

VOLTAGE CONVERTERS  
POWER SUPPLIES  
BATTERY CHARGERS  
LOW VOLTAGE DISCONNECTS  
USB CHARGERS  
WIRELESS CHARGERS



## INTRODUCTION

Welcome to our latest Alfatronix Catalogue featuring all products in the portfolio. Here you will be able to find all of the information you need with regard to DC-DC converters, mains and desktop power supplies, PowerTector LVD battery protectors and DC-DC battery chargers, as well as our extensive range of USB chargers.

This year's catalogue includes a new range of wireless chargers. For vehicle installations, we have the new podsole, wireless and USB charging console which is totally versatile and can be installed onto any seatback, a fully integrated module which can be installed into passenger seating, and a surface module which can be installed into table tops and media benches to provide unobtrusive, yet stylish wireless charging for passengers. In addition is a new mains powered, surface integrated wireless charger module for installation into furniture. Its robustness makes it perfect for use in publicly accessible spaces. Alongside our USB chargers this completes our range to offer charging for all mobile devices.

Our DC-DC range is more extensive than ever and now offers converters from 36W to 600W and includes 24V-12V and 12V-24V configurations as well as an improved range of 12V-12V and 24V-24V stabilisers.

In addition to our brick in the lead mains power supplies, our desktop range continues to be very popular and new radio configurations are added regularly, so please check for up to date information. Today, all popular radio transceivers are covered by the Alfatronix Desktop or "wedge," range, as they have become popularly known in the market.

All products are manufactured at our factories in Poole, England and are available for fast despatch, usually within a day or two. We have distributors throughout Europe and beyond for fast delivery within your local area and our expert engineering team is always available to assist with any issues relating to application or installation. Here at Alfatronix, we make every effort to maintain the very highest of quality standards backed by a return to base guarantee.

Whether you are involved in the communications, automotive or marine markets, specifying original fit components at OEM level, or you require power conversion as part of a system integration, we have a wide range of products to suit your needs.

Keith Reilly  
Managing Director



USB Chargers



Voltage Converters



Wireless Chargers for land and vehicle applications



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# POWERVERTER & DD SERIES SELECTION TABLE

The following table provides an overview of our DC-DC products. Simply choose the input/output voltage configurations on the left against the continuous power rating (expressed in Watts) across the top.

	WATT RATING						
	36W	72W	108/144W	168/216W	240/288W	400W	600W
<b>24V-12V</b> NON-ISOLATED Converters	PV3s 3Amp	PV6s 6Amp	PV12s 12Amp	PV18s 18Amp	PV24s 24Amp		PV50s 50Amp
<b>24V-12V</b> ISOLATED Converters	PV3i 3Amp	PV6i 6Amp	PV12i 12Amp	PV18i 18Amp	PV24i 24Amp		
<b>24V-12V</b> Dual Output Switched NON-ISOLATED	PV3s-A 3Amp	PV6s-A 6Amp	PV12s-A 12Amp				
<b>12V-24V</b> NON-ISOLATED Converters		DD12-24 072 3Amp		DD12-24 168 7Amp	DD12-24 240 10Amp	DD12-24 400 17Amp	DD12-24 600 25Amp
<b>12V-12V</b> ISOLATED Converters	DDi12-12 036 3Amp	DDi12-12 072 6Amp	DDi12-12 108 9Amp	DDi12-12 168 14Amp			
<b>24V-24V</b> ISOLATED Converters	DDi24-24 036 1.5Amp	DDi24-24 072 3Amp	DDi24-24 108 4.5Amp	DDi24-24 168 7Amp	DDi24-24 240 10Amp		
<b>48V-12V</b> NON-ISOLATED Converters		DD48-12 072 6Amp	DD48-12 108 9Amp		DD48-12 240 20 Amp		
<b>48V-12V</b> ISOLATED Converters	DDi48-12 036 3Amp	DDi48-12 072 6Amp	DDi48-12 108 9Amp				

 Denotes non-isolated common earth products.

 Denotes isolated products. These provide isolation between input and output and are often used for marine applications or for petrochemical applications to prevent sparking. They can also help to reduce the effects of EMC interference. They can always be used in place of non-isolated products but not vice versa.

All of these products are also available in IP65 versions. *Please add the suffix **-RU** to the part number when ordering.*

Many products have an intermittent current rating, so occasional short periods above the continuous ratings are permissible. Intermittent ratings are normally 25% above the continuous ratings, though often greater on smaller units. Permissible max usage cycle is 2 minutes, followed by 8 minutes rest.

In addition to the standard products tabled, a number of wide input converters are also available. These are configured to operate from both 12V and 24V systems. ***Please contact us for more information.***

Output voltages are generally set to typify normal battery output voltages as follows: 12V nominal = 13.6V, 24V nominal = 27.2V, 48V nominal = 54.4V.

Most products are available with alternative output voltage options at extra cost, for example 12V instead of 13.6V.

Most products are IP53 as standard. Many products are also available as IP65 versions. Part numbers will have **-RU** suffix. *Please see data sheet for clarification.*

# POWERVERTER

## 24VDC TO 12VDC VOLTAGE CONVERTERS

### 24VDC TO 12VDC VOLTAGE CONVERTERS

These products offer a convenient way to operate mass produced 12Vdc equipment such as cell phones, in car entertainment, professional communications, telematics equipment, refrigerators, televisions etc. from the 24Vdc mobile electrical systems found on diesel engined vehicles and vessels.

### A COMPREHENSIVE RANGE

There are 14 products in the range from 3A to 50A in isolated or common earth configurations. They have been optimised for high volume 24Vdc to 12Vdc applications such as on heavy goods vehicles, coaches, buses, forestry and agricultural vehicles, as well as commercial and leisure marine vehicles.

### TAMPER PROOF

These units are IP53, so there are no ventilation holes to permit stray objects, dust or water droplets to enter the case, there are no external fuses to be tampered with. Fuses will only blow if there is a fault so there is no need to make them accessible.

### PRODUCT VARIANTS

Many PowerVerters and DD Series products can be configured with alternative output voltages etc. for specialist applications. *Please call our sales team to discuss your requirements.*



Galvanically isolated units are suitable for marine applications and come complete with the green tamperproof label for petrochemical applications.



PV50s, 50Amp converter

### FAST INSTALLATION

All the units consume an off load current of less than 15mA, which is probably less than the self discharge current of the vehicle's battery. In most cases this can be ignored, speeding the installation by removing the need to fit a remote switch.

All products fit onto a "Click 'n' Fit" mounting clip which is fixed in three points allowing it to be mounted on uneven surfaces. It is easy to fit the clip into awkward places and then simply click the unit into position. A fixing kit for din rail installation is also available.

A green LED indicates when there is output from the converter. This gives reassurance to the installation engineer and speeds fault finding.



Many units in the PowerVerter range are also available as IP65 Versions. Please add the suffix -RU to the part number when ordering.

# CHOOSE YOUR POWERVERTER PRODUCT

Part Number	Cont/Int Power	Nominal Voltage	Dimensions	Weight
PV3s	3A/6A non-isolated	24Vdc input, 12Vdc output	67 x 87 x 50mm	200g
PV6s	6A/10A non-isolated	24Vdc input, 12Vdc output	89 x 87 x 50mm	250g
PV12s	12A/18A non-isolated	24Vdc input, 12Vdc output	127 x 87 x 50mm	405g
PV18s	18A/22A non-isolated	24Vdc input, 12Vdc output	167 x 87 x 50mm	605g
PV24s	24A/30A non-isolated	24Vdc input, 12Vdc output	167 x 87 x 50mm	620g
*PV50s	50A/60A non-isolated	24Vdc input, 12Vdc output	283 x 125 x 74mm	1820g
PV3i	3A/6A isolated	24Vdc input, 12Vdc output	89 x 87 x 50mm	280g
PV6i	6A/10A isolated	24Vdc input, 12Vdc output	127 x 87 x 50mm	505g
PV12i	12A/18A isolated	24Vdc input, 12Vdc output	167 x 87 x 50mm	590g
PV18i	18A/22A isolated	24Vdc input, 12Vdc output	217 x 87 x 50mm	775g
PV24i	24A/30A isolated	24Vdc input, 12Vdc output	217 x 87 x 50mm	785g

*Other input and output voltage configurations are available as special orders, please ask our sales team*

For Railway Approved Versions , please see PowerVerter Railway Converters.

## TECHNICAL DATA

Input voltage range	17-32Vdc
Output voltage	13.6Vdc +15% -20% at extremes of temperature, load, input tolerance, etc.
Intermittent output power	As stated, taken for a maximum of 2 minutes followed by 8 minutes rest
Transient voltage protection	Meets ISO7637-2 International standard for 24Vdc commercial vehicles
Electrostatic voltage protection	Meets ISO10605, ISO14982, >8kV contact, 15kV discharge
Output noise	<50mV pk-pk at continuous load. Meets CISPR25.
Off load current (quiescent current)	<15mA
Power conversion efficiency	Typically: 90% for non-isolated units, 85% for isolated units, *95%
Isolation	>400Vrms between input , output and case, on isolated products only
Operating temperature	-25°C to +30°C to meet this specification table +30°C to +80°C de-rate linearly to OA
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Anodised aluminium, glass filled polycarbonate, dust water and impact resistance to IP533
Connections	Four 6.3mm push-on flat blade connectors *(5 way Phoenix connector including enable on/off terminal and mating half)
Output indicator	Green LED adjacent to output terminals
Mounting method	Click 'n' fit mounting clip, fitted separately using three hole fixture, * 4 hole cradle
Safe area protection:	
Over current	Limited by current sensing circuit
Over heat	Limited by temperature sensing circuit
Transients	Protected by filters and rugged component selection
Catastrophic protection	Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, ISO 7637-2, ISO 11452-1, ISO 14982, EN12895, EN60945, EN55022, FCC15B.
Markings	CE and E (automotive) marked

# POWERVERTER

## DUAL OUTPUT 24VDC TO 12VDC CONVERTERS

### PV-A RANGE DUAL OUTPUT CONVERTERS WITH SWITCHED OUTPUT

Some automotive equipment, such as In Car Entertainment (ICE) usually has two links to the vehicle's electrical system, one for memory back-up and one for switching the equipment on and off.

The on/off function is controlled from the ignition switch so that when the ignition key is removed, the ICE equipment is turned off, preventing the battery from becoming discharged whilst leaving the memory back-up circuit still active.

Also, some truck manufacturers run other 12V equipment, such as a cigar lighter socket from the same feed, while others prefer to leave it permanently on.



Alfatronix have developed three voltage converters, a 3Amp, 6Amp (continuous) and a 12A (continuous), which overcome these configuration problems. The Alfatronix converters mimic the 12V battery and 12V ignition function by providing two outputs, either of which can provide full power. One output is available whenever the 24V battery is connected. The other output is switched by the 24V ignition switch. Now the ICE equipment can be fitted to the 24V truck as simply as fitting it to a 12V car.

Of course, the Dual Output Range can be used for any application where a dual output is required or where a switched and permanent or memory connection must be retained.

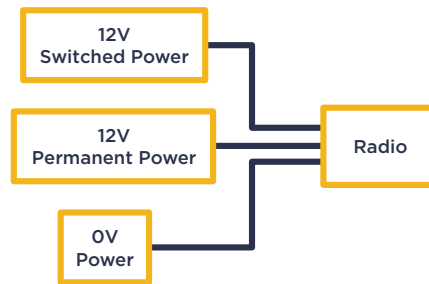
The PV12s-A is ideal for powering in car entertainment systems where a permanent memory circuit is required for security purposes.



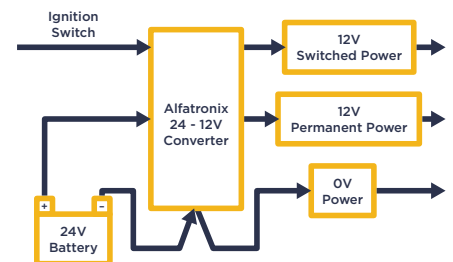
The PV3s-A is ideal for smaller applications where a switched and permanent circuit are both required.



### TYPICAL APPLICATIONS



### THE ALFATRONIX SOLUTION



### CONNECTION SOLUTIONS



#### PV12s-A Connections

Pin No.	Colour	Description
1	Red	+12Vdc Switched Output
2	Yellow	+12Vdc Permanent Output
3	White	0Vdc Output
4	Blue	0Vdc Input
5	Green	+24Vdc Input
6	Brown	+24Vdc Ignition Switch Input

# CHOOSE YOUR PV-A RANGE PRODUCT

Part Number	Cont/Int Power	Nominal Voltage	Dimensions	Weight
PV3s-A	3A/6A non-isolated	24Vdc input, 12Vdc output	67 x 87 x 50mm	200g
PV6s-A	6A/10A non-isolated	24Vdc input, 12Vdc output	89 x 87 x 50mm	250g
PV12s-A	12A/15A non-isolated	24Vdc input, 12Vdc output	126 x 87 x 50mm	455g

## TECHNICAL DATA

Input voltage range	17-32Vdc								
Output voltage	13.6Vdc +15% -20% at extremes of temperature, load, input tolerance, etc.								
Output power	As stated, from either output or combination of both. Intermittent ratings as stated, taken for a maximum of 2 minutes followed by 8 minutes rest.								
Transient voltage protection	Meets ISO7637-2 International standard for 24Vdc commercial vehicles								
Electrostatic voltage protection	Meets ISO10605, ISO14982, >8kV contact, 15kV discharge								
Output noise	<50mV pk-pk at continuous load. Meets CISPR25 and VDE0879-3								
Off load current (quiescent current)	<15mA								
Power conversion efficiency	Typically: 90%								
Operating temperature	-25°C to +30°C to meet this specification table +30°C to +80°C de-rate linearly to 0A								
Storage temperature	-25°C to +100°C								
Operating humidity	95% max., non-condensing								
Casework	Anodised aluminium, glass filled polycarbonate, dust water and impact resistance to IP533								
Connections	Five 6.3mm push-on flat blade connectors 6-way 070 connector (PV12s-A)								
Output indicator	Green LED adjacent to output terminals, None on PV12s-A								
Mounting method	'Click 'n' fit mounting clip, fitted separately using three hole fixing								
Safe area protection:	<table border="0"> <tr> <td>Over current</td> <td>Limited by current sensing circuit</td> </tr> <tr> <td>Over heat</td> <td>Limited by temperature sensing circuit</td> </tr> <tr> <td>Transients</td> <td>Protected by filters and rugged component selection</td> </tr> <tr> <td>Catastrophic protection</td> <td>Protected by internal input and output fuses</td> </tr> </table>	Over current	Limited by current sensing circuit	Over heat	Limited by temperature sensing circuit	Transients	Protected by filters and rugged component selection	Catastrophic protection	Protected by internal input and output fuses
Over current	Limited by current sensing circuit								
Over heat	Limited by temperature sensing circuit								
Transients	Protected by filters and rugged component selection								
Catastrophic protection	Protected by internal input and output fuses								
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive								
Markings	CE and E (automotive) marked								

# POWERVERTER RAILWAY

## 24VDC TO 12VDC VOLTAGE CONVERTERS

### 24VDC TO 12VDC VOLTAGE CONVERTERS

These railway approved products are the perfect solution if your system specification requires galvanic isolation, high performance products for the railway industry and other demanding applications. This Alfatronix range of DC-DC converters have been designed and approved for railway applications. They meet all the necessary standards for RF immunity, transient and electrostatic discharge including EN50121 and EN61004 as well as shock and vibration to EN61373.

They are isolated and can be used to power any 12Vdc equipment from the rolling stock 24Vdc source. The circuit provides transient and EMC protection and can also be used to protect ancillary equipment from interference and voltage surges. They can be used in conjunction with the Alfatronix PVPro range of USB chargers providing approval to EN 50155, RIA12 (EN 50121-3-2) as well as other suitable equipment installations.



POWERVERTER RAILWAY  
PV6i-R



POWERVERTER RAILWAY  
PV12i-R

Two products are available, providing 6Amps or 12Amps continuous power. Both units are housed in a strong aluminium casing and the installation is quick and easy and offers long term reliability with vibration proof connections and mounting system.

### TAMPER PROOF

These units are IP53, so there are no ventilation holes to permit stray objects, dust or water droplets to enter the case, there are no external fuses to be tampered with. Fuses will only blow if there is a fault so there is no need to make them accessible.

### FAST INSTALLATION

All products fit onto a "Click 'n' Fit" mounting clip which is fixed in three points allowing it to be mounted on uneven surfaces. It is easy to fit the clip into awkward places and then simply click the unit into position.

A green LED indicates when there is output from the converter. This gives reassurance to the installation engineer and speeds fault finding.



# CHOOSE YOUR RAILWAY CONVERTER

Part Number	Cont/Int Power	Nominal Voltage	Constant Power	Dimensions	Weight
PV6i-R	6A/10A isolated	24Vdc input, 12Vdc output	80W	127 x 87 x 50mm	505g
PV12i-R	12A/18A isolated	24Vdc input, 12Vdc output	160W	167 x 87 x 50mm	590g
PV24i-R	24A/30A isolated	24Vdc input, 12Vdc output	320W	217 x 87 x 50mm	785g

## TECHNICAL DATA

Input voltage range	17-32Vdc
Output voltage	13.6Vdc +/- 15% at extremes of temperature, load, input tolerance, etc.
Intermittent output power	As stated, taken for a maximum of 2 minutes followed by 8 minutes rest
Transient voltage protection	EN50121-3-2 to EN61004-4
Electrostatic discharge	EN50121-3-2 to EN61004-2
RF Immunity	Conducted: EN50121-3-2 to EN6100 4-6, Radiated to EN6100 4-3
RF Emissions	EN50121-3-2 to EN55011
Surges	EN50121-3-2 to EN6100 4-5
Vibration, Shock, Impact	EN61373
Output noise	<50mV pk-pk at continuous load. Meets CISPR25
Off load current (quiescent current)	<30mA
Power conversion efficiency	Typically: 85%
Isolation	>400Vrms between input, output and case
Operating temperature	-25°C to +55°C to meet this specification table +30°C to +80°C de-rate linearly to 0A
Storage temperature	-25°C to +70°C
Operating humidity	95% max., non-condensing
Casework	Anodised aluminium, glass filled polycarbonate, dust water and impact resistance to IP533
Connections	Four 6.3mm push-on flat blade connectors
Output indicator	Green LED adjacent to output terminals
Mounting method	Click 'n' fit mounting clip, fitted separately using three hole fixture
Safe area protection:	
Over current	Limited by current sensing circuit
Over heat	Limited by temperature sensing circuit
Reverse polarity	Limited by sensing circuit
Transients	Protected by filters and rugged component selection
Catastrophic protection	Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive 93/68/EEC The CE marking directive Railway Standards to EN50155 & RIA12
Designed to	EN50155, EN50121-3-2, EN45545-2 and EN61373
Markings	CE and E (automotive) marked

# DD SERIES & DDi SERIES VOLTAGE CONVERTERS

## 12V-12V, 24V-24V & 48V-12V CONVERTERS FOR A WIDE RANGE OF APPLICATIONS

The sensitivities of modern electronic equipment to variable input voltages, susceptibility to EMC interference and in some cases, the need to isolate the supply has made voltage stabilisation an important section of our product range. Start/Stop technology on motor vehicles has added to this problem. The DDi Series offers a wide range of 12V-12V and 24V-24V isolated products that ensure a stable and reliable voltage can be delivered to important equipment. Units are available from 36-240W. The range now also offers 48V-12V units, suitable for the telecoms and forklift truck markets. *For 12V-24V converters, see DD Series 'Up' Voltage Converters*



### A COMPREHENSIVE PRODUCT RANGE

There are four products in the 12V-12V isolator range from 36W to 168W and a further five products in the 24V-24V range from 36W to 240W. There are also three 48V-12V products from 36W to 108W. All products use modern switchmode designs and are built using the same concepts and technologies as the successful PowerVerter range, which will of course meet your 24V-12V requirements.

### FAST INSTALLATION

All the units consume an off load current of less than 15mA, which is probably less than the self discharge current of the vehicle's battery.

All the products fit onto a "Click 'n' fit" mounting clip which is fixed in three points allowing it to be mounted onto uneven surfaces. It is easy to fit the clip into awkward places, then simply click the unit into position.

The green LED indicates when there is output from the converter. This gives reassurance to the installation engineer and speeds fault finding.

### PRODUCT CODING

The product code is developed as follows, taking the DDi 12-12 036 as an example:

<b>DD</b>	DC input and output
<b>i</b>	Denotes isolated converter
<b>12-12</b>	Nominal 12V input /output
<b>036</b>	36W capacity unit



12V-12V and 24V-24V units can provide a stable output voltage as well as providing galvanic isolation for a variety of applications



# CHOOSE YOUR DD SERIES PRODUCT

Part Number	Power	Nominal Voltage	Dimensions	Weight
DDi12-12 036	36W (3A) Isolated	12Vdc input, 12Vdc output	89 x 87 x 50mm	280g
DDi12-12 072	72W (6A) Isolated	12Vdc input , 12Vdc output	127 x 87 x 50mm	440g
DDi12-12 108	108W (9A) Isolated	12Vdc input, 12Vdc output	167 x 87 x 50mm	540g
DDi12-12 168	168W (14A) Isolated	12Vdc input, 12Vdc output	217 x 87 x 50mm	820g
DDi24-24 036	36W (1.5A) Isolated	24Vdc input, 24Vdc output	89 x 87 x 50mm	280g
DDi24-24 072	72W (3A) Isolated	24Vdc input, 24Vdc output	127 x 87 x 50mm	440g
DDi24-24 108	108W (4.5A) Isolated	24Vdc input, 24Vdc output	167 x 87 x 50mm	540g
DDi24-24 168	168W (7A) Isolated	24Vdc input, 24Vdc output	217 x 87 x 50mm	820g
DDi24-24 240	240W (10A) Isolated	24Vdc input, 24Vdc output	217 x 87 x 50mm	820g
DD48-12 072	72W (6A) Non-Isolated	48Vdc input, 12Vdc output	89 x 87 x 50mm	270g
DD48-12 108	108W (9A) Non-Isolated	48Vdc input, 12Vdc output	127 x 87 x 50mm	360g
DD48-12 240	240W (20A) Non-Isolated	48Vdc input, 12Vdc output	217 x 87 x 50mm	760g
DDi48-12 036	36W (3A) Isolated	48Vdc input, 12Vdc output	89 x 87 x 50mm	280g
DDi48-12 072	72W (6A) Isolated	48Vdc input, 12Vdc output	127 x 87 x 50mm	500g
DDi48-12 108	108W (9A) Isolated	48Vdc input, 12Vdc output	167 x 87 x 50mm	560g

*Other input and output voltage configurations are available as special orders, please ask our sales team.*

*DIN Rail Mounting available*

## TECHNICAL DATA

Input voltage range	12Vdc, 24Vdc +/- 30%, 48Vdc -30% +25%
Output voltage	13.6Vdc or 27.2Vdc +15% -20% at extremes of temperature, load, input tolerance etc
Intermittent output power	Continuous rating +25% taken for a maximum of 2 minutes followed by 8 minutes rest
Transient voltage protection	Meets ISO7637-2 International standard for 24Vdc commercial vehicles
Electrostatic voltage protection	Meets ISO10605, ISO14982, >8kV contact, 15kV discharge
Output noise	<50mV pk-pk (100mV on 24V units) at continuous load. Meets CISPR25.
Off load current (quiescent current)	<15mA (<25mA, 168W + 240W versions)
Power conversion efficiency	Typically: 90% for non-isolated units, 85% for isolated units
Isolation	>400Vrms between input , output and case, on isolated products only
Operating temperature	-25°C to +30°C to meet this specification table +30°C to +80°C de rate linearly to OA
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Anodised aluminium, glass filled polycarbonate, dust water and impact resistance to IP533
Connections	Four 6.3mm push-on flat blade connectors
Output indicator	Green LED adjacent to output terminals
Mounting method	Click 'n' fit mounting clip, fitted separately using three hole fixture
Safe area protection:	Over current Limited by current sensing circuit
	Over heat Limited by temperature sensing circuit
	Transients Protected by filters and rugged component selection
	Catastrophic failure Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, ISO 7637-2.
Markings	CE and E (automotive) marked

# DD SERIES

## 12-24V "UP" VOLTAGE CONVERTERS

### 12V-24V "UP" CONVERTERS FOR A WIDE RANGE OF APPLICATIONS

If you need to fit 24V equipment onto a 12V electrical system, then an "up" converter from the DD Series offers a fast and easy way to configure your system. Now with a range from 72W (3A output) to 600W (25A output), these products offer state of the art designs for fast installation and long term reliable operation. Typical applications include the installation of 24V equipment on 12V vehicles and installation of specialist equipment requiring higher operating voltages.



### 400W AND 600W 12-24V UNITS

The latest addition to the range includes two high current (17 and 25 Amps output) units. These use state of the art designs with efficiency up to 93% and practically all components are mounted using computer controlled surface mount technology (SMT). The result is a robust product with low component mass. The mechanical aspects include a brand new casing profile designed for maximum heat dissipation as well as a new design of our highly successful mounting cradle that allows the unit to be fully wired before being "clicked" into place. This provides for a faster installation time with mechanics capable of withstanding long term vibration with no risk of screws falling out.

### CASING FORMATS

12V-24V converters are available in two casing formats. Units from 72-240W use the standard Alfatronix aluminium casings with polycarbonate end-caps and three point mounting cradle. The larger 400W and 600W units occupy a larger heat-sink casing and utilise the heavy duty Phoenix connector. Installation is by way of the larger four point "I" shaped mounting cradle.

### ALSO AVAILABLE IN IP65 FORMAT

The DD Series 12-24V products are available in either standard IP53 format (like most Alfatronix converters) or the ruggedised IP65 versions. Just add -RU to the part number. These are suitable where the installation is in a particularly hostile environment and subject to increased water and dirt exposure.



### PRODUCT CODING

The product code is derived as follows, taking the DD 12-24 072-RU as an example:

<b>DD</b>	DC input and output
<b>12-24</b>	Denotes 12V input , 24V output
<b>072</b>	Denotes wattage
<b>-RU</b>	Denotes IP65 version

# CHOOSE YOUR DD SERIES PRODUCT

Part Number	Power	Nominal Voltage	Dimensions	Weight
DD12-24 072	72W (3A) Non-Isolated	12Vdc input, 24Vdc output	89 x 87 x 50mm	300g
DD12-24 168	168W (7A) Non-Isolated	12Vdc input, 24Vdc output	167 x 87 x 50mm	430g
DD12-24 240	240W (10A) Non-Isolated	12Vdc input, 24Vdc output	217 x 87 x 50mm	550g
DD12-24 400	400W (16A) Non-Isolated	12Vdc input, 24Vdc output	233 x 125 x 74mm	1420g
DD12-24 600	600W (25A) Non-Isolated	12Vdc input, 24Vdc output	283 x 125 x 74mm	1710g

Other output voltage configurations are available as special orders, please ask our sales team

## TECHNICAL DATA

Input voltage range	12Vdc +/- 30%
Output voltage	27.2Vdc +/-5% at extremes of temperature, load, input tolerance etc
Continuous current rating	3A - 25A depending on model
Intermittent rating	Continuous rating +20%, taken for a maximum of 2 minutes followed by 8 minutes rest
Transient voltage protection	Meets ISO7637-2 International standard for 12V and 24Vdc commercial vehicles
Electrostatic voltage protection	Meets ISO10605
Output noise	<100mV pk-pk at continuous load
Off load current (quiescent current)	<20mA (400W and 600W enable off), less than 100mA (72 - 240W units)
Power conversion efficiency	Typically 93%
Operating temperature	-25°C to +30°C to meet this specification table +30°C to +80°C de rate linearly to 0A
Storage temperature	-25°C to +70°C
Operating humidity	95% max., non-condensing
Casework	Anodised aluminium, glass-filled polycarbonate, dust, water and impact resistance to IP53. Ruggedised versions also available to IP65.
Connections	Four 6.3mm push on flat blade connectors (72W - 240W) Five terminal connector with screw tightening with mating half supplied (400W and 600W units)
Output indicator	Green LED adjacent to output terminals
Mounting method	"Click 'n' fit" mounting clip, fitted separately using 3 hole fixing (4 hole on 400W and 600W)
Safe area protection:	Over current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Transients Protected by filters and rugged component selection
Input /Output over voltage protection	Controlled by internal circuitry
Catastrophic failure	Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, ISO 7637-2
Markings	CE and E (automotive) marked

# ALFACHARGE WIRELESS CHARGER AL1

## 12/24VDC WIRELESS CHARGER MODULE

### AL1 SERIES WIRELESS CHARGER MODULE FOR INTEGRATION INTO VEHICLE EQUIPMENT

Wireless charging is increasingly becoming the preferred method of maintaining battery power in mobile devices, with most of the latest designs from the major manufacturers including wireless charging as standard.

The AL1 series wireless charger module is designed for integration into equipment on vehicles to allow this facility to extend to private and public transport applications. This module is typically housed in apparatus that enables mobile phones to be retained in position on the vehicle during charging. Typical applications include integration into seat back consoles and table tops.

The charging element is placed within 0.7mm of the casing exterior to allow for maximum performance in a wide range of situations. When designing into housing equipment, we recommend keeping the active face of the unit within 5.0mm of the passenger accessible area.



Designed for integration into passenger vehicles.

Accepts both 12Vdc and 24Vdc.

- Extra vibration protection to EN61373.
- Approved to EN50498, ISO7637-2 and EN50155. E marked (Reg10) and CE marked.
- Phone communicates every millisecond to establish correct charge.
- Foreign object detection & activation.
- Convenient wide input of 9-32Vdc for wireless charger in one extrusion.
- LED to confirm correct operation.

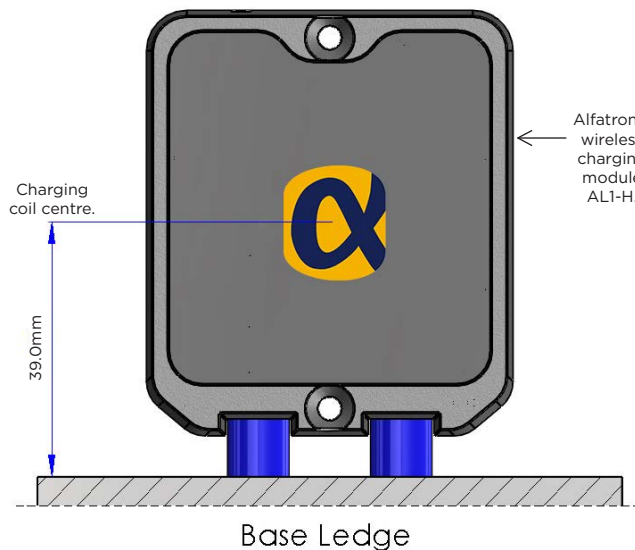
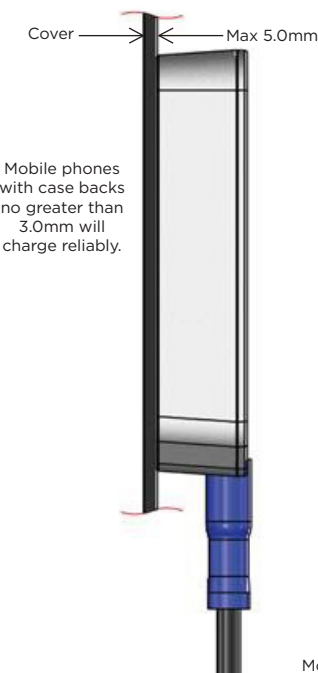
### THE RANGE

The Alfacharge range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498, EN61373, ISO7637-2 and is both CE and E marked (Reg10). The casings are made from VO rated (self extinguishing) high impact polycarbonate and the PCB is populated by computer controlled SMT for maximum accuracy and durability.



This is a module unit which must be installed within a further structure. Cover or structure over the coil area should not exceed 5.0 mm in thickness.

When placed against a structure, wireless devices such as mobile phones with cases less than 3.0mm thick will reliably charge.



Alfatronix wireless charging module AL1-H.

Most wireless mobile phones will connect within 5.0mm from optimal central point. If the installation includes a base ledge (on which the phone sits) this should ideally be placed 39.0mm from the centre of the AL1 series module for optimum performance with a wide variety of mobile phones.

It is recommended that these units are fused individually with a 1Amp fuse (24V systems) or a 2Amp fuse (12V Systems). Suitable in-line fuses are available.

### WARRANTY

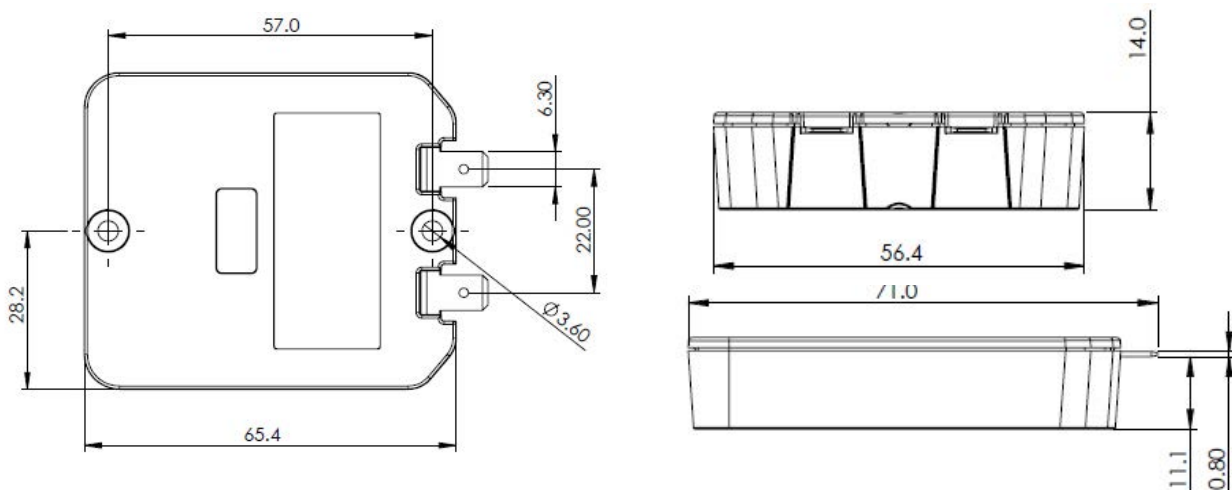
The AL1 Series of wireless chargers are manufactured using rugged components to provide years of services in demanding commercial environments and are covered by a three year return to base warranty.

# ALFACHARGE PART SELECTION

Part Number	Description	Dimensions (mm)	Weight
AL1-H	Integrated wireless phone charger with horizontal connectors	65.4 x 56.4 x 14	70g

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output power	Nominal 5W
Application	Charging of wireless enabled devices
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles
Tx-Range	Nominal 8mm
Off load current (quiescent current)	6mA
Power conversion efficiency	50% - 60%
Operating temperature	-25°C to +40°C
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Black polycarbonate body
Connections	Input: 6.3mm push-in flat blade connectors Output: Wireless transmission <200kHz
Output indicator	Green/blue LED output indication
Mounting method	Box with mounting screw holes - screws provided. Can also be installed by clips or other bespoke method
Safe area protection:	Over Current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Overvoltage and Undervoltage Limited by sensing circuit Reverse Polarity Limited by sensing circuit Transients Protected by filters and rugged component selection Catastrophic protection Internal fuse
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, EN61373, EN50155, EN45545, ISO 7637-2 & R118
Markings	CE and E marked
IP Rating:	IP65 when installed correctly





# ALFACHARGE WIRELESS CHARGER AL2

## 12/24VDC COMBINED WIRELESS AND USB CHARGER

### AL2 SERIES WIRELESS CHARGER PODSOLE FOR INTEGRATION INTO VEHICLE EQUIPMENT

Wireless charging is increasingly becoming the preferred method of maintaining battery power in mobile devices, with most of the latest designs from the major manufacturers including wireless charging as standard.

The AL2 series Podsole has been elegantly designed to allow passengers to charge both wireless and USB charging devices on the move. The two retaining clips and non-slip buttons secure the device into place permitting the wireless charging of all wireless enabled smart devices, whilst the USB connector can charge another device like a phone or tablet simultaneously.

The Podsole is extremely versatile and can be connected to both 12Vdc and 24Vdc electrical systems without adjustment. It has also been designed for both OEM and retrofit applications and can be mounted to any seat back using 4 screws which are hidden behind tamperproof covers. Due to the durable polyurethane compound encompassing the electronic components, comprehensive protection is provided against dust and liquid ingress to IP65.

The advanced electronic design will detect the charge status of the device and alter the charging process accordingly. This ensures that whatever device is connected, be it Apple, Android, phone or tablet, it will always be charged as fully as time and capacity allow. Two LEDs indicate the chargers are operational.



Designed for integration into passenger vehicles.

Accepts both 12Vdc and 24Vdc.

- Approved to EN50498, EN50155 & ISO7637-2. E marked (Reg10) and CE marked.
- Phone power communicates every millisecond to establish correct charge.
- Foreign object detection & activation.
- Convenient wide input of 9-32Vdc for wireless and USB charging in one extrusion.
- LED to confirm correct operation.



### THE RANGE

The Alfacharge range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498, EN50155 & ISO7637-2, and is both CE and E marked (Reg10). The casings are made from VO-rated (self-extinguishing) high impact polycarbonate and the PCB is populated by computer-controlled SMT for maximum accuracy and durability.

### WARRANTY

The AL2 Podsole Series of combined wireless chargers and USB Chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

It is recommended that these units are fused individually with a 2Amp fuse (24V systems) or a 3Amp fuse (12V systems).

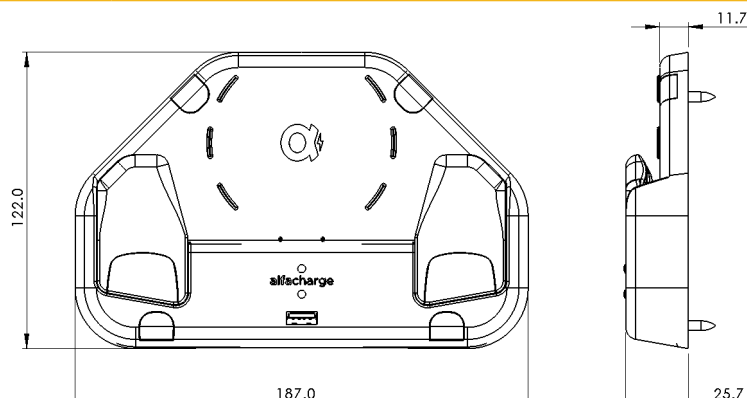
# ALFACHARGE PART SELECTION

Part Number	Description	Dimensions (mm)	Weight
AL2-WS	Combined Wireless and USB Charger	187 x 122 x 26	225g

*Other configurations are available, please speak to our sales team*

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output power	Wireless Charger: Nominal 5W; USB Charger: 10W for BC1.2 and 12W for Q.C 3.0
Application	Wireless Charger: Charges wireless enabled devices; USB Charger: Charges all USB devices inc. Apple and Android
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles and EN61000.4.4 and 4.5 for rail
Tx-Range	Nominal 5mm
Off load current (quiescent current)	Combined 10mA
Power conversion efficiency	Wireless Charger: 50% - 60%; USB Charger: 90%
Operating temperature	-25°C to +40°C
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Grey polycarbonate body
Connections	Input: 6.3mm push-in flat blade connectors Output: USB type 'A' single socket - tested to 10,000 mating cycles
Output indicator	Green/blue LED output indication
Mounting method	Box with mounting screw holes - screws provided. Can also be installed by clips or other bespoke method
Safe area protection:	Over Current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Overvoltage and Undervoltage Limited by sensing circuit Reverse Polarity Limited by sensing circuit Transients Protected by filters and rugged component selection Catastrophic protection Internal fuse
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, EN61373, EN50155, EN45545, ISO 7637-2 & R118
Markings	CE and E marked
IP Rating:	IP65 (Not USB connector)



Our policy is one of continuous improvement and we reserve the right to change specifications without prior notice.

# ALFACHARGE WIRELESS CHARGER AL3

## 12/24VDC WIRELESS CHARGER MODULE

### PASSENGER ACCESSIBLE WIRELESS CHARGERS FOR VEHICLE INSTALLATIONS

Wireless charging is increasingly becoming the preferred method of maintaining battery power in mobile devices, with most of the latest designs from the major manufacturers including wireless charging as standard.

The AL3-V wireless charger is designed for installation into table tops on vehicles such as buses and coaches to allow passengers the ability to charge their devices on the move. The unit is installed through an 80.0mm hole in the table and secured underneath, providing an unobtrusive and functional enhancement of the passenger experience. These units make a complementary addition to the AL1-H integrated charger modules, and can be installed at the vehicle build stage or as part of a retrofit activity, as required.

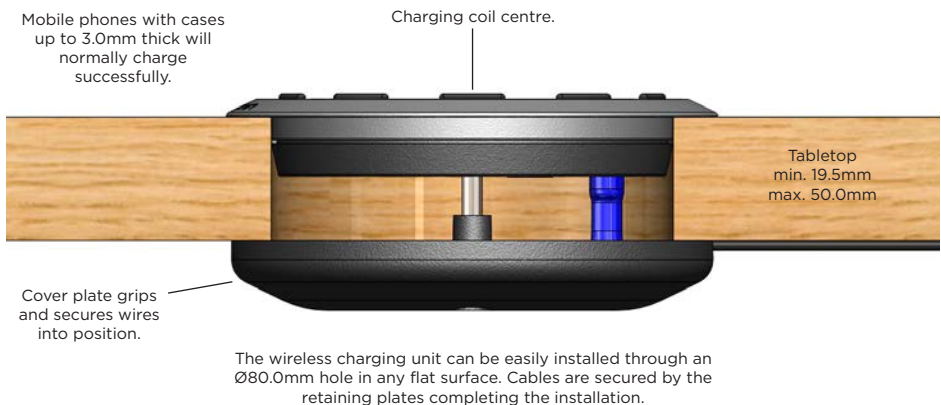
The wireless receiver of the charging unit will automatically detect the presence of suitably enabled mobile devices and will typically charge through a case up to 3.0mm thick.



### THE RANGE

The Alfacharge range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498 and ISO7637-2 and is both CE and E marked (Reg10). The casings are made from V0-rated (self-extinguishing) high impact polycarbonate and the PCB is populated by computer-controlled SMT for maximum accuracy and durability.

#### Alfatronix wireless charging module AL3-V



Designed for integration into passenger vehicles.

Accepts both 12Vdc and 24Vdc.

- Approved to EN50498, EN50155 and ISO7637-2. E marked (Reg10) and CE marked.
- Phone communicates every millisecond to establish correct charge.
- Foreign object detection & activation.
- Convenient wide input of 9-32Vdc in one standard casing.
- LED to confirm correct operation.



It is recommended that these units are fused individually with a 1Amp fuse (24V systems) or a 2Amp fuse (12V Systems). Suitable in-line fuses are available.

### WARRANTY

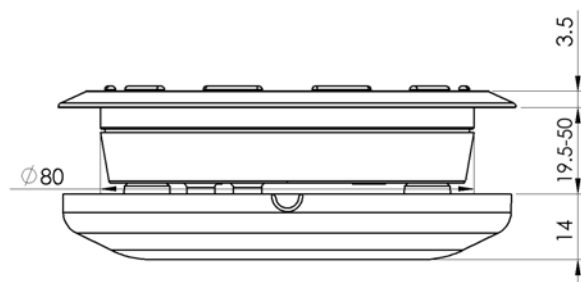
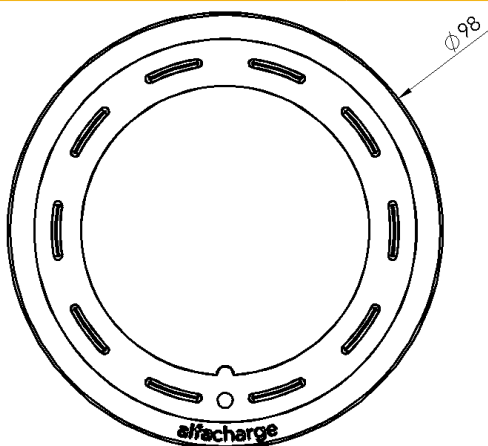
The AL3 Series of wireless chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

# ALFACHARGE PART SELECTION

Part Number	Description	Dimensions (mm)	Weight
AL3-V	Integrated wireless phone charger	Ø98.0 x 15.3; Hole Ø80.0	160g

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output power	Nominal 5W
Application	Charging of wireless enabled devices
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles
Tx-Range	Nominal 5mm
Off load current (quiescent current)	6mA
Power conversion efficiency	50% - 60%
Operating temperature	-25°C to +40°C
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Grey polycarbonate body
Connections	Input: 6.3mm push-in flat blade connectors Output: Wireless transmission <200kHz
Output indicator	LED: Blue - standby, green - charging
Mounting method	Enclosure with underside securing plate into Ø80.0mm hole
Safe area protection:	Over Current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Overvoltage and Undervoltage Limited by sensing circuit Reverse Polarity Limited by sensing circuit Transients Protected by filters and rugged component selection Catastrophic protection Internal fuse
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, EN61373, EN45545, ISO 7637-2 & R118
Markings	CE and E marked
IP Rating:	IP65 when installed correctly



# ALFACHARGE WIRELESS CHARGER AL4

## MAINS WIRELESS CHARGER MODULE

### ACCESSIBLE WIRELESS CHARGERS FOR COMMERCIAL INSTALLATIONS

Wireless charging is increasingly becoming the preferred method of maintaining battery power in mobile devices, with most of the latest designs from the major manufacturers including wireless charging as standard.

The aesthetically pleasing design of the AL4-J wireless charger can be easily installed into furniture such as desks, bedside tables, media benches and counter tops, making it ideal for tough, publicly accessible areas where different users with a variety of mobile devices come and go. The modules are water resistant to IP65 and can withstand any spills and constant use. The high friction charging surface encourages the phone to stay in place. The installation couldn't be simpler, insert the unit through an Ø80.0mm hole, secure from below and connect to power with the supplied transformer.

The wireless receiver of the charging unit will automatically detect the presence of suitably enabled mobile devices and will typically charge through a case up to 3.0mm thick, with a Tx-Range of 5mm.



Designed for integration into furniture.

- CE marked.
- Phone communicates every millisecond to establish correct charge.
- Unit rated to IP65
- Foreign object detection & activation.
- Overcharge and power surge protected
- LED to confirm correct operation.
- Customisable, to include corporate logo and reflect corporate colours.

### THE RANGE

The Alfacharge range has been designed to withstand the challenging demands of commercially used environments and is CE marked. The casings are made from VO-rated (self-extinguishing) high impact polycarbonate and the PCB is populated by computer-controlled SMT for maximum accuracy and durability.

#### Alfatronix wireless charging module AL4-J

Mobile phones with cases up to 3.0mm thick will normally charge successfully.

Charging coil centre.



Cover plate grips and secures wires into position.

Power supply plug.

The wireless charging unit can be easily installed through an Ø80.0mm hole in any flat surface. Cables are secured by the retaining plate completing the installation.



The AL4-J is ideal for retrofit hotel room installations and offices.

### WARRANTY

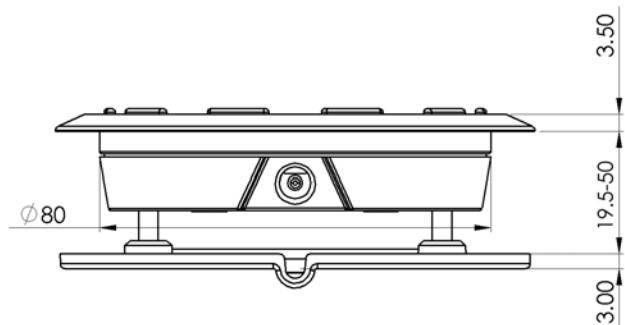
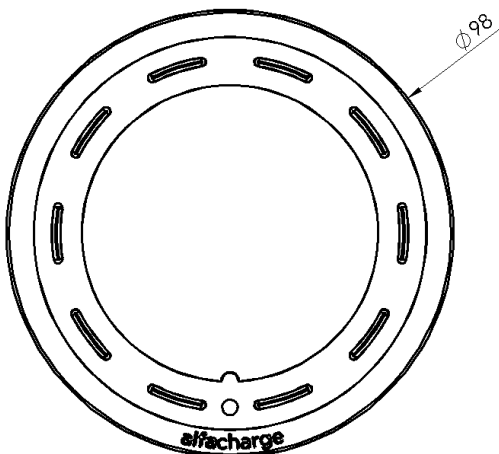
The AL4 Series of wireless chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

# ALFACHARGE PART SELECTION

Part Number	Description	Dimensions (mm)	Weight
AL4-J	Integrated wireless charger	Ø98.0 x 15.3; Hole Ø80.0	160g

## TECHNICAL DATA

Input voltage range	5Vdc using main 230Vac input power adaptor (supplied)
Output power	Nominal 5W
Application	Charging of wireless enabled devices
Tx-Range	Nominal 5mm
Off load current (quiescent current)	9mA
Power conversion efficiency	50% - 60%
Operating temperature	-25°C to +40°C
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Grey polycarbonate body
Connections	Input: Power supply plug Output: Wireless transmission <200kHz
Output indicator	LED: Blue - standby, green - charging
Mounting method	Enclosure with underside securing plate into Ø80.0mm hole
Safe area protection:	Over Current Limited by current sensing circuit
	Over heat Limited by temperature sensing circuit
	Overvoltage and Undervoltage Limited by sensing circuit
	Reverse Polarity Limited by sensing circuit
	Transients Protected by filters and rugged component selection
	Catastrophic protection Internal fuse
Approvals	2014/30/EU The general EMC directive 93/68/EEC The CE marking directive
Designed to	EN45545, EN61204 & R118
Markings	CE marked
IP Rating:	IP65 when installed correctly



# POWERVERTER Pro

## 12/24VDC USB CHARGERS

### FOR MOBILES AND TABLETS – THE SAFE ALTERNATIVE FOR ON BOARD POWER

The widespread use of smartphones and computer tablets has created an increasing need for user accessible, on the move charging systems. The PowerVerter USB Chargers can be easily installed onto any vehicle and allow both drivers and passengers to readily access power to charge any device connected via a USB lead.

This type of system has the distinct advantage of largely negating the need for mains electricity on vehicles. The 5Volt DC power is much safer than mains, so installation is quick and simple. Passengers can access the charging facility directly and power their equipment simply through the USB charging lead which is supplied with all such products.

All versions in the range can be connected directly to both 12Vdc and 24Vdc systems without adjustment. The advanced electronic design will detect the charge status of the device and alter the charging process accordingly. This ensures that whatever device is connected, be it Apple, Android, iPad, phone or tablet, it will always be charged as fully as time and capacity allow.



Protective pod for under seat or retrofit installation. Can be supplied with charger, pod & wiring ready assembled.

- 12Vdc and 24Vdc systems
- Up to 2.1A output (single) 3.0A (double) max 1.5A per socket
- Apple and Android compatible
- Dashboard, slim-line seat back or underseat pod configurations
- LED output indicator
- CE and E Marked



PowerVerter USB PVPro-S and PVPro-D single and double outputs



Slim design can be installed with as little as 20mm rear space available.



PVPro-DFf, front fitting version can be screwed in place from the front, then covered with attractive ring to avoid tampering.



PV-USB2: Charger only, no interface. For under-dash use.

### THE RANGE

The PowerVerter USB range has been completely re-designed for 2016 to include a standard design that can be used in regular as well as slim-line installations. Aesthetically the design has been improved with a dark grey body and contrasting light grey ring as well as an attractive and more obvious LED indicator. This helps to draw attention to the unit and encourages use. Part numbers are: PVPro-S for a single output and PVPro-D for a double output.

The front fitting system has also been improved with a round bezel with tamperproof covering ring to hide the screws, yet will still allow the unit to be replaced quickly and easily should this be required. Part numbers are: PVPro-SFf (single output) and PVPro-DFf (double output).

Electronically, the design now includes automatic short circuit detection, so in the event of tampering or compromise, the unit will automatically shut down, then re-start again once the fault has been removed.

A charger only version is also available for permanent, behind the scenes installations without customer interface. Part number is: PV-USB2. The range is completed with our 'Pod'. This is ideal for retrofit installations and is designed to fit underneath the seat in front. This

system can also be bought as a complete assembly including; PVPro USB charger, pod and 1.2m of fused cable. Please order part numbers; PVPro-S-Assy (single) and PVPro-D-Assy (double).

### COMMERCIAL INSTALLATIONS

The PowerVerter USB chargers offer an advanced design that effectively counteracts the voltage drop common when output currents vary as different devices charge at different rates. This avoids the common problem of the phone or tablet indicating it is charging when in fact very little current is being supplied. They also have an exceptionally low quiescent current of less than 2mA meaning that multiple devices can safely be installed throughout buses and coaches without materially discharging the battery.

They have been designed to meet the rigorous standards required for on board commercial vehicle applications including BS EN50498 and ISO 7637-2 and are both CE and E marked. The casings are made from V0 rated (self-extinguishing) high impact polycarbonate and the electronic assembly is predominantly by computer controlled SMT for maximum reliability.

All versions have a subtle blue LED light to highlight their location on the vehicle.

### WARRANTY

Like all products, the USB chargers are manufactured using rugged components to provide years of service in demanding commercial environments. Due to the limitations of public use, the guarantee on these products is limited to three years.

# CHOOSE YOUR USB Pro PRODUCT

Part Number	Description	Dimensions (mm)	Weight
PVPro-S	Single output 12/24-5V USB Charger 2.1A	Ø37 x 33; Hole Ø30	20g
PVPro-D	Double output 12/24-5V USB Charger 3.0A (1.5A per socket)	Ø37 x 33; Hole Ø30	24g
PVPro-SFf	Single output 12/24-5V USB 2.1A Front fitting	Ø47 x 33; Hole Ø30	23g
PVPro-DFf	Double output 12/24-5V USB Charger 3.0A Front fitting	Ø47 x 33; Hole Ø30	27g
PV-USB2	Single output charger only 12/24-5V USB 2.1A	113 x 24 x 15	17g
PV-USB-POD	Mounting pod for USB Chargers	Width 60; Height 52; Depth 80	55g
PV-USB-H1	Standard 1.2m wiring with in-line 2A fuse	1 x Red 1.2m, 1 x Black 1.2m	50g

For Railway Approved Versions , please see PowerVerter Pro Railway

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output voltage	5Vdc +/- 0.2V
Output Power	2.1A (single) 3.0A (double) - max 1.5A per socket
Application	Charges all USB devices including Apple and Android
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles
Output noise	<50mV pk-pk
Off load current (quiescent current)	<1.7mA
Power conversion efficiency	90%
Operating temperature	-25°C to +55°C to meet this specification table
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Black polycarbonate body
Connections	Input: 6.3mm push-in flat blade connectors Output: USB type A single socket/double socket - tested to 10000 mating cycles
Output indicator	Blue LED output indication
Mounting method	30mm diameter hole with or without bezel. USB2 for non through fitting applications.
Safe area protection:	Over Current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Overvoltage and Undervoltage Limited by sensing circuit Reverse Polarity Limited by sensing circuit Transients Protected by filters and rugged component selection Catastrophic protection Internal fuse
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive AES5, ECE R118 and UL 94: V-0
Designed to	EN50498, EN61373 and ISO 7637-2 To meet railway approval to EN50155, EN45542-2 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R
Markings	CE and E (automotive) marked
IP Rating:	IP30

# POWERVERTER PVPWp

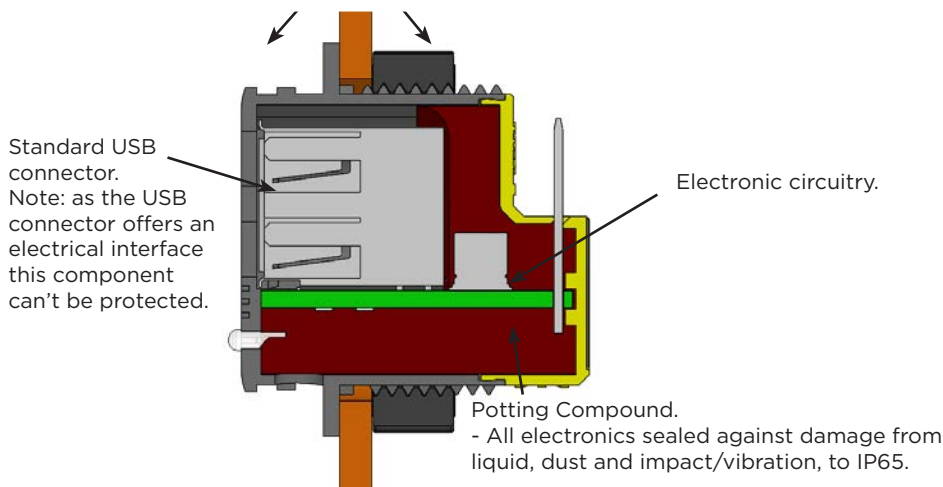
## 12/24VDC USB CHARGERS IP65 PROTECTED

### SLIMLINE USB POWER WITH ADDED LIQUID & DUST INGRESS PROTECTION TO IP65

The PVPWp range of USB chargers offers all the performance benefits of the PVPro range with additional protection provided to the electronic circuit of the unit. A durable polyurethane compound encompasses the electronic components offering comprehensive protection against dust and liquid ingress to IP65.

This product offers a good solution where tampering might be an issue or in dirty or more challenging environments. Although the nature of the USB connector itself can always be wilfully broken or damaged and will still corrode if repeatedly exposed to liquid ingress, all electronics in these units are protected to IP65.

No airflow is possible between fore and rear of the unit.



- Designed for demanding environments.
- Electronics protected to IP65.
- Approved to EN50498 and ISO7637-2. E marked (Reg10) and CE marked.



PowerVerter PVPWp-S and PVPWp-D single and double outlets.



The Front facing version can be screwed in place from the front, then covered with the attractive ring to avoid tampering. Available in both single (PVPWp-SFF) and double outputs (PVPWp-DF).

### THE RANGE

The range mirrors the very successful PVPro products, offering both single and double outputs and rear fit as well as front fitting options which allow the unit to be replaced quickly and easily should this be required. Automatic short circuit protection is also included, so in the event of tampering or compromise, the unit will automatically shut down, then re-start once the fault has been removed. All units can be installed on both 12Vdc or 24Vdc vehicles without adjustment.

Units can be installed directly into bulkheads, vehicle walls, into seat fittings and underneath seats using the mounting pod P/N USB-POD. They can also be fitted onto table tops using the horizontal surface mounting pod P/N USB-TPOD.

### APPROVALS AND MANUFACTURE

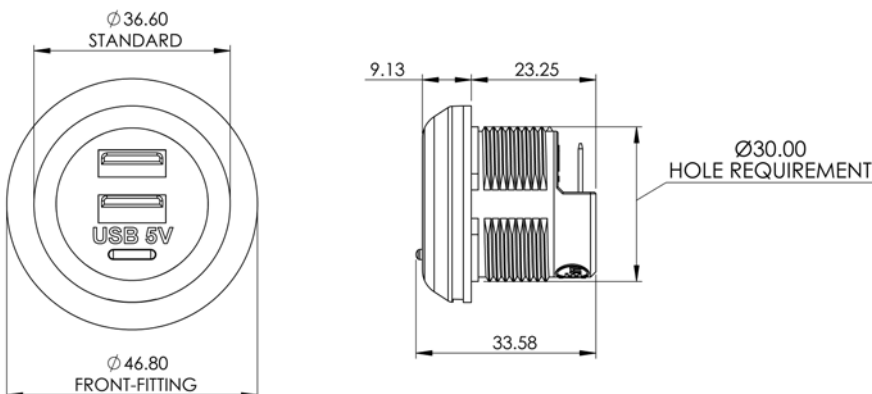
The range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498, ISO7637-2, and is both CE and E marked (Reg10). The casings are made from V0 rated (self-extinguishing) high impact polycarbonate and the electronic assembly is predominantly by computer controlled SMT for maximum durability.



It is recommended that these units are fused individually with a 1Amp fuse (24V systems) or a 2Amp fuse (12V Systems). Suitable in-line fuses are available;

### WARRANTY

The PVPWp range of chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base guarantee.



# CHOOSE YOUR PVPW<sub>p</sub> PRODUCT

Part Number	Description for USB Charger	Dimensions (mm)	Weight
PVPWp-S	Single output 12/24-5V 2.1A	Ø37 x 33; Hole Ø30	21g
PVPWp-D	Double output 12/24-5V 3.0A (1.5A per socket)	Ø37 x 33; Hole Ø30	25g
PVPWp-SFf	Single output 12/24-5V 2.1A Front fitting	Ø47 x 33; Hole Ø30	24g
PVPWp-DFf	Double output 12/24-5V 3.0A (1.5A per socket) Front fitting	Ø47 x 33; Hole Ø30	28g
USB-POD	Under-seat mounting pod	Width 60; Height 52; Depth 80	55g
USB-TPOD	Table mounting pod	Width 103; Height 44.5; Depth 88	62g
USB-WPOD	Wall mounting pod	Width 60.5; Height 75.9; Depth 25.6	... 22g
PV-USB-H1	Standard 1.2m wiring with in-line 2A fuse	1 x Red 1.2m, 1 x Black 1.2m	50g

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output voltage	5Vdc +/- 0.2V
Output Power	2.1A (single), 3.0A (double) - max 1.5A per socket
Application	Charges all USB devices including Apple and Android
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles
Output noise	<50mV pk-pk
Off load current (quiescent current)	<1.7mA
Power conversion efficiency	90%
Operating temperature	-25°C to +55°C to meet this specification table
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Dark grey polycarbonate body, with yellow end cap
Connections	Input: 6.3mm push-in flat blade connectors Output: USB type 'A' single/double socket - tested to 10,000 mating cycles
Output indicator	Blue LED output indication
Mounting method	30mm diameter hole with or without bezel
Safe area protection:	<ul style="list-style-type: none"> <li>Over Current Limited by current sensing circuit</li> <li>Over heat Limited by temperature sensing circuit</li> <li>Overvoltage and Undervoltage Limited by sensing circuit</li> <li>Reverse Polarity Limited by sensing circuit</li> <li>Transients Protected by filters and rugged component selection</li> <li>Catastrophic protection Internal fuse</li> </ul>
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, ISO 7637-2 & R118 To meet railway approval to EN50155, EN45542-2 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R
Markings	CE and E marked
IP Rating:	IP65 (Not USB connector)

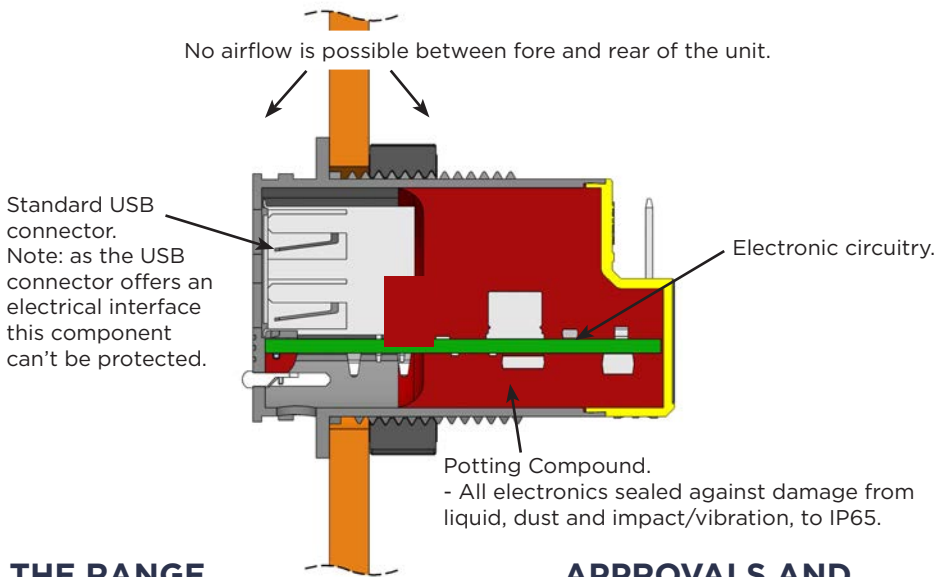
# POWERVERTER PV65R

## 12/24VDC USB CHARGERS IP65 PROTECTED

### USB POWER WITH ADDED LIQUID & DUST INGRESS AND VIBRATION PROTECTION TO IP65

The PV65R range of USB chargers offers all the performance benefits of the PVPro range with additional protection provided to the electronic circuit of the unit. A durable polyurethane compound encompasses the electronic components offering comprehensive protection against dust and liquid ingress to IP65.

This product offers a good solution where tampering might be an issue or in dirty or more challenging environments. Although the nature of the USB connector itself can always be wilfully broken or damaged and will still corrode if repeatedly exposed to liquid ingress, all electronics in these units is protected to IP65.



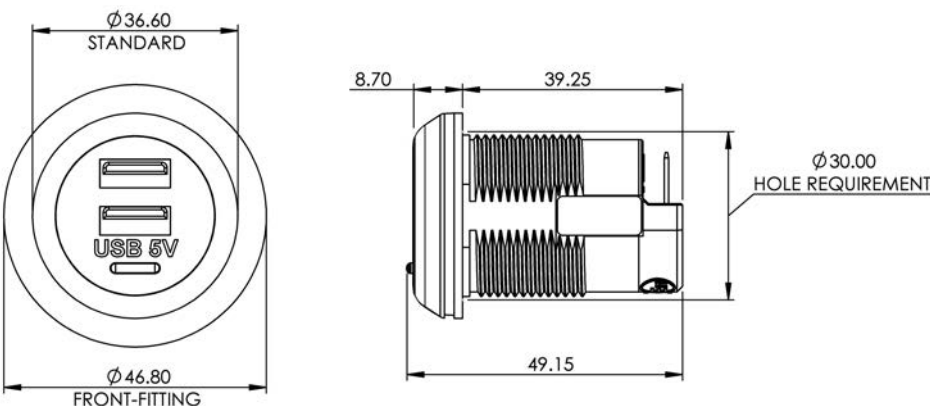
### THE RANGE

The range mirrors the very successful PVPro products, offering both single and double outputs and rear fit as well as front fitting options which allow the unit to be replaced quickly and easily should this be required. Automatic short circuit protection is also included, so in the event of tampering or compromise, the unit will automatically shut down, then re-start once the fault has been removed. All units can be installed on both 12Vdc or 24Vdc vehicles without adjustment.

Units can be installed directly into bulkheads, vehicle walls, into seat fittings and underneath seats using the mounting pod P/N USB-POD. They can also be fitted onto table tops using the horizontal surface mounting pod P/N USB-TPOD.

### APPROVALS AND MANUFACTURE

The range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498, ISO7637-2, EN61373 and EN50155 and is both CE and E marked (Reg10). The casings are made from VO rated (self-extinguishing) high impact polycarbonate and the electronic assembly is predominantly by computer controlled SMT for maximum durability.



- Designed for demanding environments including bus, coach, off road and railway applications.
- Electronics protected to IP65.
- Extra vibration protection to EN61373.
- Approved to EN50498, ISO7637-2 and EN50155. E marked (Reg10) and CE marked.



PowerVerter PV65R-S and PV65R-D single and double outlets.



The Front facing version can be screwed in place from the front, then covered with the attractive ring to avoid tampering. Available in both single (PV65R-SFf) and double outputs (PV65R-DFf).



### WARRANTY

The PV65R range of chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base guarantee.

# CHOOSE YOUR PV65R PRODUCT

Part Number	Description USB Charger	Dimensions (mm)	Weight
PV65R-S	Single output 12/24-5V 2.1A	Ø37 x 49; Hole Ø30; Rear space req. typ. 36	36g
PV65R-D	Double output 12/24-5V 3.0A (1.5A per socket)	Ø37 x 49; Hole Ø30; Rear space req. typ. 36	40g
PV65R-SFf	Single output 12/24-5V 2.1A Front fitting	Ø47 x 49; Hole Ø30; Rear space req. typ. 36	39g
PV65R-DFf	Double output 12/24-5V USB 3.0A Front fitting	Ø47 x 49; Hole Ø30; Rear space req. typ. 36	43g
USB-POD	Under-seat mounting pod	Width 60; Height 52; Depth 80	55g
USB-TPOD	Table mounting pod	Width 103; Height 44.5; Depth 88	62g
PV-USB-H1	Standard 1.2m wiring with in-line 2A fuse	1 x Red 1.2m, 1 x Black 1.2m	50g

## TECHNICAL DATA

Input voltage range	9-32Vdc
Output voltage	5Vdc +/- 0.2V
Output Power	2.1A (single), 3.0A (double) - max 1.5A per socket
Application	Charges all USB devices including Apple and Android
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles
Output noise	<50mV pk-pk
Off load current (quiescent current)	<1.7mA
Power conversion efficiency	90%
Isolation	Non-Isolated, >400Vrms only between casing and terminals. For full galvanic isolation, see PV6i-R, PV12i-R.
Operating temperature	-25°C to +55°C to meet this specification table
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Dark grey polycarbonate body, with yellow end cap
Connections	Input: 6.3mm push-in flat blade connectors Output: USB type 'A' single/double socket - tested to 10,000 mating cycles
Output indicator	Blue LED output indication
Mounting method	30mm diameter hole with or without bezel.
Safe area protection:	<ul style="list-style-type: none"> <li>Over Current Limited by current sensing circuit</li> <li>Over heat Limited by temperature sensing circuit</li> <li>Overvoltage and Undervoltage Limited by sensing circuit</li> <li>Reverse Polarity Limited by sensing circuit</li> <li>Transients Protected by filters and rugged component selection</li> <li>Catastrophic protection Internal fuse</li> </ul>
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, EN61373, EN50155, EN50121-3-2, EN45545 & ISO 7637-2, AES5, R118 To meet railway approval to EN50155, EN45542-2 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R
Markings	CE and E marked
IP Rating:	IP65 (Not USB connector)

Our policy is one of continuous improvement and we reserve the right to change specifications without prior notice.

# POWERVERTER PVPro RAILWAY

## 12/24VDC USB CHARGERS FOR RAILWAY

### USB CHARGERS CERTIFIED TO EN 50155 (EN 50121-3-2) AND EN61373 (ROLLING STOCK)

The widespread use of smartphones and computer tablets has created an increasing need for user accessible, on the move charging systems. The PowerVerter PVPro Railway range is especially designed to meet all the requirements for rolling stock applications. These units can easily be installed into seat backs or directly into carriage walls or under-seat using the mounting pod.

These units are available in both standard (secured from the rear with a nut) or front fitting, secured by three screws, covered with a discreet cover ring.

Further general information can be found on the standard PowerVerter Pro leaflet.

Installations can be carried out two ways:

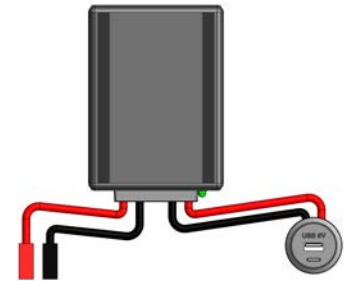
For Rail installations, the PV65R can be connected directly to the electrical system (either 12V or 24V). These units have been approved to EN 50155.

However, if the system specification requires galvanic isolation, then the PVPro range units can be used in conjunction with the Alfatronix PV6i-R, PV12i-R or PV24i-R isolated railway approved converters. These units have also been tested as a system to EN 50155.

Both systems have been approved for Rail Fire EN45545-2.



Note: PV6i-R, PV12i-R and PV24i-R can be used to provide power in a wide variety of railway applications



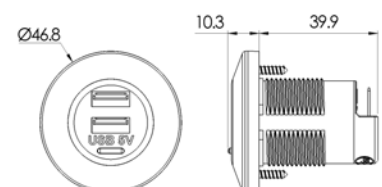
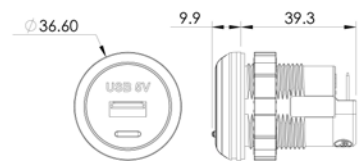
PVPro-S with PV6i-R  
Any product in the PVPro range can be installed with a PV6i-R, PV12i-R or PV24i-R to meet EN 50121-3-2

Note: A PV6i-R can power up to 6 single or 4 double output USB chargers. A PV12i-R can power up to 12 single or 8 double output USB chargers



PV65R-Sff

PV65R-D



All PV65R units meet EN50121-3-2.

For galvanic isolation use PVPro and PV65R Series with PV6i-R, PV12i-R or PV24i-R



# CHOOSE YOUR PVPro RAILWAY PRODUCT

Part No.	Description	Dimensions (mm)	Weight
*PVPro-S	Single output 12/24-5V USB Charger, 2.1A	Ø37 x 33; Hole Ø30	20g
*PVPro-D	Double output 12/24-5V USB Charger, 3.0A (1.5A per socket)	Ø37 x 33; Hole Ø30	24g
*PVPro-SFf	Single output 12/24-5V USB, 2.1A, front fitting	Ø47 x 33; Hole Ø30	23g
*PVPro-DFf	Double output 12/24-5V USB, 3.0A, front fitting	Ø47 x 33; Hole Ø30	27g
*To meet railway approval to EN50155 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R			
PV65R-S	Single output USB charger with electronics protected to IP65	Ø37 x 49; Hole Ø30	36g
PV65R-D	Double output USB charger with electronics protected to IP65	Ø37 x 49; Hole Ø30	40g
PV65R-SFf	Single output front-fitting USB charger with electronics protected to IP65	Ø47 x 49; Hole Ø30	39g
PV65R-DFf	Double output front-fitting USB charger with electronics protected to IP65	Ø47 x 49; Hole Ø30	43g

*NOTE: An under-seat and table top mounting pod P/N USB-POD, USB-TPOD and wiring P/N PV-USB-H1 are also available.*

## TECHNICAL DATA (PVPro Series & PV65R)

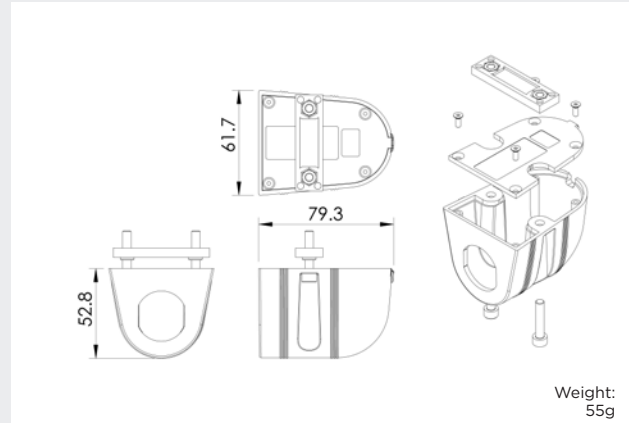
NOTE: Technical specification also applies where PVPro and PV65R series is used with PV6i-R, PV12i-R and PV24i-R

<b>Input voltage range</b>	9-32Vdc
<b>Output voltage</b>	5Vdc +/- 0.2V
<b>Output Power</b>	2.1A (single) 3.0A (double) - max 1.5A per socket
<b>Application</b>	Charges all USB devices including Apple and Android
<b>Transient voltage protection</b>	Meets EN50155: 2007, EN50121-3-2: 2006
<b>Vibration/Shock</b>	EN61373: 2010
<b>Output noise</b>	<50mV pk-pk
<b>Off load current (quiescent current)</b>	<1.7mA
<b>Power conversion efficiency</b>	90%
<b>Isolation</b>	Non-Isolated, >400Vrms only between casing and terminals. For full galvanic isolation, see PV Railway.
<b>Operating temperature</b>	-25°C to +55°C to meet this specification table
<b>Storage temperature</b>	-25°C to +100°C
<b>Operating humidity</b>	95% max., non-condensing
<b>Casework</b>	Dark grey polycarbonate body
<b>Connections</b>	Input: 6.3mm push-in flat blade connectors Output: USB type A single socket/double socket - tested to 10,000 mating cycles
<b>Output indicator</b>	Blue LED output indication
<b>Mounting method</b>	30mm diameter hole, secured by rear nut or front-fitting bezel
<b>Protection:</b>	
<b>Over Current:</b>	Limited by current sensing circuit
<b>Over heat:</b>	Limited by temperature sensing circuit
<b>Over-voltage and Under-voltage:</b>	Limited by sensing circuit
<b>Reverse Polarity:</b>	Limited by sensing circuit
<b>Transients:</b>	Protected by filters and rugged component selection
<b>Catastrophic protection:</b>	Internal fuse
<b>Approvals</b>	2014/30/EU The general EMC directive 93/68/EEC The CE marking directive ECE R118 and UL 94: V-0
<b>Designed to</b>	EN50498, EN61373 and ISO 7637-2      PV65R and PV6i-R, PV12i-R or PV24i-R meet railway approval to EN50155, EN45545-2 and EN50121-3-2 To meet railway approval to EN50155 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R
<b>Markings</b>	CE and E (automotive) marked
<b>IP Rating:</b>	PVPro IP30; PV65R IP65; PV6i-R, PV12i-R & PV24i-R IP53

## USB-POD

FOR UNDERSEAT INSTALLATIONS

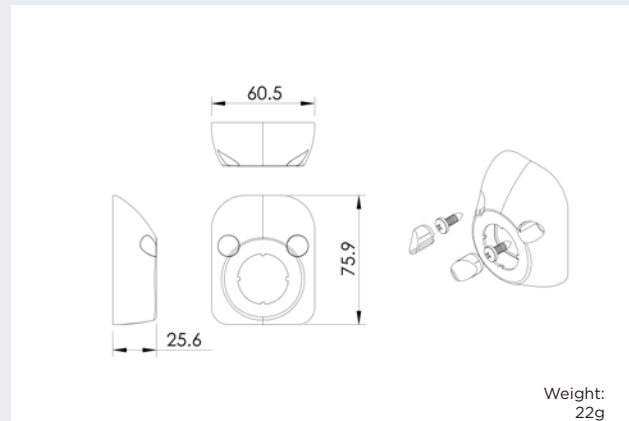
Rugged mounting pod for PVPro USB installation under seats, accessible from the front or rear. It can house PVPro, PV65R and PVPWp USB chargers and is also available as a complete assembly together with 1.2m of fused wiring.



## USB-WPOD

FOR ON WALL INSTALLATIONS

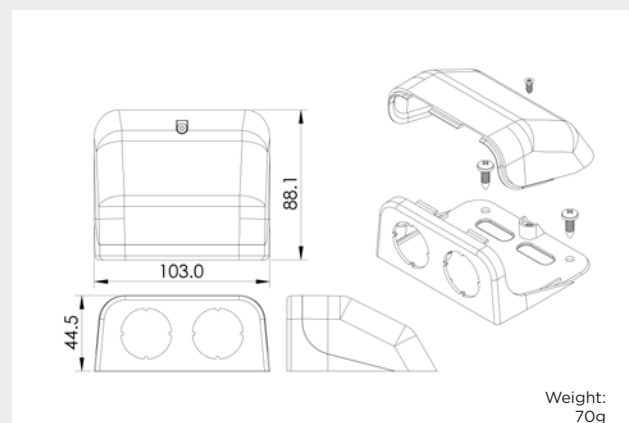
Wall-mounted housing to allow the standard PVPro & PVPWp range to be installed on the wall of the vehicle without the need of a 30mm drilled hole. It is fixed to the wall with screws hidden by tamper-proof overs and space is provided for a fuse to protect the wiring (recommended).



## USB-TPOD

FOR TABLE TOP INSTALLATIONS

Designed to house two PVPro, PV65R or PVPWp USB chargers. It comes complete with fused internal wiring to allow for a single input source from the vehicle wiring. Using this system up to four USB outlets (2 x double units) can be made available for charging at tables.



# POWERVERTER Pro

## PVPro-L SEAT MOUNTED READING LIGHT

### PVPro-L - THE DISCREET SOLUTION FOR PERSONAL SEAT MOUNTED READING LIGHTS

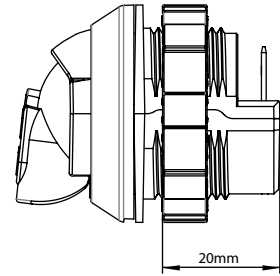
Achieving the correct ambient lighting in buses and coaches while driving at night can be a challenge. Some passengers may wish to rest, others might like to read or check and update mobile devices. This causes the dilemma: lights on or off? At night, typically lights are dimmed and passengers can choose a private reading light, illuminating their surroundings, usually situated in the ceiling of the vehicle. However, to reach from the ceiling, such lights need to be quite bright. This can cause annoyance to nearby passengers, as well as a significant rear view distraction to the driver as lights flash on and off.



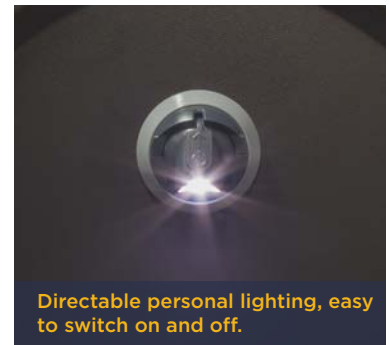
PowerVerter USB PVPro-D and PVPro-L

The Alfatronix PVPro-L reading light offers the ideal solution. It can be installed in the back of the seat in front. The light ray can be directed to the left or right as well as forward or backwards for discreet, yet maximum comfort for both the user and their neighbours.

The PVPro-L reading light is designed to match with our already popular PVPro range of USB chargers. With passenger accessible charging and directable personal lighting, these two products offer a simple and inexpensive offering that significantly enhances customer experience.



Slim design can be installed with as little as 20mm rear space.



Directable personal lighting, easy to switch on and off.

Part Number	Description	Dimensions (mm)	Weight
PVPro-L	12/24 seat mounted reading light	Ø37 x 45; Hole Ø30	19g

For 12/24 Vdc USB Chargers, please see our PowerVerter Pro Range.

## TECHNICAL DATA

Input voltage range	9-32Vdc	
Output light	500 lux @ 0.25m, 225 lux @ 0.5m	
Transient voltage protection	Meets ISO7637-2 International standard for 12/24V vehicles	
Off load current (quiescent current)	< 2mA @ 12V, 7mA @ 24V	
Power conversion efficiency	Light on 98mA @ 12V, 48mA @ 24V	
Operating / Storage temperature	-25°C to +55°C to meet this specification table / -25°C to +100°C	
Operating humidity	95% max., non-condensing	
Casework	Polycarbonate body	
Connections	Input: 6.3mm push-in flat blade connectors	On/off switch incorporated
Output indicator	Blue LED output indication when reading light off	
Mounting method	30mm diameter hole with or without bezel.	
Safe area protection:	Over heat	Limited by temperature sensing circuit
	Over- & Undervoltage, Reverse Polarity	Limited by sensing circuit
	Transients	Protected by filters and rugged component selection
	Catastrophic protection	Internal fuse
Approvals	2014/30/EU The general EMC directive, Regulation 10 The automotive directive, 93/68/EEC The CE marking directive, AES5, ECE R118.02 and UL 94: V-0	
Designed to	EN50498, EN61373, EN45545-2 and ISO 7637-2 To meet railway approval to EN50155 & EN50121-3-2 the PVPro-L is to be used with a PV6i-R, PV12i-R or PV24i-R Please see PowerVerter PVPro Railway	
Markings / IP Rating	CE and E (automotive) marked / IP30	

Our policy is one of continuous improvement and we reserve the right to change specifications without prior notice.

# POWERVERTER POLE MOUNTED 12/24VDC USB POLE CHARGING UNIT

## PASSENGER ACCESSIBLE USB CHARGERS FOR POLE INSTALLATIONS

USB is the preferred method for charging mobile devices on the move. The Alfatronix range of PVPPro chargers can already be seen installed on vehicle walls, seat backs and table tops as well as under seats. The PVPm-S USB charger is designed for applications where journeys are relatively short and passengers are standing for some or all of their time on the vehicle. These units are designed for installation onto vertical poles and offer a robust solution for buses, trams, trains and metro carriages.

The units are designed to be fitted directly to 35mm diameter poles and provide an easily accessible and strong charging solution. These chargers utilise the latest fast charge technology and will seek to communicate with the phone and where compatibility exists, will automatically increase the charge voltage. Using this system, it is possible to provide a useful charging boost even over relatively short time periods.



Designed for integration into passenger vehicles.

Accepts both 12Vdc and 24Vdc.

- Approved to EN50498 and ISO7637-2. E marked (Reg10) and CE marked.
- Quick Charge enabled.
- 2A internal fuse to protect against catastrophic failure.
- Convenient wide input of 9-32Vdc in one standard casing.
- LED indicates unit operational.
- Robust design allows the unit to be grabbed as part of the pole without damage.
- USB connector faces downwards to protect against splashes and avoid connector damage.

It is recommended that these units are fused individually with a 1Amp fuse (24V systems) or a 2Amp fuse (12V Systems).

### THE RANGE

The PVPm range has been designed to meet the rigorous standards required for on board commercial vehicle applications including EN50498 and ISO7637-2 and is both CE and E marked (Reg10). The casings are made from V0-rated (self-extinguishing) high impact polycarbonate and the PCB is populated by computer-controlled SMT for maximum accuracy and durability.

### WARRANTY

The PVPm Series of Pole mounted USB chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

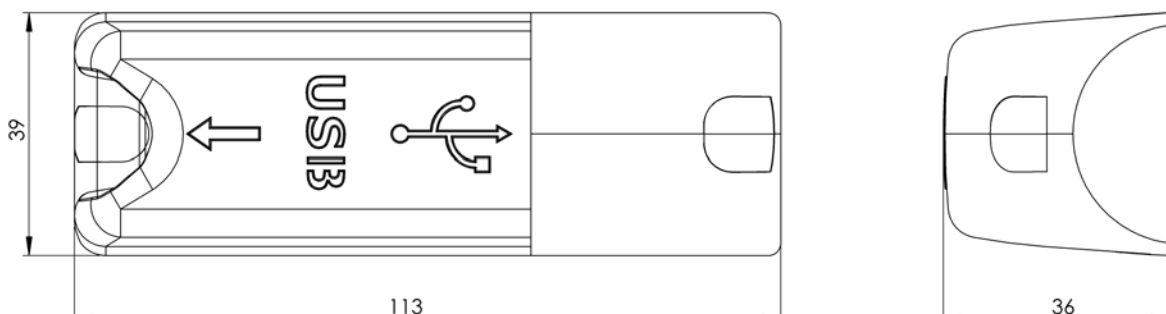


# POLE MOUNTED USB CHARGER

Part Number	Description	Dimensions (mm)	Weight
PVPm-S	Pole mounted USB charging unit	113 x 39 x 37	57g

## TECHNICAL DATA

<b>Input voltage range</b>	9-32Vdc
<b>Output voltage</b>	5Vdc +/- 0.2V for BC 1.2V and up to 9Vdc for Q.C 3.0
<b>Output power</b>	10W for BC1.2 and 12W for Q.C 3.0
<b>Application</b>	Charges all USB devices Including Apple and Android
<b>Transient voltage protection</b>	Meets ISO7637-2 International standard for 12/24V vehicles and EN61000.4.4 and 4.5
<b>Output noise</b>	<50mV pk-pk
<b>Off load current (quiescent current)</b>	<1.7mA
<b>Power conversion efficiency</b>	90%
<b>Isolation</b>	Non-isolated, >400Vrms only between casing and terminals. For full galvanic isolation, see PV Railway
<b>Operating temperature</b>	-25°C to +55° to meet this specification table
<b>Storage temperature</b>	-25°C to +100°C
<b>Operating humidity</b>	95% max., non-condensing
<b>Casework</b>	Dark grey polycarbonate body (R118 + EN45545 materials approved)
<b>Connections</b>	Input: 6.3mm push-in flat blade connectors Output: USB type 'A' single socket - tested to 10,000 mating cycles
<b>Output indicator</b>	LED indicates unit operational
<b>Mounting method</b>	Screw mounting to vertical pole (Ø35mm)
<b>Protection:</b>	<ul style="list-style-type: none"> <li><b>Over Current</b> Limited by current sensing circuit</li> <li><b>Over heat</b> Limited by temperature sensing circuit</li> <li><b>Overvoltage and Undervoltage</b> Limited by sensing circuit</li> <li><b>Reverse Polarity</b> Limited by sensing circuit</li> <li><b>Transients</b> Protected by filters and rugged component selection</li> <li><b>Catastrophic protection</b> Internal fuse</li> </ul>
<b>Approvals</b>	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
<b>Designed to</b>	EN50498, EN55032, EN50155, EN50121-3-2 & ISO 7637-2 To meet railway approval to EN50155 the PVPro is to be used in conjunction with a PV6i-R, PV12i-R or PV24i-R
<b>Markings</b>	CE and E marked
<b>IP Rating:</b>	IP30



# ICI SERIES DC-DC INTELLIGENT BATTERY CHARGERS

## DC-DC INTELLIGENT BATTERY CHARGERS

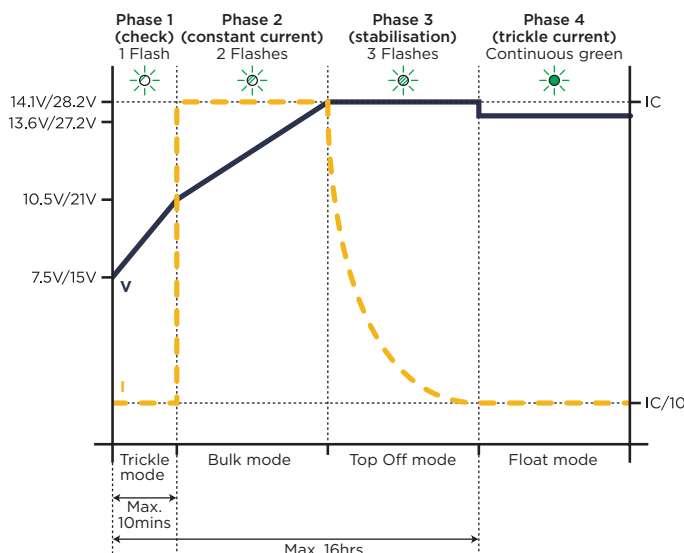
While many applications can be supplied using a standard voltage converter or stabiliser, sometimes there can be a requirement to charge one DC battery from another in order to provide independent power. The Alfatronix range of DC-DC chargers are based on the very successful PowerVerter range but configured to offer a four stage charging program that will ensure that batteries are charged to a maximum capacity providing long term reliable power.

These products come with many of the same safety and protection features as the PowerVerter, but are also additionally designed to detect faulty batteries and dead cells. They will also ensure that they will not operate unless the source battery is attached to a charging source such as a vehicle alternator or mains unit. In this way, you can ensure that the charger will not allow unintentional draining of the source battery.



## MANY KEY FEATURES

These intelligent battery chargers operate a four stage charging cycle. The first stage monitors the battery to establish that the battery is in good condition before starting the three stage process. This feature is of key importance in ensuring that faulty batteries are not inadvertently charged causing overheating and potential system failure. The units are also reverse polarity protected and when re-connected correctly will operate normally without reset. The Alfatronix three point mounting cradle is also supplied for fast and easy installation.



- These intelligent DC-DC battery chargers offer a comprehensive 4 stage charging programme as well as protection against battery source drainage. A fifth terminal is also available to allow the unit to be installed as a float-mode charger if required as an alternative.
- All the battery chargers are galvanically isolated so can be used on any application including automotive, marine, petrochemical or off road applications.
- DC-DC chargers are suitable for providing auxiliary power on a wide variety of vehicles including fire, police and ambulance, as well as farming, forestry, commercial and leisure marine.

# CHOOSE YOUR BATTERY CHARGER

Part Number	Cont/Int Power	Input Voltage	Dimensions	Weight
ICi24-12 144	12A Isolated	24Vdc input, 12Vdc output (variable charge voltage)	167 x 87 x 50mm	600g
ICi24-24 144	6A Isolated	24Vdc input, 24Vdc output (variable charge voltage)	167 x 87 x 50mm	600g
ICi12-12 072	6A Isolated	12Vdc input, 12Vdc output (variable charge voltage)	167 x 87 x 50mm	600g
ICi12-24 072	3A Isolated	12Vdc input, 24Vdc output (variable charge voltage)	167 x 87 x 50mm	600g

## TECHNICAL DATA

Input voltage range	24-32Vdc, 12-16Vdc. Configured to prevent depletion of source battery.
Output voltage	12V or 24V nominal through the intelligent battery charging curve. Please see charge graph for further information.
Transient voltage protection	Meets ISO7637-2 International standard for 24Vdc commercial vehicles
Electrostatic voltage protection	Meets ISO10605, >8kV contact, 15kV discharge
Output noise	<50mV pk-pk (100mV on 24V units) at continuous load. Meets CISPR25.
Off load current (quiescent current)	Typically <5mA. Unit will shut down when source battery is not being charged.
Power conversion efficiency	Typically 85%
Isolation	>400Vrms between input , output and case, on isolated products only
Operating temperature	-25°C to +30°C to meet this specification table +30°C to +80°C de rate linearly to 0A
Storage temperature	-25°C to +100°C
Operating humidity	95% max., non-condensing
Casework	Anodised aluminium, glass-filled polycarbonate, dust, water and impact resistance to IP533
Connections	Five 6.3mm push-on flat blade connectors
Output indicator	Multicolour LED adjacent to output terminals indicating power and charging mode
Mounting method	“Click ‘n’ fit” mounting clip, fitted separately using three hole fixing
Safe area protection:	<ul style="list-style-type: none"> <li>Over current Limited by current sensing circuit</li> <li>Over heat Limited by temperature sensing circuit</li> <li>Transients Protected by filters and rugged component selection</li> <li>Catastrophic failure Protected by internal input and output fuses</li> </ul>
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Designed to	EN50498, EN55022, ISO 7637-2, EN61204-3
Markings	CE and E (automotive) marked

# POWERTECTOR

## LOW VOLTAGE DISCONNECT

### SOLID STATE BATTERY GUARDS

The PowerTector Battery Guard is a solid state battery device that will monitor the source voltage and disconnect the equipment from the battery if the voltage falls below a pre-determined level. This can work to ensure that there is always sufficient voltage remaining in the battery to start a vehicle engine or ensure power is available for other critical applications. The total discharge of a lead acid battery can also cause damage to the cells significantly shortening the life of the battery. The PowerTector unit can also be set to disconnect equipment at a lower voltage that will still protect the battery from total discharge, while allowing for maximum battery usage. A timed version is also available which will disconnect automatically after a set period of time once the ignition has been switched off.



### A WIDE RANGE OF FEATURES

There are six units in the range from 10A to 200A. The 10A and 20A unit offer a simple in-line system, usually wired to a specific piece of equipment. These units do not require chassis mounting and simply connect and tie wrap neatly within the wiring system.

The 40A and 60A units are connected by M6 brass bolts, the 100A and 200A by M10 brass bolts and use a three point mounting system to avoid rocking or stress to the electronics when mounted on uneven surfaces. Heat is dissipated into our custom manufactured die cast casing and all units will operate at full power without additional heatsink dissipation.

### MANUAL SHUTDOWN FACILITY

From 40A upwards, the units have the facility to be manually shutdown either through the ignition or a dedicated switch. In addition, from 100A upwards the units can have an override switch fitted. This allows the units to be reactivated for four minutes to allow emergency actions to be performed.

### ALARM & DISCONNECT DELAY FEATURE

An alarm output is provided which, once the threshold has been reached for 10 seconds, will activate, sounding an alarm or other indicating device for a further 50 seconds prior to disconnection. This allows the operator to restart the engine or take other action to maintain continuous power. (alarm not provided)

### TIMED VERSIONS

In addition to the standard PowerTectors, the PT-T versions offer a timed facility. This will disconnect the output after a set time after the ignition has been turned off. If required, during this time period, the voltage can still be monitored and disconnected if it falls below a set level to protect the battery power and system. The unit will reactivate when the ignition has been turned on again and the battery voltage has reached 8.5Vdc (12V systems), 17Vdc (24V systems).

### FULLY PROGRAMMABLE

All units in the range are supplied pre-programmed for a variety of scenarios offering higher or lower disconnect voltages and it is quick and simple to select the correct programme to suit your needs.

- All PowerTectors from 40A upwards are mounted in a rugged die cast aluminium casing with glass filled polycarbonate cover providing terminal protection and insulation.
- Smaller units; 10A and 20A, are available in a lightweight, polycarbonate casing that can be simply fitted in the wiring, like an inline fuse without the need to drill the vehicle chassis.



- Using the simple programming terminal, select the pre-set disconnect voltage according to your requirements.
- LED indicates operational status.
- Audible alarm and/or visual indicator can be installed in the dashboard or cockpit to alert operator of a potential problem.
- Switch terminal allows the unit to be operated via the ignition or a manual switch.
- The PowerTector battery guards offer excellent protection for communication and other mission critical applications

# CHOOSE YOUR POWERTECTOR PRODUCT

Part Number	Power	Input Voltage	Dimensions	Weight
PT10	10A continuous	9Vdc-32Vdc (Automatic Referencing)	155 x 30 x 15mm	45g
PT10-T	10A continuous	9Vdc-32Vdc (Auto Ref) Timed	155 x 30 x 15mm	45g
PT20	20A continuous	9Vdc-32Vdc (Automatic Referencing)	155 x 30 x 15mm	45g
PT20-T	20A continuous	9Vdc-32Vdc (Auto Ref) Timed	155 x 30 x 15mm	45g
PT40	40A continuous	9Vdc-32Vdc (Automatic Referencing)	76 x 78 x 33mm	155g
PT40-T	40A continuous	9Vdc-32Vdc (Auto Ref) Timed	76 x 78 x 33mm	155g
PT60	60A continuous	9Vdc-32Vdc (Automatic Referencing)	76 x 78 x 33mm	155g
PT60-T	60A continuous	9Vdc-32Vdc (Auto Ref) Timed	76 x 78 x 33mm	155g
PT100	100A continuous	9Vdc-32Vdc (Automatic Referencing)	124 x 97 x 51mm	530g
PT100-T	100A continuous	9Vdc-32Vdc (Auto Ref) Timed	124 x 97 x 51mm	530g
PT200	200A continuous	9Vdc-32Vdc (Automatic Referencing)	124 x 97 x 51mm	530g
PT200-T	200A continuous	9Vdc-32Vdc (Auto Ref) Timed	124 x 97 x 51mm	530g

## TECHNICAL DATA

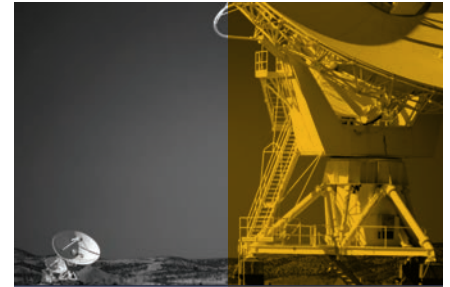
Input voltage range	9-32Vdc (Automatic Referencing)
Output voltage	Equal to input voltage when operating (maximum of 100mV drop across terminals)
Transient over current rating (% of continuous value)	110% for 10s 200% for 1s 300% for <0.5ms On over current shutdown there is a retry every 30s
Quiescent current when shutdown (while running)	Typ 2mA @ 13.6V, (PT40/60 Typ 4mA @ 13.6V), (PT100/200 Typ 6mA @ 13.6V)
Transient voltage protection	Meets ISO7637-2 International standard for 24V vehicles
Electrostatic voltage protection	Meets ISO10605, >8kV contact, 15kV discharge
Operating temperature	-25°C to +60°C to meet this specification table
Storage temperature	-25°C to +100°C
Ingress protection	IP65
Casework	Silver anodised aluminium, glass filled polycarbonate
Connections	PT10/20 Insulated 6.3mm push-on flat blade connectors PT40/60 M6 ring tongues PT100/200 M10 ring tongues 6.3mm push-in flat blade connectors for earth, switch, override and alarm Programming lead with 2.8mm blade connector provided
Output indicator	Green LED for programming and output indication
Mounting method	PT10/20 tie wrap to wiring (supplied) PT40/60/100/200 3off half inch No8 pozi pan head screws (supplied)
Safe area protection:	Over current Limited by current sensing circuit Over heat Limited by temperature sensing circuit Transients Protected by filters and rugged component selection Catastrophic protection Set by external input fuse (set by application demands) and ground line fuse max 1A
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive AES5
Designed to	EN50498, ISO 7637-2
Markings	CE and E (automotive) marked

# AD SERIES

## 115/230V<sub>AC</sub> MAINS POWER SUPPLIES

### MAINS POWER SUPPLIES IN 12V, 24V & 48V CONFIGURATIONS

The AD Series units may be used to supply mobile radios and other appliances from AC mains used in offices, portable site cabins, communication cabins, telephone exchanges, remote antennae sites, ships, oil rigs etc. The units will accept either European 230Vac or US 115Vac input s and are available as standard in 12V, 24V and 48V output configurations. Input is via a standard IEC-320 C13/14 power cord with UK, European or US mains plugs - *please state your requirement.*



AD Series Power supplies can also be fitted with DIN rail clips for rack mounted applications.



### FAST INSTALLATION

There's nothing worse than a power supply lying around on the floor. The T-shaped mounting clip, common to many Alfatronix products, allows the power supplies to be installed quickly and simply in many out of the way locations, such as underneath desks or on walls. The 3 point 'T' clip can be fitted securely, even on uneven surfaces, quickly and simply, and then the power supply simply 'clips' in place.

### BATTERY CHARGING REQUIRED?

A fixed voltage battery charging facility is also available with the supplementary loom; P/N AD BB loom.

### FULL CIRCUIT PROTECTION

The AD Series supplies have transient, overload and overheat protection for reliable operation even in the toughest environments.

### RUGGED AND COMPACT

These units, often referred to as 'brick in the lead' supplies are housed in a rugged, corrosion resistant anodised aluminium extrusion. The low mass surface mount technology components offer excellent resistance to shock and vibration, thus further increasing the reliability of these products.

A green LED indicates when there is output from the converter. This gives reassurance to the installation engineer and speeds fault finding.

### DESKTOP VERSIONS ALSO AVAILABLE

While the brick power supplies offer a versatile solution, if you are powering a mobile radio, try our *Desktop Versions*. These are configured to attach to the radio forming one dedicated unit and are available for a variety of radios including Motorola, Hytera, Tait, Kenwood, Icom, Maxon and Vertex.

### PRODUCT CODING

The product code is derived as follows, taking the AD 115/230-12 108 as an example:

<b>AD</b>	AC input and DC output
<b>115/230</b>	Denotes auto select US or European AC input voltage
<b>-12</b>	Nominal 12Vdc output
<b>108</b>	108W capacity unit

# CHOOSE YOUR AD SERIES PRODUCT

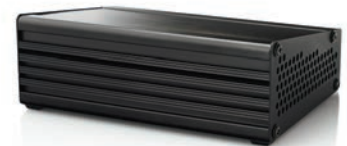
		Output Voltage			Dimensions	Weight
Product Codes		12Vdc	24Vdc	48Vdc		
		AD 115/230-12 036 (3A)	AD 115/230-24 036 (1.5A)	AD 115/230-48 036 (0.75A)	174 x 87 x 62mm	675g
		AD 115/230-12 072 (6A)	AD 115/230-24 072 (3A)	AD 115/230-48 072 (1.5A)	174 x 87 x 62mm	675g
		AD 115/230-12 108 (9A)	AD 115/230-24 108 (4.5A)	AD 115/230-48 108 (2.25A)	174 x 87 x 62mm	675g
		AD 115/230-12 168 (14A)	AD 115/230-24 168 (7A)	AD 115/230-48 168 (3.5A)	225 x 87 x 62mm	900g
		AD 115/230-12 240 (20A)	AD 115/230-24 240 (10A)	AD 115/230-48 240 (5A)	264 x 87 x 62mm	1150g
<b>Additional Loom for battery charging - P/N: AD BB Loom</b>						

## TECHNICAL DATA

Input voltage range	Auto-Select, 85-135Vac and 170-265Vac, 50/60Hz	
Output voltage options	13.6Vdc, 27.2Vdc or 54.4Vdc, as ordered. Worst case limits are +/- 4%	
Output Noise	<50mV pk-pk at continuous load (100mV on 24V versions, 200mV on 48V versions)	
Power Conversion Efficiency	Typically 83%	
Isolation between input and case/output	1.5kVac/3.0kVac rms	
Isolation between casework to ground	Connected directly to mains input ground	
Normal operating temperature	-25°C to +30°C to meet this specification table +30°C to +70°C de rate linearly to OA	
Storage temperature	-25°C to +100°C	
Max case temperature	70°C at full load with 25°C ambient	
Operating humidity	95% max, non-condensing	
Casework	Anodized aluminum, glass-filled polycarbonate	
Connections:	Input	IEC-320 C14 socket, C13 terminated cordset
	Output	6.3mm push-on blade terminals
	Ground	6.3mm push-on blade terminals, adjacent to input (additional external ground if required)
Output indicator	Green LED adjacent to output terminals	
Mounting method	'Click 'n' fit' mounting clip or rubber feet. DIN rail clips available if required.	
Safe area protection:	Over current	Limited by current sensing circuit
	Over heat	Limited by temperature sensing circuit
	Transients	Protected by filters and rugged component selection
	Catastrophic protection	Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive 2014/35/EU The low voltage directive 93/68/EEC The CE marking directive	
Designed to	EN60950, EN55022, EN61204-3	
Markings	CE	

## DESKTOP POWER SUPPLIES

The desktop power supplies, popularly called the "wedge" due to its distinctive, ergonomically friendly shape, offer a convenient way to convert 12Vdc mobile radio transceivers for use as desktop base stations. They will operate from AC supplies, either 115V or 230V without manual adjustment and output up to 108W (9Amps).



- We started making these for Motorola radios in 2002, now we have 27 varieties for 11 manufacturers.
- The desktop units are supplied with end-plates configured to fit with your radio – see complete list.
- For a complete system, order our fully compatible battery back up box – P/N AD BBB (to include a 7Ah battery) or AD BBB NB (excluding the battery).

Radio Transceiver + Alfatronix Desktop Power Supply + Alfatronix Battery Back Up Box

## BATTERY BACK UP BOX

The AD Series Desktop Power Supplies include a battery back up output as standard. This can be connected to maintain charge in a lead acid battery to supply power in the event of a mains failure. As a neat alternative to a loose battery, Alfatronix also supply a battery back up box, P/N AD BBB. This is designed to fit underneath the desktop supply and radio assembly and includes a 7Ah lead acid gel battery, presenting all three components as one tidy desktop assembly.

The battery back up box also includes a speaker (mounted on the front of the unit) for those wishing to use hands free radio operation.

## CAN'T FIND WHAT YOU'RE LOOKING FOR?

Alfatronix Desktop "wedge" power supplies are configured to suit a wide range of radio transceivers from many manufacturers. However, if you use a variety of radio not listed, or cannot find

a compatible unit, try our UNIVERSAL unit (P/N AD UN UNI). This uses a mechanical interlocking fixing system (3M "Dual Lock") to fix the transceiver securely to the power supply.

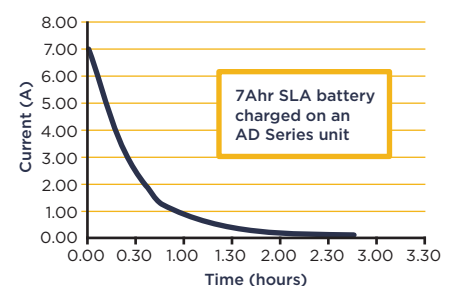
## PRODUCT CODING

The product codes are developed to be as intuitive as possible. Taking the Motorola AD MT CM as an example:

<b>AD</b>	AC input & DC output
<b>MT</b>	Denotes the radio manufacturer, in this case Motorola
<b>CM</b>	Denotes a popular radio compatible with this unit

Please note: Like most part numbers, the CM fits a *range* of radios, not just the CM.

## BATTERY CHARGING CURVE



# TECHNICAL DATA

Input voltage range	Auto-select, 85-135Vac and 170-265Vac, 50Hz/60Hz								
Output voltage & current	13.6Vdc. Worst case limits are +/- 4% 108W (9A)								
Output Noise	<50mV pk-pk at continuous load								
Power Conversion Efficiency	Typically 83%								
Isolation between input and case/output	1.5kVac/3.0kVac rms								
Isolation between casework to ground	Connected directly to mains input ground								
Normal operating temperature	-25°C to +30°C to meet this specification table +30°C to +70°C de rate linearly to OA								
Storage temperature	-25°C to +100°C								
Max case temperature	70°C at full load with 25°C ambient								
Operating humidity	95% max, non-condensing								
Casework	Anodized aluminum, glass-filled polycarbonate								
Connections:	<table border="0"> <tr> <td>Input</td> <td>IEC-320 C14 socket, C13 terminated cordset</td> </tr> <tr> <td>Output</td> <td>6.3mm push-on blade terminals</td> </tr> <tr> <td>Ground</td> <td>6.3mm push-on blade terminals, adjacent to output (additional external ground if required)</td> </tr> </table>	Input	IEC-320 C14 socket, C13 terminated cordset	Output	6.3mm push-on blade terminals	Ground	6.3mm push-on blade terminals, adjacent to output (additional external ground if required)		
Input	IEC-320 C14 socket, C13 terminated cordset								
Output	6.3mm push-on blade terminals								
Ground	6.3mm push-on blade terminals, adjacent to output (additional external ground if required)								
Output indicator	Green LED mains output on Orange LED battery back up mode								
Mounting method	By rubber feet on base and direct attachment to radio above.								
Safe area protection:	<table border="0"> <tr> <td>Over current</td> <td>Limited by current sensing circuit</td> </tr> <tr> <td>Over heat</td> <td>Limited by temperature sensing circuit</td> </tr> <tr> <td>Transients</td> <td>Protected by filters and rugged component selection</td> </tr> <tr> <td>Catastrophic protection</td> <td>Protected by internal input and output fuses</td> </tr> </table>	Over current	Limited by current sensing circuit	Over heat	Limited by temperature sensing circuit	Transients	Protected by filters and rugged component selection	Catastrophic protection	Protected by internal input and output fuses
Over current	Limited by current sensing circuit								
Over heat	Limited by temperature sensing circuit								
Transients	Protected by filters and rugged component selection								
Catastrophic protection	Protected by internal input and output fuses								
Approvals	2014/30/EU The general EMC directive 2014/35/EU The low voltage directive 93/68/EEC The CE marking directive								
Designed to	EN60950, EN55022, EN61204-3								
Markings	CE								

## Weights and Dimensions

	Width	Depth	Height	Weight
AD UN UNI	168mm	125mm	58mm	800g
AD BBB	163mm	145mm	70mm	2810g
AD BBB NB	163mm	145mm	70mm	318g

**Note:** The general body of all wedges measure as above. The end-plates protrude further to allow fixing to the radio.

**Technical Note:** AD BBB contains SLA Battery 12V 7Ahr, both AD BBB and AD BBB NB contain Speaker 8 OHM 3W

**FULL PRODUCT LIST**

Brand	Alfatronix Part Number	Model	Width (mm)	Height (mm)	Depth (mm)		
Motorola	AD MT-3100/DM	MTM5400 Tetra	170	49	155		
		MTM800 Tetra	170	49	155		
		PRO3100	177	56	176		
		PRO5100	186	59	179		
		PRO7100	186	59	179		
		GM340	168	48	187		
		GM640	168	48	187		
		GM350	168	48	183		
		GM360	168	48	183		
		GM660	168	48	199		
		GM380	168	48	199		
		DM 1400/DM 1600	169	44	134		
		DM2600	169	44	134		
		DM 3400/DM 3401	175	51	206		
		DM 3600/DM 3601	175	51	206		
		DM 4400/DM 4401	175	51	206		
		DM 4600/DM 4601	175	51	206		
		Motorola	AD MT-CM	CM-140	169	44	118
				CM-160	169	44	118
CM-340	169			44	118		
CM-360	169			44	118		
Kenwood	AD KW TK-762	TK-760	140	40	145		
		TK-860	140	40	145		
		TK-762	140	40	145		
		TK-780	140	40	145		
		TK-880	140	40	145		
		TK-980	140	40	145		
		TK-981	140	45	145		
Kenwood	AD KW NX 5000	NX5700/5800	171	48	176		
Kenwood	AD KW TK-7102H	NX-700/800	160	45	157		
		NX3720/NX3820	160	43	160		
		TK-7302/8302	160	43	137		
		TK-7180	160	45	157		
		TK-7189E	160	45	157		
		TK-8180	160	45	157		
		TK-8189E	160	45	157		
		TK-7360/8360	160	43	160		
Kenwood	AD KW TK-7160	TK-7160	160	43	107		
		TK-7162	160	43	107		
		TK-8160	160	43	107		
		TK-8162	160	43	107		
		TK-7102	160	43	107		
		TK-8102	160	43	107		
Icom	AD IC IC-F310	IC-F310s	140	40	170		
		IC-F410s	140	40	170		
		IC-F310	140	40	170		
		IC-F410	140	40	170		
		IC-F510	140	40	170		
		IC-F610	140	40	170		
		IC-F320s	140	40	170		
		IC-F420s	140	40	170		
		IC-F320	140	40	170		
		IC-F420	140	40	170		
		IC-F520	140	40	170		
		Icom	AD IC IC-F1700	IC-F1710	175	45	170
				IC-F2710	175	45	170
IC-F1810	175			45	170		
IC-F2810	175			45	170		
Icom	AD IC IC-F1010	IC-F1010	150	50	180		
		IC-F2010	150	50	180		
		IC-F1020	150	50	180		
		IC-F2020	150	50	180		
		IC-F1610	150	50	180		
		IC-F2610	150	50	180		
		IC-A110 Euro	150	50	180		
Icom	AD IC IC-F110	IC-F110	150	40	117.5		
		IC-F110S	150	40	117.5		
		IC-F210	150	40	117.5		
		IC-F210S	150	40	117.5		
		IC-F5022	150	40	117.5		
		IC-F6022	150	40	117.5		
		IC-F121/IC-F121S	150	40	167.5		
		IC-F221/IC-F221S	150	40	167.5		
		IC-F111/IC-F111S	150	40	167.5		
		IC-F211/IC-F211S	150	40	167.5		
		IC-F5122	150	40	167.5		
		IC-F6122	150	40	167.5		
		IC-F5012	150	40	167.5		
		IC-F6012	150	40	167.5		
		Icom	AD IC IC-F5062	IC-F5062	160	45	150
IC-F6062	160			45	150		
IC-A120E	161			45	176		
Icom	AD IC IC-F5400	IC-F5400D	174	55	150		
		IC-F6400D	174	55	150		

Brand	Alfatronix Part Number	Model	Width (mm)	Height (mm)	Depth (mm)
Tait	AD TA-8000	TM8105	160	50	175
		TM8110	160	50	175
		TM8250	160	50	175
		TM8255	160	50	175
		TM9300	160	50	175
		TM9400	160	50	175
Yaesu/Vertex	AD VS VX-2200	VX2200E/2100E	165	46	155
Yaesu/Vertex	AD VS VX-4500	VX-4500/4600	165	45	155
		EVX-5300/5400/5600	165	45	155
Yaesu/Vertex	AD VS FP-2500	VX-2000V	160	40	105
		VX-2000U	160	40	105
		FP-2500E	160	40	110
Yaesu/Vertex	AD VS VX-4104	VS-4104-0-50	165	43	155
		VX4100E	165	43	155
		VX4200E	165	43	155
Maxon	AD MX PM160	PM100	174	58	167
		PM160	174	58	167
Nokia EADS	AD NK EA-TMR880	TMR880	190	58	130
Nokia EADS	AD NK EA-TMR880i	TMR880i	182	60	125
		TMR880i remote head	190	72	36
Novel	AD NR-M400	NM-60-100	225	47	180
		NM-60-400	225	47	180
Hytera	AD HYT 600	TM 600	152	43	125
		TM 610	152	43	125
Hytera	AD HYT 615	MD 615	164	43	150
Hytera	AD HYT 785	MD 785	170	60	180
Hytera	AD HYT 680	MT 680	180	60	180
Hytera	AD HYT MD655	MD652/MD652G	165	46	140
		MD655/MD655G	165	46	140
Sepura	AD SP 8000	SBM800/SCM8000/SEM8000	177	60	184
Simoco	AD SIM SDM 700	SDM 700	170	60	120
Universal	AD UN UNI	Cleartone Hytera TM 800 Simoco Sepura			

The Alfatronix range of Desktop Power Supplies provide bespoke solutions for radios from a wide range of manufacturers. For any not listed the *AD UNI* version can be used with any radio.



# POWERVERTER & DD SERIES

## IP65 RUGGEDISED CONVERTERS

### HARSH ENVIRONMENTS

These products offer the same great electrical characteristics as our PowerVerter and DD Series, but are provided in "Ruggedised" casings for use in harsh environments. Using the well-known Ingress Protection System, the product range has been tested and subjected to demanding environmental conditions and awarded a rating of IP65. All Ruggedised PowerVerterter are enclosed in a durable aluminium extrusion. The low mass Surface Mount Technology components are also less prone to damage from vibration and shock, further increasing the reliability of the units.

### INNOVATIVE TECHNOLOGY

Utilising the same GORE-TEX® technology that is used in extreme outdoor clothing, the Ruggedised range is able to breathe freely, without compromising the water tight and dust tight seal. This free-flow of air ensures that the pressure remains equal inside and outside the unit thus allowing it to operate within a large temperature range and at varying altitudes safely.

### FAST INSTALLATION

All the products fit onto a "Click 'n' Fit" mounting clip which is fixed in three points allowing it to be mounted on uneven surfaces. It is easy to fit the clip into awkward places, then simply click the unit into position.

### ANTI-VIBRATION

As well as being dust and water tight to IP65, the units are vibration resistant. They have an anti-vibration cable gland fitted into a hexagonal recess to prevent unwanted knocks from loosening it, so they can be fitted into rugged environments care-free.



### ADDITIONAL FEATURES

The RU range has the same features as the standard PV & DD range, but in addition, they also offer the following benefits:

- Dust, water and impact resistant to IP65.
- Breathable vent to prevent unwanted build up of pressure.
- Anti-vibration cable gland.
- Supplied with 1m of cable as standard.

### PRODUCT VARIANTS

Many PowerVerter-RU and DD-RU Series products can be configured with alternative output voltages etc. for specialist applications. Please call our sales team to discuss your requirements.



# CHOOSE YOUR RU SERIES PRODUCT

Part Number	Power	Nominal Voltage	Dimensions	Weight
PV3s-RU	36W (3A) non-isolated	24Vdc input, 12Vdc output	86 x 91 x 52mm	325g
PV6s-RU	72W (6A) non-isolated	24Vdc input, 12Vdc output	108 x 91 x 52mm	370g
PV12s-RU	144W (12A) non-isolated	24Vdc input, 12Vdc output	146 x 91 x 52mm	505g
*PV18s-RU	216W (18A) non-isolated	24Vdc input, 12Vdc output	186 x 91 x 52mm	820g
*PV24s-RU	288W (24A) non-isolated	24Vdc input, 12Vdc output	186 x 91 x 52mm	835g
**PV50s-RU	600W (50A) non-isolated	24Vdc input, 12Vdc output	274 x 125 x 74mm	2340g
PV3i-RU	36W (3A) isolated	24Vdc input, 12Vdc output	108 x 91 x 52mm	390g
PV6i-RU	72W (6A) isolated	24Vdc input, 12Vdc output	146 x 91 x 52mm	510g
PV12i-RU	144W (12A) isolated	24Vdc input, 12Vdc output	186 x 91 x 52mm	690g
PV18i-RU	216W (18A) isolated	24Vdc input, 12Vdc output	236 x 91 x 52mm	1035g
PV24i-RU	288W (24A) isolated	24Vdc input, 12Vdc output	236 x 91 x 52mm	1050g
DDi 12-12 036-RU	36W (3A) isolated	12Vdc input, 12Vdc output	108 x 91 x 52mm	390g
DDi 12-12 072-RU	72W (6A) isolated	12Vdc input, 12Vdc output	146 x 91 x 52mm	505g
DDi 12-12 108-RU	108W (9A) isolated	12Vdc input, 12Vdc output	186 x 91 x 52mm	835g
DDi 24-24 072-RU	72W (3A) isolated	24Vdc input, 24Vdc output	146 x 91 x 52mm	540g
DDi 24-24 108-RU	108W (4.5A) isolated	24Vdc input, 24Vdc output	186 x 91 x 52mm	640g
DDi 24-24 168-RU	168W (7A) isolated	24Vdc input, 24Vdc output	236 x 91 x 52mm	880g
DD 12-24 072-RU	72W (3A) non-isolated	12Vdc input, 24Vdc output	108 x 91 x 52mm	400g
*DD 12-24 168-RU	168W (7A) non-isolated	12Vdc input, 24Vdc output	186 x 91 x 52mm	740g
*DD 12-24 240-RU	240W (10A) non-isolated	12Vdc input, 24Vdc output	236 x 91 x 52mm	920g
**DD 12-24 400-RU	400W (16A) non-isolated	12Vdc input, 24Vdc output	221 x 125 x 74mm	2080g
**DD 12-24 600-RU	600W (25A) non-isolated	12Vdc input, 24Vdc output	274 x 125 x 74mm	2340g
DD 48-12 072-RU	72W (6A) non-isolated	48Vdc input, 12Vdc output	108 x 91 x 52mm	360g
DD 48-12 108-RU	108W (9A) non-isolated	48Vdc input, 12Vdc output	146 x 91 x 52mm	460g
DDi 48-12 036-RU	36W (3A) isolated	48Vdc input, 12Vdc output	108 x 91 x 52mm	390g
DDi 48-12 072-RU	72W (6A) isolated	48Vdc input, 12Vdc output	146 x 91 x 52mm	510g

*Other input and output voltage configurations are also available as special orders, please ask our sales team*

## TECHNICAL DATA

Input voltage range	12Vdc, 24Vdc +/- 30%, 48Vdc -30% +25%
Output voltage	13.6Vdc or 27.2Vdc +15% -20% at extremes of temperature, load, input tolerance etc.
Intermittent output power	Continuous rating +25%, taken for maximum of 2 minutes followed by 8 minutes rest
Transient voltage protection	Meets ISO7637-2 International standard for 24Vdc commercial vehicles
Electrostatic voltage protection	Meets ISO10605, ISO14982, >8kV contact, 15kV discharge
Output noise	<50mV pk-pk (100mV on 24V units) at continuous load. Meets CISPR25 and VDE0879-3
Off load current (quiescent current)	<15mA (PowerVerter), <15mA (DD Series exc. 12-24), <100mA (DD Series 12-24 units)
Power conversion efficiency	Typically: 90% for non-isolated units, 85% for isolated units ** 95%
Isolation	>400Vrms between input, output and case, on isolated products only
Operating temperature	-25°C to +30°C de rate output current linearly from +30°C to 0A at +80°C
Storage temperature	-25°C to +100°C
Operating humidity	100%
Casework	Anodised aluminium, glass filled polycarbonate, dust water and impact resistance to IP65
Connections	4 core cable, *4 wires (1m in length) stripped and tinned for individual connection
Voltage drop in 1m supplied cable	60mV per amp @ 25°C on units with output current < 18A 10mV per amp @ 25°C on units with output current ≥ 18A
Output indicator	Green LED adjacent to cable gland
Mounting method	Click 'n' fit mounting clip, fitted separately using three hole fixture **4 hole cradle
Safe area protection:	
Over current	Limited by current sensing circuit
Over heat	Limited by temperature sensing circuit
Transients	Protected by filters and rugged component selection
Catastrophic protection	Protected by internal input and output fuses
Approvals	2014/30/EU The general EMC directive Regulation 10 The automotive directive 93/68/EEC The CE marking directive
Markings	CE and E (automotive) marked

## 'T' SHAPED MOUNTING CRADLE

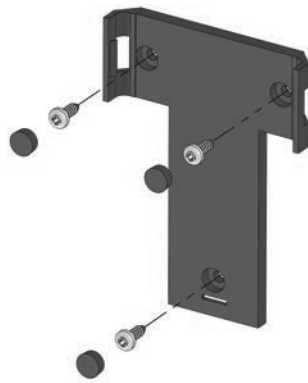
Many Alfatronix products are installed using our 'T' shaped mounting cradle. This is manufactured from VO rated (self-extinguishing) glass filled polycarbonate material and exhibits excellent strength and durability characteristics. The three point design allows for flat installation, even on uneven surfaces and it is both quick and easy to install as the bracket itself can be used as a template for accurate drilling before being screwed firmly into position. The converter can be fully wired before being clipped securely onto the bracket. The clip design is entirely vibration proof and, as the body of the converter covers the screw heads, once installed it is virtually impossible for any of the screws to vibrate loose, a potential long term problem on a diesel vehicle.

This bracket is supplied as standard with all PowerVerter DC-DC converters up to 240W (24A), DD Series converters (up to 240W) and Brick in the lead AD Series mains power supplies.

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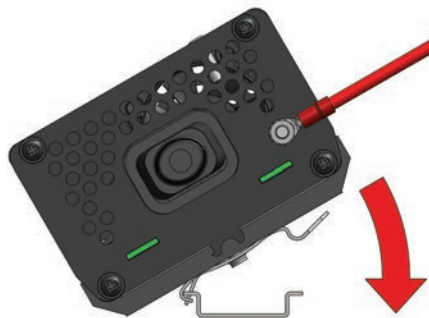
## DIN RAIL MOUNTING CLIP

The din rail mounting pack is sold separately as an alternative to the 'T' shaped bracket and is supplied in a pack of two. Please order part number: DIN RAIL CLIP Pack (2). These are compatible with all units supplied with a 'T' bracket (which should be discarded). For PV3s units, only one clip is sufficient. A pair of clips should be used for all other installations.

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## POWERTECTOR INSTALLATION METHODS

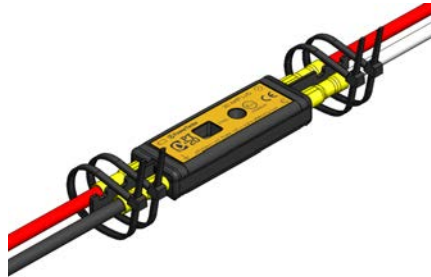
Depending on the size of the units, the PowerTector battery guards use two different mounting methods.

For any units up to 20A, it is not necessary to drill into the vehicle chassis as these small, lightweight units can be wired in place, then simply tie-wrapped in position in a similar way as an in line fuse.

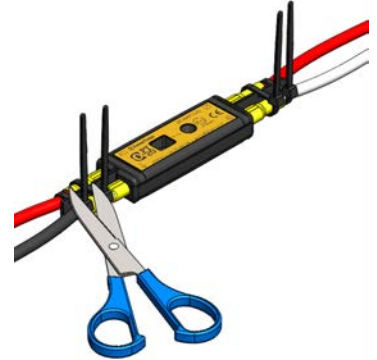
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Units from 40-200A use a die cast aluminium body configured with three mounting holes. These are offset slightly from the heat-sink structure to allow installation onto uneven surfaces and provide for airflow beneath the unit.

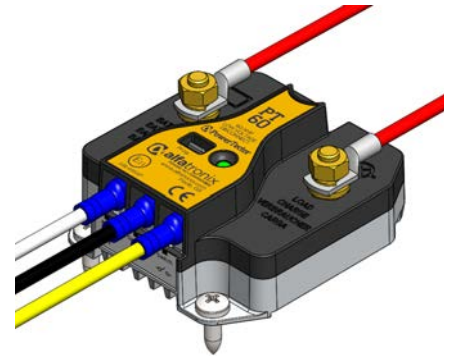
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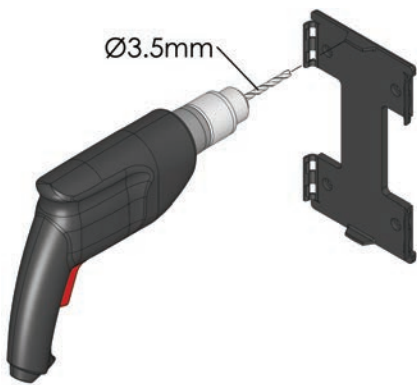
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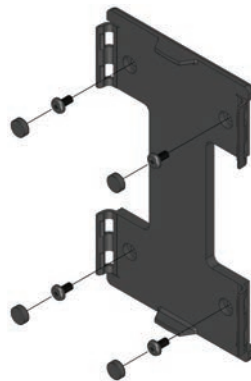
### 'I' SHAPED MOUNTING CRADLE

This cradle is supplied as standard and used for the more powerful, heavier units from 400W upwards. Examples include DD 12-24 400, DD 12-24 600 and PV50s. It is manufactured from V0 rated (self-extinguishing) glass filled polycarbonate material and exhibits excellent strength and durability characteristics. The four point design includes spacer washers to allow for flat installation, even on uneven surfaces and it is both quick and easy to install as the bracket itself can be used as a template for accurate drilling before being screwed firmly in position. The converter can be fully wired before being clipped securely onto the bracket. The clip design is entirely vibration proof and as the body of the converter covers the screw heads, once installed it is virtually impossible for any of the screws to vibrate loose, a potential long term problem on a diesel vehicle.

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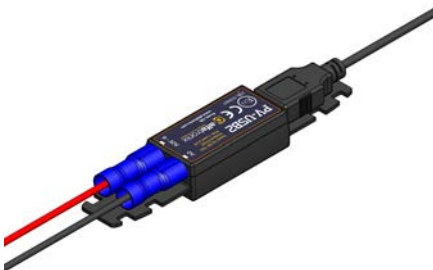
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### PV-USB2 INSTALLATION METHODS

To install the PV-USB2, it is not necessary to drill into the vehicle chassis as these small, lightweight units can be wired in place, then simply tie-wrapped in position in a similar way as an in line fuse.

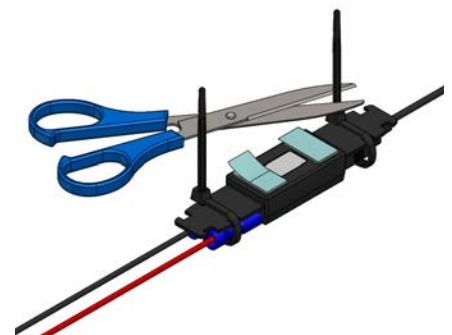
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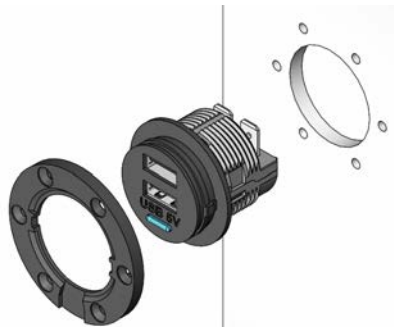
## PVPro & PV65R INSTALLATION METHODS

Choose a suitable mounting surface ensuring nothing behind can be damaged, then drill a Ø30mm hole. For Standard Ring installation press 'Standard Ring' over front of PVPro, ensuring the slot is at the bottom. Insert body through the hole. Tighten the nut onto back of body ensuring front is aligned. For Front fitting place bezel over PVPro/PV65R, mark screw hole positions, install through Ø30mm hole and screw into position. Press 'Bezel Ring' over front of PVPro, ensuring the slot is at the bottom.

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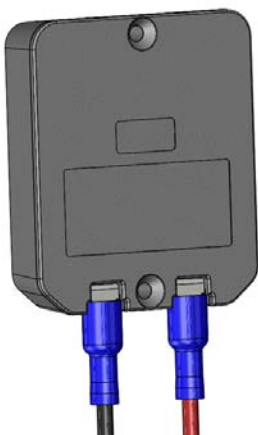


## INTEGRATED WIRELESS CHARGER INSTALLATION

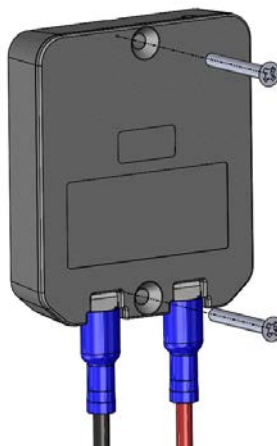
Crimp cables on to blade terminals and plug onto unit. Using screws provided secure the device in desired location. (No.6 x 25 provided)

Ensure there is no more than 2mm of material in front of the unit. A distance of greater than 5mm from the front of the unit will stop the unit from detecting a phone. Connect to compatible power source (9V-32V, fused at 2A) and ensure blue light is on to check unit is working

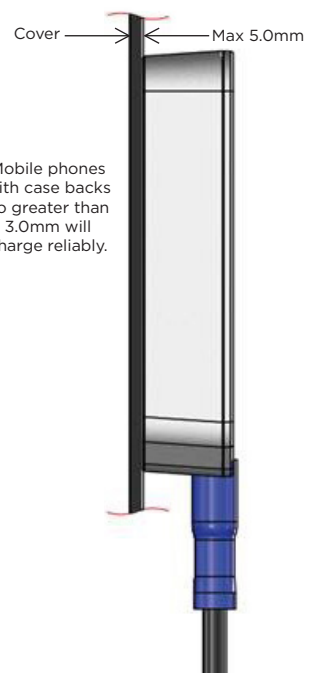
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### WIRELESS CHARGER INSTALLATION

Use an 80mm hole to saw to cut hole in work surface—minimum table thickness 19.5mm. Crimp cables onto blade terminals or connect power supply

Place unit and cables through previously cut hole

Measure the thickness of work surface and choose correct size screw, using a 3mm hex key, lightly tighten the retaining plate to the underside of the work surface to secure the unit (DO NOT OVERTIGHTEN). Ensure the cable is trapped in the correct location.

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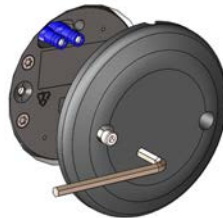
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**Version: 1910**