MORNSUN®

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

IGBT Driver · LED Driver · EMC Auxiliary Device

Product Catalogue 2016

MORNSUN®

MORE THAN RELIABILITY

Distributions & Channels

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

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Headquarter in Guangzhou

CONTENT

Manufacturing Center in Guangzhou

R&D Center in Guangzhou

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 17 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 product lines have UL, CE, EN60601-1, [Exia]IIC approval. And with multiple management systems of ISO9001:2008, TS16949, ISO14001, 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, 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 our 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

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

2014----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

Product Certifications

c UL us CE CB REACH RoHS COMPLIANT Ex

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.

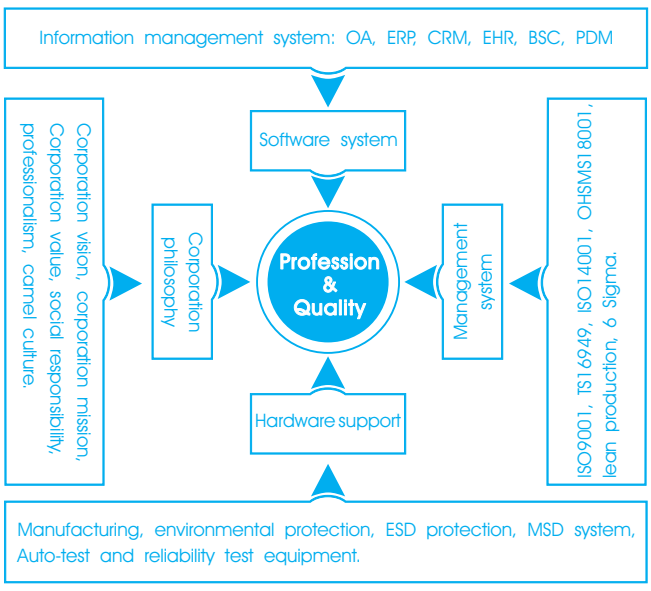
"No pain, no gain." The reliability can only be achieved by earnest, meticulous work, step by step, which is consistent with Mornsun's Camel Culture. In conclusion, Mornsun's meticulous and systemic work makes products reliable .

Automatic TE workshop

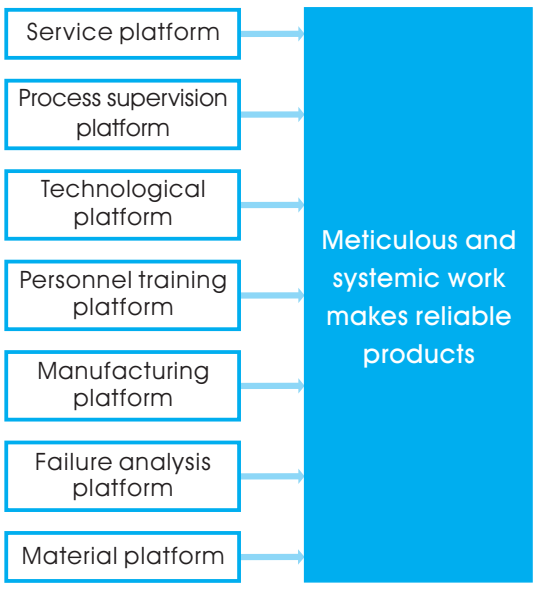
Systems

TS16949 ISO9001 ISO14001 OHSMS18001

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	Input Voltage (VDC)	Input Voltage Range(VDC)	Output Voltage (VDC)	Isolation Capacitance (pF)	Output Current (mA)	Effi(%) (typ)	Isolation	Certification	Page
QA01	15	14.5~15.5	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS	78
QA01-09	15	14.5~15.5	+9	6.6	+111	80%	3000VAC	RoHS	78
QA01-A09	15	14.5~15.5	+9/-9	6.6	+55/-55	80%	3000VAC	RoHS	78
QA01-17	15	14.5~15.5	+17/-8.7	6.6	+80/-40	80%	3000VAC	RoHS	78
QA02	12	11.6~12.4	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS	78
QA03	24	23.3~24.7	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS	78
QA04	12	9~15	+15/-8	6.6	+100/-80	80%	3000VAC	RoHS	78
QA01C	15	13.5~16.5	+20/-4	3.5	+100/-100	83%	3500VAC	RoHS	79
QAW01	12	9~18	+15/-9	100	+200/-200	85%	3000VDC	RoHS	79
QAW02	24	18~36	+15/-9	100	+200/-200	85%	3000VDC	RoHS	79
QA152D	15	13.5~16.5	+15/-9	3.0	+200/-200	83%	4000VAC	RoHS	79

Series	Power Supply VCC(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	80

Series	Power Supply VCC(VDC)	Power Supply VEE(VDC)	Gate Voltage (VDC)	Max. Driving Current (A)	Max.Frequency (KHz)	Driving Channel	Isolation	Certification	Page
QC962-8A	15	-10	+15/-9	±8	40	1	3750VAC	RoHS	80

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	85~528VAC/100~745VDC	5,12,24	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
LH40-10B	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	50,52
WRB_S-1WR2/3WR2	1W,3W	4.5~9,9~18,18~36,36~72	3.3,5,9,12,15,24	RoHS	50,52

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	70
TD301/501D485H	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～200Kbps	RoHS cULus CE CB	70
TD301/501D485H-A	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD301/501D485H-E	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～500Kbps	RoHS cULus CE CB	70
TDH301/501D485H	Single economical/high rate/high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD312P485/TD512P485	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～9.6Kbps	RoHS	70
TD312P485H/TD512P485H	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD31IP485H/TD51IP485H	Duplex economical/high rate high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
FS-TD01D	485-AB Bus surge protection module	/	≤115.2Kbps	RoHS	71
TD301/501DCAN	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD301/501DCANH3	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD302/502DCAN	Duplex universal CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	72
TD301/501D232H	Single/duplex high rate RS232	3.0～3.6V,4.5～5.5V	0～115.2Kbps	RoHS	72
TD302/502D232H	Single/duplex high rate RS232	3.0～3.6V,4.5～5.5V	0～115.2Kbps	RoHS	72

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	73
TE_AN	Active module positive and negative signal	±5V, ±10V	0～5V,0～10V	2000VAC	RoHS	73
TE_CN	Active module positive and negative signal	±5V, ±10V	±5V, ±10V	2000VAC	RoHS	73
TEM_AN	Active, mV-class, positive and negative signal	±75mV/±100mV	0～5V	2000VAC	RoHS	73
TEM_CN	Active, mV-class, positive and negative signal	±50mV/±100mV/±200mV	±5V/±10V	2000VAC	RoHS	73
TF_N	Active module	0～5V,0～10V	0/4～20mA,0～5V,0～10V	2000VAC	RoHS	74
T_P	Active module	0/4～20mA,0～5V,0～10V	0/4～20mA,0～5V,0～10V	2500VDC	RoHS	74
T_AP	Active high precision signal	±5V, ±10V	4～20mA,0～5V,0～10V	2500VDC	RoHS	74
TM_P	Active high precision(mV-class) signal	0～10/30/50/75/100mV	0/4～20mA,0～5V,0～10V	2500VDC	RoHS	75
TM_AP	Active high precision(mV-class) signal	±10/±20/±50/±75/±100mV/±200mV	4～20mA,0～5V,0～10V	2500VDC	RoHS	75
TM_CP	Active high precision(mV-class) signal	±10/±20/±50/±75/±100mV/±200mV	±5V/±10V	2500VDC	RoHS	75
T1100N	Passive module	4～20mA	4～20mA	3000VDC	RoHS	76
T1100L	Passive module	4～20mA	4～20mA	3000VDC	RoHS	76
T1100L-F	Passive module(loop power supply)	4～20mA	4～20mA	3000VDC	RoHS	76
T_HL	Two-wire Self-Powered module with HART	0～2.5V	3.7～22mA	2000VAC	RoHS	76
T_L	Two-wire loop power supply	0～2.5V	3.7～22mA	2000VAC	RoHS	76
TRP_P	RTDs detection type isolated module	Pt100(0～200℃)	4～20mA	2000VAC	RoHS	77
TE_HN	Active high precision high isolated detection type signal	0～5V	0～5V	4000VAC	RoHS	77
TF_GN	Active module	0～5V	-10～+10V	2000VAC	RoHS	78

Instrumentation

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

Product Guide by Industry

Series	Power	Input Voltage (VDC)	Output Voltage (VDC)	Certification	Page
B_XT-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS	43
A_XT-1WR2	1W	5,12,15,24	±5,±12,±15	RoHS	43
B_LS-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS	41
A_S-2WR2	2W	5,12,15,24	±5,±12,±15	RoHS	45
B_S-2WR2	2W	5,12,15,24	3.3,5,12,15,24	RoHS	45

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	36
PV40-27B	40W	200～1200	12,15,24	RoHS	36
PV45-27D	45W	200～1400	12,15,24 duplex output available	RoHS	37
PV15-29B	15W	200～1500	5,12,15,24	RoHS	37
PV40-29B	40W	200～1500	12,15,24	RoHS	37

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	32
G_S-2WR2	2W	5,12,24VDC	±5,±9,±12,±15	RoHS	39
H_S-2WR2	2W	5,12,24VDC	5,12,15	RoHS	39
LH-10BxxER2	10W,15W,25W	85～264VAC/120～370VDC	5,12,15,24	RoHS	33

Intelligent Surveillance System

Series	Power	Input Voltage (VDC)	Output Voltage (VDC)	Certification	Page
E_XT-1WAR2	1W	5,12,15,24	±5,±12,±15	RoHS	43
F_XT-1WR2/2WR2	1W, 2W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS	43,46
E_S-1WR2/2WR2	1W, 2W	5,12,15,24	±5,±12,±15	RoHS	42,45
F_S-1WR2/2WR2	1W, 2W	3.3,5,12,24	3.3,5,12,15,24	RoHS	42,45
WRE_S-1WR2/3WR2	1W,3W	4.5～9,9～18,18～36,36～75	±3.3,±5,±9,±12,±15,±24	RoHS	50,54
WRF_S-1WR2/3WR2	1W,3W	4.5～9,9～18,18～36,36～75	3.3,5,9,12,15,24	RoHS	50,54

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	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	5,12,24	RoHS	23
LS05-SS	5W	85～264VAC/100～400VDC	3.3,5,9,12,15,24	RoHS	22
LD01-10B	1W	85～305VAC/120～430VDC	3.3,5,9,12,15,24	RoHS	25
LD02-10B	2W	85～305VAC/120～430VDC	3.3,5,9,12,15,24	RoHS	25
LD03-10BxxR2	3W	85～264VAC/100～370VDC	3.3,5,9,12,15,24	RoHS	24
LD05-23B	5W	85～305VAC/100～430VDC	3.3,5,9,12,15,24	RoHS	25
LN(01-03)-12B	1W,2W,3W	165～264VAC/233～370VDC	5,12,24	RoHS	23

Distribution Network Automation

Series	Power	Output Voltage/Current	Floating charging voltage	Charging current	Certification	Page
MCP100-2A	100W	27V/1.5A	27V	3A	RoHS	34
MBP300-2A	108W(350W/30S)	27V/3A	27V	1A	RoHS	34
MBP500-2A	162W(540W/30S)	27V/4.5A	27V	1.5A	RoHS	34

Series	Power	Input Voltage (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	58
URF_LP-20WR3	20W	9～36,18～75	3.3,5,9,12,15,24	RoHS cULus CE CB	59

Transportation

OBU

Series	Power	Input Voltage Range (VDC)	Output Voltage (VDC)	Certification	Page
URB1D_YMD-6W	6W	40～160	5,12,15,24	RoHS CE	62
URB1D_XD-10W	10W	40～160	5,12,15,24	RoHS CE	62
URB1D_LD-15W	15W	40～160	3.3,5,12,15,24	RoHS CE	62
URB1D_LD-20W	20W	40～160	5,12,15,24	RoHS CE	62
URF1D_QB-50W/75W/100W	50W,75W,100W	66～160	5,12,15,24	RoHS	63
URF1D_HB_150W	150W	50-160	12,15,24	RoHS	63

Railway Auxiliary Device

Series	Power	Input Voltage Range	Output Voltage (VDC)	Certification	Page
IB_LS-1W	1W	5,12,15,24(VDC)	3.3,5,12,15,24	RoHS	48
URB_YMD-10WR3	10W	9～36(VDC)	3.3,5,9,12,15,24	RoHS cULus CE CB	58
URB_LD-20WR3	20W	9～36,18～75(VDC)	3.3,5,9,12,15,24	RoHS cULus CE CB	59
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--BMS(Battery Management System)

Series	Power	Input Voltage (VDC)	Output Voltage (VDC)	Certification	Page
CF_XT-1WR2	1W	5	5	RoHS	38

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
QA04	12	9～15	+15/-8	6.6	+100/-80	80%	3000VAC	RoHS cULus CB	78

Product Guide by Industry

Medical

Series	Power	Input Voltage	Output Voltage (VDC)	Certification	Page
G_S-1WR2/2WR2	1W,2W	5,12,24VDC	±5,±9,±12,±15	RoHS	39
H_S-1WR2/2WR2	1W,2W	5,12,24VDC	5,12,15	RoHS	39
URH_P-6WR3	6W	9～36,18～75VDC	5,9,12,15,24	RoHS	55
LD05-MU	5W,5.5W	85～264VAC/100～370VAC	5,12,15,24	RoHS	31

Lighting

Series	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)	Certification	Page
KC24H-1000	5.5～48	3.3～36	0～1000	RoHS	89
KC24H-1200	5.5～48	3.3～36	0～1200	RoHS	89
KC24RT	5.5～48	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
KC24H-R	5.5～46	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
KC24W	5.5～48	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
LO60-26B	200～400VAC/280～560VDC	0～60V available	0.9A constant current	RoHS	88

Communication

Series	Power	Input Voltage Range (VDC)	Output Voltage (VDC)	Certification	Page
VRB-LD-15WR3	15W	18-36	5,12,15,24	RoHS	59
VRB_LD-50W	50W	18～36,36～75	3.3,5,12,15,24	RoHS	60
URA_YMD-6WR3	6W	9～36,18～75	±5,±12,±15,±24	RoHS	57
URB_YMD-6WR3	6W	9～36,18～75	3.3,5,9,12,15,24	RoHS	57
URA_YMD-10WR3	10W	9～36,18～75	±5,±9,±12,±15,±24	RoHS	58
URA_LD-20WR3	20W	9～36,18～75	±5,±9,±12,±15	RoHS	59
URB_LD-30WR3	30W	9～36,18～75	3.3,5,9,12,15,24	RoHS	60
URF_P-6WR3	6W	9～36,18～75	3.3,5,9,12,15,24	RoHS	57
URF_LP-20WR3	20W	9～36,18～75	3.3,5,9,12,15,24	RoHS	59

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	70
TD301/501D485H	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～200Kbps	RoHS	70
TD301/501D485H-A	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD301/501D485H-E	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～500Kbps	RoHS	70
TDH301/501D485H	Single economical/high rate/high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD312P485/TD512P485	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～9.6Kbps	RoHS	70
TD312P485H/TD512P485H	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD31IP485H/TD51IP485H	Duplex economical/high rate high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
FS-TD01D	485-AB Bus surge protection module	/	≤115.2Kbps	RoHS	71
TD301/501DCAN	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD301/501DCANH3	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD302/502DCAN	Duplex universal CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	72

IOT(Internet of Things)

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	85～528VAC/100～745VDC	5,12,24	500,250,125	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
B_XT-1WR2	1W	3.3,5,12,15,24VDC	3.3,5,12,15,24	42,67,84,200,303	RoHS cULus CE	43

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	49
K78(L)-1000R3(L)	1000mA	6～36	3.3,5,-5,9,-12,12,-15,15	RoHS cULus CE	49
K78-1500(L)	1500mA	4.75～18	3.3,5.0,6.5	RoHS	49
K78-2000(L)	2000mA	4.75～18	3.3,5.0,6.5	RoHS cULus CE	49

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	81
TAx05W	DC current input analog signal	0/4～20mA	0/4～20mA,0/1～5V,0/2～10V	DIN-Rail power supply	81
TAx06W	Passive Barrier	4～20mA	4～20mA	/	82
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	82
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	83
TRxx0PW	Programmable RTD	Pt100,Cu50,Cu100	0/4～20mA,0/1～5V,0/2～10V	DIN-Rail power supply	83
TR1x0PWE	Programmable RTD	Pt100,Cu50,Cu100	0/4～20mA,0/1～5V,0/2～10V	DIN-Rail power supply	84
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	84
TA_W-EX	Analog detection type	4～20mA,0～10V	0/4～20mA,0～10V	HART, DIN-Rail power supply	85
TAF_W-EX	Analog operation type	4～20mA	4～20mA	HART, DIN-Rail power supply	85
TS_W-EX	Switch detection type	Switch input	TSx00W-EX-xx: Relay output TSx01W-EX-xx: Transistor output	DIN-Rail power supply	86
TSF_W-EX	Switch operation type	Switch input	12V/44mA	DIN-Rail power supply	86
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	87
TR_PW-EX	Programmable RTD	Pt100,Cu50,Cu100	0/4～20mA,0/1～5V,0/2～10V	DIN-Rail power supply	87
TD100 -EX-485	RS 485 communication signal	RS485 digital signal	RS485/RS232 digital signal	Digital signal	88
TD101W-EX-485	RS 485 communication signal	RS485 digital signal	RS485/RS232 digital signal	Digital signal	88

AC/DC Converter Selection Guide

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	85～528VAC/100～745VDC	5,12,24	500,250,125	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	23
LN02-12B	2W	165～264VAC/233～370VDC	5,12,24	RoHS CE	23
LN03-12B	3W	165～264VAC/233～370VDC	5,12,24	RoHS CE	23

1-20W Compact Size 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
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	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	27-28
LH20-10D	20W	85～264VAC/100～370VDC	5	12,15,24	RoHS	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
LH60-20B	60W	90～264VAC/122～370VDC	5,9,12,15,24,48	/	RoHS cULus CE	29

5-25W 85～305VAC Wide Voltage Input 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	26
LH10-13B	10W	85～305VAC/100～430VDC	3.3,5,9,12,15,24	RoHS	26
LH15-13B	15W	85～305VAC/100～430VDC	3.3,5,9,12,15,24,48	RoHS	26
LH20-13B	20W	85～305VAC/100～430VDC	3.3,5,9,12,15,24	RoHS	26
LH25-13B	25W	85～305VAC/100～430VDC	3.3,5,9,12,15,24,48	RoHS	26

120～240W DIN35 DIN-Rail LI Series

Series	Power	Input Voltage Range	Output Voltage (VDC)	Output Current (mA)	Certification	Page
LI120-10B24	120W	85～264VAC/120～370VDC	24	5000	RoHS	30
LI240-10B24	240W	85～264VAC/120～370VDC	24	10000	RoHS	30

5W 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	31

10W LO Series Specialized for Flow-meter Industry

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～±24V) available	Positive and negative voltage (±5V～±70V) available	RoHS	31

10-30W Power Supplier for Electric Power Industry

Series	Power	Input Voltage Range	Output Voltage (VDC)	EMI	Certification	Page
LO10-24B	10W	30～280VAC/30～400VDC	5,12,13	Class B	RoHS	32
LH10-10BxxER2	10W	85～264VAC/120～370VDC	5,12,24	Class A	RoHS	33
LH10-10DxxER2	10W	85～264VAC/120～370VDC	5/5,5/12,5/24	Class A	RoHS	33
LH15-10BxxER2	15W	85～264VAC/120～370VDC	5,12,24	Class A	RoHS	33
LH15-10DxxER2	15W	85～264VAC/120～370VDC	5/12,5/24	Class A	RoHS	33
LH25-10BxxER2	25W	85～264VAC/120～370VDC	5,12,15,24	Class A	RoHS	33
LM30-00J0512-03E	30W	85～264VAC/100～370VDC	5/±12/24	Class B	RoHS	32

100W 165～265VAC Input AC/DC 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	34

350W/540W 165～264VAC Input AC/DC Battery Charging MBP Series

Series	Long-Term Power	Input Voltage Range	Load Voltage/Current	Floating charging voltage/ Charging current	Certification	Page
MBP300-2A27D27	108W(instantaneous350W/30S)	165～264VAC	27V/3A	27V/1A	RoHS	34
MBP500-2A27D27	162W(instantaneous540W/30S)	165～264VAC	27V/4.5A	27V/1.5A	RoHS	34

DC/DC Converter Selection Guide

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	38
HK5S_BV	5	3.5–22	3.3	3	RoHS	38
HK8S_B	7.5	4–20	3,3.3,5	3.5,5	RoHS	38

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

Series	Power	Input Voltage (VDC)	Output Voltage (VDC)	Certification	Page
B_S-W2R2	0.25W	3.3,5,12,24	3.3,5	RoHS	41
B_XT-W2R2	0.25W	3.3,5,12,24	3.3,5,12,15	RoHS CE	43
F_XT-W2R2	0.25W	5,12	5	RoHS CE	43
CF_XT-1WR2	1W	5	5	RoHS	38
G_S-1WR2	1W	5,12,24	±5,±9,±12,±15	RoHS cULus CE	39
H_S-1WR2	1W	5,12,24	5,12,15	RoHS cULus CE	39
B_RN-1WR2	1W	5	5	RoHS	40
B_RT-1WR2	1W	5	5	RoHS	40
F_RN-1W	1W	5	5	RoHS	40
F_RT-1W	1W	5	5	RoHS	40
A_S-1WR2	1W	5,12,15,24	±5,±12,±15	RoHS cULus CE	41
B_S-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	41
B_LS-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	41
E_S-1WR2	1W	5,12,15,24	±5,±12,±15	RoHS cULus CE	42
F_S-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	42
A_XT-1WR2	1W	5,12,15,24	±5,±12,±15	RoHS cULus CE	43
B_XT-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	43
E_XT-1WAR2	1W	5,12,15,24	±5,±12,±15	RoHS cULus CE	43
F_XT-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	43
A_D-1WR2	1W	5,12,24	±5,±12,±15	RoHS	44
B_D-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	44
E_D-1WR2	1W	5,12,24	±5,±12,±15	RoHS	44
F_D-1WR2	1W	3.3,5,12,15,24	3.3,5,12,15	RoHS	44
G_S-2WR2	2W	5,12,24	±5,±9,±12,±15	RoHS cULus CE	39
H_S-2WR2	2W	5,12,24	5,12,15	RoHS cULus CE	39
H_RN-2W	2W	5,12,24	5,12,15	RoHS CE	40
H_LT-2W	2W	5,12,24	3.3,5,12,15	RoHS CE	40
A_S-2WR2	2W	5,12,15,24	±5,±12,±15	RoHS cULus CE	45
B_S-2WR2	2W	5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	45
E_S-2WR2	2W	5,12,15,24	±5,±12,±15	RoHS cULus CE	45
F_S-2WR2	2W	5,12,15,24	3.3,5,12,15,24	RoHS cULus CE	45
B_XT-2WR2	2W	5,12,15,24	3.3,5,12,15,24	RoHS CE	46
F_XT-2WR2	2W	5,12,15,24	5,12,15,24	RoHS CE	46
A_D-2WR2	2W	5,12,15,24	±5,±12,±15	RoHS cULus CE	47
B_D-2WR2	2W	3.3,5,12,24	3.3,5,12,15,24	RoHS cULus CE	47
E_D-2WR2	2W	5,12,15,24	±5,±12,±15	RoHS cULus CE	47
F_D-2WR2	2W	5,12,15,24	5,12,15,24	RoHS cULus CE	47
B_S-3WR2	3W	5,12	5,12	RoHS	45
F_S-3WR2	3W	5,12	5,12	RoHS	45
B0505T-3W	3W	5	5	RoHS	46

DC/DC Converter Selection Guide

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	48
IB_XT-1WR2	1W	5,12,15,24	3.3,5,12,15	RoHS CE	48
IF_XT-1WR2	1W	5,12,24	5,12,15	RoHS CE	48
IF_S-1W	1W	5,12,24	5,12,15,24	RoHS	48
IB_S-2W	2W	5,12,15,24	5,12,15	RoHS	48
IF_S-2W	2W	5,12,24	5	RoHS	48
IF_RN-1W	1W	5,12	5	RoHS	48
IF_RT-1W	1W	5,12	5	RoHS	48

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,±12,±15	RoHS CE	50
WRB_S-1WR2	1W	4.5~9,9~18,18~36,36~75	3.3,5,9,12,15,24	RoHS CE	50
WRE_S-1WR2	1W	4.5~9,9~18,18~36,36~75	±5,±12,±15	RoHS CE	50
WRF_S-1WR2	1W	4.5~9,9~18,18~36,36~75	3.3,5,9,12,15,24	RoHS CE	50
WRB_N-2W	2W	9~18,18~36	5,12,15	RoHS CE	51
WRA_S-3WR2	3W	4.5~9,9~18,18~36,36~75	±5,±12,±15,±24	RoHS CE	52
WRB_S-3WR2	3W	4.5~9,9~18,18~36,36~75	3.3,5,9,12,15,24	RoHS CE	52
WRA_ZP-3WR2	3W	4.5~9,9~18,18~36,36~75	±5,±9,±12,±15	RoHS CE	52
WRB_ZP-3WR2	3W	4.5~9,9~18,18~36,36~75	3.3,5,9,12,15,24	RoHS CE	52
WRE_S-3WR2	3W	4.5~9,9~18,18~36,36~75	±5,±9,±12,±15	RoHS CE	54
WRF_S-3WR2	3W	4.5~9,9~18,18~36,36~75	3.3,5,9,12,15,24	RoHS CE	54
WRE_P-3WR2	3W	4.5~9,9~18,18~36,36~75	±5,±9,±12,±15	RoHS CE	54
WRF_P-3WR2	3W	4.5~9,9~18,18~36,36~75	3.3,5,12,15,24	RoHS CE	54
VRA_YMD-6WR3	6W	9~18,18~36	±5,±12,±15	RoHS	56
VRB_YMD-6WR3	6W	9~18,18~36	3.3,5,12,15,24	RoHS	56
VRA_ZP-6WR3	6W	9~18,18~36,36~75	±5,±12,±15	RoHS cULus CE CB	56
VRB_ZP-6WR3	6W	9~18,18~36,36~75	3.3,5,12,15,24	RoHS cULus CE CB	56
VRB_YMD-10WR3	10W	18~36	3.3,5,12,15,24	RoHS	58
VRB_LD-15WR3	15W	18~36	5,12,15,24	RoHS	59
VRA_LD-20WR3	20W	18~36,36~75	±5,±9,±12,±15	RoHS cULus CE CB	59
VRB_LD-20WR3	20W	18~36,36~75	3.3,5,9,12,15,24	RoHS cULus CE CB	59
VRB_LD-30WR3	30W	18~36,36~75	3.3,5,9,12,15,24	RoHS cULus CE CB	60
VRB_LD-50W	50W	18~36,36~75	3.3,5,12,15,24	RoHS	60

5~45W Ultra-wide Input Voltage DC-DC Converter

Series	Power	Input Voltage Range (VDC)	Output Voltage (VDC)	Certification	Page
PV05-R2	5W	100~1000	5	RoHS CE	36
PV10-R2	10W	100~1000	5,9,24	RoHS CE	36
PV15-R2	15W	100~1000	12,15,24	RoHS CE	36
PV40-27B	40W	200~1200	12,15,24	RoHS	36
PV45-27D	45W	200~1400	12V/15V/24V duplex output available	RoHS	37
PV15-29B	15W	200~1500	5,12,15,24	RoHS CE	37
PV40-29B	40W	200~1500	12,15,24	RoHS CE	37

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	51
PWB_ZP-3WR2	3W	9~36,18~75	3.3,5,9,12,15,24	RoHS CE	53
URB_MT-3WR3	3W	9~36,18~75	5,12,15,24	RoHS cULus CE CB	53
URH_P-6WR3	6W	9~36,18~75	5,9,12,15,24	RoHS CE	55
URA_YMD-6WR3	6W	9~36,18~75	±5,±12,±15,±24	RoHS cULus CE CB	57
URB_YMD-6WR3	6W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	57
URA_ZP-6WR3	6W	9~36,18~75	±5,±12,±15,±24	RoHS cULus CE CB	57
URB_ZP-6WR3	6W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	57
URE_P-6WR3	6W	9~36	±5,±12,±15	RoHS	57
URF_P-6WR3	6W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	57
URA_YMD-10WR3	10W	9~36,18~75	±5,±9,±12,±15,±24	RoHS cULus CE CB	58
URB_YMD-10WR3	10W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	58
URE_LP-10WR3	10W	9~36,18~75	±5,±12,±15	RoHS	58
URF_LP-10WR3	10W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	58
URA_LD-20WR3	20W	9~36,18~75	±5,±9,±12,±15	RoHS cULus CE CB	59
URB_LD-20WR3	20W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	59
URF_LP-20WR3	20W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	59
URB_LD-30WR3	30W	9~36,18~75	3.3,5,9,12,15,24	RoHS cULus CE CB	60
UW2405D-20W-TK	20W	6-50	5	RoHS	61
URB1D_YMD-6W	6W	40~160	5,12,15,24	RoHS CE	62
URB1D_XD-10W	10W	40~160	5,12,15,24	RoHS CE	62
URB1D_LD-15W	15W	40~160	3.3,5,12,15,24	RoHS CE	62
URB1D_LD-20W	20W	40~160	5,12,15,24	RoHS CE	62
URF1D_QB-50W	50W	66~160	5,12,15,24	RoHS	63
URF1D_QB-75W	75W	66~160	5,12,15,24	RoHS	63
URF1D_QB-100W	100W	66~160	12,15,24	RoHS	63
URF1D_HB-150W	150W	50-160	12,15,24	RoHS	63

Wide Input Voltage, Non-isolated & Regulated Output DC/DC Converter

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	49
K78L-500R3	500/-300/-150	4.75~36	3.3,5,12,15 -5,-12,-15	RoHS cULus CE	49
K78-1000R3(L)	1000/-500/-300	6~36	3.3,5,9,12,15 -5,-12,-15	RoHS cULus CE	49
K78L-1000R3	1000/-500/-300	6~36	3.3,5,12,15 -5,-12,-15	RoHS cULus CE	49
K78-1500	1500	4.75~18	3.3,5,6.5	RoHS	49
K78-1500L	1500	4.75~18	3.3,5,6.5	RoHS	49
K78-2000	2000	4.75~18	3.3,5,6.5	RoHS cULus CE	49
K78-2000L	2000	4.75~18	3.3,5,6.5	RoHS cULus CE	49

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 Series	9-24	0~2.7	10000	80	RoHS	61
URF2428LP-700 Series	9-36	0~28.5	700	86/88	RoHS	61
URB24A5YMD-1000 Series	9-36	0~4.8	1000	76/78	RoHS	61

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	65
FC-LX1D2	EMC Filter	85～305VAC	1.5A	RoHS	65
FC-L01DV1	EMC Filter	85～305VAC	0.3A	RoHS	65
FC-AX3D	EMC Filter	10～36VDC	30W	RoHS	65
FC-B02D	EMC Filter	18～75VDC	30W	RoHS	65
FC-D03D	EMC Filter	18～36VDC	50W	RoHS	65
FC-E03D	EMC Filter	36～75VDC	75W	RoHS	65
FC-A01D	EMC Filter	9～36VDC	1A	RoHS	65
FC-B01D	EMC Filter	18～75VDC	1A	RoHS	65
FC-C01D	EMC Filter	40～160VDC	10W	RoHS	66
FC-CX1D	EMC Filter	40～160VDC	30W	RoHS	66
FC-C03D	EMC Filter	40～160VDC	50W	RoHS	66
FC-CX3D	EMC Filter	66～160VDC	100W	RoHS	66
FI-B03D	EMI Filter	0～80VDC	3A	RoHS	66
FS-A01D	Surge Suppresser	0～40VDC	0.6A	RoHS	67
FT-BX1D	EFT Suppresser	0～80VDC	1.5A	RoHS	67
FS-TD01D	485-AB Bus Surge Protection Module	0～5VDC	≤0.1	RoHS	68
FL2D	Common Mode Filter	/	0.5,1,3A	RoHS	68

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	70
TD301/501D485H	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～200Kbps	RoHS c UL us CE CB	70
TD301/501D485H-A	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD301/501D485H-E	Single economical/high rate/high isolated RS485	3.17～3.45V,4.75～5.25V	0～500Kbps	RoHS c UL us CE CB	70
TDH301/501D485H	Single economical/high rate/high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD312P485/TD512P485	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～9.6Kbps	RoHS	70
TD312P485H/TD512P485H	Duplex economical/high rate high isolated Rs485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
TD31IP485H/TD51IP485H	Duplex economical/high rate high isolated RS485	3.17～3.45V,4.75～5.25V	0～115.2Kbps	RoHS	70
FS-TD01D	485-AB Bus surge protection module	/	≤115.2Kbps	RoHS	71
TD301/501DCAN	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD301/501DCANH3	Single economical/ universal/high rate CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	71
TD302/502DCAN	Duplex universal CAN	3.0～3.6V,4.5～5.5V	0～1Mbps	RoHS	72
TD301/501D232H	Single/duplex high rate RS232	3.0～3.6V,4.5～5.5V	0～115.2Kbps	RoHS	72
TD302/502D232H	Single/duplex high rate RS232	3.0～3.6V,4.5～5.5V	0～115.2Kbps	RoHS	72

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	73
TE_AN	Active module positive and negative signal	±5V, ±10V	0～5V,0～10V	2000VAC	RoHS	73
TE_CN	Active module positive and negative signal	±5V, ±10V	±5V, ±10V	2000VAC	RoHS	73
TEM_AN	Active, mV-class, positive and negative signal	±75mV/±100mV	0～5V	2000VAC	RoHS	73
TEM_CN	Active, mV-class, positive and negative signal	±50mV/±100mV/±200mV	±5V/±10V	2000VAC	RoHS	73
TF_N	Active module	0～5V,0～10V	0/4～20mA,0～5V,0～10V	2000VAC	RoHS	74
T_P	Active module	0/4～20mA,0～5V,0～10V	0/4～20mA,0～5V,0～10V	2500VDC	RoHS	74
T_AP	Active high precision signal	±5V, ±10V	4～20mA,0～5V,0～10V	2500VDC	RoHS	74
TM_P	Active high precision(mV-class) signal	0～10/30/50/75/100mV	0/4～20mA,0～5V,0～10V	2500VDC	RoHS	75
TM_AP	Active high precision(mV-class) signal	±10/±20/±50/±75/±100mV/±200mV	4～20mA,0～5V,0～10V	2500VDC	RoHS	75
TM_CP	Active high precision(mV-class) signal	±10/±20/±50/±75/±100mV/±200mV	±5V/±10V	2500VDC	RoHS	75
T1100N	Passive module	4～20mA	4～20mA	3000VDC	RoHS	76
T1100L	Passive module	4～20mA	4～20mA	3000VDC	RoHS	76
T1100L–F	Passive module(loop power supply)	4～20mA	4～20mA	3000VDC	RoHS	76
T_HL	Two-wire Self-Powered module with HART	0～2.5V	3.7～22mA	2000VAC	RoHS	76
T_L	Two-wire loop power supply	0～2.5V	3.7～22mA	2000VAC	RoHS	76
TRP_P	RTDs detection type isolated module	Pt100(0～200℃)	4～20mA	2000VAC	RoHS	77
TE_HN	Active high precision high isolated detection type signal	0～5V	0～5V	4000VAC	RoHS	77
TF_GN	Active module	0～5V	-10～+10V	2000VAC	RoHS	78

LED Driver

Series	Input Voltage Range(VDC)	Output Voltage(VDC)	Output Current(mA)	Certification	Page
KC24H-1000	5.5～48	3.3～36	1000	RoHS	89
KC24H-1200	5.5～48	3.3～36	1200	RoHS	89
KC24H-R	5.5～46	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
KC24W	5.5～48	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
KC24RT	5.5～48	3.3～36	0～300,0～350,0～500,0～600,0～700	RoHS	89
LO60-26B	200～400VAC/280～560VDC	0～60V available	0.9A constant current	RoHS	88

DC/DC Converter for IGBT Driver

Series	Input Voltage (VDC)	Input Voltage Range(VDC)	Output Voltage (VDC)	Isolation Capacitance (pF)	Output Current (mA)	Effi(%) (typ)	Isolation	Certification	Page
QA01	15	14.5～15.5	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS c UL us CB	78
QA01-09	15	14.5～15.5	+9	6.6	+111	80%	3000VAC	RoHS c UL us CB	78
QA01-A09	15	14.5～15.5	+9/-9	6.6	+55/-55	80%	3000VAC	RoHS c UL us CB	78
QA01-17	15	14.5～15.5	+17/-8.7	6.6	+80/-40	80%	3000VAC	RoHS c UL us CB	78
QA02	12	11.6～12.4	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS c UL us CB	78
QA03	24	23.3～24.7	+15/-8.7	6.6	+80/-40	80%	3000VAC	RoHS c UL us CB	78
QA04	12	9～15	+15/-8	6.6	+100/-80	80%	3000VAC	RoHS c UL us CB	78
QA01C	15	13.5～16.5	+20/-4	3.5	+100/-100	83%	3500VAC	RoHS c UL us CE CB	79
QAW01	12	9～18	+15/-9	100	+200/-200	85%	3000VDC	RoHS	79
QAW02	24	18～36	+15/-9	100	+200/-200	85%	3000VDC	RoHS	79
QA152D	15	13.5～16.5	+15/-9	3.0	+200/-200	83%	4000VAC	RoHS	79

Hybrid Integrated IGBT Driver (Built-in Isolated)

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	80

Hybrid Integrated IGBT Driver

Series	Power Supply VCC(VDC)	Power Supply VEE(VDC)	Gate Voltage (VDC)	Max. Driving Current (A)	Max.Frequency (KHz)	Driving Channel	Isolation	Certification	Page
QC962-8A	15	-10	+15/-9	±8	40	1	3750VAC	RoHS	80

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 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

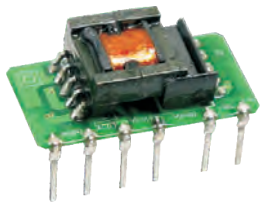
Pin+	Power Supply+
Pin-	Power Supply-
Pout+	Isolated Output+
Pout-	Isolated Output-
Pgnd	Isolated Output GND
Vo	Output
+Poss	+Isolated Power, Output
-Poss	-Isolated Power, Output
FB	Input Feedback
Ocom	Output Common
Icom	Input Common
Pin com/GND	Power Common
Iout	Current Output
Iin	Current Input
Sin+	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

Features

- Various applications available, especially for limited dimension application
- Input voltage range: 85～264VAC/70～400VDC
- Operating temperature: -40℃～+85℃ (LS05: -25℃～+85℃)
- Isolation: 3000VAC
- Efficiency up to 80%
- Output short-circuit, over-current protection
- IEC/UL/EN60950 certified



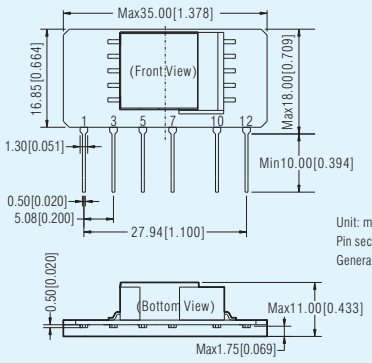
Product Program

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 to modules, and more details refer to typical applications;
2. All series are available for 90° pin-out;
3. Detailed application please see datasheet;
4. If the application has a higher requirement for EMC, please choose our matching FC-L01DV1.

Package Dimension

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

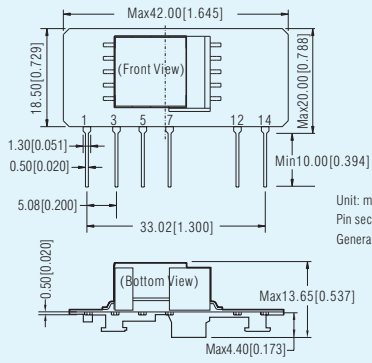


Pin-Out

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)



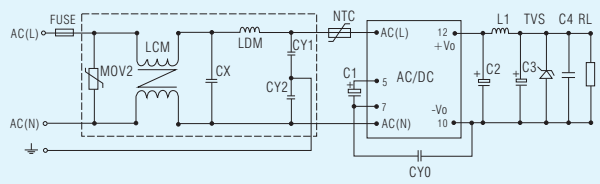
Pin-Out

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]

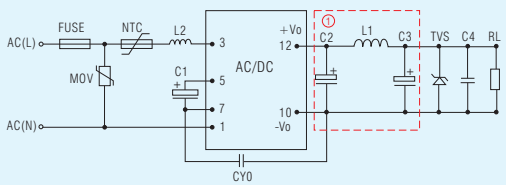
EMC solution-recommended circuit

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



Typical application circuit

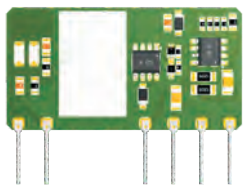
e.g.: LS03-15BXXSR2S(-F), for others please see datasheet.



Note: ① is Pi filter circuit

3W DIY Type three-phase-four-wire Specialized for Electric Power

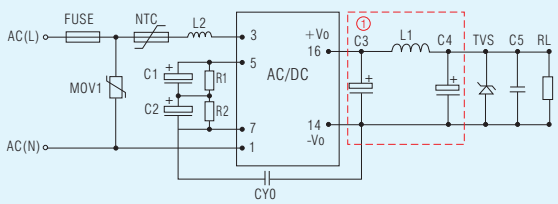
(pending)



Features

- Various applications available, especially for limited dimension application
- Electric power, instrumentation available
- Input voltage range: 85～528VAC/100～745VDC
- Operating temperature: -40℃～+85℃
- Isolation: 4000VAC
- Output short-circuit, over-current protection
- UL/EN60950 certified (pending)

Typical application circuit



Note: ① is Pi filter circuit

Product Program

Model Number	Power	Input Voltage Range	Output Voltage/ Current(Vo/Io)	Certification
LS03-16B05SS	2.5W	85～528VAC	5V/500mA	pending
LS03-16B12SS	3W	85～528VAC	12/250mA	
LS03-16B24SS		85～528VAC	24/125mA	

Note: 1. External electrolytic capacitors are required to modules, and more details please refer to typical applications;
2. All series are available for 90° pin-out.

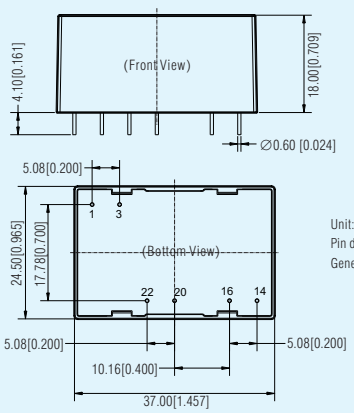
1～3W No Electrolytic Capacitor LN Series

CE RoHS

Features

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

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)

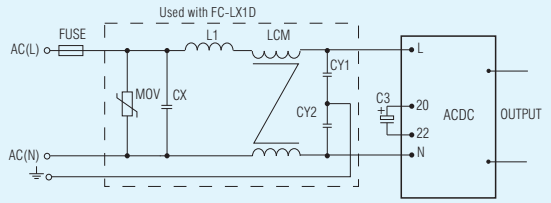
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

Product Program

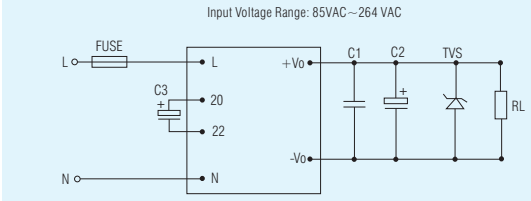
Model Number	Power	Input Voltage Range	Output Voltage/ Current(Vo/Io)	Effi(%) (typ)	Certification
LN01-12B05	1W	165～264VAC	5V/200mA	68	CE RoHS
LN01-12B12		165～264VAC	12V/83mA	69	
LN01-12B24		165～264VAC	24V/42mA	69	
LN02-12B05	2W	165～264VAC	5V/400mA	70	
LN02-12B12		165～264VAC	12V/167mA	76	
LN02-12B24		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 has a higher requirement for EMS, please choose our matching EMC recommended circuit as following;
2. 85～264VAC input voltage is available as following typical application circuit;
3.Detailed application please see datasheet.

EMC solution-recommended circuit



Typical application circuit



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

3～20W Compact Universal Input Voltage LD Series

Features

- Compact size, compact application available
- Input voltage range: 85～264VAC/100～370VDC
- Isolation: 3000VAC/4000VAC
- Efficiency up to 83%
- Low standby power consumption, high efficiency, environmental friendly
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protection
- IEC/EN/UL60950 certified

A2S Chassis Mounting

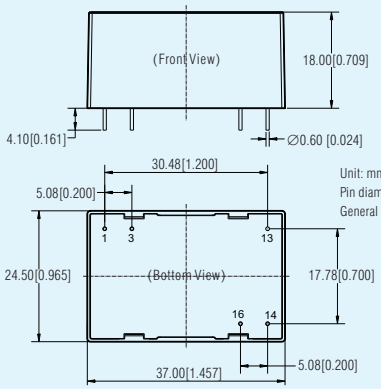
A4S DIN-Rail Mounting

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	
LD03-10B05R2		85～264VAC	5V/600mA	74	
LD03-10B09R2		85～264VAC	9V/330mA	75	
LD03-10B12R2	3W	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		85～264VAC	5V/1000mA	78	
LD05-20B09		85～264VAC	9V/550mA	78	
LD05-20B12	5W	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	
LD10-20B05		85～264VAC	5V/2000mA	76	
LD10-20B09		85～264VAC	9V/1100mA	80	
LD10-20B12	10W	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	
LD12-20B05		85～264VAC	5V/2400mA	78	
LD12-20B12		85～264VAC	12V/1000mA	82	
LD12-20B15	12W	85～264VAC	15V/800mA	82	
LD12-20B24		85～264VAC	24V/500mA	83	
LD20-10B03	11.88W	85～264VAC	3.3V/3600mA	74	
LD20-10B05	18W	85～264VAC	5V/3600mA	78	
LD20-10B12		85～264VAC	12V/1660mA	82	
LD20-10B15	20W	85～264VAC	15V/1330mA	83	
LD20-10B24		85～264VAC	24V/833mA	83	

Package Dimension

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

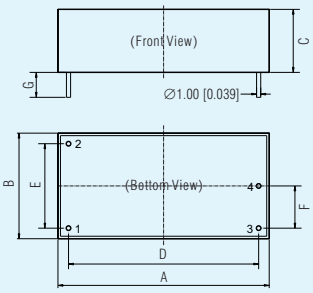


Pin-Out

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:



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

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

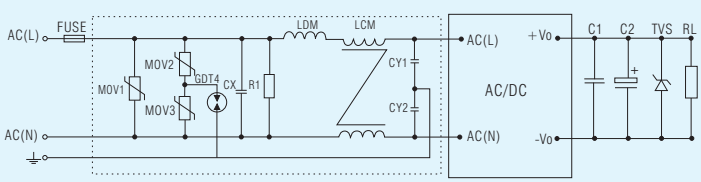
Pin-Out

	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

Note: A2S chassis mounting and A4S DIN-Rail mounting are available and please visit datasheet for more detailed information.

Note: 1.LD series meet the requirements of anti-lightning surge. If the application has a higher requirement for anti-lightning and EMI, please choose our standard products LH series(surge level three), LH-ER2(surge level four), or recommended peripheral circuit to reach a higher level;
2.If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. 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 see datasheet.

EMC solution-recommended circuit



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

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

Features

- Compact size, compact application available
- Input voltage range: 85～305VAC/120～430VDC
- Isolation: 3000VAC/4000VAC
- Efficiency up to 83%
- Low standby power consumption, high efficiency, environmental friendly
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protection
- IEC/UL/EN60950 certified

A2S Chassis Mounting

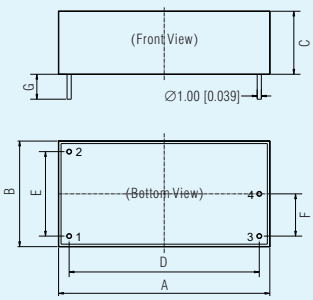
A4S DIN-Rail Mounting

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

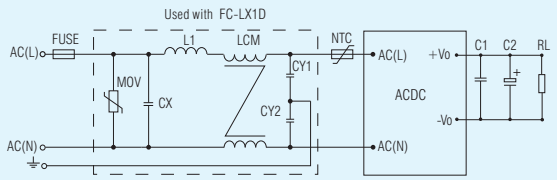
Pin-Out

	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 visit datasheet for more detailed information.

EMC solution-recommended circuit

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



Note: 1.LD series meet the requirements of anti-lightning surge. If the application has a higher requirement for anti-lightning and EMI, please choose our standard products LH series(surge level three), LH-ER2(surge level four), or recommended peripheral circuit to reach a higher level;
2.If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. For example, LD05-23B with FC-LX1D reaches to ±2KV/4KV(level four);
3.Detailed application please see datasheet.

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

Features

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

A2 Chassis Mounting

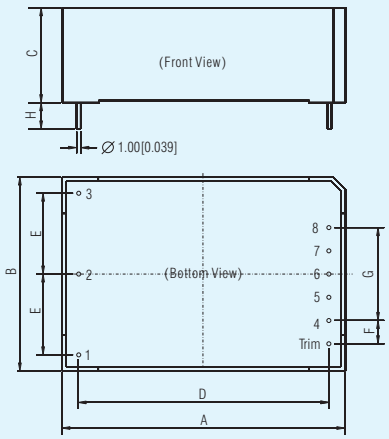
A4 DIN-Rail Mounting

Product Program

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

Note: 1. LH(05-25)-13B series meet the requirements of surge level of ±1KV/2KV(level three). If the application has a higher requirement for surge, please choose our recommended peripheral circuit to reach to ±2KV/4KV(level four);
2. If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. For example, LH(05-25)-13B series with FC-LX1D reaches to±2KV/4KV(level four);
3. Detailed application please see datasheet.

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

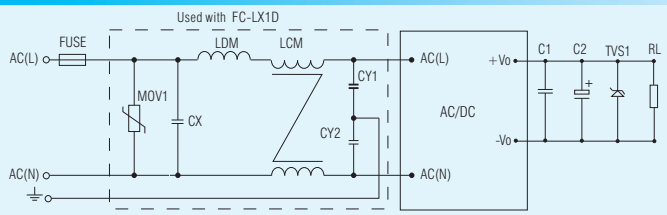
Pin-Out

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 as datasheet.
Further developing is also available if needed.

EMC solution-recommended circuit



5～25W Standard Package LH Series

Features

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

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	

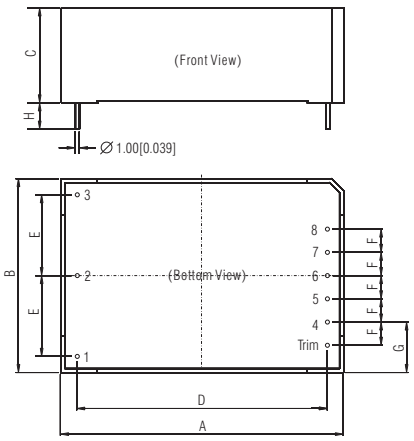
Note: 1. Standard LH series meet the requirements of surge level of ±1KV/2KV(level three). If the application has a higher requirement for surge, please choose our LH-ER2 series to ±2KV/4KV(level four) or recommended peripheral circuit to ±2KV/4KV(level four);
2. If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. For example, standard LH(05-25) series with FC-LX1D reaches to±2KV/4KV(level four);
3. Detailed application please see 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		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	20W	+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		3.3V/4100mA		74	
LH25-10B05		5V/4100mA		79	
LH25-10B09		9V/2500mA		81	
LH25-10B12	25W	12V/2100mA		83	
LH25-10B15		15V/1600mA		84	
LH25-10B24		24V/1100mA		85	
LH25-10B48		48V/500mA		87	

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

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

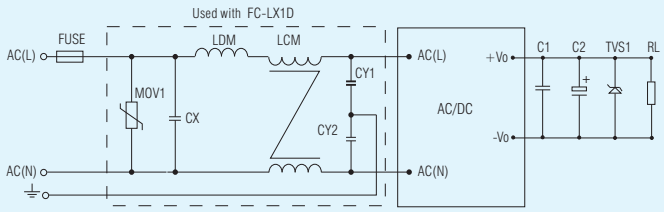
NO.	LH05	LH10	LH15	LH20	LH25
A	48.50	55.00	62.00	70.00	70.00
B	36.00	45.00	45.00	48.00	48.00
C	20.50	21.00	22.50	23.50	23.50
D	40.50	47.00	54.00	62.00	62.00
E	12.50	17.50	17.50	20.00	20.00
F	4.00	5.00	5.00	5.75	5.75
G	10.00	12.50	12.50	12.50	12.50

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 visit datasheet for more detailed information.

EMC solution-recommended circuit



40～60W Standard Package LH Series

Features

- Standard package, industrial control applications available that has a higher requirement for EMC
- Input voltage range: 85～264VAC/100～370VDC
- Operating temperature: -40℃～+70℃
- Efficiency up to 86%
- Optional package: chassis mounting, DIN-Rail mounting
- Output short-circuit, over-current and over-voltage protection
- UL/EN60950 certified

A5 Chassis Mounting

A6 DIN-Rail Mounting

Product Program

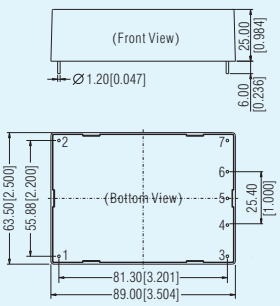
Model Number	Power	Output Voltage/ Current(Vo1/Io1)	Max.Capcitive Load(μF)	Isolation	Certification
LH40-10B03	26.4W	3.3V/8000mA	60000	3000VAC	cULus CE RoHS
LH40-10B05	40W	5V/8000mA	40000		
LH40-10B09		9V/4444mA	12000		
LH40-10B12		12V/3333mA	9000		
LH40-10B15		15V/2666mA	7000		
LH40-10B24		24V/1667mA	2000		

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 has a higher requirement for surge, please choose our recommended peripheral circuit to ±2KV/4KV(level four);
2. LH60 meets the requirements of surge level of ±2KV/4KV(level four). If the application has a higher requirement for surge, please choose our recommended peripheral circuit to ±4KV/6KV;
3. Detailed application please see datasheet.

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



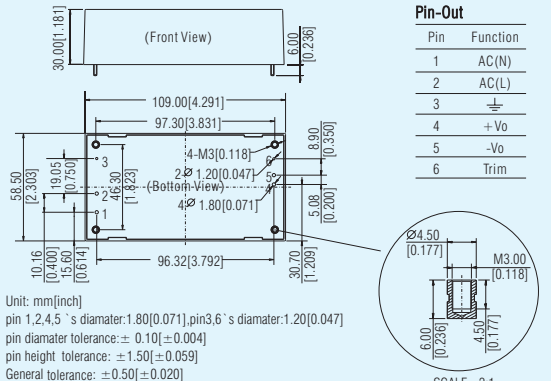
Pin-Out

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 see datasheet for more detailed information.

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



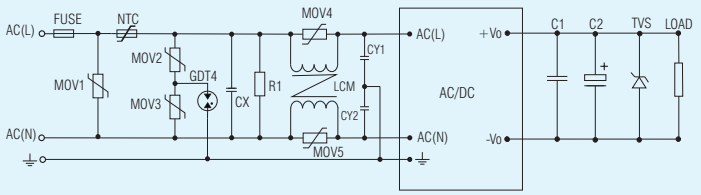
Pin-Out

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 fix screws in the haid vibration

EMC solution-recommended circuit

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



120～240W DIN35 DIN-Rail LI Series

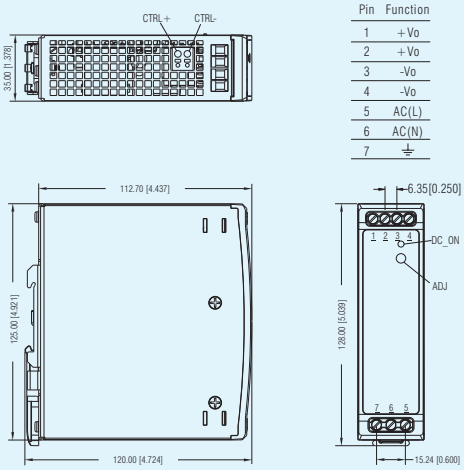
Features

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

Product Program

Model Number	Power	Input Voltage Range	Output Voltage/ Current(Vo/Io)	Effi(%) (typ)	Certification
LI120-10B24	120W	85～264VAC	24V/5000mA	92	RoHS
LI120-10B48	120W	85～264VAC	48V/2500mA	93	pending
LI240-10B24	240W	85～264VAC	24V/10000mA	92	RoHS
LI240-10B48	240W	85～264VAC	48-52.8V/5000mA	93	pending

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

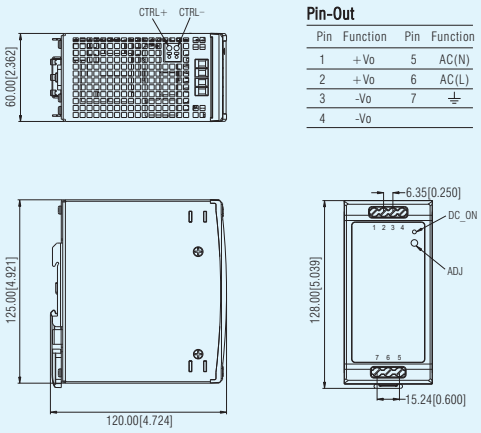


Pin-Out

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

5W Compact size LD05-MU Series (Medical)

RoHS

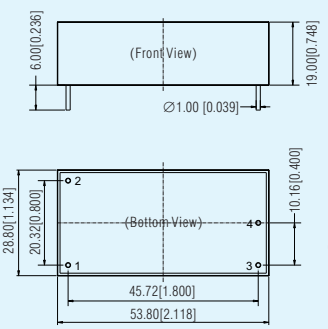
Features

- EN/UL60601 certified (3rd edition, 2*MOPP)
- Input voltage range: 85～264VAC/100～370VDC
- Operating temperature: -25℃～+70℃
- Isolation: 4000VAC
- Ripple & noise: 50mV(Typ.)
- Output short-circuit, over-current and over-voltage protection

Product Program

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

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



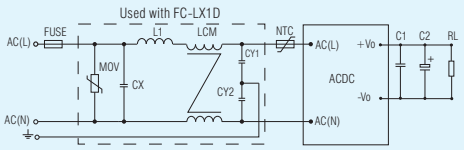
Pin-Out

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 as datasheet. Further developing is also available if needed.

EMC solution-recommended circuit



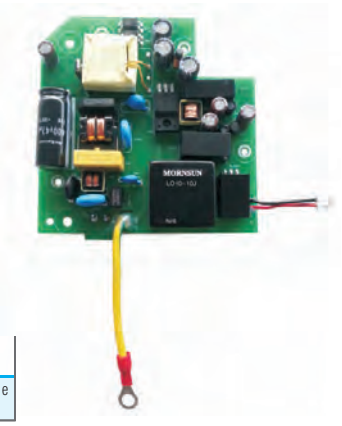
Note: series meet the requirements of surge level of ±1KV. If the application has a higher requirement for surge, please choose our recommended peripheral circuit. Detailed application please see datasheet.

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

RoHS

Features

- Series with seven outputs specialized for flow-meter industry, various outputs customization available
- 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

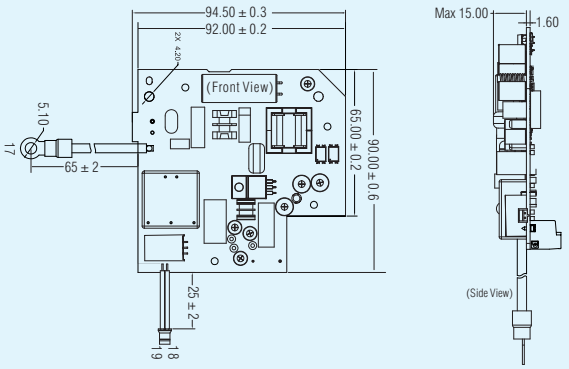


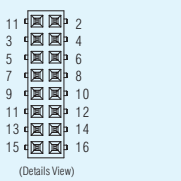
Product Program

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～±24V) available	Positive and negative voltage (±5V～±70V) available

Note: Seven outputs or below customization available. For more information, please contract us.

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)		

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

10W Open Frame LO Series Specialized for Electric Power

RoHS

Features

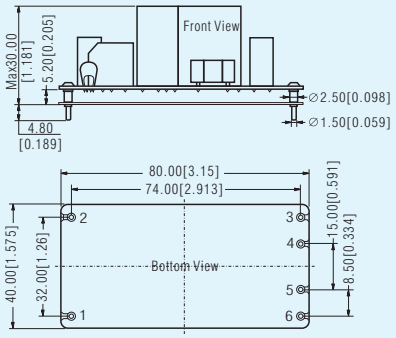
- Specialized for electric-meter application, EMI CLASS B with ±2KV surge
- Input voltage range: 30～280VAC/30～400VDC
- Isolation: 4000VAC
- High efficiency, high reliability
- Low ripple & noise, low standby power consumption
- Long-life low-impedance electrolytic capacitors
- Output short-circuit, over-voltage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

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 available.

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

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

RoHS

Features

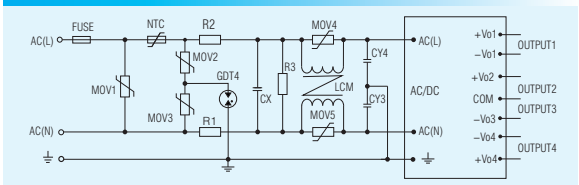
- EMC: EMI CLASS B; ±2KV/4KV surge (level four)
- Input voltage range: 85～264VAC/100～370VDC
- Isolation: 2000VAC
- Low standby power consumption, high efficiency
- Low ripple & noise
- Multiplexed outputs, metal mask
- Output short-circuit, over-current and over-voltage protection

Product Program

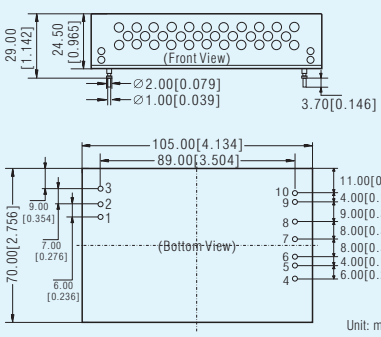
Model Number	Power	Input Voltage Range	Output Voltage (VDC)	Certification
LM30-00J0512-03E	30W	85～264VAC, 100～370VDC	5/±12/24	RoHS

Note: 1. Series meet the requirements of surge level of ±2KV/4KV(level four). If the application has a higher requirement for surge, please choose our recommended peripheral circuit to ±4KV/6KV;
2. If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. For example, series with FC-L01D2 reaches to ±4KV/6KV;
3. Detailed application please see 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, excellent EMS performance with ±2KV/±4KV surge(level four)
- Input voltage range: 85～264VAC/120～370VDC
- Isolation: 3000VAC
- Efficiency up to 85%
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting
- Meet CLASS I, safety
- Output short-circuit, over-current protection

A2 Chassis Mounting

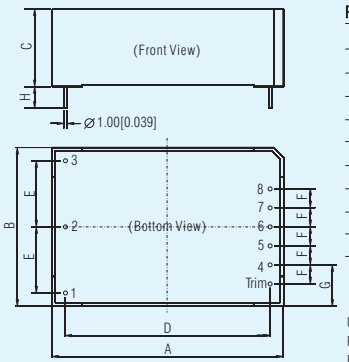
A4 DIN-Rail Mounting

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. Series meet the requirements of surge level of ±2KV/4KV(level four). If the application has a higher requirement for surge, please choose our recommended peripheral circuit to ±4KV/6KV;
2. If the application has a higher requirement for lightning surge, please choose our matching EMC auxiliary device. For example, series with FC-L01D2 reaches to ±4KV/6KV;
3. Detailed application please see datasheet.

Package Dimension



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

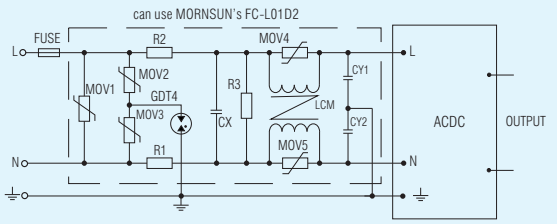
Unit: mm[inch]
Pin length(H):≥6.00[0.236]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.50[±0.020]

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

Note: Trim**: only for LH20/25-13B Series.
A2 chassis mounting and A4 DIN-Rail mounting are available and please visit datasheet for more detailed information.

EMC solution-recommended circuit



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

RoHS

Features

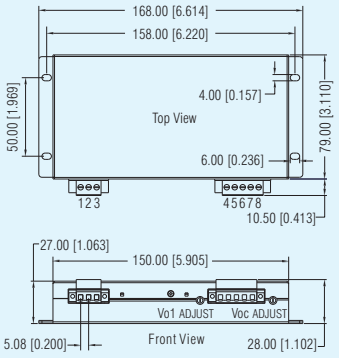
- Specialized for distribution automation system, power magnet switch controller, electric network cabinet and other electrical equipment applications available; with charging function, the output ultra-capacitor can be charged
- Operating temperature: -40℃～+75℃
- Isolation: 3000VAC
- Efficiency up to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

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

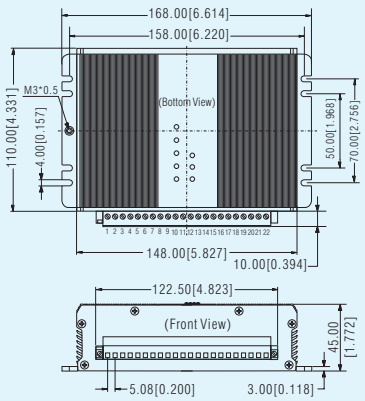
- Specialized for distribution automation system, power distribution automation system, intelligent power box-type substation and RMU applications available; with charging function, the lead-acid battery can be charged
- Operating temperature: -40℃～+70℃
- Efficiency up to 86%
- Low stand by power consumption,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

Product Program

Model Number	Long-Term Power	Load Voltage /Current	Floating charging voltage	Charging current	Certification
MBP300-2A27D27	108W (instantaneous350W/30S)	27V/3A	27V	1A	RoHS
MBP500-2A27D27	162W (instantaneous540W/30S)	27V/4.5A	27V	1.5A	

Note:48V output customization available.

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

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

DC/DC Converter

5～15W New Energy Isolation Converter with Ultra-wide Input Voltage of 100-1000VDC

CE RoHS

Features

- Ultra-wide input voltage for PV & HVC applications available
- 10:1ultra-wide input voltage range: 100～1000VDC
- Operating temperature: -40℃～+70℃
- Isolation: 4000VAC
- Efficiency up to 80%
- High reliability, 3 years warranty
- Output over-voltage, short-circuit, input against reverse protection
- EN62109 certified

A2 Chassis Mounting

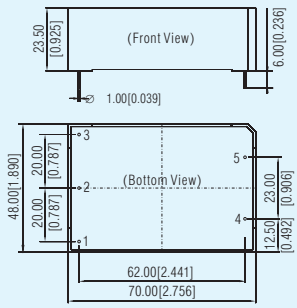
A4 DIN-Rail Mounting

Product Program

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

Note: Detailed application please see 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 visit datasheet for more detailed information.

40W New Energy Isolation Converter with Ultra-wide Input Voltage of 200-1200VDC

RoHS

Features

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

A5 Chassis Mounting

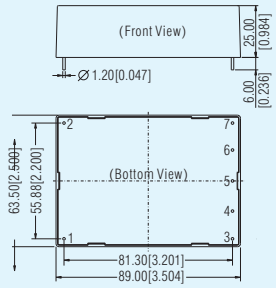
A6 DIN-Rail Mounting

Product Program

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

Note: Detailed application please see 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]

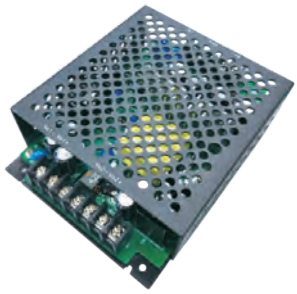
Note: A5 chassis mounting and A6 DIN-Rail mounting are available and please visit datasheet for more detailed information.

Caged Power Supply with Ultra-wide Input Voltage of 200-1400VDC Specialized for SVG

RoHS

Features

- Designed for SVG application with reverse voltage, output short-circuit, over-current protection
- 7:1ultra-wide input voltage range: 200～1400VDC
- Operating temperature: -40℃～+85℃
- Isolation: 4000VAC
- High reliability, 3 years warranty
- Operating elevation: 3500m

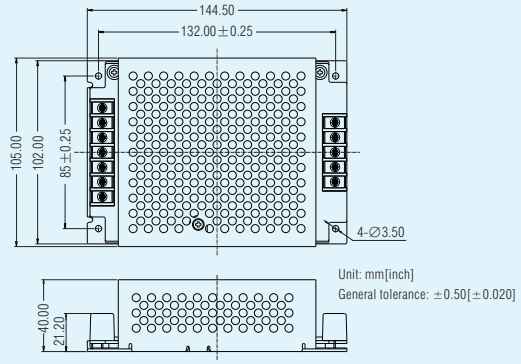


Product Program

Model Number	Power	Input Voltage Range (Optional)	Output Voltage Range	Certification
PV45-27D	45W	200～1400VDC	12V/15V/24V duplex output available	RoHS

Note: 1500VDC input with 12V/15V/24V duplex output customization available.

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



New Energy 200-1500VDC Ultra-wide Input Voltage and Ultra-high Isolation Converter

CE RoHS
(pending)

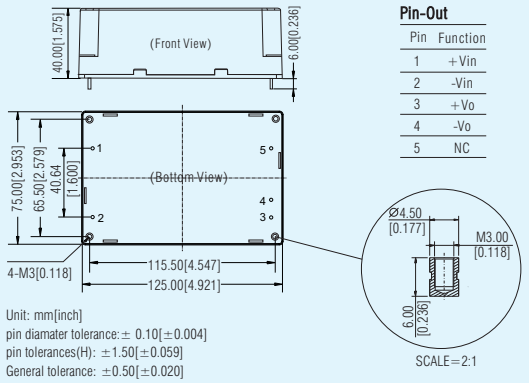
Features

- Input voltage range: 200 ～ 1500VDC
- Operating temperature: -40℃～+70℃
- Isolation: 4000VAC
- High efficiency, low ripple& noise
- Input under-voltage, reverse voltage, output short-circuit, over-current, over-voltage protection
- EN62109 certified

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 (pending) RoHS
PV15-29B12	15W	200～1500VDC	12V/1250mA	71	
PV15-29B15		200～1500VDC	15V/1000mA	72	
PV15-29B24		200～1500VDC	24V/625mA	74	
PV40-29B12	40W	200～1500VDC	12V/3330mA	76	
PV40-29B15		200～1500VDC	15V/2670mA	78	
PV40-29B24		200～1500VDC	24V/1670mA	80	

Package Dimension LxWxH: 125.00x75.00x40.00(mm)



Pin-Out

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

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

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

RoHS

Features

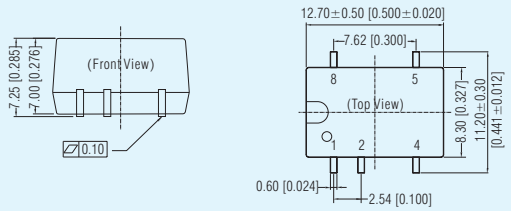
- Specialized for automotive industry, meet AEC-Q100 standard
- Operating temperature: -50℃～+125℃
- Isolation: 3500VDC
- Compact SMD package
- Manufacturing process meets TS16949 standard
- Output short-circuit protection (self-recovery)

Product Program

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

Note: If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device.

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



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

Pin-Out

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

NC: No connection.

Power Supply Specialized for Intelligent Instrument

RoHS

Features

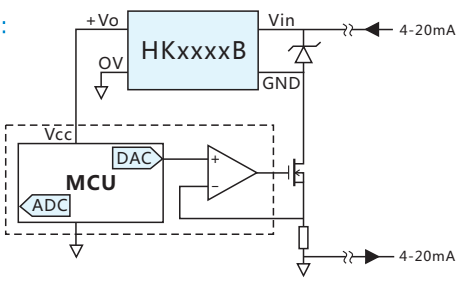
- Two-wire loop power application
- Operating temperature: -40℃～+85℃
- Isolation: 1000VDC
- High efficiency, low power consumption
- Excellent high and low temperature characteristics

Product Program

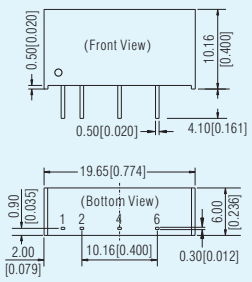
Model Number	Input Voltage (VDC)	Input Current (mA)	Output Voltage (VDC)	Output Current (mA)	Max.Capacitive Load (μF)
HK5S03B	5	4-20	3.3	3.2	10
HK5S05B		4-20	5	2	10
HK5S03BV		3.5-22	3.3	3	10
HK8S03B	7.5	4-20	3.3	3.5	10
HK8SX3B		4-20	3	5	10
HK8S05IB		4-20	5	3.5	10

Note: If the application has a higher requirement for EMC, you can choose our matching EMC auxiliary device.

Application:



Package Dimension LxWxH: 19.65x6.00x10.16(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]

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

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

Features

- EN/UL60601 certified (3rd edition, 1*MOPP/2*MOOP)
- Operating temperature: -40℃～+85℃
- Isolation: 4200VAC
- Efficiency up to 80%
- International standard pin-out

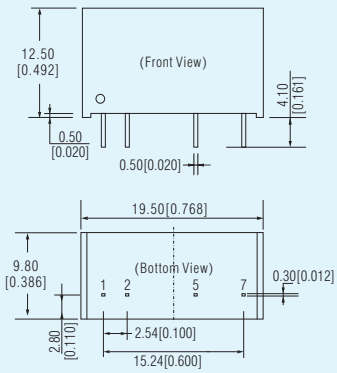
Product Program

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)	
G0509S-1WR2			±9V/±56mA		
G0512S-1WR2			±12V/±42mA		
G0515S-1WR2			±15V/±34mA		
H0505S-1WR2			5V/200mA		
H0512S-1WR2			12V/84mA		
H0515S-1WR2			15V/67mA		
G1205S-1WR2	1W	10.8-13.2 (12VDC)	±5V/±100mA	4200VAC (SIP)	
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)	
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)	
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)	
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)	
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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

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

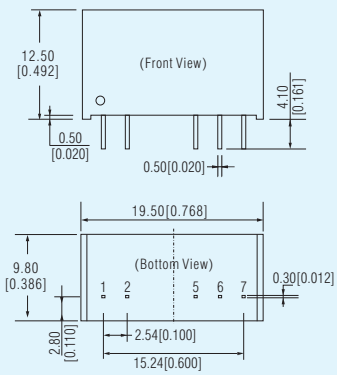


Pin-Out

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

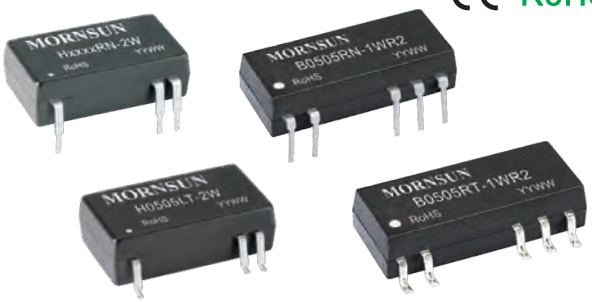
Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

1～2W Fixed Input Voltage, Isolated & Unregulated Output Series

CE RoHS

Features

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



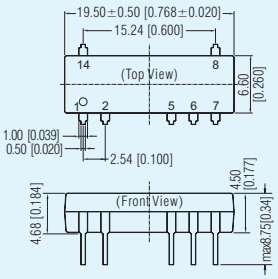
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation	Package
B0505RN-1WR2	1W	4.5-5.5 (5VDC)	5V/200mA	1500VDC	SIP
B0505RT-1WR2					SMD
F0305RN-1W	1W	4.5-5.5 (5VDC)	5V/200mA	3000VDC	SIP
F0505RT-1W					SMD
H0505RN-2W	2W	4.5-5.5 (5VDC)	5V/400mA	6000VDC	SIP
H0512RN-2W			12V/167mA		
H0515RN-2W			15V/133mA		
H0505LT-2W			5V/400mA		SMD
H1205RN-2W	2W	10.8-13.2 (12VDC)	5V/400mA	6000VDC	SIP
H1205LT-2W			5V/400mA		SMD
H1215LT-2W			15V/133mA		
H2405RN-2W	2W	21.6-26.4 (24VDC)	5V/400mA	6000VDC	SIP
H2415RN-2W			15V/133mA		
H2403LT-2W			3.3V/400mA		SMD
H2405LT-2W			5V/400mA		
H2412LT-2W			12V/167mA		
H2415LT-2W			15V/133mA		

Note: If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

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



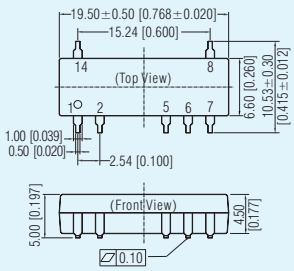
Pin-Out

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

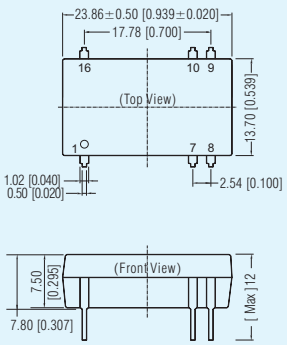
Pin	Function
1	Vin
2	GND
5	0V
6	+Vo
Others	NC

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)



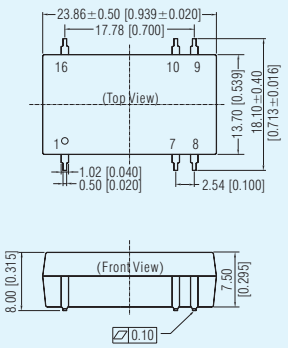
Pin-Out

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]

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

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

Features

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

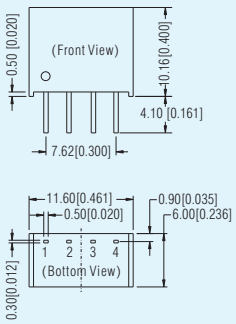
Product Program

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-4)	RoHS
B0305S-W2R2			5V/50mA		
B0503S-W2R2		4.5-5.5 (5VDC)	3.3V/76mA		
B0505S-W2R2			5V/50mA		
B1205S-W2R2		10.8-13.2(12VDC)	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-7)	RoHS
B0305LS-1WR2			5V/200mA		
B0303S-1WR2			3.3V/303mA	1500VDC (SIP-4)	cULus CE RoHS
B0305S-1WR2			5V/200mA		
A0505S-1WR2	1W	4.5-5.5 (5VDC)	±5V/±100mA	1500VDC (SIP-7)	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-4)	
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-7)	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-4)	
B1212S-1WR2			12V/84mA		
B1215S-1WR2			15V/67mA		
B1224S-1WR2			24V/42mA		
A1505S-1WR2	1W	13.5-16.5 (15VDC)	±5V/±100mA	1500VDC (SIP-7)	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-4)	RoHS
B1512S-1WR2			12V/84mA		
B1515S-1WR2			15V/67mA		
A2405S-1WR2*	1W	21.6-26.4 (24VDC)	±5V/±100mA	1500VDC (SIP-7)	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-4)	
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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

B_S-1WR2、B_S-W2R2 Series (SIP-4) LxWxH: 11.60x6.00x10.16(mm)

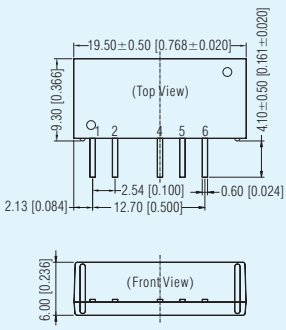


Pin-Out

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 (SIP-7) 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℃～+105℃
- Efficiency up to 80%
- High power density
- Miniature SIP package, automation packaged
- Anti-static protection: ±8KV
- Continuous short-circuit protection

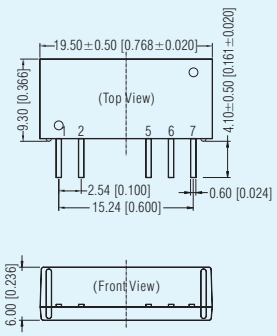
Product Program

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-7)	RoHS
F0305S-1WR2			5V/200mA		
E0505S-1WR2	1W	4.5-5.5 (5VDC)	±5V/±100mA	3000VDC (SIP-7)	
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-7)	
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-7)	
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-7)	
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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

E_S-1WR2、F_S-1WR2 Series (SIP-7) 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℃～+105℃
- Efficiency up to 80%
- High power density
- Miniature 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)	
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)	
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)	
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)	
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		

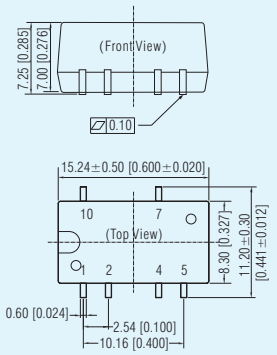
Product Program

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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

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



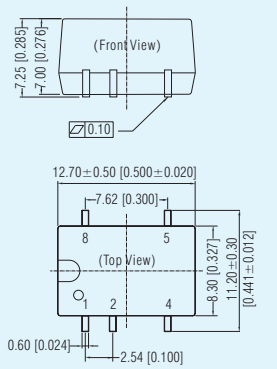
Pin-Out

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]

• 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

Features

- Operating temperature: -40℃～+105℃
- Efficiency up to 80%
- Miniature SMD package
- Anti-static protection: ±8KV
- Continuous short-circuit protection

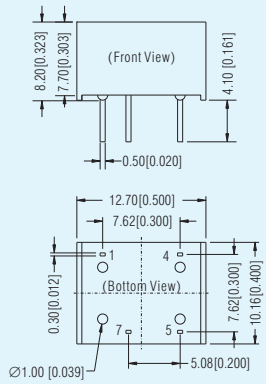
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
B0303D-1WR2	1W	2.97-3.63 (3.3VDC)	3.3V/303mA	1500VDC (DIP-8)	RoHS
B0305D-1WR2			5V/200mA		
A0505D-1WR2	1W	4.5-5.5 (5VDC)	±5V/±100mA	1500VDC (DIP-14)	RoHS
A0512D-1WR2			±12V/±42mA		
A0515D-1WR2			±15V/±34mA		
B0503D-1WR2			3.3V/303mA	1500VDC (DIP-8)	cULus CE RoHS
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-14)	RoHS
A1212D-1WR2			±12V/±42mA		
B1205D-1WR2			5V/200mA	1500VDC (DIP-8)	cULus CE RoHS
B1212D-1WR2			12V/84mA		
B1215D-1WR2			15V/67mA		
B1505D-1WR2	1W	13.5-16.5 (15VDC)	5V/200mA	1500VDC (DIP-8)	RoHS
B1515D-1WR2			15V/67mA		
A2412D-1WR2*	1W	21.6-26.4 (24VDC)	±12V/±42mA	1500VDC (DIP-14)	RoHS
A2415D-1WR2*			±15V/±34mA		
B2405D-1WR2*			5V/200mA	1500VDC (DIP-8)	cULus CE RoHS
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-14)	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-14)	RoHS
F1205D-1WR2			5V/200mA		
F1212D-1WR2			12V/83mA		
F1215D-1WR2			15V/67mA		
F1515D-1WR2		13.5-16.5(15VDC)	15V/67mA		cULus CE RoHS
E2412D-1WR2*	1W	21.6-26.4 (24VDC)	±12V/±42mA	3000VDC (DIP-14)	RoHS
E2415D-1WR2*			±15V/±34mA		
F2405D-1WR2*			5V/200mA		

Note: 1. Short circuit protection time of products marked with * is 1s;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

B_D-1WR2 Series (DIP-8) LxWxH: 12.70x10.16x8.20(mm)

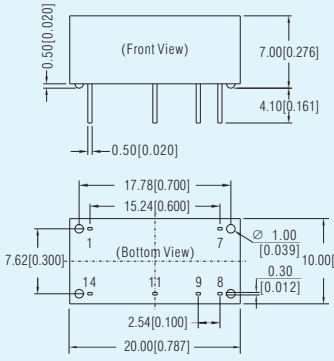


Pin-Out

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-14) LxWxH: 20.00x10.00x7.00(mm)



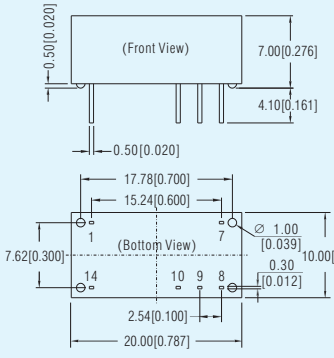
Pin-Out

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-14) 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

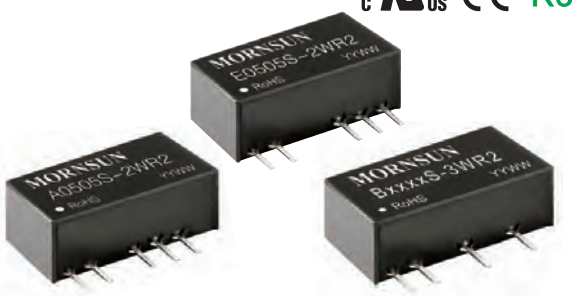
NC: No connection.

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℃～+105℃
- Efficiency up to 80%
- High power density
- Miniature SIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection



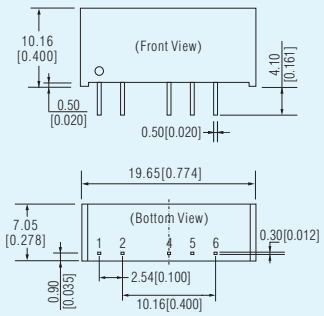
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
A0505S-2WR2	2W	4.5-5.5 (5VDC)	±5V/±200mA	1500VDC (SIP-7)	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-7)	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-7)	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-7)	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-7)	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-7)	RoHS
F1505S-2WR2			5V/400mA		
F1512S-2WR2			12V/167mA		
E2405S-2WR2*	2W	21.6-26.4 (24VDC)	±5V/±200mA	3000VDC (SIP-7)	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-7)	RoHS
B1212S-3WR2		10.8-13.2(12VDC)	12V/250mA		
F0505S-3WR2	3W	4.5-5.5(5VDC)	5V/600mA	3000VDC (SIP-7)	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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

A_S-2WR2、B_S-2WR2 Series (SIP-7) LxWxH: 19.65x7.05x10.16(mm)



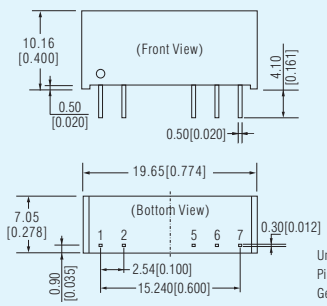
Pin-Out

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-7)

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

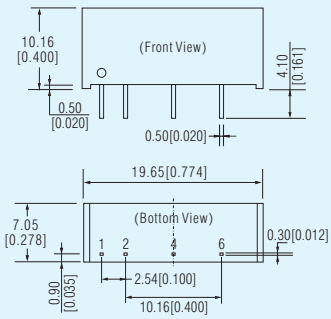


Pin-Out

Pin	E_S-2WR2	F_S-2WR2
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-7) 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]

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

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

CE RoHS

Features

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

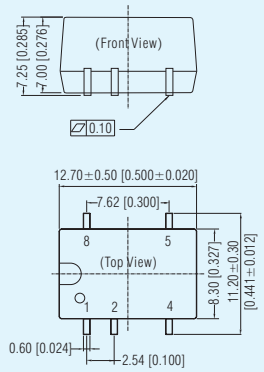
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

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



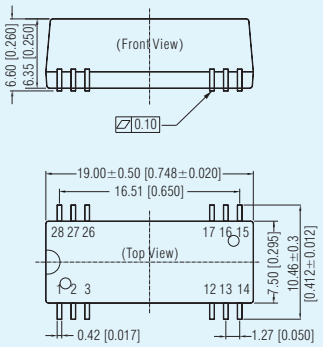
Pin-Out

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℃～+105℃
- Efficiency up to 80%
- Miniature DIP package
- Anti-static protection: ±8KV
- Continuous short-circuit protection

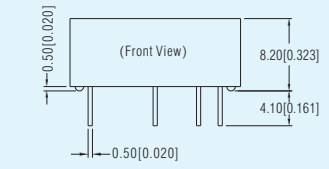
Product Program

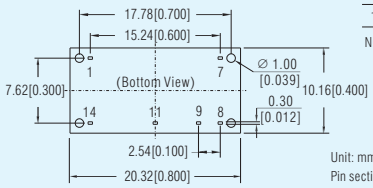
Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
B0303D-2WR2	2W	2.97-3.63 (3.3VDC)	3.3V/400mA	1500VDC (DIP-14)	RoHS
B0305D-2WR2			5V/400mA		
A0505D-2WR2	2W	4.5-5.5 (5VDC)	±5V/±200mA	1500VDC (DIP-14)	cULus CE RoHS
A0512D-2WR2*			±12V/±83mA		
A0515D-2WR2*			±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-14)	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-14)	RoHS
A2405D-2WR2*	2W	21.6-26.4 (24VDC)	±5V/±200mA		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-14)	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-14)	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-14)	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-14)	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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

A/B_D-2WR2 Series (DIP-14) LxWxH: 20.32x10.16x8.20(mm)





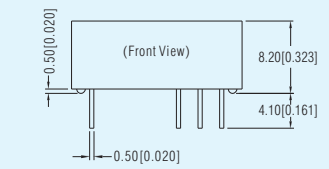
Pin-Out

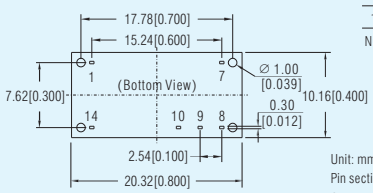
Pin	Single	Dual
1	GND	GND
7	NC	NC
8	0V	0V
9	+Vo	+Vo
11	No Pin	-Vo
14	Vin	Vin

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-14) 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

RoHS

Features

- High precise measurement application available
- Operating temperature: -40℃～+85℃
- Low ripple & noise: Min. 10mVp-p/Min. 50mVp-p
- Output voltage accuracy: ±3%
- International standard pin-out
- Short-circuit protection

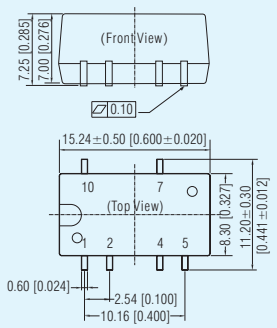
Product Program

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 (SIP)	RoHS
IF1205RN-1W		11.4-12.6(12VDC)			
IF0505RT-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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

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



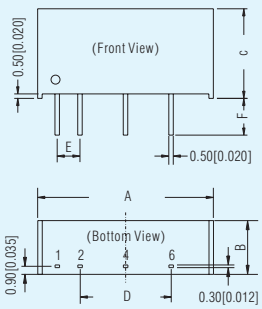
Pin-Out

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

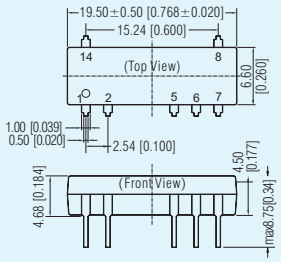
Pin	1	2	4	6
Function	Vin	GND	0V	+Vo

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)



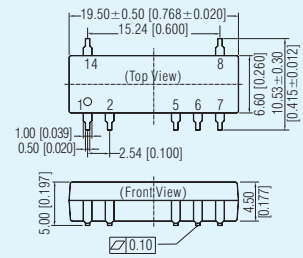
Pin-Out

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]

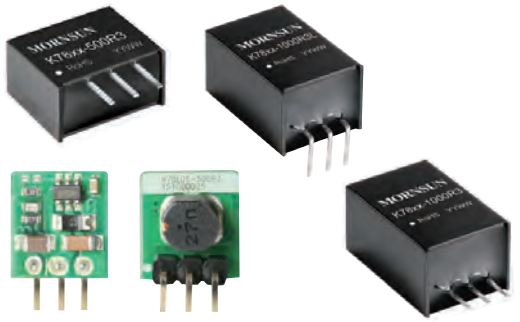
• This catalog is for reference only, please visit our website for detailed datasheets: www.mornsun-power.com

0.5～2A Wide Input Voltage, Non-isolated & Regulated Output Series

cULus CE RoHS

Features

- Operating temperature: -40℃～+85℃
- Efficiency up to 96%
- Low standby input current
- Negative output available: R3 series/K78-1000(L) series
- Pin-out compatible with LM78XX series
- Continuous short-circuit protection



Product Program

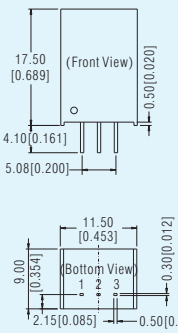
Model Number	Input Voltage Range (Nominal)	Output Voltage (VDC)	Output Current (mA)	Certification
K78(L)03-500R3	4.75-36 (24VDC)	3.3	500	cULus CE RoHS
K78(L)05-500R3	6.5-36 (24VDC)	5	500	
	7-31 (12VDC)	-5	-300	
K7809-500R3	12-36 (24VDC)	9	500	
K78(L)12-500R3	15-36 (24VDC)	12	500	
	8-24 (12VDC)	-12	-150	
K78(L)15-500R3	19-36 (24VDC)	15	500	
	8-21 (12VDC)	-15	-150	
K78(L)03-1000R3	6-36 (24VDC)	3.3	1000	cULus CE RoHS
K7805-1000R3(L)	8-36 (24VDC)	5	1000	
	8-27 (12VDC)	-5	-500	
K78L05-1000R3	8-36 (24VDC)	5	1000	
	8-27 (12VDC)	-5	-500	
K7809-1000R3	13-36 (24VDC)	9	1000	
K78(L)12-1000R3	16-36 (24VDC)	12	1000	
	8-20 (12VDC)	-12	-300	
K78(L)15-1000R3	20-36 (24VDC)	15	1000	
	8-18 (12VDC)	-15	-300	
K7803-1500(L)	4.75-18 (12VDC)	3.3	1500	RoHS
K7805-1500(L)	6.5-18 (12VDC)	5.0		
K78X6-1500(L)	8-18 (12VDC)	6.5		
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 has a higher requirement for EMC, please choose our matching EMC auxiliary device.

Package Dimension

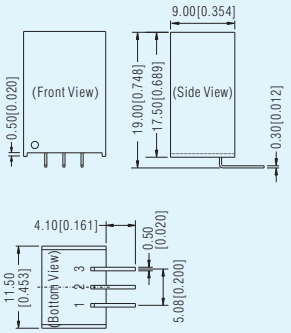
K78-1000R3、K78-1500、K78-2000 Series

LxWxH: 11.50x9.00x17.50(mm)



K78-1000R3L、K78-1500L、K78-2000L Series

LxWxH: 19.00x11.50x9.00(mm)



K78-1000R3(L)

Pin-Out

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

K78-1500(L)/K78-2000(L)

Pin-Out

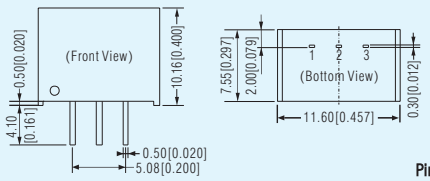
Pin	1	2	3
Function	Vin	GND	+Vo

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

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

Package Dimension

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



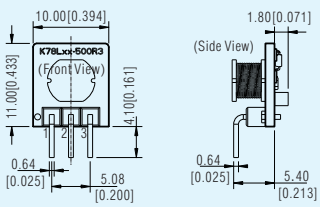
Unit: mm[inch]
Pin section tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]

Pin-Out

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

K78L-500R3 Series (Open Frame)

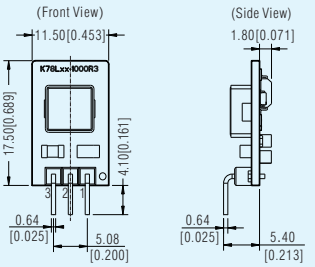
LxWxH:10.00x7.20x11.00(mm)



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 used to introduce our latest products, for more information, please contact our sales department

1W Wide Input Voltage, Isolated & Regulated Output Series

Features

CE RoHS

- Communication, instrumentation, industrial electronics applications available
- Operating temperature: -40℃～+85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 certified

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		

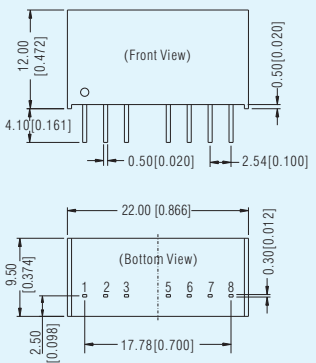
Product Program 2:1 Input series

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 has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

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]

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

2W Wide Input Voltage, Isolated & Regulated Output Series

RoHS

Features

- Communication, instrumentation, industrial electronics applications available
- Operating temperature: -40℃～+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-16)	RoHS
WRB1212N-2W			12V/167mA		
WRB1215N-2W			15V/133mA		
WRB2405N-2W		18-36 (24VDC)	5V/400mA		
WRB2412N-2W			12V/167mA		
WRB2415N-2W			15V/133mA		

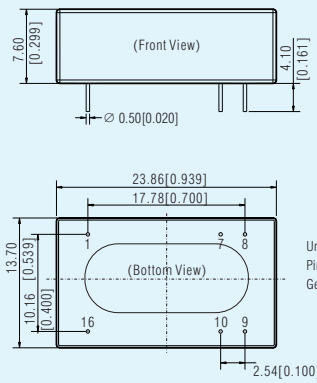
Product Program 4:1 Input series

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
PWB2405CS-2W	2W	9-36 (24VDC)	5V/400mA	1500VDC (SIP)	RoHS
PWB2409CS-2W			9V/222mA		
PWB2412CS-2W			12V/167mA		
PWB2415CS-2W			15V/133mA		
PWB4805CS-2W		18-72 (48VDC)	5V/400mA		
PWB4812CS-2W			12V/167mA		
PWB4815CS-2W			15V/133mA		

Note: 1. Series with suffix "N"are standard DIP16 packaged with plastic case and detailed dimension please see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

Package Dimension

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



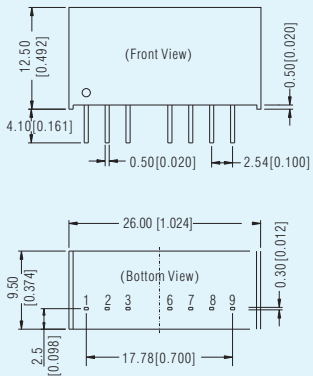
Pin-Out

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

- Communication, instrumentation, industrial electronics applications available
- Operating temperature: -40℃～+85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 certified

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		

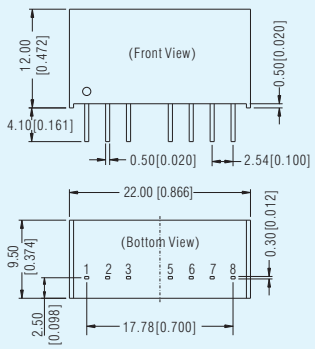
Product Program 2:1 Input series

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 see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

Package Dimension

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



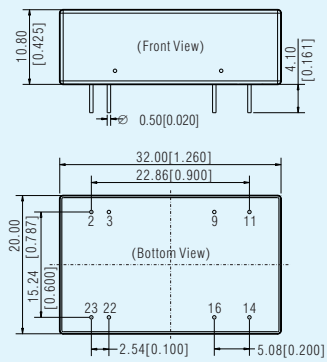
Pin-Out

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]

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

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

CE RoHS

Features

- Communication, instrumentation, industrial electronics applications available
- Operating temperature: -40℃～+85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 certified

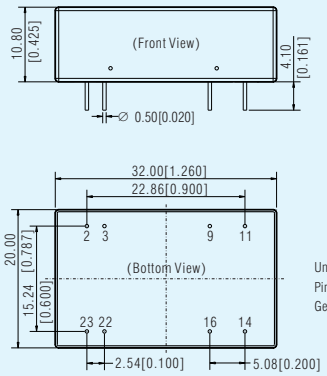
Product Program 4:1 Input series

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 see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

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

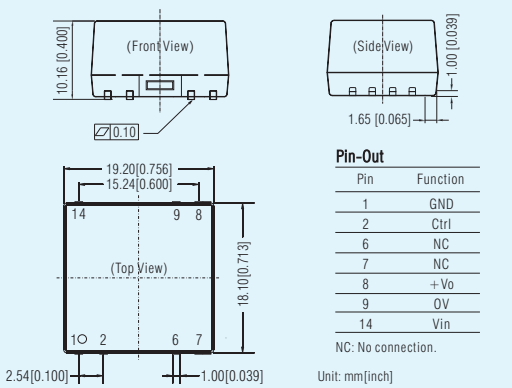
- Communication, instrumentation, industrial electronics application available
- Operating temperature: -40℃～+85℃
- Efficiency up to 84%
- Standby power consumption as low as 0.12W
- International standard pin-out
- Protection function: input under-voltage protection, output short-circuit, over-current protection
- IEC/UL/EN60950 certified

Product Program

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

Note: If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

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]

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

3W Wide Input Voltage, 3000VDC Isolated & Regulated Output Series

CE RoHS

Features

- Communication, instrumentation, industrial electronics applications available
- Operating temperature: -40℃～+85℃
- Low ripple & noise
- High power density
- Remote ON/OFF
- Continuous short-circuit protection, self-recovery
- EN60950 certified

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)	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		

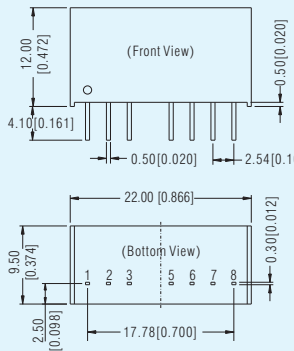
Product Program 2:1 Input series

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 see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

Package Dimension

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



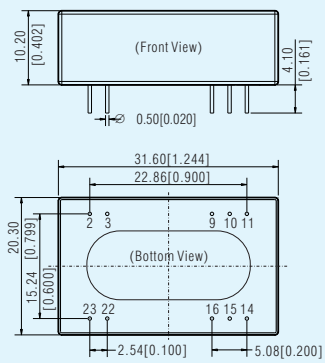
Pin-Out

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]

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

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

CE RoHS

Features

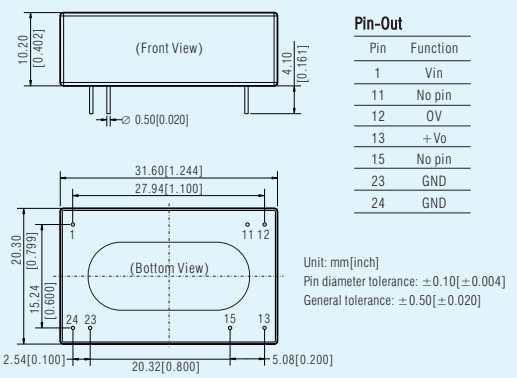
- Medical and energy storage system application available due to low standby power consumption
- EN60601 certified (3rd edition, 2*MOOP & 2*MOPP)
- Operating temperature: -40℃～+105℃
- Isolation: 6000VDC (Enhanced)
- Standby power consumption as low as 0.12W
- International standard pin-out
- Input under-voltage, output over-voltage, over-current, short-circuit protection

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 has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

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, Isolated & Regulated Output Series

Features

- Industrial control, electric power, instrustation and communication applications available
- Operating temperature: -40℃～+85℃
- 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, short-circuit protection
- IEC/UL/EN60950 certified

A2S Chassis Mounting　　A4S DIN-Rail Mounting

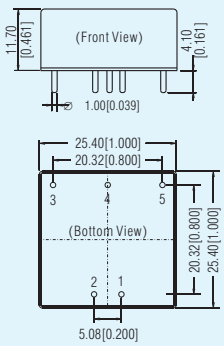
Product Program　2:1 Input series

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
VRA1205YMD-6WR3	6W	9-18 (12VDC)	±5V/±600mA	1500VDC (DIP)	
VRA1212YMD-6WR3			±12V/±250mA		
VRB1205YMD-6WR3			5V/1200mA		
VRB1212YMD-6WR3			12V/500mA		
VRA2405YMD-6WR3	6W	18-36 (24VDC)	±5V/±600mA	1500VDC (DIP)	
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)	
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)	
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)	
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 detailed dimension please see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

Package Dimension

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

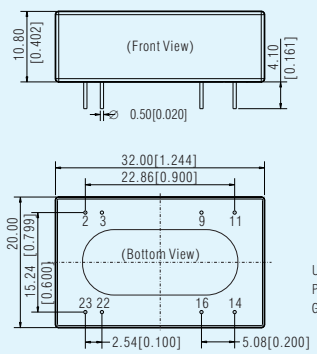


Pin-Out

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

- Industrial control, electric power, instrustation and communication applications available
- Operating temperature: -40℃～+85℃
- 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, short-circuit protection
- IEC/UL/EN60950 certified

A2S Chassis Mounting

A4S DIN-Rail Mounting

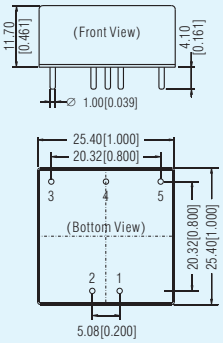
Product Program 4:1 Input series

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)	RoHS / 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 see illustration;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more information.

Package Dimension

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

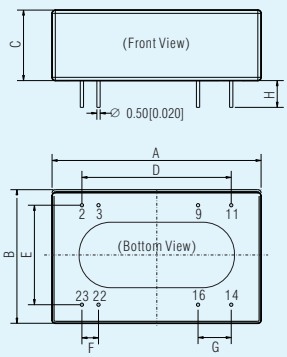


Pin-Out

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

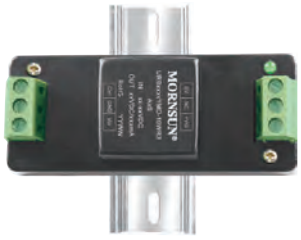
• This catalog is used to introduce our latest products, for more information, please contact our sales department

10W Wide Input Voltage, Isolated & Regulated Output Series

Features

- Industrial control, electric power, instrustation and communication applications available
- Operating temperature: -40℃～+85℃
- 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, short-circuit protection
- IEC/UL/EN60950 certified

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

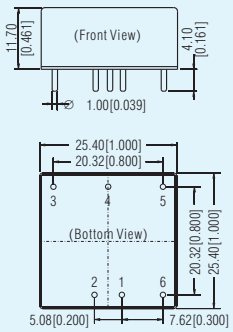
Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation (Package)	Certification
URA2405YMD-10WR3	10W	9-36 (24VDC)	±5V/±1000mA	1500VDC (DIP)	cULus CB CE RoHS
URA2409YMD-10WR3			±9V/±555mA		
URA2412YMD-10WR3			±12V/±416mA		
URA2415YMD-10WR3			±15V/±333mA		
URA2424YMD-10WR3			±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 us or visit datasheet for more information. Series have input anti-reverse connection 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 see illustration;
3. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more detailed information.

Package Dimension

URA/B_YMD-10WR3、VRB_YMD-10WR3 Series

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



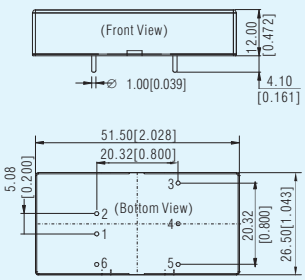
Pin-Out

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

15～20W Wide Input Voltage, Isolated & Regulated Output Series

Features

- DCS, battery-powered device, communication, distributed power system, D/A hybrid system, RTU, industrial robot system applications available
- Operating temperature: -40℃～+85℃
- 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, short-circuit protection
- IEC/UL/EN60950 certified

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)	RoHS
VRB2412LD-15WR3			12V/1250mA		
VRB2415LD-15WR3			15V/1000mA		
VRB2424LD-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		

Note: 1. Chassis mounting and DIN-Rail mounting are available and please contact us or visit datasheet for more information. Series have input anti-reverse connection 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 see illustration;
3. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more detailed information;
4. URB4809LD-20WR3 is pending to be certified.

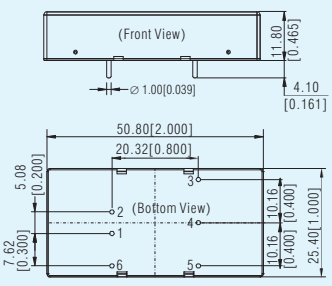
Product Program 4:1 Input series

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		

Package Dimension

VRB_LD-15WR3、VRA/B_LD-20WR3、URA/B_LD-20WR3 Series

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



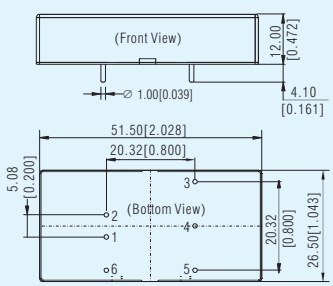
Pin-Out

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 used to introduce our latest products, for more information, please contact our sales department

30～50W Wide Input Voltage, Isolated & Regulated Output Series

Features

- DCS, battery-powered device, communication, distributed power system, D/A hybrid system, RTU, industrial robot system applications available
- Operating temperature: -40℃～+85℃
- 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, short-circuit protection
- IEC/UL/EN60950 certified

A2S Chassis Mounting　　A4S DIN-Rail Mounting

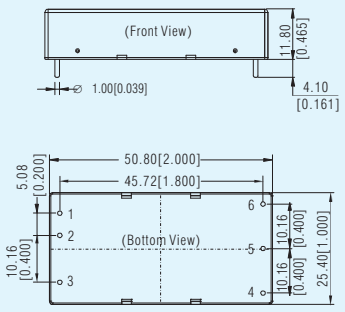
Product Program　2:1 Input series

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

URB_LD-30WR3、VRB_LD-30WR3、VRB_LD-50WR3 Series

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



Pin-Out

Pin	Function
1	Vin
2	GND
3	Ctrl
4	Trim
5	0V
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
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		
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 us or visit datasheet for more information. Series have input anti-reverse connection protection;
2. Series with suffix "LD" are 2*1 packaged with aluminum alloy casing, and detail dimension please see illustration;
3. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more detailed information.

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

RoHS

Features

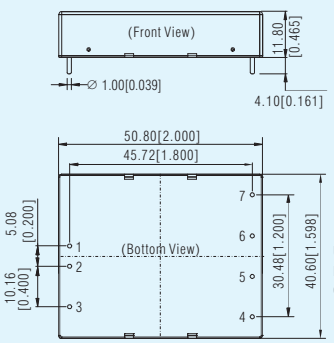
- Automobile industry available
- Operating temperature: -40℃～+85℃
- Efficiency up to 82%
- Standby power consumption as low as 0.4W
- Input voltage as low as 6VDC
- Meet CISPR22/EN55022 CLASS A
- Input under-voltage, output over-voltage, over-current, short-circuit protection

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 low to 4.5VDC input customization available.

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]

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

RoHS

Features

- Super-capacitor and lithium battery-powered applications available
- Constant voltage & current output
- Adjustable output voltage
- Internal SMD construction
- Remote ON/OFF
- Output over-voltage, short-circuit protection

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 available.

6～20W DC/DC Converter with Wide Input Voltage, 1500VDC Isolated & Regulated Output Series (Railway)

CE RoHS

Features

- Railway application available
- Wide input voltage range: 40～160VDC
- Operating temperature: -40℃～+85℃
- Isolation: 1500VDC
- Low ripple & noise
- International standard pin-out
- Output over-voltage, short-circuit protection

A4S Chassis Mounting　　A4S DIN-Rail Mounting

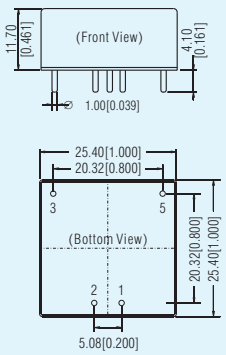
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation	Certification
URB1D05YMD-6W	6W	40-160 (110VDC)	5V/1200mA	1500VDC	CE RoHS
URB1D12YMD-6W			12V/500mA		
URB1D15YMD-6W			15V/400mA		
URB1D24YMD-6W			24V/250mA		
URB1D05XD-10W	10W	40-160 (110VDC)	5V/2000mA	1500VDC	CE RoHS
URB1D12XD-10W			12V/833mA		
URB1D15XD-10W			15V/667mA		
URB1D24XD-10W			24V/416mA		
URB1D03LD-15W	15W	40-160 (110VDC)	3.3V/4000mA	1500VDC	CE RoHS
URB1D05LD-15W			5V/3000mA		
URB1D12LD-15W			12V/1250mA		
URB1D15LD-15W			15V/1000mA		
URB1D24LD-15W			24V/625mA		
URB1D05LD-20W	20W	40-160 (110VDC)	5V/4000mA	1500VDC	CE RoHS
URB1D12LD-20W			12V/1667mA		
URB1D15LD-20W			15V/1333mA		
URB1D24LD-20W			24V/833mA		

Note: 1. Heat sink is available;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more detailed information.

Package Dimension

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



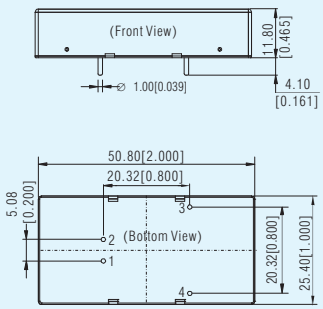
Pin-Out

Pin	Function
1	GND
2	Vin
3	+Vo
5	0V

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

Package Dimension

URB1D_XD-10W Series　LxWxH: 50.80x25.40x11.80(mm)

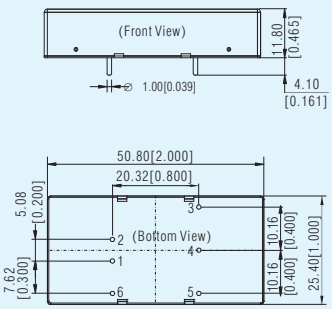


Pin-Out

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

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

URB1D_LD-15W、URB1D_LD-20W Series
LxWxH: 50.80x25.40x11.80(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]

50～150W DC/DC Converter with Wide Input Voltage, 3000VDC Isolated & Regulated Output Series (Railway)

RoHS

Features

- Railway application available
- Wide input voltage range: 66～160VDC
- Operating temperature: -40℃～+100℃
- Isolation: 3000VDC
- International standard brick package
- Input under-voltage, output over-voltage, over-current, short-circuit protection
- Meet railway standard EN50155

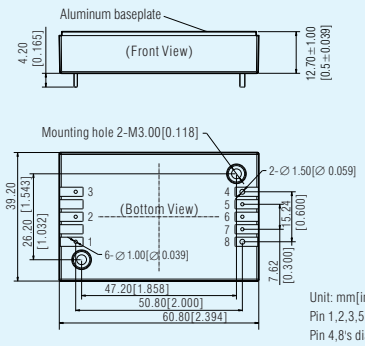
Product Program

Model Number	Power	Input Voltage (Nominal)	Output Voltage/Current (Vo/Io)	Isolation	Certification
URF1D24QB-50W URF1D24QB-50WH	50W	66-160 (110VDC)	24V/2083mA	3000VDC	RoHS
URF1D24QB-75W URF1D24QB-75WH	75W	66-160 (110VDC)	24V/3125mA		
URF1D24QB-100W URF1D24QB-100WH	100W	66-160 (110VDC)	24V/4167mA		
URF1D24HB-150W URF1D24HB-150WH	150W	50-160 (110VDC)	24V/6250mA		

Note: 1. Heat sink is available;
2. If the application has a higher requirement for EMC, please choose our matching EMC auxiliary device such as FC-AX3D, FC-B02D, FI-B03D and FT-BX1D and contact us for more detailed information.

URF1D24QB Series Package Dimension

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

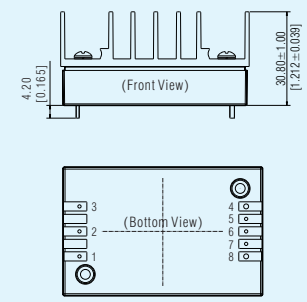


Pin-Out

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

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

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

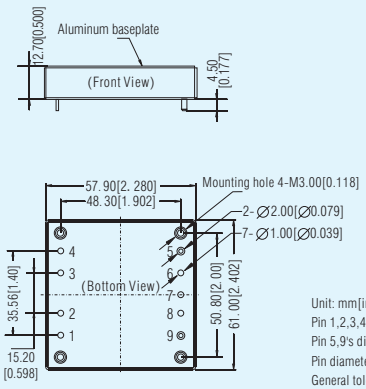


Pin-Out

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

URF1D24HB Series Package Dimension

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

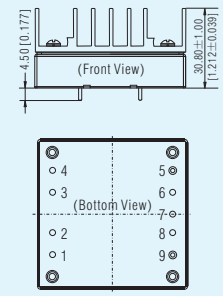


Pin-Out

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

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

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



Pin-Out

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

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EMC Auxiliary Device

EMC Filter Specialized for AC/DC Converter

RoHS

Features

- Being used with LD/LH/LH-ER2/LM30 can greatly improve EMS performance and make EMI meet requirements of CISPR22/EN 55022 Class B standard
- Wide input voltage: 85～305VAC
- Operating temperature range: -40℃～+85℃
- Compact size, cost-effective
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting

A2S Chassis Mounting Package

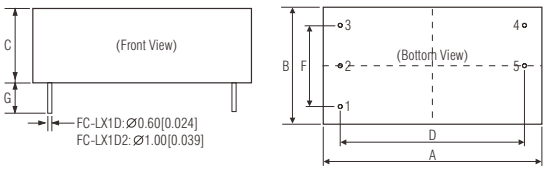
A4S DIN-Rail Mounting Package

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: 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-LX1D	FC-LX1D2	FC-LO1DV1
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

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

A2S Chassis Mounting Package

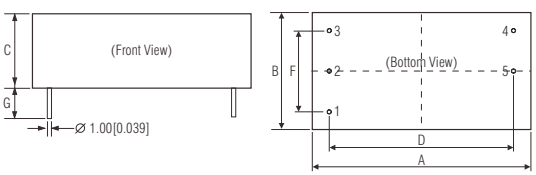
A4S DIN-Rail Mounting Package

Product Program

Model Number	Input Voltage Range (VAC)	Nominal Current (A)(max)	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 and 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

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

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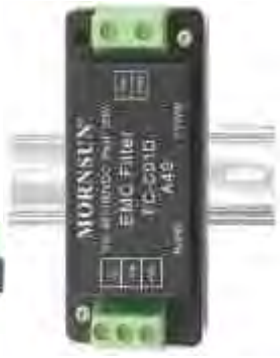
EMC Filter Specialized for Railway

RoHS

Features

- Being used with 10～100W Railway power supply can meet requirements of EN50155 standard and improve EMI performance & EMS performance
- Efficiency up to 98%
- Optional package: 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



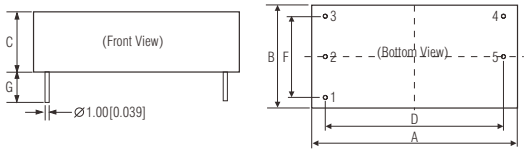
A4S DIN-Rail Mounting Package

Product Program

Model Number	Input Voltage Range (VAC)	Nominal Current (A)(max)	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

- Improving EMI performance and being used with 0～80V wide input voltage under 3A input current power supply can meet requirements of EN 55022 Class B standard
- Attenuation rate up to 20dB
- Low temperature rise
- Restrain line disturb of DC power source
- Compact size, cost-effective
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting

A2S Chassis Mounting Package

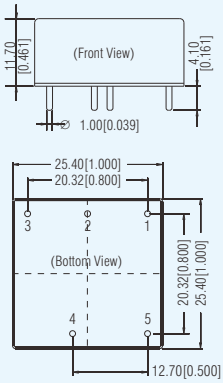
A4S DIN-Rail Mounting Package

Product Program

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

Note:
1. Being used with EMI filter can meet requirements of EN 55022 Class B standard for below 3A input DC/DC converter.
2. 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

- Improving surge performance and being used with 0~40V wide input power supply can meet ±2KV/±4KV(Grade Four) requirements of IEC/EN61000-4-5 for DC/DC converter
- Attenuation rate up to 30dB
- Low temperature rise
  Compact size, cost-effective
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting
- Design to suppress the DC power surge to achieve primary protection

A2S Chassis Mounting Package

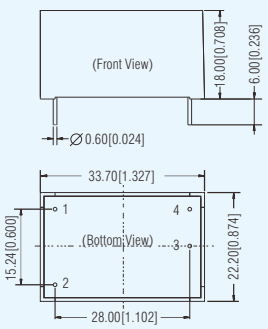
A4S DIN-Rail Mounting Package

Product Program

Model Number	Input Voltage Range (VAC)	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

- Being used with 0~80V wide input power supply can meet ±4KV requirements of IEC/EN61000-4-4 for DC/DC converter and improve pulse group suppressor performance
- Attenuation rate up to 30dB
- Low temperature rise
- Compact size, cost-effective
- Optional package: PCB mounting, chassis mounting, DIN-Rail mounting
- Design to suppress the DC power interference

A2S Chassis Mounting Package

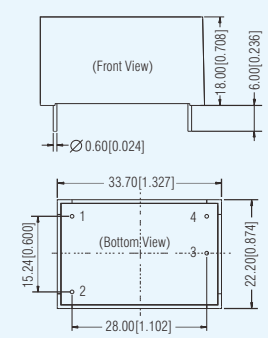
A4S DIN-Rail Mounting Package

Product Program

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

Note:
1.Being used with pulse group suppressor can meet ±4KV requirements of IEC/EN61000-4-4.
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]

485-AB Bus Surge Protection Module

RoHS

Features

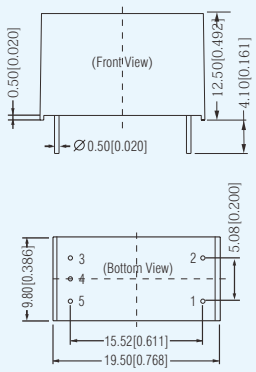
- Suppress signal port lightning surge
- Impact anti - current: ≤1KA (8/20 μ s Simulated lightning waveforms)
- Compact size, cost-effective
- Meet surge level of IEC/EN61000-4-5

Product Program

Model Number	Operating Voltage (VDC)	Clamp Voltage (VDC)	Nominal Current (A)	Transmission Rate (bps)	Certification
FS-TD01D	0-5	15	≤0.1	≤115200	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. Customization available

Package Dimension



Pin-Out

Pin	Designation	Function
1	A(out)	Output 485 BUS A
2	B(out)	Output 485 BUS B
3	B(in)	Input 485 BUS B
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

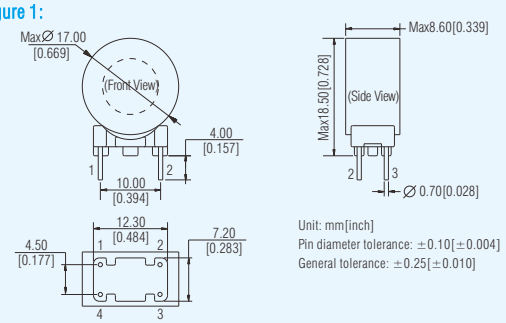
Product Program

Model Number	Inductance Value (μH)	Nominal Current (A)	DCR (mΩ)	Weight (g)	Certification
FL2D-Z5-103	10000*2	0.5	500*2	3.5	
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	RoHS
*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 visit Fig. 2;otherwise, please visit Fig. 1.

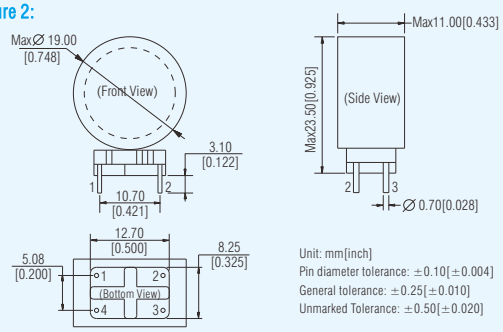
Package Dimension

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

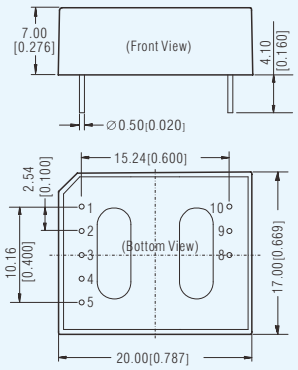
- Operating Temperature:-40℃～+85℃
- Isolation: 2500VDC (single economical/High rate module)
  3750VAC (high rate/high isolated module)
- Two-terminal isolation (input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxD485xx compatible with the UART port of +3.3V
  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
TD501D485H	4.75-5.25	0-200Kbps	32	High rate	
TD301D485H-A	3.17-3.45	0-115.2Kbps	32	Automatic switch to send and receive	RoHS
TD501D485H-A	4.75-5.25	0-115.2Kbps	32		
TD301D485H-E	3.17-3.45	0-500Kbps	256	High rate, enhanced version	RoHS CB
TD501D485H-E	4.75-5.25	0-500Kbps	256		
TDH301D485H	3.17-3.45	0-115.2Kbps	32	High rate high isolated 3750VAC	RoHS
TDH501D485H	4.75-5.25	0-115.2Kbps	32		

Note:customization available.

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
5(CON)	Send&Receiving Conrrol 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 tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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

Duplex Economical/High Rate High Isolated RS485 Transceiver Module

RoHS

Features

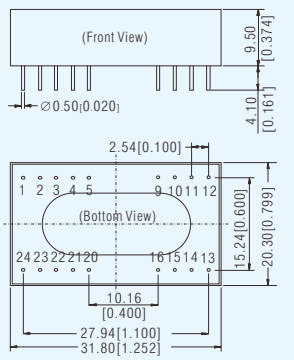
- Operating Temperature:-40℃～+85℃
- Isolation: 2500VDC
- Two-terminal isolation (input and output are mutually isolated), built-in isolated power supply bus protection
- TD3xxP485x compatible with the UART port of +3.3V
  TD5xxP485x compatible with the UART port of +5V
- Low power consumption,static current≤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:customization available.

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



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	Pin-Out
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

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

485-AB Bus Surge Protection Module

RoHS

Features

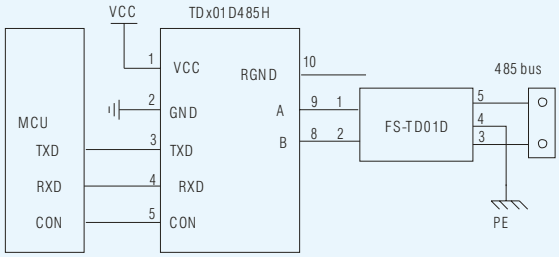
- Suppress signal port lightning surge
- Impact anti - current: ≤1KA (8/20 μ s simulated lightning waveforms)
- Compact size, cost-effective
- Meet ±2KV/±4KV surge level of IEC/EN61000-4-5

Product Program

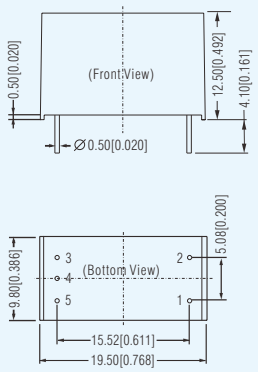
Model Number	Operating Voltage (VDC)	Clamping Voltage (VDC)	Nominal Current (A)	Data Rate (max)	Certification
FS-TD01D	0-5	15	≤0.1	≤115.2kbs	RoHS

Notes:
1. Being used with surge suppressor can meet surge level of IEC/EN61000-4-5 ±2KV (2Ω internal resistance)/±4KV(12Ω internal resistance).
2. Customization available.

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]

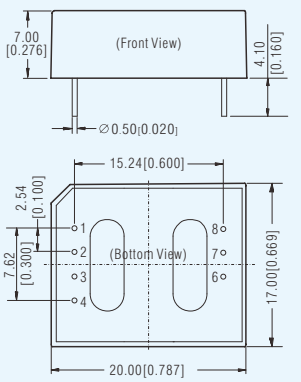
Single Economical/ Universal/High Rate CAN Transceiver Module

RoHS

Features

- Operating Temperature: -40℃～+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, static current≤30mA
- ESD protection(human body discharge:±4KV), perfect EMC recommended circuit

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 tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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 available.

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

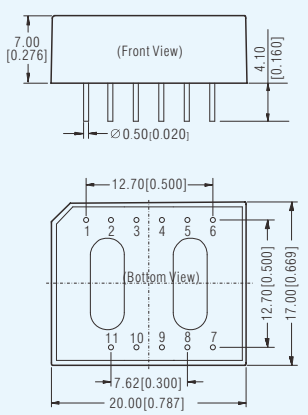
Duplex Universal CAN Transceiver Module

RoHS

Features

- Operating Temperature: -40℃～+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,static current: TD302DCAN≤80mA/TD502DCAN≤50mA
- ESD protection(human body discharge:±4KV), perfect EMC recommended circuit

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-CANH1 Pin

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	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 available.

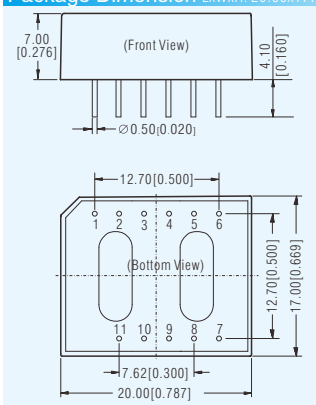
Single/Duplex High Rate RS232 Transceiver Module

RoHS

Features

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

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

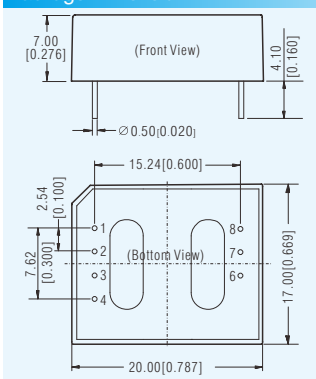


Pin-Out

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 tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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]

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 available.

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

Active High Precision(mV-class) Detection Type Positive/Negative 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℃～+85℃)

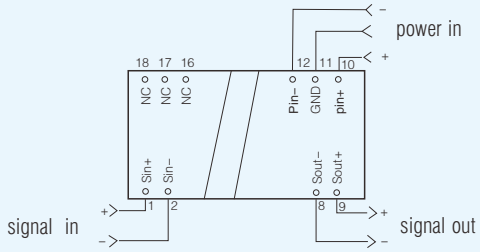
Product Program

Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TE1530N	24	4-20mA	0-10V	None	RoHS
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	0-5V	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	

Product Program

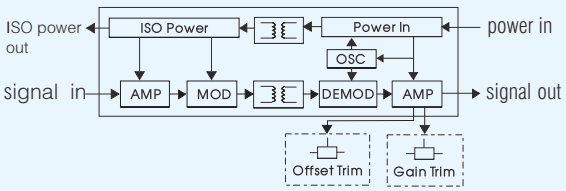
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TE5540CN	±15	±10V	±10V	None	RoHS
TE5550CN	±12	±10V	±10V	None	
TE6640CN	±15	±5V	±5V	None	
TE6650CN	±12	±5V	±5V	None	
TEM5630AN	24	±75mV	0～5VDC	None	
TEM6650AN	12	±75mV	0～5VDC	None	
TEM6640AN	15	±100mV	0～5VDC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

Wiring Diagram TE_AN//CN Series

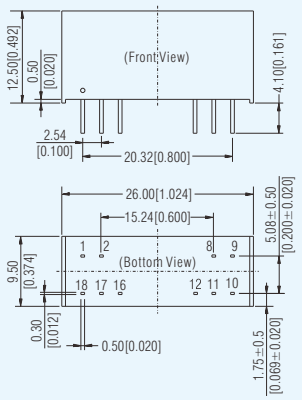


Note:
1. Series with suffix AN have no 12 pin,but with CN have.
2. 16,17,18 pin is the internal test pin, can not have any electrical connection to an external circuit.

Schematic diagram TE_N Series



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



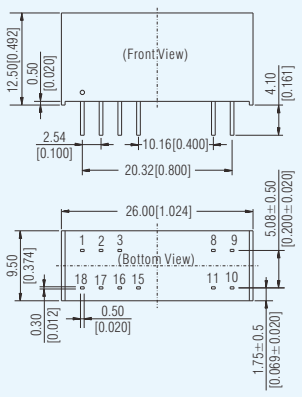
Pin-Out

Designation	Funtion
1(Sin+)	Signa output(+)
2(Sin-)	Signa output(-)
8(Sout–)	Signal input(-)
9(Sout+)	Signal input(+)
10(Pin+)	Distribution output(+)
11(GND)	Distribution outPout(-)

Note: series with suffix AN have no 12 pin, but with CN have.

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

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



Pin-Out

Designation	Funtion
1(Sout+)	Signa output(+)
2(Sout-)	Signa output(-)
3(SG)	Gain regulation
8(Sin-)	Singnal input(-)
9(Sin+)	Singnal input(+)
10(Pout+)	Distribution output(+)
11(Pout-)	Distribution outPout(-)
15(ZR)	Zero zuxiliary regulation*
16(SZ)	Zero regulation
17(Pin-)	Power supply(-)
18(Pin+)	Power supply(+)

*Note:the power supply of 24V withou 15 Pin

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

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Active High Precision Output Type Signal Conditioning Module

RoHS

Features

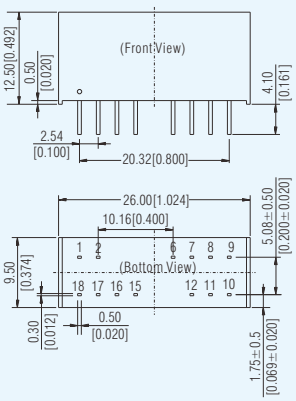
- Isolation: 2000VAC
- Two-terminal isolation (signal input and signal output)
- Frequency response ≥ 2KHZ
- Gain adjustment and zero adjustment function
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃(within -40℃～+85℃)

Product Program

Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TF5134N	24	0-10V	4-20mA	15V	RoHS
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	

Note:customization available.

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

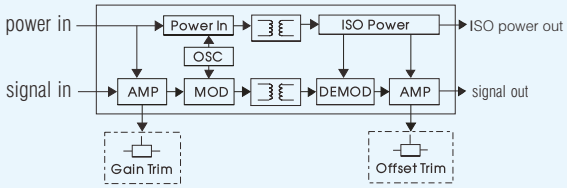


Pin-Out

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 supply(+)
11(Pin-)	Power supply(-)
12	No connection
15(ZR)	Zero auxiliary regulation
16(SZ)	Zero regulation
17(Pout-)	Distribution output(-)
18(Pout+)	Distribution output(+)

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

Schematic diagram



Active High Precision Signal Conditioning Module

RoHS

Features

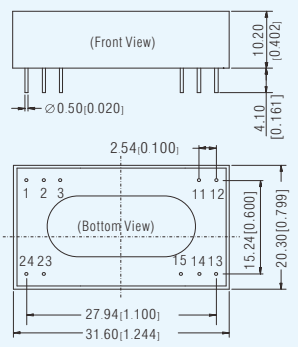
- Isolation: 2500VDC
- Four-terminal isolation
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃ (within -40℃～+85℃)
- Low cost, ultra-size, convenient to use, high reliability

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 available.

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

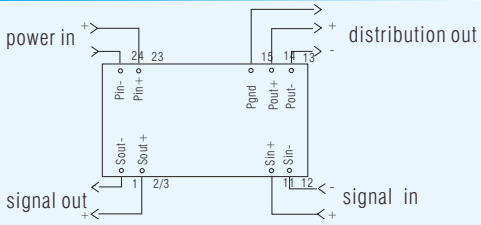


Pin-Out

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-	Power distribution output-
14	Pout+	Pout+	Power distribution output-
15	NC	NC	No function pin
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

NC: no connection.
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

Typical application



Active High Precision(mV-class) Signal Conditioning Module

RoHS

Features

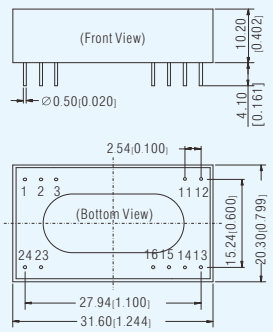
- Three-terminal isolation
- High precision & linearity: 0.1%F.S
- Isolation: 2500VDC
- Extremely low temperature drift: 50PPM/℃(within -40℃～+85℃)
- Low cost, ultra-size, convenient to use, high reliability

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)



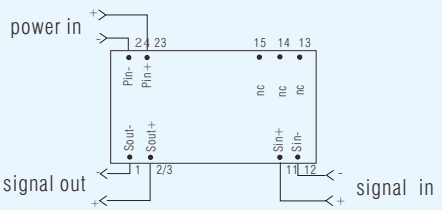
Pin-Out

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 function pin
15,16	NC	NC	No function pin
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

NC: no connection.

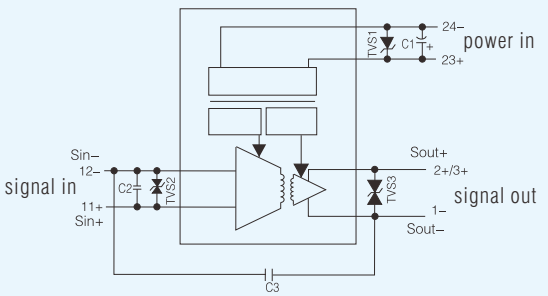
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

Wiring Diagram



EMC solution-recommended ciruit

TM_P Series



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Passive High Precision Signal Conditioning Module

RoHS

Features

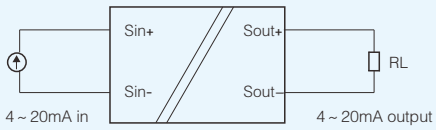
- Isolation: 3000VDC
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 35PPM/℃
- Low voltage-drop: ≤ 3V (20mA input)
- High reliability(MTBF＞500,000 hours)

Product Program

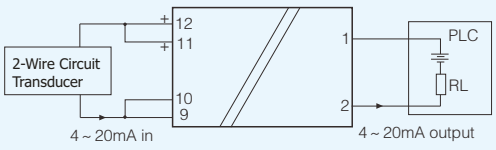
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Channel	Certification
T1100L	None	4-20mA	4-20mA	None	1	RoHS
T1100N	None	4-20mA	4-20mA	None	1	
T1100NS	None	4-20mA	4-20mA	None	1	
T1100L-F	None	4-20mA	4-20mA	None	1	

Note:please use module within loop power voltage;otherwise, it can damage the module.

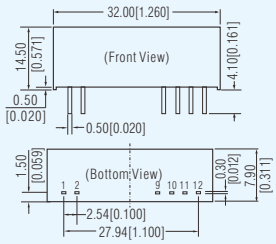
Application Circuit Diagram T1100L/ N Series



Application Circuit Diagram(Loop Power) T1100L-F Series



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

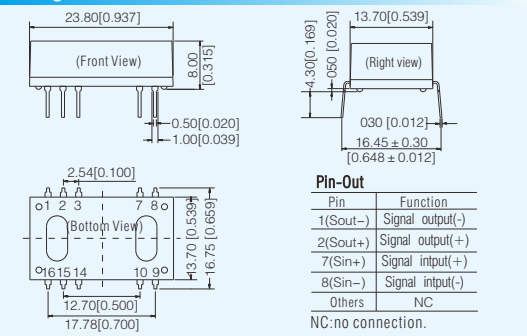


Pin-Out

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 tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

Package Dimension LxWxH: 32.00x7.90x14.50(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 tolerance: ±0.10[±0.004] General tolerance: ±0.25[±0.010] Unmarked Tolerance: ±0.50[±0.020]

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

RoHS

Features

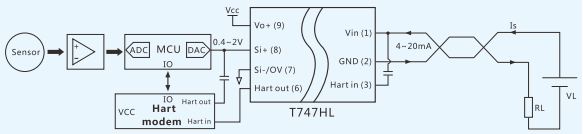
- 4-20mA output loop stealing, 3.3V regulated output(loop power)
- Isolation: 2000VAC
- Two-terminal isolation (signal input and signal output)
- High precision & linearity: 0.1%F.S
- Extremely low temperature drift: 50PPM/℃
- Convert digital signal(PWM) into 4～20mA
- HART compatible

Product Program

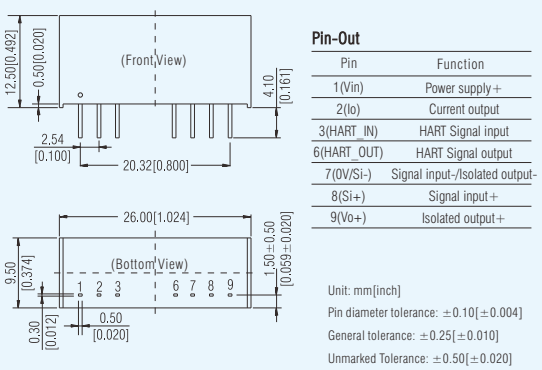
Model Number	Loop Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
T747HL	10-24V	0～2.5V	3.7-22mA	3.3V	RoHS
T797HL	15-24V	0～2.5V	3.7-22mA	3.3V	
T747L	10-24V	0-2.5V	3.7-22mA	3.3V	
TW147HL	10-24V	PWM Signal	3.7～22mA	3.3V	

Note:customization available.

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+

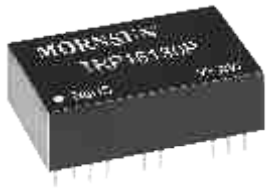
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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℃～+85℃)
- International standard signal output: 4-20mA/0-5V/0-10V etc.
- Low cost, ultra-size, convenient to use, high reliability

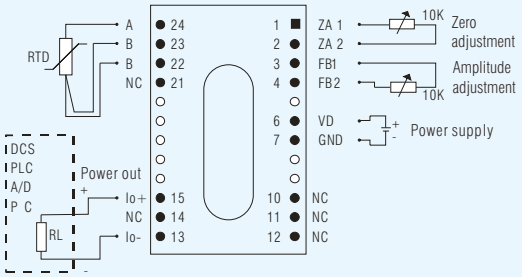


Product Program

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

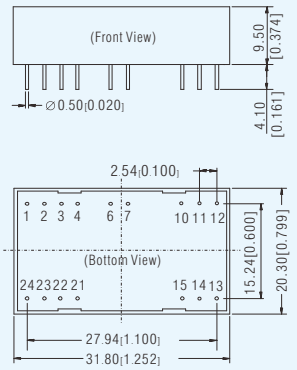
Note:customization available.

Application Cricuit Diagram



Package Dimension

LxWxH: 31.80x20.30x9.50(mm)



Pin-Out

Pin	Function
1(Sout-)	Signal output-
2,3(Sout+)	Signal output+
11(Sin+)	Signal input+
12(Sin-)	Signal input-
13(Pout-)	Isolated output-
14(Pout+)	Isolated output+
15(Pgnd)	Distribution output GND
23(Pin+)	Power supply+
24(Pin-)	Power supply-

NC: No connection.
If no distribution output, pin 13&14&15 are NC pin.
If single distribution output, pin 15 are NC pin.
If voltage output, pin 2 is NC pin;
If current output, pin 3 is NC pin.

Active High Precision High Isolation Detection Type Signal Conditioning Module

RoHS

Features

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

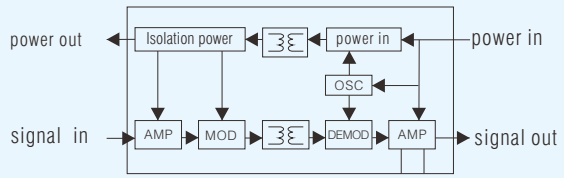
Note:design sketch for your reference.

Product Program

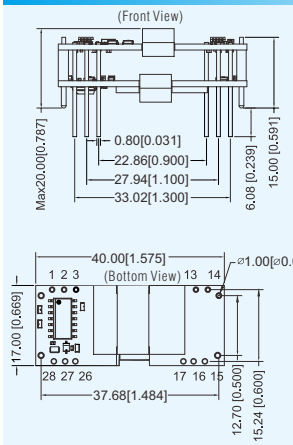
Model Number	Power Supply (VDC)	Input Signal	Output Signal	Isolation Power Output	Certification
TE6650HN	12	0～5V	0～5V	None	RoHS

Note:customization available.

Schematic diagram



Package Dimension



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

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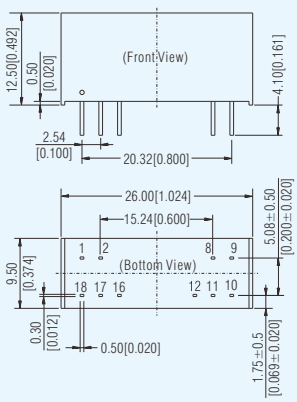
Active High Precision Output Type Signal Conditioning Module

RoHS

Features

- Operating temperature: -40℃～+105℃
- Isolation: 3000VAC
- Low isolation capacitance
- Standby operation allowed
- Ultra-miniature SIP package
- Continuous short-circuit protection,self-recovery

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

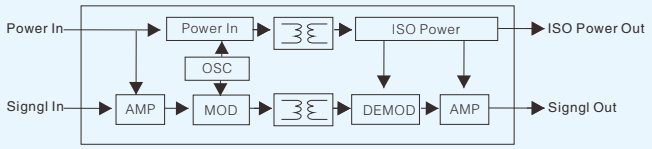


Pin-Out

Pin	Function
1(Sin+)	Signal input+
2(Sin-)	Signal input-
8(Sout−)	Signal output+
9(Sout+)	Signal output-
10(Pin+)	Power supply input+
11(GND)	Others
Other	Distribution GND

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

Wiring Diagram



Product Program

Model Number	Input Voltage (VDC)	Input Signal	Output Signal	Isolation(VAC)
TF6550GN	12	0～5V	−10V～+10V	3000

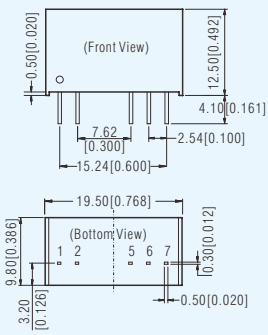
DC/DC Converter for IGBT Driver

cULus CB RoHS

Features

- Operating temperature:-40℃～+105℃
- Isolation: 3000VAC
- Low isolation capacitance
- Standby operation allowed
- Ultra-miniature SIP package
- Continuous short-circuit protection, self-recovery

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



Pin-Out

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

*QA01−09 has on connection

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)	Positive Output (VDC)	Negative Output (VDC)	Output current(mA)	Efficiency	Isolation	Certification
QA01	15	14.5-15.5	+15	-8.7	+80/-40	80%	3000	
QA01-09	15	14.5-15.5	+9	/	+111	80%	3000	cULus
QA01-A09	15	14.5-15.5	+9	-9	+55/-55	80%	3000	
QA01-17	15	14.5-15.5	+17	-8.7	+80/-40	80%	3000	CB
QA02	12	11.6-12.4	+15	-8.7	+80/-40	80%	3000	RoHS
QA03	24	23.3-24.7	+15	-8.7	+80/-40	80%	3000	
QA04	12	9-15	+15	-8	+100/-80	80%	3000	

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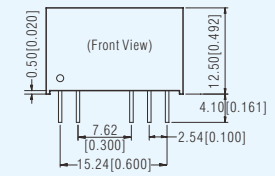
DC/DC Converter Specialized for Sic Driver

RoHS

Features

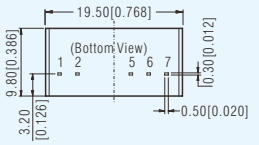
- Operating temperature:-40℃～+105℃
- Isolation: 3500VAC
- Efficiency up to 83%
- Ultra low-volume isolation capacitance: 3.5pF
- Continuous short-circuit protection
- DC/DC converter for SiC Mosfet Driver

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]
Unmarked 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	Isolation(VAC)
QA01C	15	13.5-16.5	+20	-4	+100/-100	83%	3500

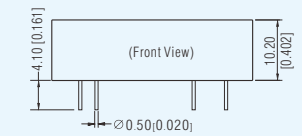
Great Power DC/DC Converter Specialized for IGBT Driver

RoHS

Features

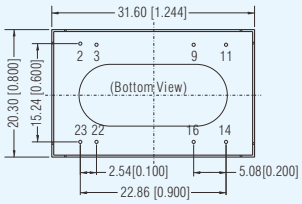
- Operating temperature:-40℃～+85℃
- High isolation
- Efficiency up to 85%
- Wide input voltage(2:1)
- DIP package
- Continuous short-circuit protection,self-recovery

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	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	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	83%	4000VAC	

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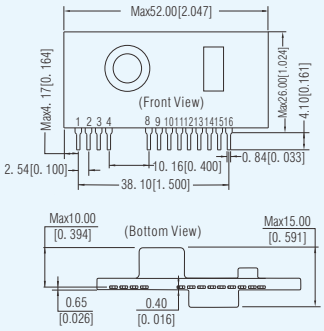
Hybrid Integrated IGBT Driver(Built-in isolated)

RoHS

Features

- Built-in DC/DC isolated power supply,one power supply
- 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)



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	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

Product Program

Model Number	Nominal Input Voltage (VDC)	Input Voltage Range(VDC)	VOH(VDC)	VOL(VDC)	Output Peak Current(A)	Switching Frequency (Max.) (KHz)	Driving Channel	Isolation(VAC)	Certification
QP12W08S-37	15	14.5-15.5	15	-9	±8	20	1	3750	RoHS

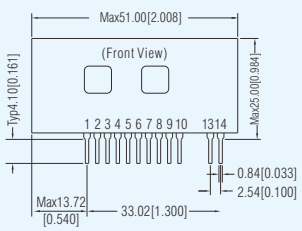
Hybrid Integrated IGBT Driver

RoHS

Features

- Built-in high CMRR opto-coupler(CMRR: Typ: 30KV/ μ s, Min.: 15KV/ μ s)
- High isolated (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
- Driving 600V/600A,1200V/400A,1700V/200A seriesof IGBT converter available
- 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

Model Number	Nominal Input Voltage (VDC)	Input Voltage VEE (VDC)	Gate Voltage(A)	Output Peak Current(A)	Switching Frequency (Max.) (KHz)	Driving Channel	Isolation (VAC)	Certification
QC962-8A	15	-10	+15/-9	±8	40	1	3750	RoHS

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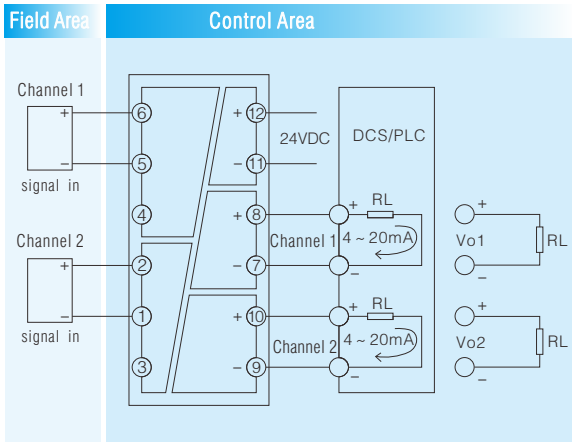
Ultra-thin Analog Signal Isolator

Bottom power supply port

Features

- Operating temperature:-25℃～+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℃～+71℃)
- Radiated immunity: 10V/m

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.

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	

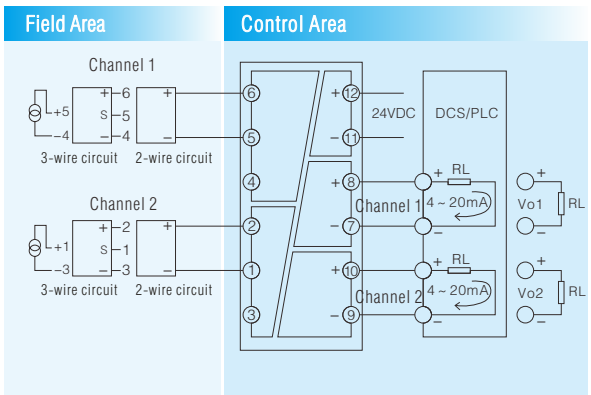
Ultra-thin Analog Signal Distributor

Bottom power supply port

Features

- Operating temperature: -25℃ ～+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℃～+71℃)
- Radiated immunity: 10V/m

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.

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

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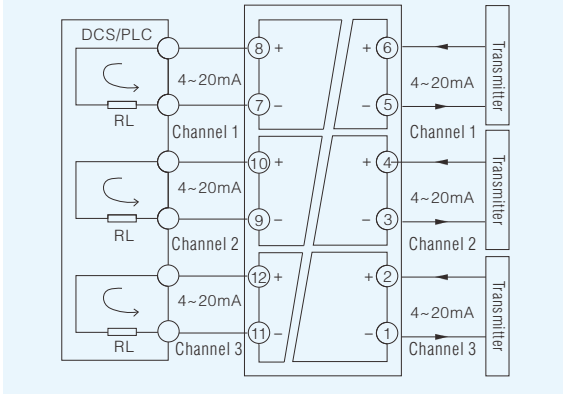
Ultra-thin Passive Signal Isolator

Features

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

Wiring Diagram for Current Source Application



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

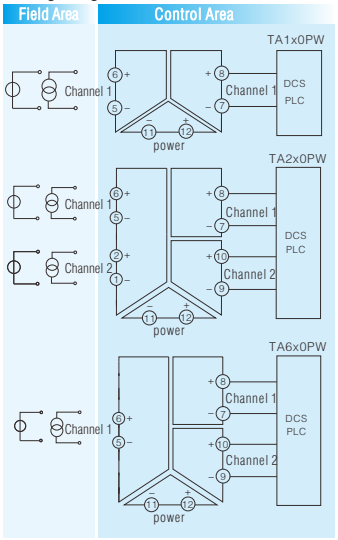
Ultra-thin Programmable Analog Signal Isolator

Bottom power supply port

Features

- Operating temperature: -25℃～+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℃～+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	0/4～20mA(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 available for special requirements.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

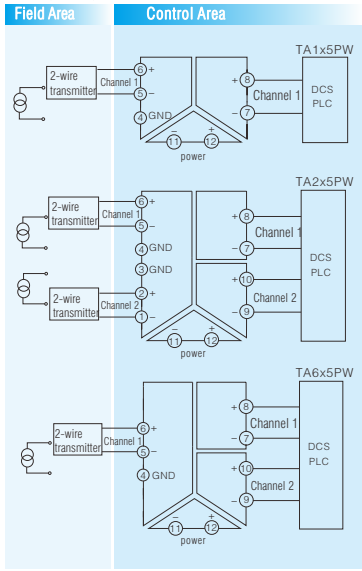
Ultra-thin Programmable Analog Signal Distributor

Bottom power supply port

Features

- Operating temperature: -25℃～+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℃～+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	0/4~20mA(Programmable)	0/4~20mA(Programmable)
TA125PW	TA225PW	TA625PW	18~30VDC	0/4~20mA(Programmable)	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 available for special requirements.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

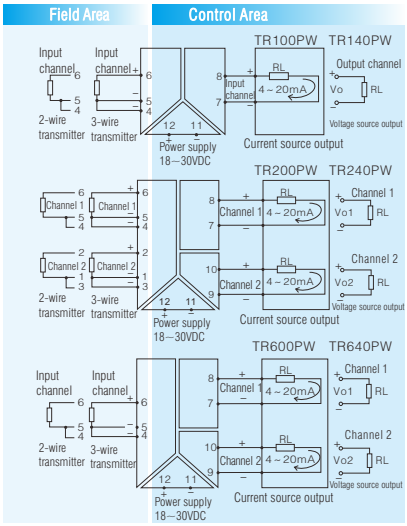
Ultra-thin Programmable RTD Signal Isolator

Bottom power supply port

Features

- Operating temperature: -25℃ ～+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℃ ～+71℃)
- Radiated immunity: 10V/m

Wiring Diagram



Product Program

TR1x0PW TR6x0PW TR2x0PW	Descriptions		
	Type of Signal	Measuring Range	Measuring(Min.)
Input Signal	Pt100	-200~+850℃	50℃
	Cu50	-50~+150℃	50℃
	Cu100	-50~+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 available.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

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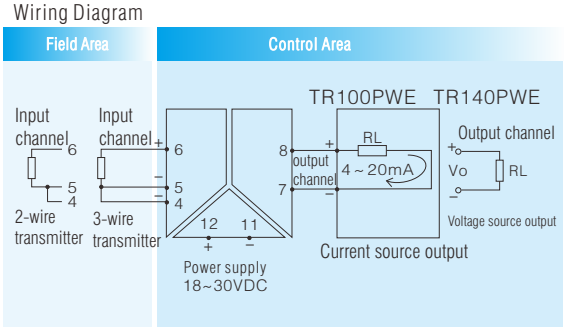
Ultra-thin Programmable RTD Signal Isolator with Perfect EMC Performance

Features

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

Wiring Diagram



Product Program

TR100x0PWE TR140x0PWE	Descriptions		
	Type of Signal	Measuring Range	Measuring(Min.)
Input Signal	Pt100	-200～+850℃	50℃
	Cu50	-50～+150℃	50℃
	Cu100	-50～+150℃	50℃
output signal	Output Current	0/4~20mA(Programmable)	
	Output Voltage	0/1~5V; 0/2~10V(Programmable)	

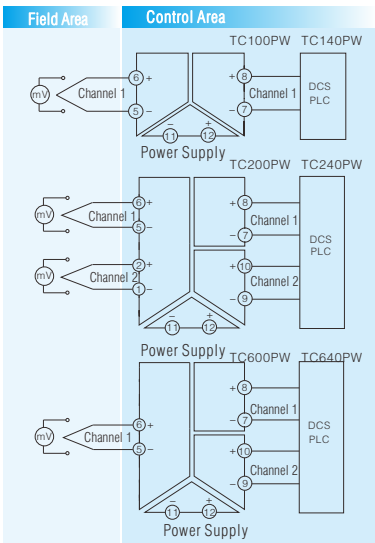
Note:
1. Customers need to determine the type of input signal, measuring range and form of output signal while placing an order,customization.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

Ultra-thin Programmable Thermocouple Signal Isolator

Features

- Operating temperature: -25℃ ～+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℃ ～+71℃)
- Radiated immunity: 10V/m

Wiring Diagram Bottom power supply port



Product Program

Type of Output	1 in 1 out	2 in 2 out	1 in 2 out
	TC100PW	TC200PW	TC600PW
	TC140PW	TC240PW	TC640PW
Input Signal	Type of Signal	Measuring Range	Measuring(Min.)
	R	-40～+1700℃	600℃
	S	-40～+1700℃	600℃
	K	-150～+1370℃	120℃
	J	-80～+900℃	100℃
	T	-160～+390℃	100℃
	B	320～+1820℃	780℃
	E	-80～+700℃	500℃
	mV	-60～+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.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

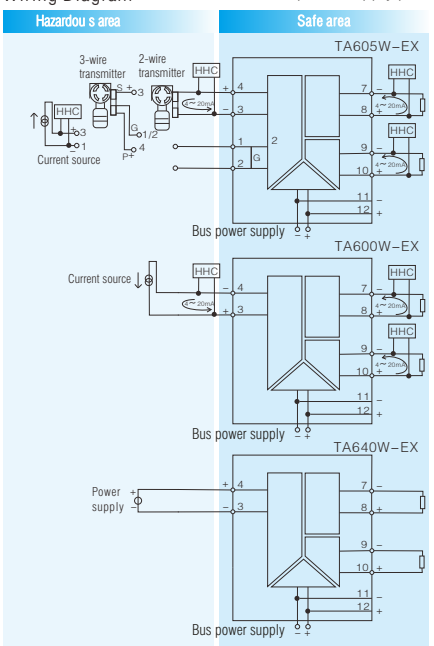
Ultra-thin Detection Type Analog Signal Isolation Barrier

Bottom power supply port

Features

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

Wiring Diagram



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:please use within loop power voltage;otherwise, it can damage the module.

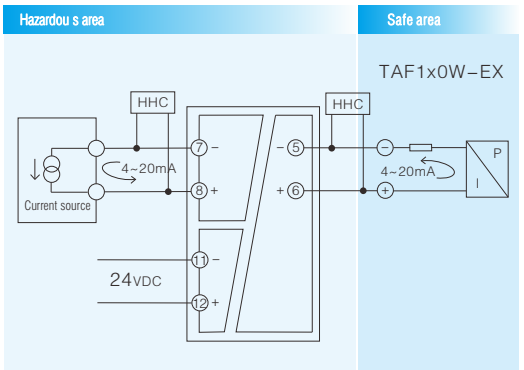
Ultra-thin Output Type Analog Signal Isolation Barrier

Bottom power supply port

Features

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

Wiring Diagram



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 available for special requirements.

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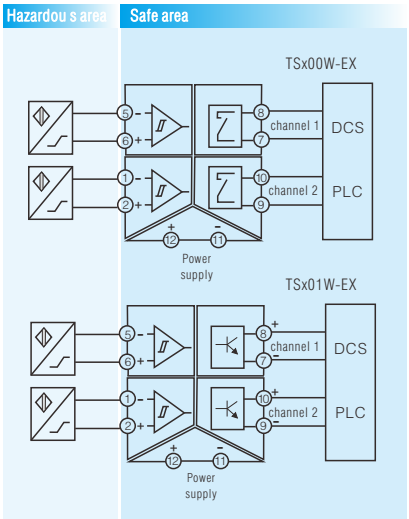
Ultra-thin Detection Type Switch Signal Isolation Barrier

Features

- Operating temperature: -25℃～+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
- Certification: [Exia Ga]IIC

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	1 in 1 out

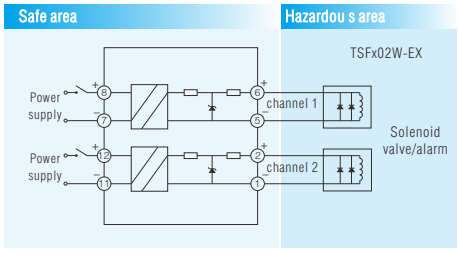
Note: Special input and output custmization available special input and output.

Ultra-thin Output Type Switch Signal Isolation Barrier

Features

- Operating temperature: -25℃～+71℃
- Isolation: 2000VAC(testing for 1Min, humidity＜70%, leakage current ＜1mA)
- Input: dry contact
- Recovery time: ≤5mS
- Driving capability: 12VDC/44mA
- Certification: [Exia Ga]IIC

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 available special input and output.

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

Features

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

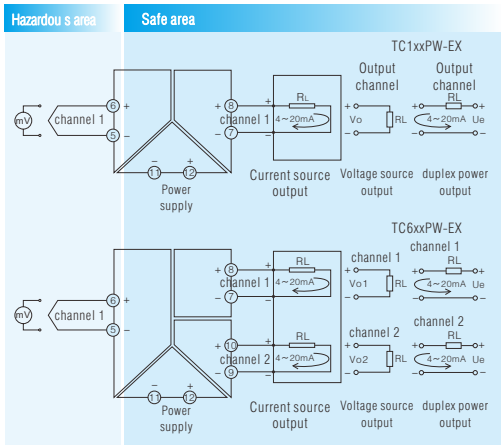
Bottom power supply port

Product Program

TC1x0PW-EX TC6x0PW-EX	Descriptions		
	Type of Signal	Measuring Range	Measuring(Min.)
Input Signal	Pt100	-200～+850℃	50℃
	R	-40～+1700℃	600℃
	S	-40～+1700℃	600℃
	K	-150～+1370℃	120℃
	J	-80～+900℃	100℃
	T	-160～+390℃	100℃
	B	+320～+1820℃	780℃
	E	-80～+700℃	500℃
	mV	-60～+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 available .
2. The ancillary USB adapter model is T-01, please contact us if you need it.
3. Defaults: type of input signal: mV measuring range: -60～+60mV type of output signal: 4～20mA.

Wiring Diagram



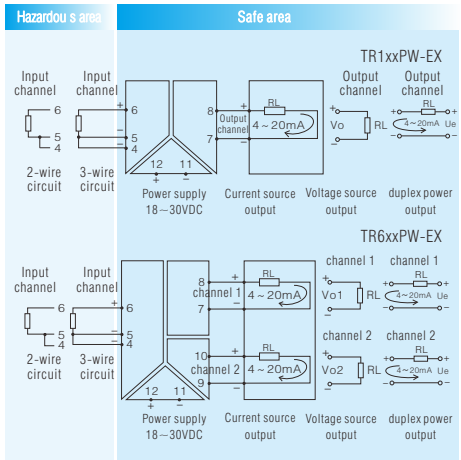
Ultra-thin Programmable Detection Type RTD Isolation Barrier

Features

- Operating temperature:-25℃ ～+71℃
- Isolation: 2000VAC(testing for 1Min, humidity＜70%,leakage current＜1mA)
- Precision: 0.1% F.S./Max.(0.5℃)
- Temperature drift:50PPM/℃(within -25℃ ～+71℃)
- Radiated immunity:10V/m
- Certification:[Exia Ga]IIC

Bottom power supply port

Wiring Diagram



Product Program

TR1xxPW-EX TR6xxPW-EX	Descriptions		
	Type of Signal	Measuring Range	Measuring(Min.)
Input Signal	Pt100	-200~+850℃	50℃
	Cu50	-50~+150℃	50℃
	Cu100	-50~+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 available.
2. The ancillary USB adapter model is T-01, please contact us if you need it.

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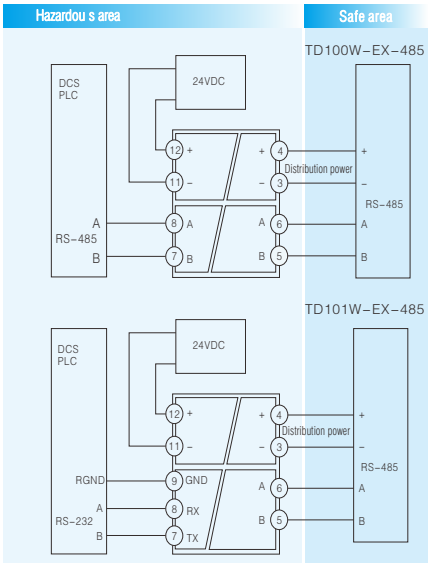
Ultra–thin RS485 Detection Type Isolation Barrier(Half–Duplex)

Features

- Operating temperature:-25℃ ～+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 reliability(MTBF＞500,000 hours)
- Certification: [Exia Ga]IIC

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 S485	None
TD100W-EX-485-05	Half-duplex RS485	Safety Area Signal S485	5V current≤40mA
TD100W-EX-485-06	Half-duplex RS485	Safety Area Signal S485	6V current≤40mA
TD100W-EX-485-08	Half-duplex S485	Safety Area Signal S485	8V current≤40mA
TD100W-EX-485-09	Half-duplex RS485	Safety Area Signal S485	9V current140mA
TD100W-EX-485-12	Half-duplex RS485	Safety Area Signal S485	12V current100mA
TD101W-EX-485-00	Half-duplex RS485	Safety Area Signal S232	None
TD101W-EX-485-05	Half-duplex RS485	Safety Area Signal S232	5V current≤140mA
TD101W-EX-485-06	Half-duplex RS485	Safety Area Signal S232	6V current≤140mA
TD101W-EX-485-08	Half-duplex RS485	Safety Area Signal S232	8V current≤140mA
TD101W-EX-485-09	Half-duplex RS485	Safety Area Signal S232	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

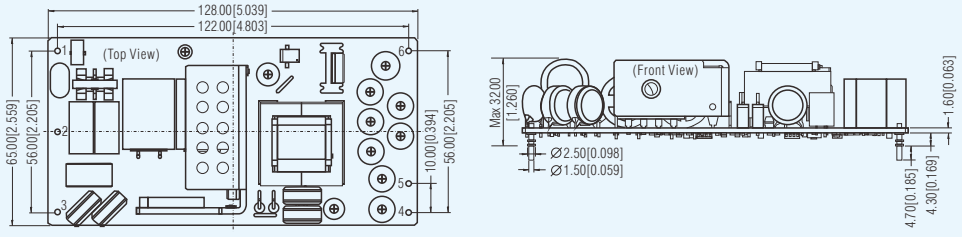
- Constant current operation, LED powered available
- Operating temperature: -40℃ ～+70℃
- Input voltage vange: 200～400VAC/280～560VDC
- Isolation: 4000VAC
- Short-circuit, over-voltage protection

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: below 60W input customization available

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]

Constant current Great Power LED Driver

RoHS

Features

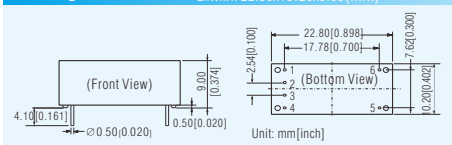
- Efficiency up to 97%
- Constant current mode, great power output
- Analogue dimming+PWM dimming
- Remote ON/OFF
- Continusous short-circuit protection

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)



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

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

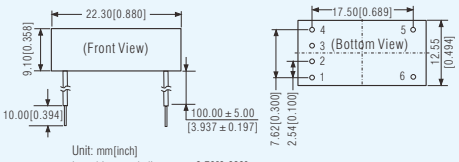
Notes:1. For the product model without a suffix such as KC24H-300R, this product is a four-pin product without the functions of analogue dimming and PWM dimming.
2. For the product model with a suffix X1 such as KC24H-300RX1, this product is a five-pin product only with the function of analogue dimming.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



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]

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 conmect to-Vout
5(white)	-Vout	LED Cathode connection
6(yellow)	+Vout	LED Anode connection

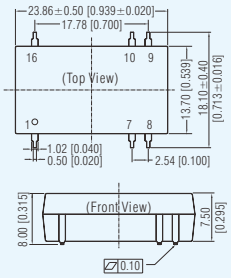
Note:1.Series without suffix such as KC24W-300 are four-wire products without analogue dimming+PWM dimming. 2.Series with suffix X1 such as KC24W-300X1 are five-wire products with analogue dimming only.
3.Series with suffix X2 such as KC24W-300X2 are five-wire products with PWM dimming only. 4.Series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

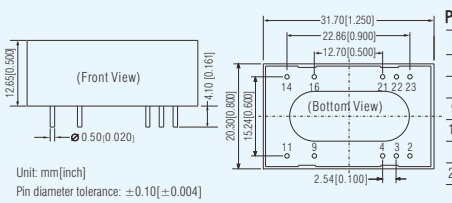
Unit: mm[inch]
Pin diameter tolerance: ±0.10[±0.004]
General tolerance: ±0.25[±0.010]
Unmarked Tolerance: ±0.50[±0.020]

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

Package Dimension LxWxH: 31.70x20.30x12.65(mm)



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	Comment
2,3	GND	Do not connect to -Vout
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

Note:
1. The types without suffix, such as KC24H-1000 are eight-pin products without analogue dimming+PWM dimming function.
2. The types with suffix X1,such as KC24H-1000X1 are nine-pin products with analogue dimming function only.
3. The types with suffix X2,such as KC24H-1000X2 are nine-pin products with PWM dimming function only.
4. The types with suffix X3,such as KC24H-1000X3 are ten-pin products with analogue dimming+PWM dimming function.

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

Purpose:

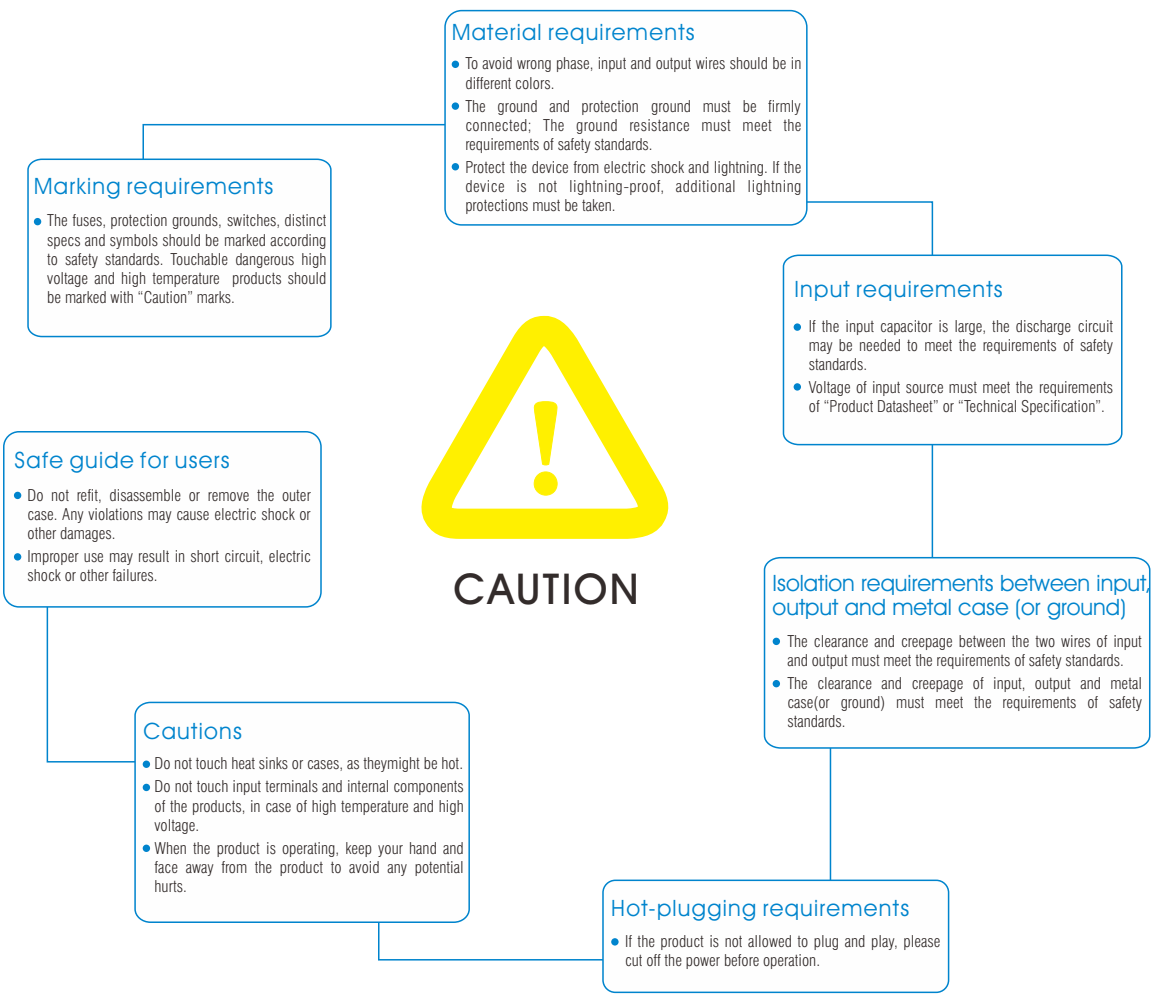
To prevent potential safety problems while using the products.

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 make sure to all the contents of Product Datasheets carefully before selection, design, or production, and design and use the products according the requirements of Product Datasheets.



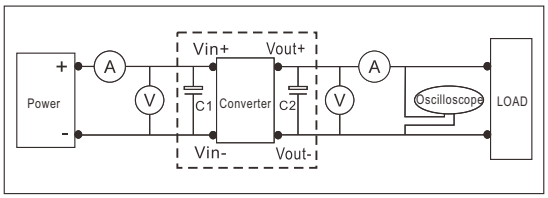
More information about application, please contact us.

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 insure and verify specified performance parameters. The following are suggested test methods and test equipment requirements. Test conditions: room 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 Rfull-load = Vout/Iout

unload Rmin-load =10x Rfull-load

e) wire: less wire loss is required.It is recommented to use 1mm multistand copper wire, which avoids over voltage drop .

Test:

A: Wire

The proper wire shall be selected as described above. Smaller guage wire will result in potential errors in measuring the true efficiency and regulation parameters. Ensure all mechanical and solder connections are sound as this will also result in errors.

B: Grounding

Improper grounding can cause unintended noise to the circuit. When testing ripple and noise, it is suggested that the single pole test method be used to lessen test error. (See graph "ripple and noise")

C: Load

To insure useful test data, the testing load of regulated products should be within 10～100% of the rated output current/power, It can test unregulated products or 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, output at rated load, the testing output voltage is noted as Vout, the nominal output voltage is Vnom.

The formula:

$$\frac{V_{OUT}-V_{NOM}}{V_{NOM}} X100\%$$

e.g: Regulated products IB1212LS-1W, the nominal input voltage is 12V, rated load is 144 ohm, the output voltage reading will be 12.039V.

$$\frac{12.039VDC-12.000VDC}{12.000VDC} X100\%=0.325\%$$

2. Line regulation:

At nominal input voltage and full load, adjust input voltage over its full specified range.

$$\text{Line regulation}=\frac{V_{OUTN}-V_{MDEV}}{V_{OUTN}} X100\%$$

At nominal input voltage, rated load, the output voltage is noteas V_{OUTN}

At input voltage upper limit, the load, read output voltage is noteas V_{OUTH}

At input voltage lower limit, the load, read output voltage is noteas V_{OUTL}

V_{MDEV} chose in V_{OUTH} or V_{OUTL} the one deviated from V_{OUTN} more.

Fixed input, isolated unregulated series:

$$\text{Line regulation}=\left|\frac{\Delta V_{OUT}}{\Delta V_{IN}}\right|$$

$$\Delta V_{OUT}=\frac{V_{OUT+10\%}-V_{OUT-10\%}}{V_{OUTNOM}} X100\%$$

$$\Delta V_{IN}=\frac{V_{IN+10\%}-V_{IN-10\%}}{V_{INNOM}} X100\%$$

In the formula:

$V_{IN+10\%}$--nominal input voltage and add 10% as for its upper limit

$V_{IN-10\%}$--nominal input voltage and minus 10% as for its lower limit

$V_{OUT+10\%}$--output voltage reading under full load when input voltage at its upper limit

$V_{OUT-10\%}$--output voltage reading under full load when input voltage at its lower limit

V_{INNOM}--nominal input voltage

V_{OUTNOM}--output voltage reading under full load and nominal input voltage

If take for example, B0505LS-1W, connect a 25 ohm resistive load, input voltage range: ±10% (or 4.5V～5.5V),

$V_{IN+10\%}$ =5.5 V; $V_{IN-10\%}$ =4.5 V ; V_{INNOM} =5V

$V_{OUT+10\%}$ reads: 5.32V; $V_{OUT-10\%}$ reads:4.2V; V_{OUTNOM} reads:4.77V

$$\Delta V_{OUT}=\frac{5.32VDC-4.2VDC}{4.77VDC} X100\%=23.5\%$$

$$\Delta V_{IN}=\frac{5.5VDC-4.5VDC}{5VDC} X100\%=20\%$$

$$\text{So the line regulation}=\left|\frac{\Delta V_{OUT}}{\Delta V_{IN}}\right|=1.174$$

3. Load regulation:

As the input voltage is rated value, you can connect 10% and 100% constant resistance load and test the difference between 10% load and rated value & the difference between 100% load and rated value respectively.

$$\text{Load regulation} = \frac{V_{b1}(V_{b2})\text{-}V_{bo}}{V_{bo}} \times 100\%$$

V_{bo}--output voltage setting value;

V_{b1}--output voltage of output current minimum value;

V_{b2}--output voltage of output current rating value;

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 100% voltage

e.g: Fixed input product B0505XD-1W, rated load is $U^2/P=25$ ohm, load range is 10%~100%, read

V_{OUTNL}= 5.29 V; V_{OUTFL}= 4.77 V

$$\text{load regulation} = \frac{5.29\text{VDC} - 4.77\text{VDC}}{4.77\text{VDC}} \times 100\% = 10.9\%$$

4. Efficiency:

The proportion of input power and output power at rated input and rated load.

The formula:

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

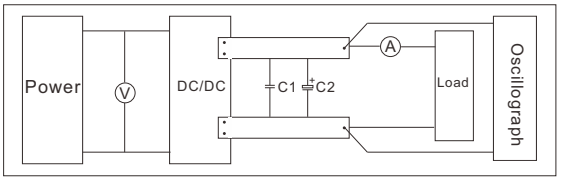
e.g.: IB1212LS-1W, rated input 12V, full-load output 12.039V; current is 83.3mA, input current is 115.0mA.

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

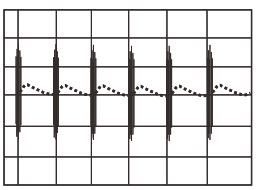
5. Ripple and noise:

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:



As the DC/DC converter output end/side can contains 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.

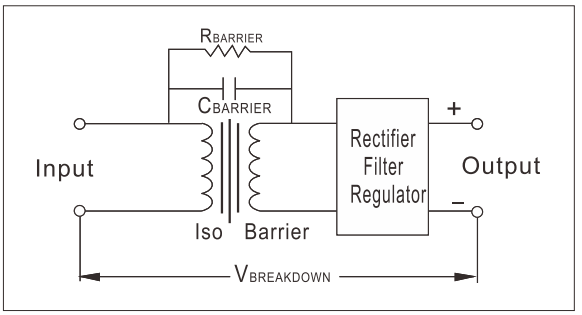
6. Start-up time:

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 like additional output capacitance added by the customer can 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 values are typically between 1KV and 6KV depending on the DC/DC converter series. The isolation circuit drawing is shown in the figure below

Isolation equivalent circuit:



$$I_{LEAKAGE} = \frac{V_{BREAKDOWN}}{R_{BARRIER}} = 2\pi\,(60\text{Hz})(C_{BARRIER})(240\text{V})$$

$C_{BARRIER}$: Isolation capacitance; coupled between primary and secondary windings

$R_{BARRIER}$: Isolation resistance: DC resistance between input and output.

$I_{LEAKAGE}$: Leakage current; the current as a result of the input/output capacitance.

$V_{BREAKDOWN}$: 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 are of very low isolation capacitance (TYP: 10PF). This is to be able to meet the tough demands in the medical field.

AC/DC Converter Application Guidelines

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. To avoid the risk of burns, do not touch the heat sink or the converter's case.

B. Do not touch the input terminals or open the case and touch internal components, which cold result in electric shock or burns.

C: When the converter is in operation, keep hands and face at a distance to avoid potential injury during improper 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. To ensure safe operation and meet safety standard requirements, install a slow blow fuse at input of the converter.

C: Installation and use of AC/DC converters should be handled by a qualified professional.

D: AC/DC converters are used in the primary transmission stage of a design and thus, should be installed in compliance with certain safety standards.

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 are to be verified before completing the circuit design.

G: These guidelines are subject to change without notice; please check our website for updates.

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 the latest notes in the case of Customers cannot be informed about the revision of the notes promptly. 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 if 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). For LD\LB\LH series (except for LH40,LH60), the suffix A2 indicates the chassis mounting, and A4 indicates the Din-rail mounting. For example, LH15-10B05A2 package is chassis mounting.

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 preferred to be used for the purpose of low cost, mature technology, lower development resistance and saving of 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

3.1. Basic Application Circuit

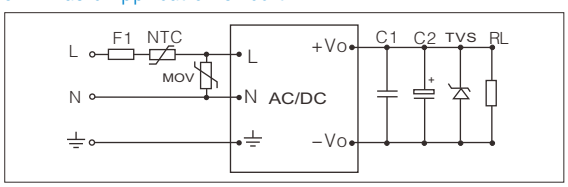


Figure 1. General AC/DC converter applications circuit

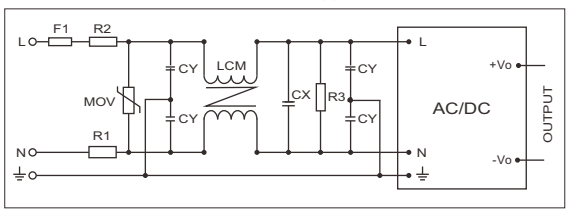


Figure 2. Typical input EMC filtering circuit

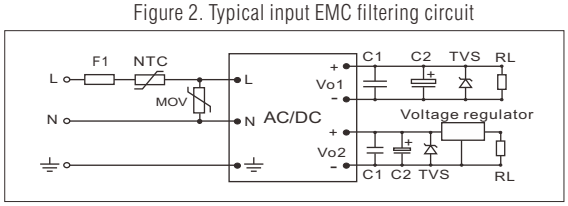


Figure 3. Typical application circuit

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 check the relevant datasheet for recommendatory capacitor parameter.

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, like electricity or outdoor applications, more filtering measures are needed. Therefore, the product in Figure 2 is more suitable as a typical input EMC filtering circuit, just for your reference.

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 connecting wires of input shall be the brown, blue and Kelly wires. For the equipment which prevents the electric shock through basic insulation and protection ground terminal (Class I equipment), the ground wire (Kelly wire) 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 1 s.

5. Common questions

5.1 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.

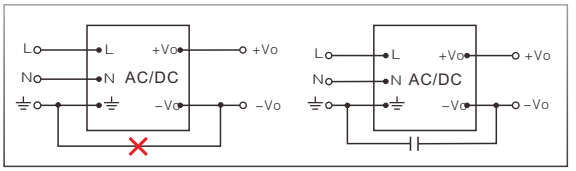


Figure. 1. Connecting method of output and protection grounding

5.2. 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.

5.3. 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.

5.4. AC/DC input

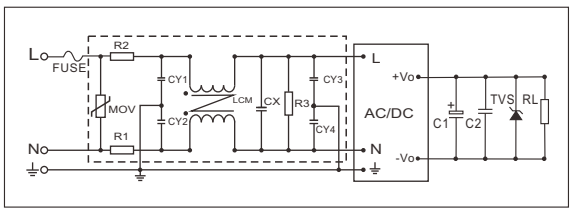
Usually the full-bridge rectifier is used on the input terminal of AC/DC power supply to meet the AC and DC power supply requirements.

5.5. 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.

5.6. 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 added on the input terminal.



5.7. No-load use of output

For the multi-output product, using the no-load may make the output voltage higher than the specifications, possibly up to 20% or more. In actual application, it is recommended to ensure the minimum load to be 10% of full load.

5.8. 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 see the data Sheet of the corresponding model.

5.9. Mark on the voltage screen print on the product casing

The mark on the product's screen print is 100VAC-240VAC. But why it is 85VAC-264VAC on the Data Sheet? 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.

1.selection guide of Power supply module

(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), also 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 to ensures the operation and avoids the cost waste in over-design.

Step 3: Confirm the type of power supply input

Check if 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 shall be selected; as for input voltages with variation range of ±5%, IA, IB, IE and IF series products with regulated voltage outputs shall be selected, such as 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 shall be selected; 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 shall be selected, 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 shall be selected. 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 can be selected (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) shall be selected.

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 preferred to be used for the purpose of low cost, mature technology, lower development resistance and saving of 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 that: 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 at that time. 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. Especially for the converter which is greatly derated in high temperature, sufficient margin shall be considered in design, 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) In the case of short indoor wire, small temperature difference and small interference, non-isolation or small power converter is generally used;
2) In the case of extramural remote transmission, in addition to considering the lightning-protection isolation, the transmission loss shall be accurately calculated, and the isolation power converter with wide voltage input and sufficient power shall be selected.
3) In the case of excessively long transmission distance and relatively large loss, the power converter must have enough power to ensure its normal operation; in consideration 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 on 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 to electromagnetic compatibility.

Step 3: Circuit interference

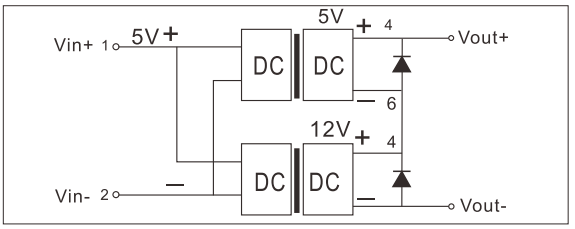
Unreasonable ground connection and power supply layouts always cause instability, high noise and other bad phenomena of system.
In many applications, the digital circuit and analog circuit share the same power supply; in this kind of design, it is very important that the analog circuit and digital circuit 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.

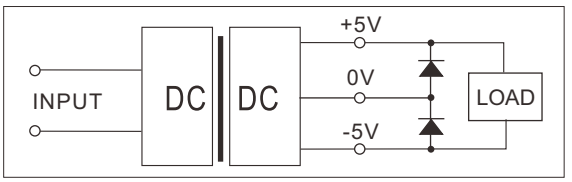
2.Additional converter applications

(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 see figure below for proper series connection.

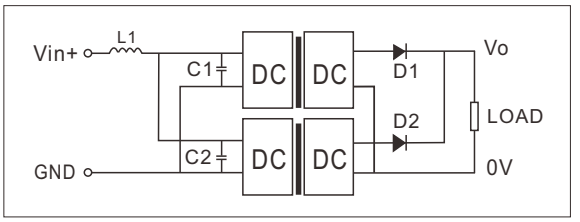


Converter 1 is 5Vout, and Converter 2 is 12Vout. As you can see a unconventional 17VDC voltage can be created by applying the 5V and 12V converters in series. Be careful not to exceed the rated current either of the converters, normally the ripple voltages of two modules will not be synchronized while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

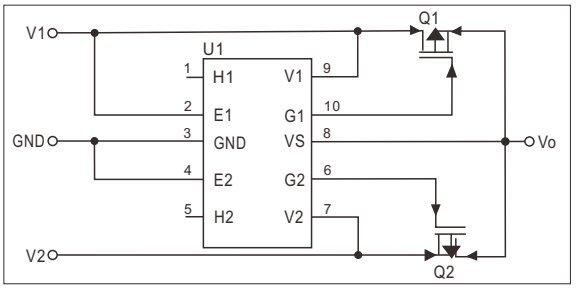


(2) DC/DC converters connected in parallel

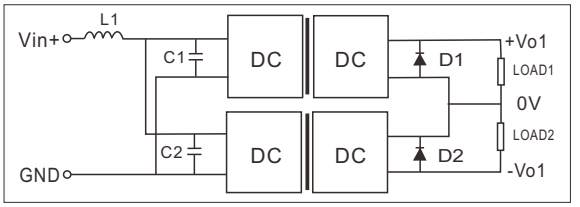
Redundant design can improve the system reliability. MOSFETt of the time, engineers connect several same converters in parallel, and if one of the converters fails, the others could operate instead. However, connecting the converters in parallel to improve the efficiency is not advisable, because the output voltage of two converters can not be exactly equal, and the converter which the output voltage is higher 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)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 there're need 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



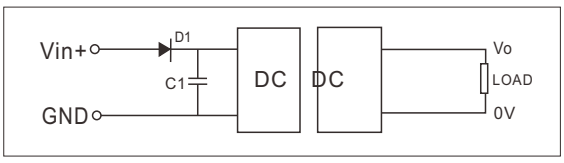
DC/DC Converter Application Guidelines

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 a same power supply, it is suggested to connect a LC filter circuit at each input ends of the converters in order to avoid the reflect ripple.

(3) Reverse input connection protection

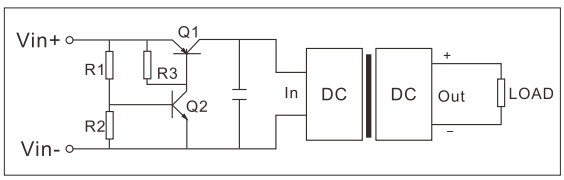
The diagram shows the reverse input connection protection circuit. When connecting a negative voltage power supply (e.g. -48VDC communication power supply), the "0V" is connected to the "Vin+" of the converter; the "-48V" is connected to "GND".

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 input connection protection. Simply, connecting a positive-going diode at the input end, when the voltage is inversely connected, the diode is not conducting, which protects the converter. The lower voltage drop of diode ensures fewer effects on the application efficiency. In addition, the backward voltage of diode can tolerate must be higher than power supply voltage (twice higher is suggested).



(4) Input under voltage protection

When the DC/DC converter is sharing a power source with other circuits, a large input voltage drop caused by external circuits or over load can 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.



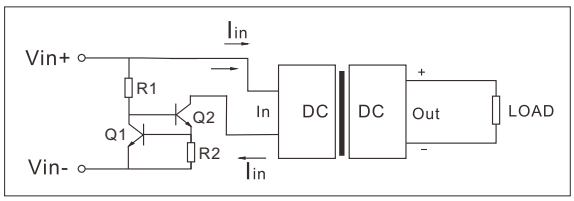
Low voltage turn-off circuit

Where R1,R2 set as low voltage switching limit, PNP transistor can be used, or a p-channel MOSFET. Please consult factory for proper calculations.

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. We especially recommend the following circuit to implement short circuit protection. As the figure shows:



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 on the datahees to prevent damage to the DC/DC converter. Below are some techniques to add some additional over voltage protection and over current protection on a standard DC/DC converter. As the figure below:

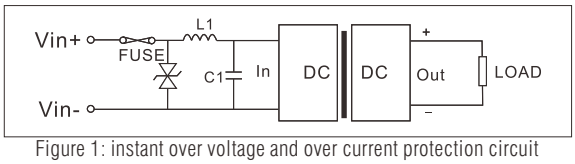


Figure 1: instant over voltage and over current protection circuit

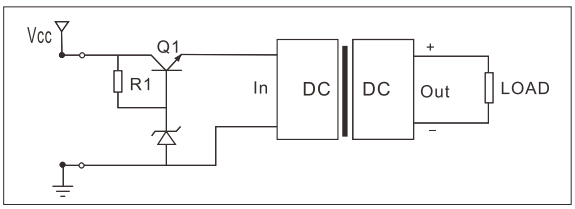


Figure 2: Continuous over voltage protection circuit

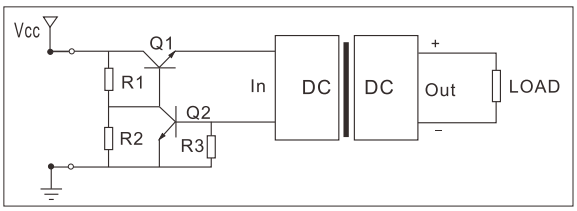


Figure 3: Continuous over current protection circuit

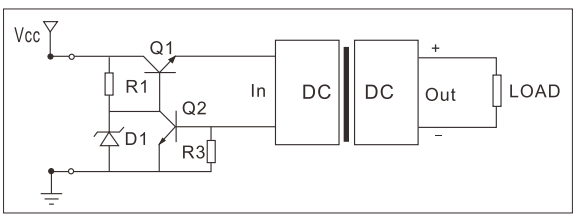
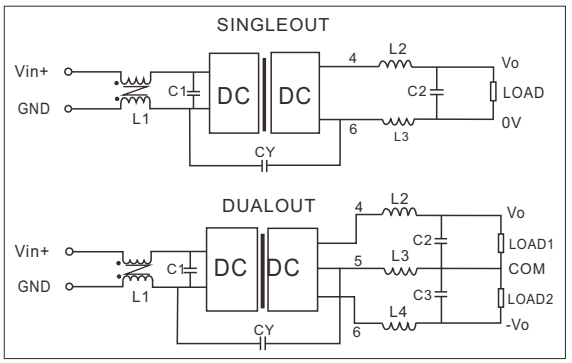


Figure 4: Continuous over voltage and over current protection circuit

(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 applicable to 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 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).

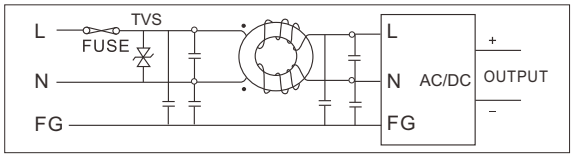
$$f_C = \frac{1}{2\pi\sqrt{LC}}$$

There are differences in the results because of the application design and load condition, thus the final parameters should be adjusted according the practical application. When selecting the parameters of filtering capacitor, it can not exceed the maximum capacitive load referring to the data sheet. And the maximum capacitive load is for the backend of the whole power supply, but not only connected at end of the power supply. For example, the regulator chip is powered by the converter and connected a 10uF capacitor, which is included in the capacitive load.

(8) Electromagnetic compatibility

As DC-DC converter is typically down stream from the incoming system AC power, where EMC requirements and regulations are required. However, Mornsun AC/DC products may fall into the requirements of these EMC regulations. Below is a recommended EMC filter circuit that can be employed on the same PCB that the Mornsun AC/DC converter is installed. Please contact factory for detailed calculations and suggestions. With the proper filter, Mornsun AC/DC power supplies will meet the standard Class B levels of EN55022 and others.

The following figure is one of that for your reference.



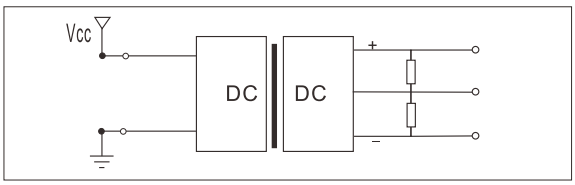
(9) Capacitive load

As common 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 data sheet for the External-connecting Capacitance List). Selecting the capacitor according to practical application ensures the best performance and efficiency (tantalum capacitor is not recommended).

(10) Output low load and overload protection

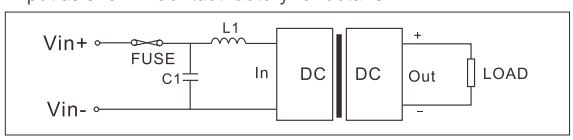
1) Low load prevention circuit

Most isolated DC/DC converters have some minimum load required to guarantee proper operation and regulation. Typically, this 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:



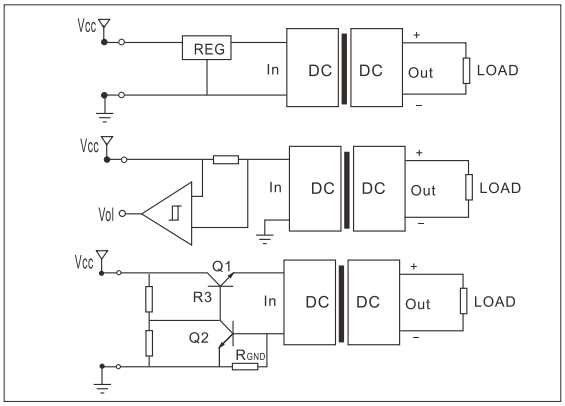
2) Overload prevention circuit

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) Sometimes a circuit breaker can be used.

(3) Sometimes we also can avoid overload by limiting the input current as the above figure shows:

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}, $0.7V = R_{GND} * ILIMIT$.

3) Remote transmission

When the power source is long-distance transmitted via cable, it will bring more the ripple and electromagnetic interferences than PCB circuit. Using isolation modules at the two ends of the cable can eliminate MOSFETt of the interferences by common-mode signal. In outdoor environments (high mountain or reservoir), the over voltage cause 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 limited to its maximum specified output power.

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.

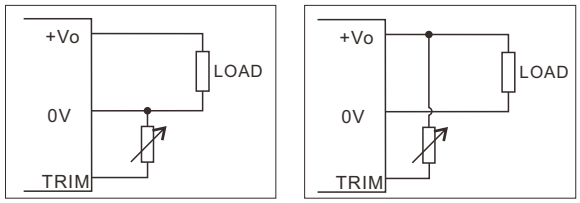
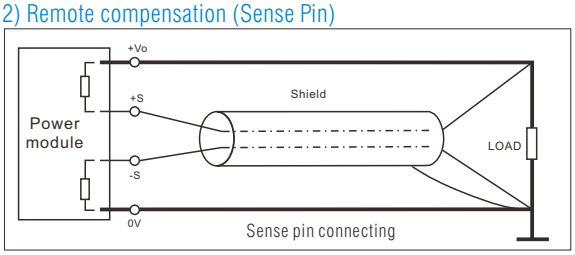


Figure 1: How to connect resistors for trimming

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.

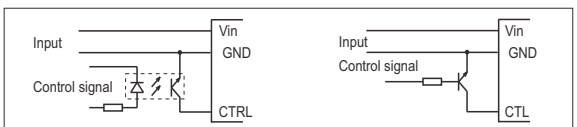


Figure 1: isolated control method Figure 2: general control method

3.Common questions

In some special applications, isolated control method is required, see figure 1 for the reference circuit.

(1) Can the module support hot plug?

Simply speaking, “hot plugging” is to plug the power supply module into or out of the system directly without switching off the power supply.

Hot plugging is not allowed when the module is in operation, as a huge current and voltage spike will be generated in the moment of hot plug, and this value may be several times, even dozens of times more than the input voltage and current

of module, thus to produce a great shock to the internal devices of module, even damage the module in severe conditions; therefore, hot plug is not allowed when the module is in operation.

(2) Can the module be applied under no-load and light-load conditions?

The converters can be applied under no-load or light-load conditions, but the conversion efficiency under these conditions are relatively low; when the product is under no-load, the loop is unstable, thus, oscillations may occur and some parameters may not be able to meet the requirements in Date Sheet. To ensure reliability, applications under no-load or light-load conditions shall be avoided as far as possible, the minimum operating output current of the module shall be preferably not less than 10% of rated current (5% of minimum load for R2 generation products), and it is recommended that the module shall be applied under 30-80% load conditions or the module with smaller power shall be selected and applied.

(3) Possible causes for poor starting of module

First cause: in the actual application, if the capacitive load exceeds the maximum capacitive load in Date Sheet 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.

Second cause: as limited by the maximum starting current of intrinsic safety power supply, the maximum power provided by power supply can't 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.

Third cause: 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 r of winding is operating in the whole circuit; as the internal resistance of winding is very small (generally mΩ level～Ω level), according to , 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.

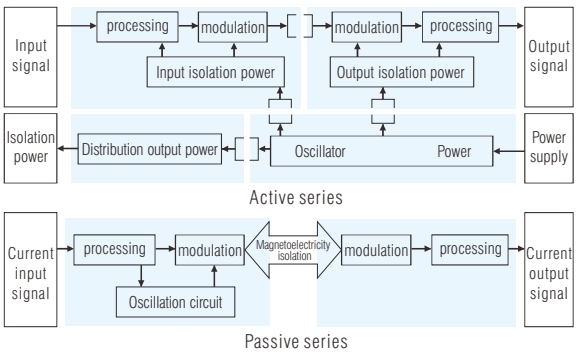
(4) Will the input terminal and output terminal of module be affected when a tantalum capacitor is connected?

On one hand, as the tantalum capacitor is easy to be subject to breakdown and show short circuit characteristics, and its anti-surge capability is bad, it is quite likely that short circuit will be formed due to the damage of capacitor caused by relatively large instantaneous current, or a very high surge voltage will be generated at start-up time and cause over-voltage breakdown of tantalum capacitor; on the other hand, the withstanding voltage value of tantalum capacitor will be reduced in high temperature environment. Therefore, 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.

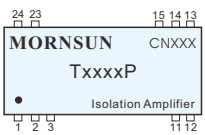
Signal Conditioning Module Application Notes

The basic composition

signal conditioning module is used to isolate the analog signal and amplify it according to certain proportion. During this progress, the distortion of output signal must be under control, and the parameters on linearity, precision, bandwidth, 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. The isolation amplifier in MORNSUN has applied the technology of magnetoelectricity isolation. The figure is as follows:



MORNSUN Isolation amplifier module pins functions is as follows:
(Take T_P series as an example):

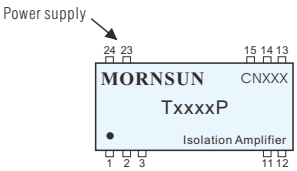


Footprint			
Pin	Function	Pin	Function
1(Sout-)	Signal output-	13(Pout-)	Distribution output-
2(Iout+)	Current output+	14(Pout+)	Distribution output+
3(Vout+)	Voltage output+	15(Pgnd)	Distribution output GND
11(Sin+)	Signal input+	23(Pin+)	Power supply+
12(Sin-)	Signal input-	24(Pin-)	Power supply-

Remark:
This pins functions were in available to DIP24/SMD24 general series, SIP16/DIP16/SMD16 small size series is different from this. The actual functions are subject to technical manual.

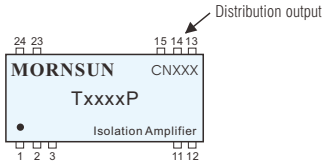
1. Power supply

Pin 23 is the positive electrode of power supply, while pin 24 is the negative, ± 5% voltage precision, if the voltage errors is too large, the Isolation amplifier module can work normally, but can't be assured long-term stability and normal singnal drive capacity. Please pay attention to the polar of input signal during connection; Very low supply voltage will not do any damage to module, but the driving capacity is not well guaranteed. The supply voltage should not exceed +15% of the nominal value, or it will do damage to the instrument. We recommend connecting TVS Protective devices at the input end to protect the module.



2. Isolation power

Pin 13 is the positive electrode of isolation power output, pin 14 is the negative. Our isolation power output can 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, then connect an external LDO or three-port regulator and the external capacitance(which value should be within 4.7μF). If the isolation power output is not needed, then just keep it unconnected. Besides, the specification of isolated output must match the power specification of instruments to avoid the damage to the field instruments.

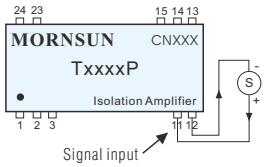


3. Signal input

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

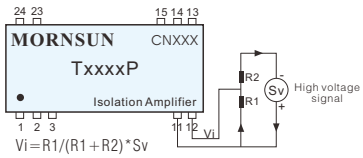
1) The actual signal input range in the nominal range

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

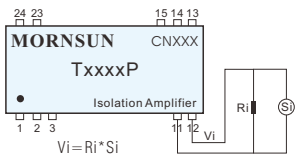


2) The actual input signal range beyond the nominal range

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.

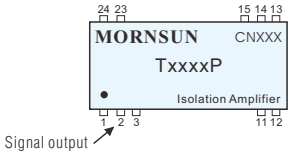


b. The solution of large current signal source is as below: Si is current signal source, which can series a shunt resistance Ri in the circuit to sampling mV signal, then amplify it to standard industrial signal through our module.

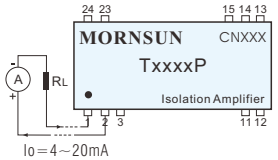


4. Signal output

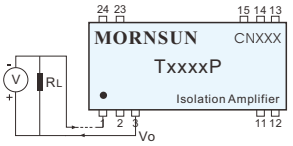
Pin 1 is the negative electrode of output signal, pin 2 is the positive output of constant current signal, pin 3 is the positive output of voltage signal. Usually, pin 2 can offer a constant current signal and the load capacity is less than 500Ω, that is if the load is less than 500Ω, the correspondent output is only depend on the input signal, not the load. This characteristic urges that constant current signal is suitable to remote transmission. Only connect a sampling resistance with constant current loop at the remote terminal, the voltage of the sampling resistance is linear proportional to input signal.



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



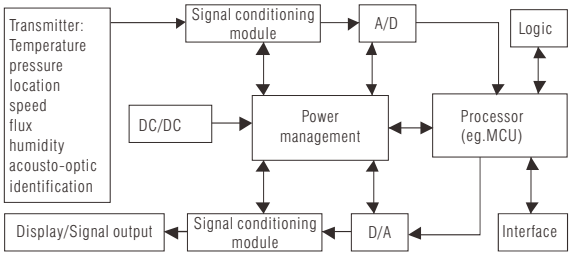
b: Voltage signal output
As below, voltage output is from the pin 3, and pin 2 is no connection. When the voltage output is maximum, load capacity is higher than 1KΩ.



Typical application

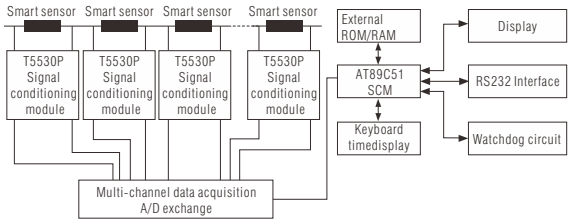
1. Signal acquisition: measurement and control instruments

On 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, 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, and when DC large current flowing along the rail on the ground, leakage current flow to the ground and to all kinds of metal on the ground, and then back to the power system. This part of the leakage current is called stray current. Because stray current will erode the metal under the ground, the serious erosion of stray current and natural corrosion lead to the accelerating of subway electrochemical corrosion. So it's necessary to monitor stray current. The cause, harm, prevention and control of stray current on metro can be referred to 《CJJ49-92》standard. The system figure of solution is as below:

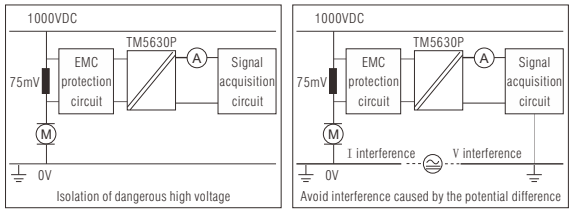


Application of signal conditioning module on metro stray current monitoring

2. Isolating anti-interference: the system of coulometric monitoring

In modern electric measurement and controlling, usually, we will use low-voltage instrument 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, the high-voltage, heavy current will easily merge into low-voltage instrument and cause terrible damage and even safety accidents.

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, which can prevent the operation error of the motor.

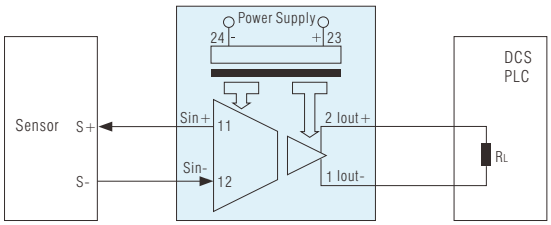


Application of signal conditioning module on coulometric monitoring system

signal conditioning module is mainly used to control the transmit of the signal under the situation of high common-mode voltage, isolating 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 extensively used in the fields of measuring equipment, medical electronic equipment and power equipment.

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, so we need 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 in place, or external interference signal coupled into the signal through transmission circuits and lead to unstable signal output, isolation amplifiers are needed to provide signal isolation, converting, and anti-interferences. The figure 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 can be used in signal interface matching, load capacity increase, signal distribution output, more reliable regional isolation and differential signal input.