



Features

- Ultra-wide 4:1 input voltage range
- High efficiency up to 88%
- No-load power consumption as low as 0.12W
- I/O isolation test voltage 1.5k VDC
- Input UVP, Output SCP, OCP, OVP
- Operating ambient temperature range: -40°C to +85°C
- Meets CISPR32/EN55032 CLASS A, without extra components
- Input reverse polarity protection available
- Meets EN50155 railway standard
- Industry standard pin-out



Ideal Power's 36URx-YMD-10WR3-A2S 10W Enclosed Chassis Mount DC/DC Converter Series are certified to cURus, CE, UKCA, CB, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Audio & Video, Railway Industries and customised solutions are available upon request.

Models

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (µF) Max.
	Nominal (Range)	Max.	Voltage (VDC)	Current (mA) Max./Min.		
36URA2405YMD-10WR3	24 (9-36)	40	±5	±1000/0	81/83	1000
36URA2409YMD-10WR3			±9	±555/0	84/86	680
36URA2412YMD-10WR3			±12	±416/0	85/87	470
36URA2415YMD-10WR3			±15	±333/0	85/87	330
36URA2424YMD-10WR3			±24	±208/0	85/87	100
36URB2403YMD-10WR3			3.3	2400/0	75/77	2200
36URB2405YMD-10WR3			5	2000/0	80/82	2200
36URB2409YMD-10WR3			9	1111/0	83/85	680
36URB2412YMD-10WR3			12	833/0	84/86	470
36URB2415YMD-10WR3			15	667/0	84/86	330
36URB2424YMD-10WR3			24	416/0	86/88	100
36URA4805YMD-10WR3			48 (18-75)	80	±5	±1000/0
36URA4812YMD-10WR3	±12	±416/0			85/87	470
36URA4815YMD-10WR3	±15	±333/0			85/87	330
36URA4824YMD-10WR3	±24	±208/0			85/87	100
36URB4803YMD-10WR3	3.3	2400/0			77/79	2200
36URB4805YMD-10WR3	5	2000/0			81/83	2200
36URB4812YMD-10WR3	12	833/0			85/87	470
36URB4815YMD-10WR3	15	667/0			85/87	330
36URB4824YMD-10WR3	24	416/0			86/88	100

Notes:

Use "H" suffix for heat sink mounting, "A2S" suffix for chassis mounting and "A4S" suffix for DIN-Rail mounting.

The A2S and A4S Model's start-up and minimum input voltages are increased by 1VDC due to the input reverse polarity protection circuit.

Exceeding the maximum input voltage may cause permanent damage.

Ideal Power Limited

14 Larks Way, Tree Beech Enterprise Park, Gunn, Barnstaple, Devon, England, EX32 7NZ.

www.idealpower.co.uk | +44 (0) 845 260 3400



Efficiency is measured at nominal input voltage and rated output load; efficiencies for A2S and A4S Model's is decreased by 2% due to the input reverse polarity protection circuit.

The specified maximum capacitive load value for positive and negative output is identical.

Products marked with "*" need an input capacitor to meet conducted specifications of CISPR32/EN55032 CLASS A.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Current (full load / no-load)	24VDC nominal input series, nominal input voltage	3.3V output	--	429/5	440/12	mA
		Others	--	502/5	521/12	
	48VDC nominal input series, nominal input voltage	3.3V output	--	190/4	215/8	
		Others	--	251/4	258/8	
Reflected Ripple Current	24VDC nominal input series	Nominal input voltage	--	40	--	
	48VDC nominal input series	Nominal input voltage	--	30	--	
Surge Voltage (1sec. max.)	24VDC nominal input series		-0.7	--	50	
	48VDC nominal input series		-0.7	--	100	
Start-up Voltage	24VDC nominal input series		--	--	9	V DC
	48VDC nominal input series		--	--	18	
Input Under-voltage Protection	24VDC nominal input series		5.5	6.5	--	
	48VDC nominal input series		12	15.5	--	
Start-up Time	Nominal input voltage & constant resistance load		--	10	--	ms
Input Filter						PI filter
Hot Plug						Unavailable
Ctrl *	Module on		Ctrl pin open or pulled high (3.5-12VDC)			
	Module off		Ctrl pin pulled low to GND (0-1.2VDC)			
	Input current when off		--	6	10	mA

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Voltage Accuracy①	0% - 100% load	--	±1	±3		
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	%
		Vo2	--	±0.5	±1	
Load Regulation②	5% -100% load	Vo1	--	±0.5	±1	
		Vo2	--	±0.5	±1.5	
Cross Regulation	Dual outputs, Vo1 load at 50%, Vo2 load at range of 10% - 100%	--	--	±5		
Transient Recovery Time	25% load step change, nominal input voltage	--	300	500	µs	
Transient Response Deviation		--	±3	±5	%	
Temperature Coefficient	Full load	--	--	±0.03	%/°C	
Ripple & Noise③	20MHz bandwidth, 5% - 100% load	--	40	80	mV p-p	
Over-voltage Protection		110	--	160	%Vo	
Over-current Protection	Input voltage range	110	140	190	%Io	
Short-circuit Protection	Continuous, self-recovery					

Note:

① Output voltage accuracy of ±5VDC/±9VDC output converter for 0%-5% load is ±5% max.

② Load regulation for 0%-100% load is ±5%.

③ Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo. The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

Ideal Power Limited

14 Larks Way, Tree Beech Enterprise Park, Gunn, Barnstaple, Devon, England, EX32 7NZ.

www.idealpower.co.uk | +44 (0) 845 260 3400

**General Specifications**

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	1500	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	1000	--	pF
Operating Temperature	See Fig. 1	-40	--	+85	°C
Storage Humidity	Non-condensing	5	--	95	%RH
Storage Temperature		-55	--	+125	°C
Pin Soldering Resistance	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	
Vibration		IEC/EN61373 - Category 1, Grade B			
Switching Frequency *	PWM mode	--	350	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Mechanical Specifications

Case Material	Aluminum alloy case; Black plastic bottom, flame-retardant and heat-resistant (UL94 V-0)				
Dimension	Horizontal package (without heat sink)	25.40 × 25.40 × 11.70 mm			
	Horizontal package (with heat sink)	25.40 × 25.40 × 16.20 mm			
	A2S chassis mounting	76.00 × 31.50 × 21.20 mm			
	A4S DIN-rail mounting	76.00 × 31.50 × 25.80 mm			
Weight	Horizontal package (without heat sink)	12.5g (Typ.)			
	A2S chassis mounting (without heat sink)	36.0g (Typ.)			
	A4S DIN-rail mounting (without heat sink)	56.0g (Typ.)			
	Horizontal package (with heat sink)	17g			
Cooling Method	Free air convection				

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A (without extra components)/ CLASS B (see Fig.3-② for recommended circuit)		
	RE	CISPR32/EN55032	CLASS A (without extra components)/ CLASS B (see Fig.3-② for recommended circuit)		
Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV		perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m		perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV (see Fig.3-① for recommended circuit)		perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2kV (see Fig.3-① for recommended circuit)		perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s		perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70%		perf. Criteria B

Ideal Power Limited

14 Larks Way, Tree Beech Enterprise Park, Gunn, Barnstaple, Devon, England, EX32 7NZ.

www.idealpower.co.uk | +44 (0) 845 260 3400



Electromagnetic Compatibility (EMC)(EN50155)

Emissions	CE	EN50121-3-2	150kHz-500kHz 99dBuV (see Fig.3-② for recommended circuit)	
		EN55016-2-1	500kHz-30MHz 93dBuV (see Fig.3-② for recommended circuit)	
	RE	EN50121-3-2	30MHz-230MHz 40dBuV/m at 10m (see Fig.3-② for recommended circuit)	
		EN55016-2-1	230MHz-1GHz 47dBuV/m at 10m(see Fig.3-② for recommended circuit)	
Immunity	ESD	EN50121-3-2	Contact ±6KV Air ±8KV	perf. Criteria A
	RS	EN50121-3-2	20V/m	perf. Criteria A
	EFT	EN50121-3-2	±2kV 5/50ns 5kHz (see Fig. 3 for recommended circuit)	perf. Criteria A
	Surge	EN50121-3-2	line to line ±1KV (42Ω, 0.5μF) (see Fig.3 for recommended circuit)	perf. Criteria A
	CS	EN50121-3-2	10 V r.m.s	perf. Criteria A

Characteristic Curves

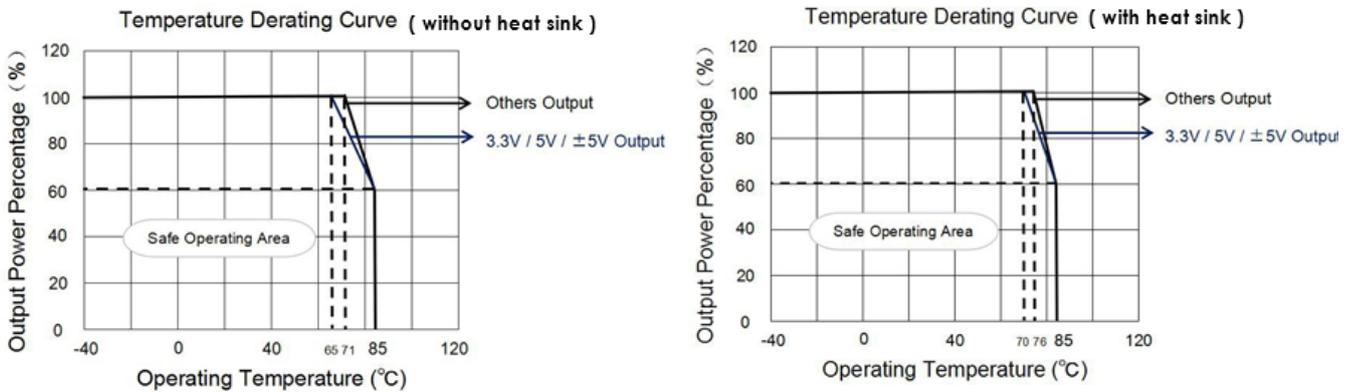
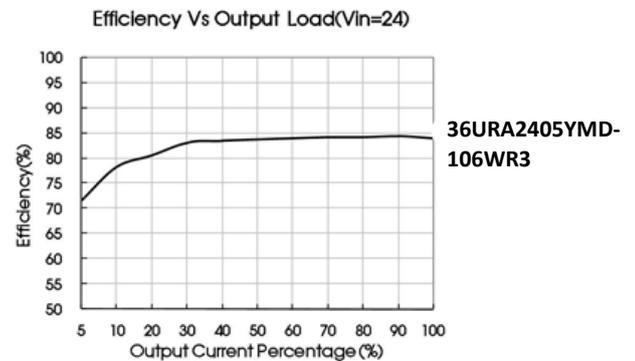
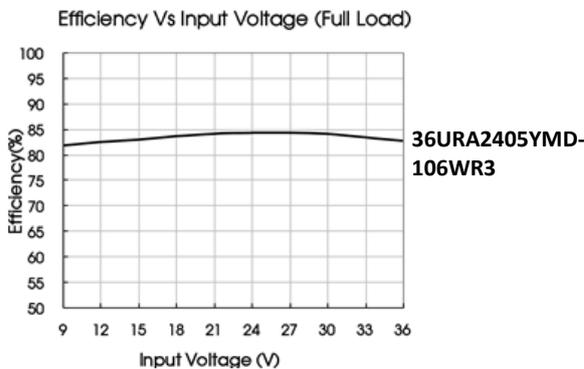
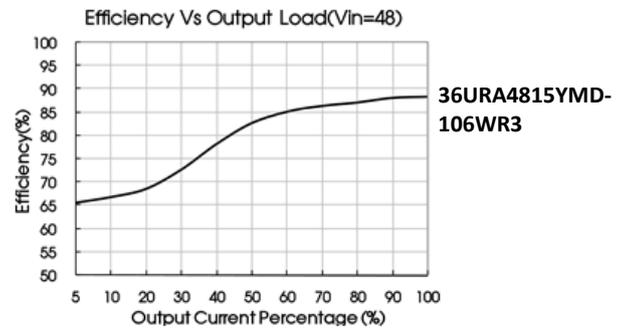
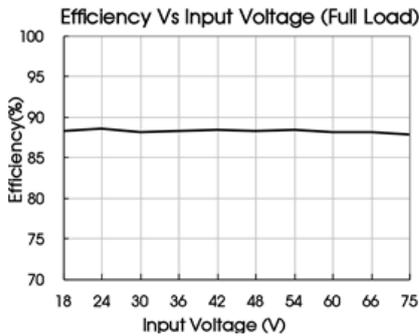


Fig. 1





Design Reference

1. Typical application

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

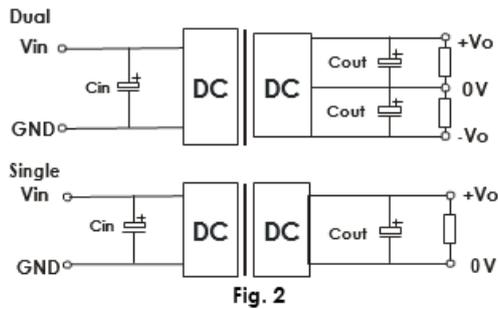


Fig. 2

Vin(VDC)	Vout(VDC)	Cin	Cout
24	3.3/5/±5	100µF/50V	10µF/16V
	9/12/15/±9/±12/±15		10µF/25V
	24/±24		10µF/50V
48	3.3/5/±5	10µF - 47µF/100V	10µF/16V
	9/12/15/±9/±12/±15		10µF/25V
	24/±24		10µF/50V

2. EMC compliance circuit

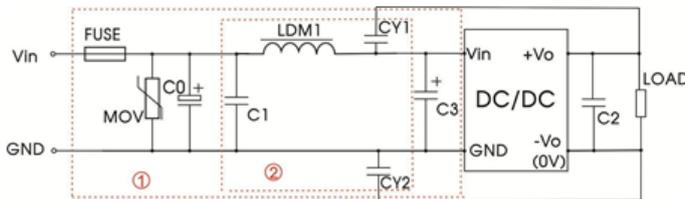


Fig. 3

Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

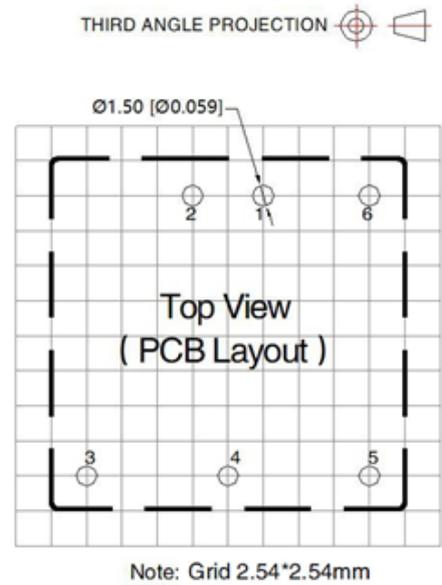
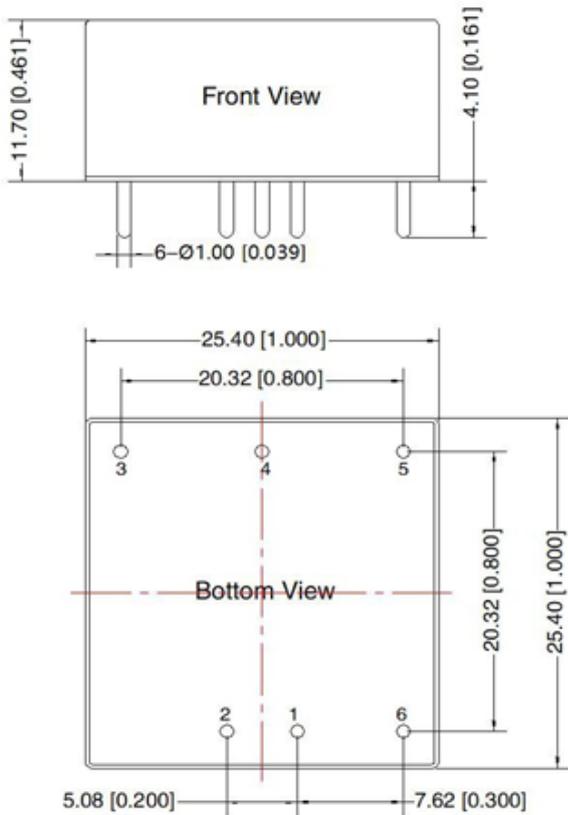
Parameter description:

Model	Vin: 24VDC	Vin: 48VDC
FUSE	Choose according to actual input current	
MOV	S20K30	S14K60
C0, C3	330µF/50V	330µF/100V
C1	1µF/50V	1µF/100V
C2	Refer to the Cout in Fig.2	
LDM1	4.7µH	
CY1, CY2	1nF/2kV	



Dimensions and Recommended Layout

Horizontal Package (without heat sink)



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

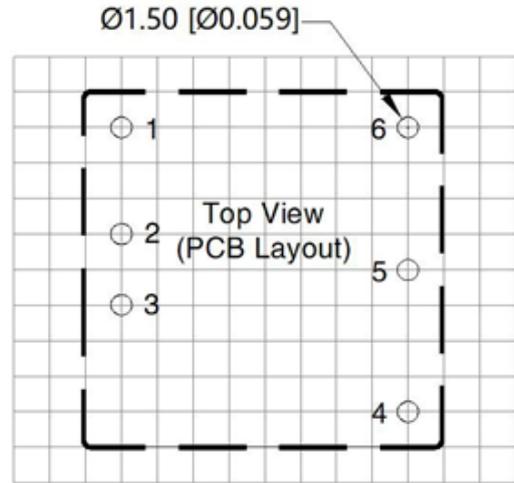
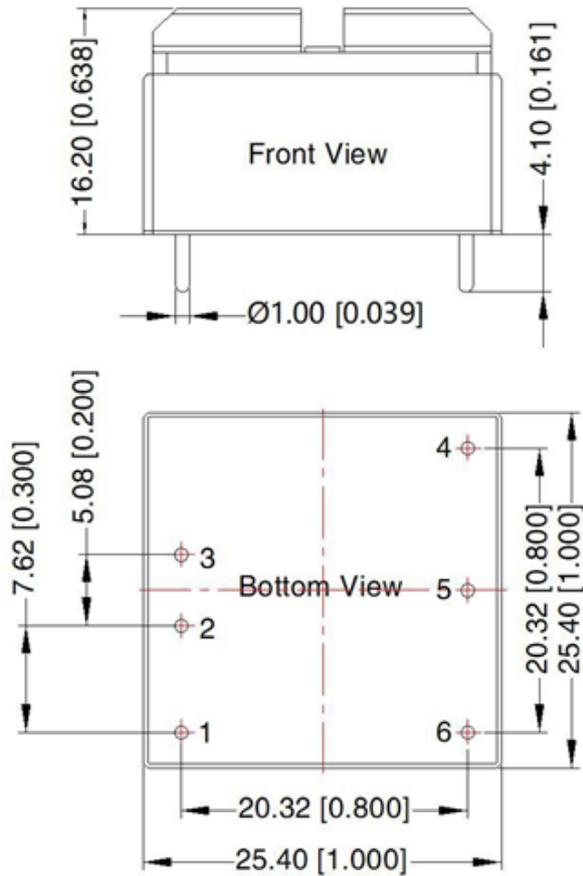
Note:
 Unit: mm[inch]
 PIN1/2/3/4/5/6: ϕ 1.0mm
 Pin diameter tolerances: ± 0.10 [± 0.004]
 General tolerances: ± 0.50 [± 0.020]



Dimensions and Recommended Layout (continued)

Horizontal Package (with heat sink)

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

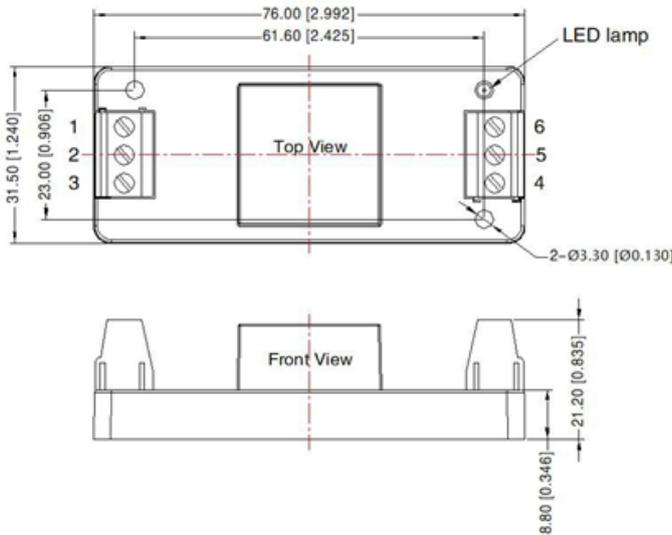
Pin	Pin-Out	
	Single	Double
1	Ctrl	Ctrl
2	GND	GND
3	Vin	Vin
4	+Vo	+Vo
5	No Pin	0V
6	0V	-Vo

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



Dimensions and Recommended Layout (continued)

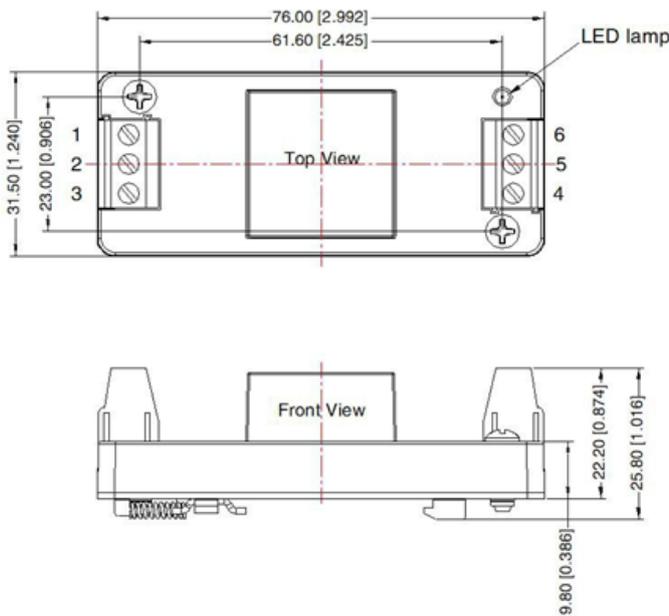
36URA_YMD-10WR3A2S & 36URB_YMD-10WR3A2S



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

Note:
 Unit: mm[inch]
 Wire range: 24–12 AWG
 Tightening torque: Max 0.4 N • m
 General tolerances: ± 1.00[± 0.039]

URA_YMD-10WR3A4S & URB_YMD-10WR3A4S



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

Note:
 Unit: mm[inch]
 Mounting rail: TS35
 Wire range: 24–12 AWG
 Tightening torque: Max 0.4 N • m
 General tolerances: ± 1.00[± 0.039]

Notes:

- For additional information on Product Packaging please refer to www.IdealPower.co.uk.
- The maximum capacitive load offered were tested at input voltage range and full load.
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load.
- All index testing methods in this datasheet are based on company corporate standards.
- We can provide product customization service, please contact our technicians directly for specific information.
- Products are related to laws and regulations: see "Features" and "EMC".
- Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.