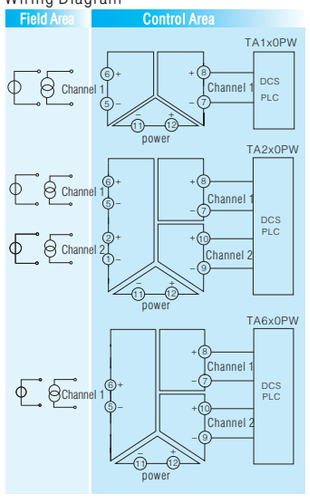
Ultra-thin Programmable Analog Signal Isolator

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.

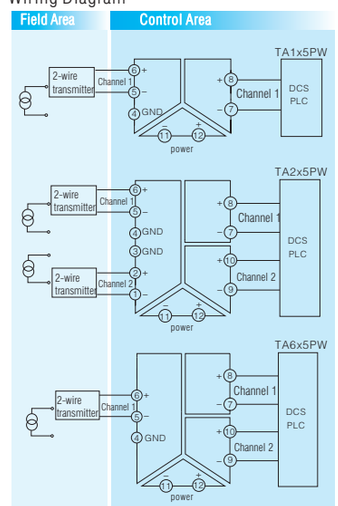
Ultra-thin Programmable Analog Signal Isolator

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) 4-20mA(Programmable)	0-20mA(Programmable) 4-20mA(Programmable)
TA125PW	TA225PW	TA625PW	18-30VDC	0-20mA(Programmable) 4-20mA(Programmable)	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 for special requirements.
2. The ancillary USB adapter model is T-01, please contact our sales department.

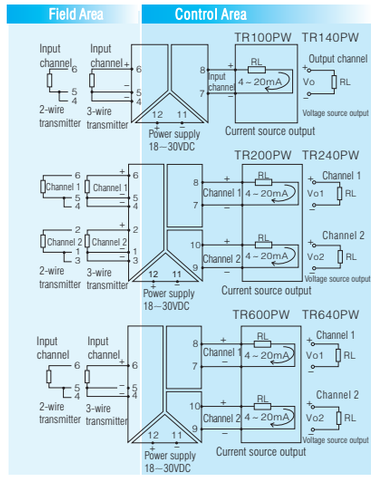
Ultra-thin Programmable RTD Signal Isolator

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 TR6x0PW 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

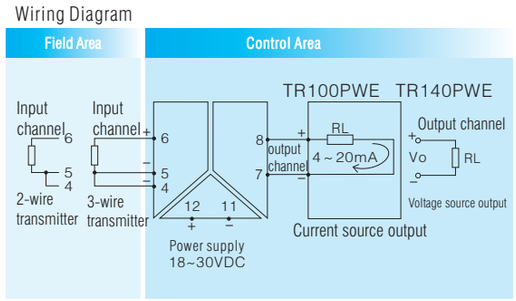
- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current <1mA)
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃ (within -25℃ to +71℃)
- Radiated immunity: 10V/m

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

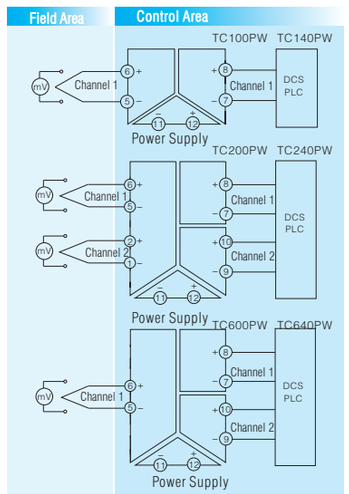
- Operating temperature: -25℃ to +71℃
- Isolation: 2000VAC/3000VDC(testing for 1Min, humidity<70%,leakage current <5mA)
- Input,output and power supply are mutually isolated from each other
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m

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

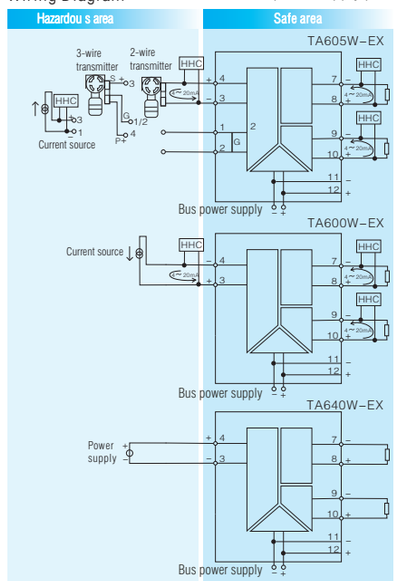
- Operating temperature:-25℃ to +71℃
- Isolation: 2000VAC(testing for 1Min, humidity<70%,leakage current ≤1mA)
- Precision: 0.1% F.S.
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity:10V/m
- [Exia Ga] IIC approval

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

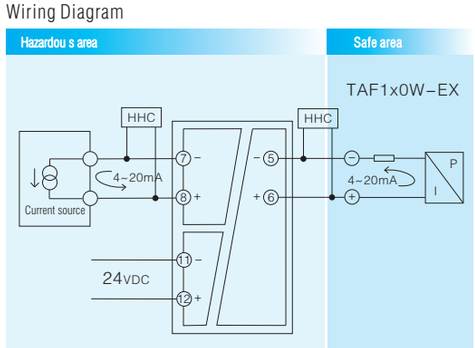
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Isolation: 2000VAC(testing for 1Min, humidity<70%, leakage current <1mA)
- Temperature drift: 50PPM/℃(within -25℃ to +71℃)
- Radiated immunity: 10V/m
- [Exia Ga] IIC approval

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

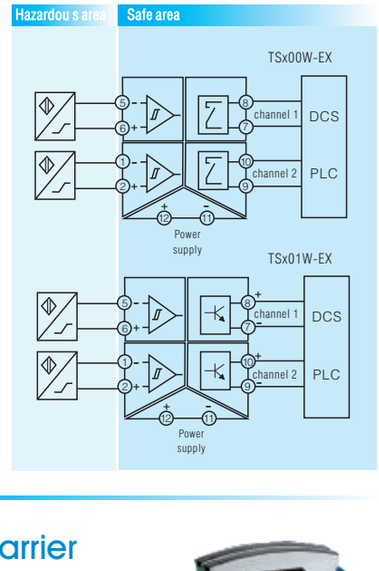


Ultra-thin Detection Type Switch Signal Isolation Barrier

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

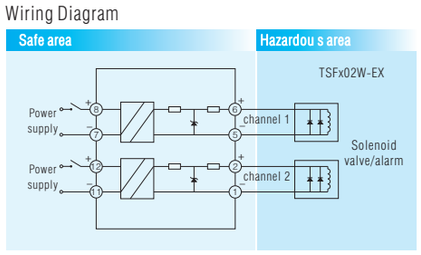
Note: Special input and output custmization is acceptable

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

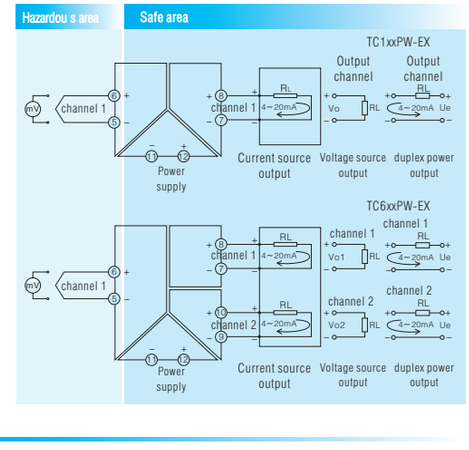
- Operating temperature:-25℃ to +71℃
- Precision: 0.1% F.S.
- Radiated immunity: 10V/m
- Cold junction compensation:
  compensation range: -25℃ to +75℃(≤1℃ error for every 20℃)
- method of compensation: internal compensation
- High reliability(MTBF>500,000 hours)
- [Exia Ga] IIC approval

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



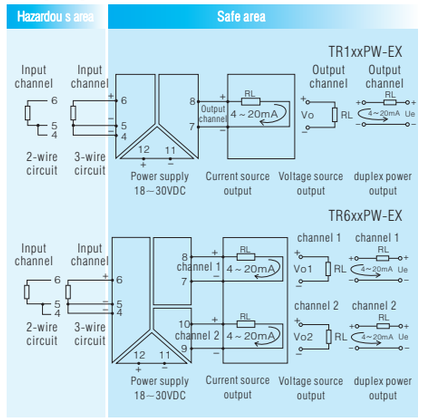
Ultra-thin Programmable Detection Type RTD Isolation Barrier

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)	

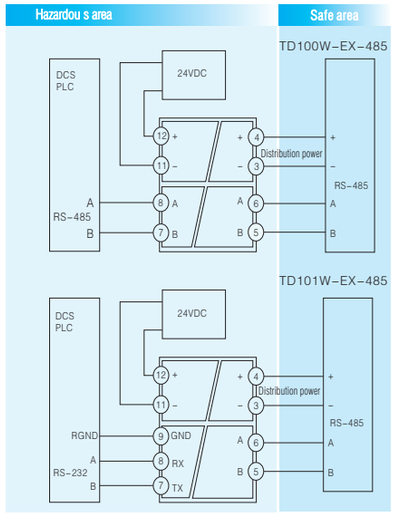
Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order. Customization is acceptable.
2. The ancillary USB adapter model is T-01, please contact our sales department.

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

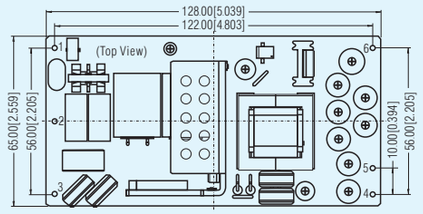
- Constant current operation, suitable for LED application
- Operating temperature: -40℃ to +70℃
- Input voltage vange: 200-400VAC/280-560VDC
- Isolation: 4000VAC
- Output short-circuit and over-voltage protections

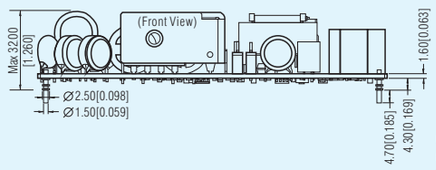
Product Program

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

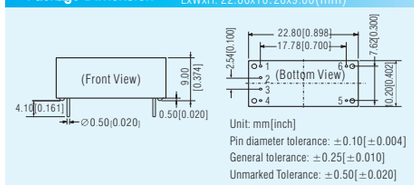
- Efficiency up to 97%
- Constant current mode, great power output
- Analogue dimming+PWM dimming
- Remote ON/OFF
- Continusous short-circuit protection

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]

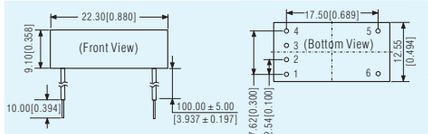
Notes:1. Series without a suffix such as KC24H-300R, this product is a four-pin product without the functions of analogue dimming and PWM dimming.
2. Series with a suffix X1 such as KC24H-300RX1, this product is a five-pin product only with the function of analogue dimming.
3. Series with a suffix X2 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]

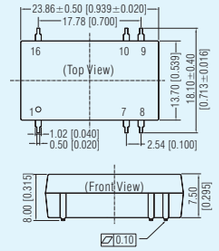
Note:1.Series without suffix such as KC24W-300 are four-wire products without analogue dimming+PWM dimming.
2.Series with suffix X1 such as KC24W-300X1 are five-wire products with analogue dimming only.
3.Series with suffix X2 such as KC24W-300X2 are five-wire products with PWM dimming only.
4.Series 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]

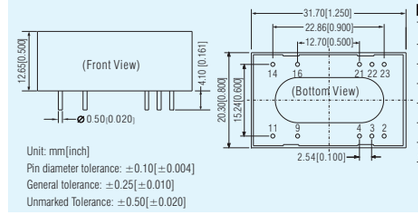
KC24H–1000 & KC24H–1200 Series

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:

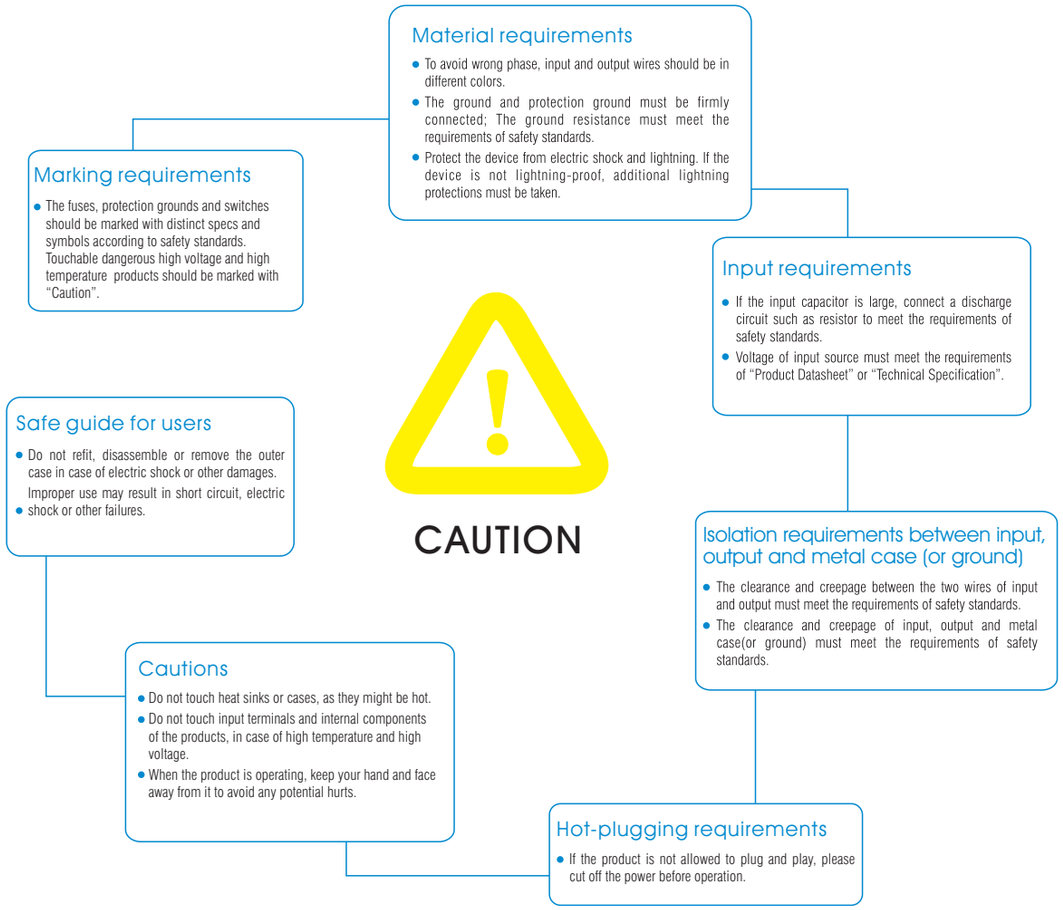
To prevent potential safety problems while using the products.

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.

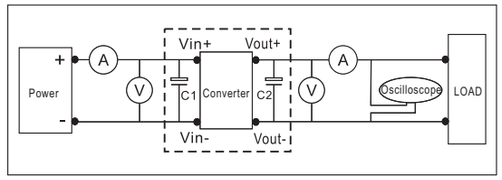
Tel: 020-38601850 E-mail: fae@mornsun.cn

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.

$$\text{Efficiency} = \frac{I_{OUT} \times V_{OUT}}{I_{IN} \times V_{IN}} \times 100\%$$

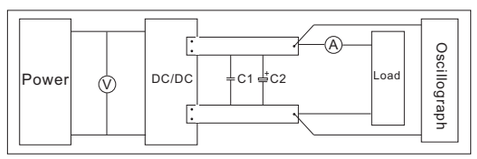
e.g.: IB1212LS-1W offers 12V rated input and 12.039V output at full load. When current is 83.3mA, input current is 115.0mA.

$$\text{Efficiency} = \frac{0.0833A \times 12.039V}{0.1150A \times 12.000V} \times 100\% = 73\%$$

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.

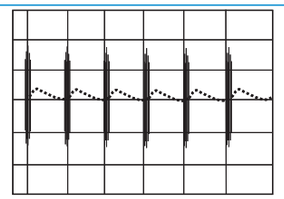
As the figure shows:



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:

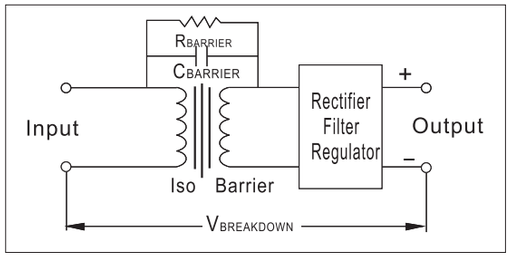
Start-up time is the time once the input voltage is present and within the specified range, the time it takes for the output of the converter to rise between 10% and 90% of its nominal value. This is usually tested and specified with a resistive load only. Other factors such as additional output capacitance 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

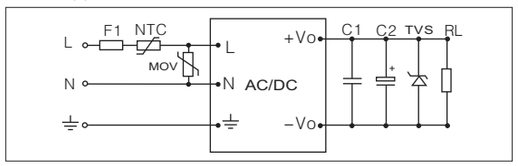


Figure 1. General AC/DC converter applications circuit

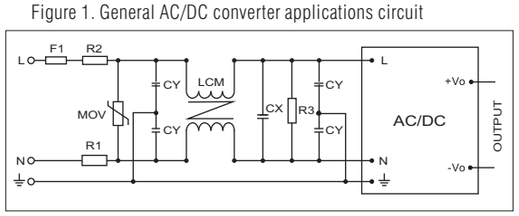


Figure 2. Typical input EMC filtering circuit

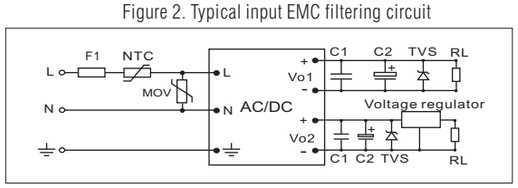


Figure 3. Typical application circuit

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;

η--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.

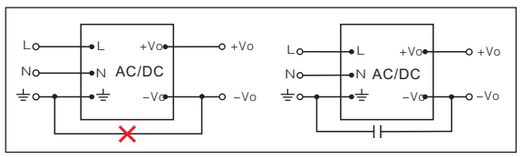


Figure. 1. Connecting method of output and protection grounding

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

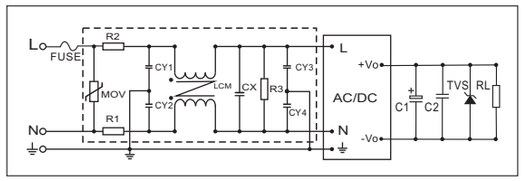
EN60950 clearly defines the Class I and II equipments:

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.

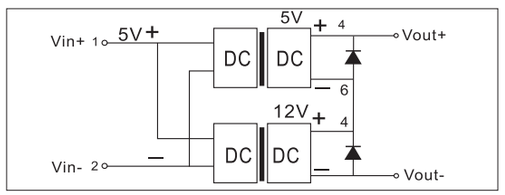
In many applications, the digital circuit and analog circuit share the same power supply; in this kind of design, it is very important that the analog circuit and digital circuit are used

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.

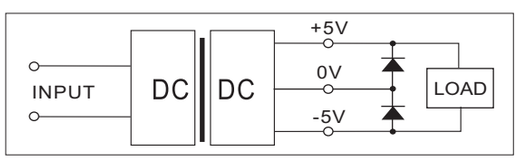
2.Additional converter applications

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.

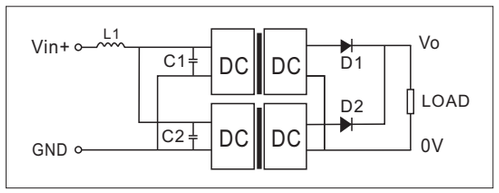


Converter 1 is 5Vout, and Converter 2 is 12Vout. As you can see a unconventional 17VDC voltage can be created by applying the 5V and 12V converters in series. Be careful not to exceed the rated current either of the converters, normally the ripple voltages of two modules will not be synchronized while 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.

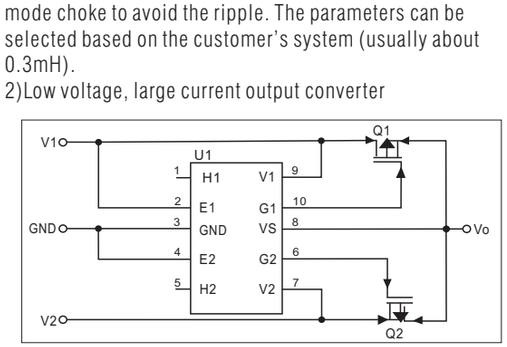


2) DC/DC converters connected in parallel

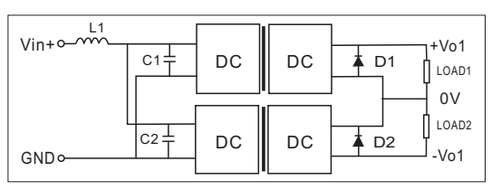
Redundant design can improve the system reliability. MOSFET of the time, engineers connect several same converters in parallel. And if one of the converters fails, the others could operate instead. However, connecting the converters in parallel to improve the efficiency is not advisable, because the 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 π-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



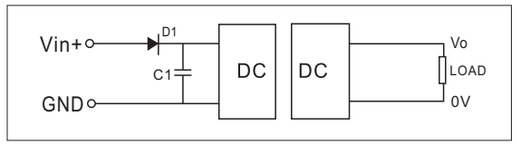
As the redundant design of diode produces high power consumption, it is not applicable for low voltage and large current situation. Therefore, we may use high power MOSFET and chip as the alternative solution. The MOSFET lowers the voltage drop and reduces the device loss at large current, which ensures 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.

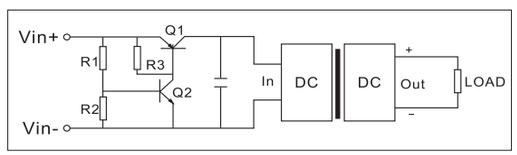
3) Reverse voltage protection

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.

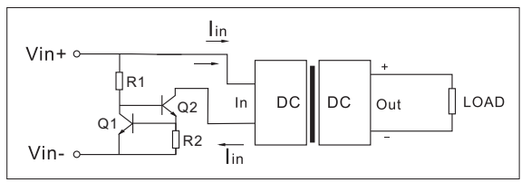


Low voltage turn-off circuit

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:

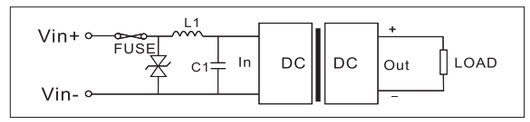


Figure 1: instant over voltage and over current protection circuit

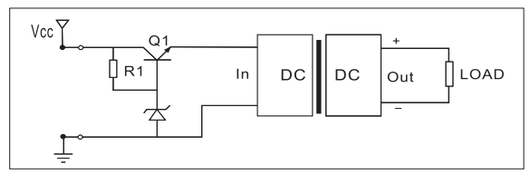


Figure 2: Continuous over voltage protection circuit

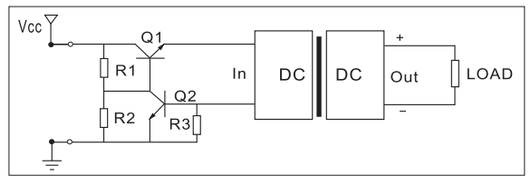


Figure 3: Continuous over current protection circuit

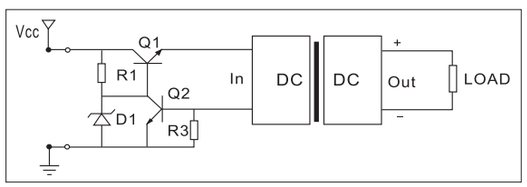
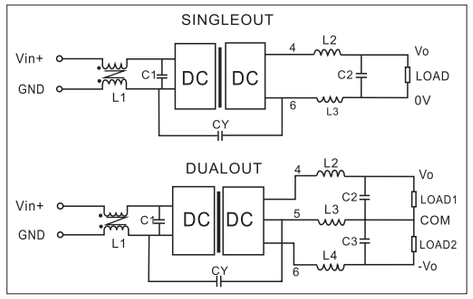


Figure 4: Continuous over voltage and over current protection circuit

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).

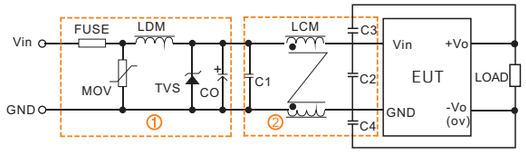
$$f C = \frac{1}{2\ \pi\sqrt{L\,C}}$$

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.



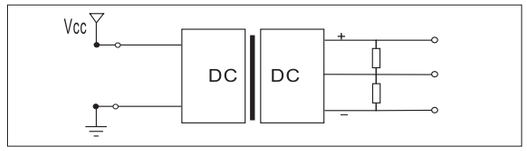
9) Capacitive load

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

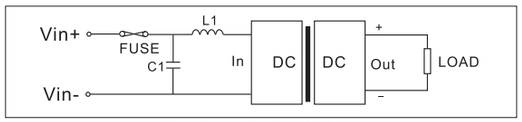
① Low load prevention circuit

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:



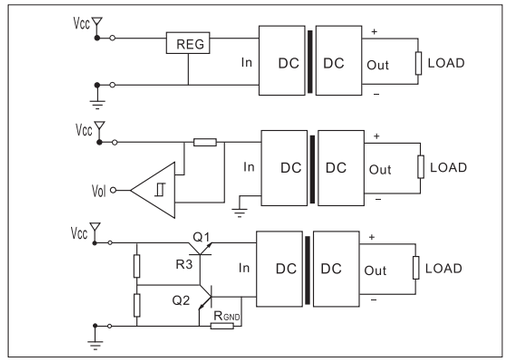
② Overload prevention circuit

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.

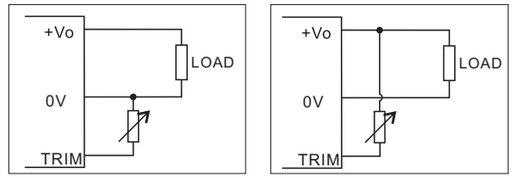
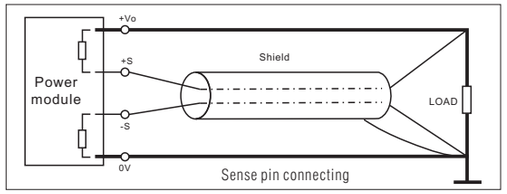


Figure 1: How to connect resistors for trimming

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.

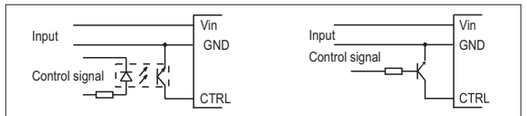


Figure 1: isolated control method Figure 2: general control method

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.

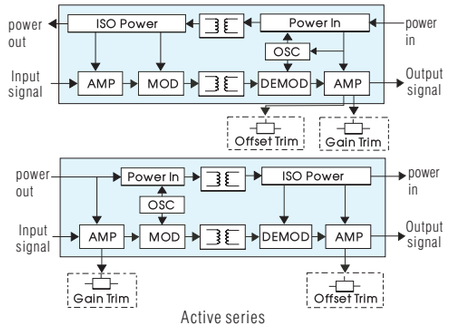
Cause 3: the winding of inductive load (generally the motor winding) fails to form induced electromotive force at the moment of starting, and only the internal resistance of winding is operating in the whole circuit. As the internal resistance of winding is very small (generally mΩ～Ω level), the current 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.

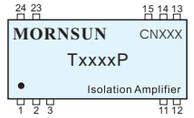
The basic composition

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):

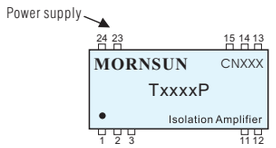


Footprint			
Pin	Function	Pin	Function
1(Sout-)	Signal output-	13(Pout-)	Distribution output-
2(Iout+)	Current output+	14(Pout+)	Distribution output+
3(Vout+)	Voltage output+	15(Pgnd)	Distribution output GND
11(Sin+)	Signal input+	23(Pin+)	Power supply+
12(Sin-)	Signal input-	24(Pin-)	Power supply-

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.

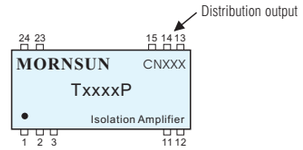
1. Power supply

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.

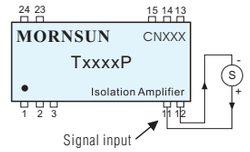


3. Signal input

Pin 11 is a positive electrode of input signal, Pin 12 is a negative one.

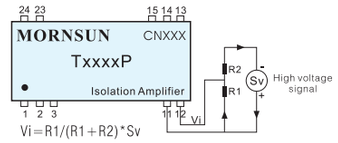
1) The actual signal input range within the nominal range

Here is the connection. S is voltage signal or current signal source, which can access the input signal directly.

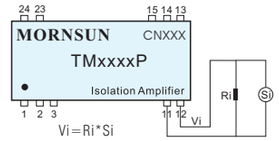


2) The actual input signal range beyond the nominal range

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.

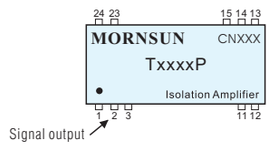


b. The solution of large current signal source is as below: Si is current signal source, which can series a shunt resistance Ri in the circuit to sampling mV signal, then amplify it to standard industrial signal through our module.



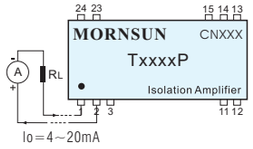
4. Signal output

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.

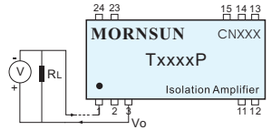


DC/DC Converter Application Guidelines

a.Current signal output
As below, the current output is from pin 2, and pin 3 is no connection .



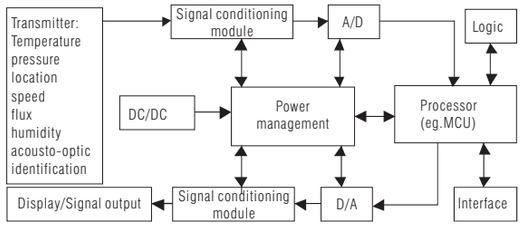
b: Voltage signal output
As below, voltage output is from the pin 3, and pin 2 is no connection. When the voltage output is maximum, load capacity is higher than 1KΩ.



Typical application

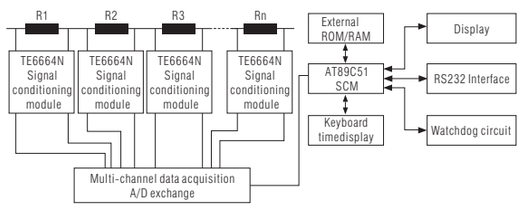
1. Signal acquisition: measurement and control instruments

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:

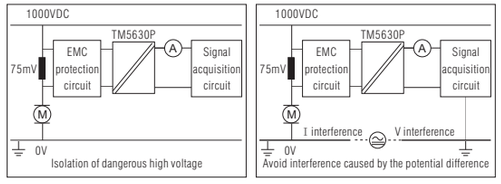


Application of signal conditioning module on metro stray current monitoring

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.

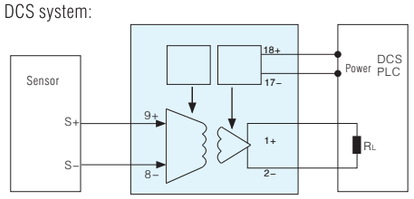


Application of signal conditioning module on coulometric monitoring system

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.