

## PRODUCT BROCHURE

[www.alfatronix.com](http://www.alfatronix.com)

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 the information you need on DC-DC converters, mains and desktop power supplies, PowerTector LVD battery protectors and battery chargers, as well as our extensive range of USB chargers.

This year's catalogue includes our new range of wireless chargers. For vehicle installations we have a fully integrated module which can be installed into equipment, like seatbacks, and a surface integrated module which can be installed into table tops to provide unobtrusive, yet stylish wireless charging for passengers. Also new is a 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.

As well as 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 factory 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><br>NON-ISOLATED<br>Converters           | PV3s<br>3Amp           | PV6s<br>6Amp         | PV12s<br>12Amp         | PV18s<br>18Amp        | PV24s<br>24Amp        |                      | PV50s<br>50Amp       |
| <b>24V-12V</b><br>ISOLATED<br>Converters               | PV3i<br>3Amp           | PV6i<br>6Amp         | PV12i<br>12Amp         | PV18i<br>18Amp        | PV24i<br>24Amp        |                      |                      |
| <b>24V-12V</b><br>Dual Output Switched<br>NON-ISOLATED | PV3s-A<br>3Amp         | PV6s-A<br>6Amp       | PV12s-A<br>12Amp       |                       |                       |                      |                      |
| <b>12V-24V</b><br>NON-ISOLATED<br>Converters           |                        | DD12-24 072<br>3Amp  |                        | DD12-24 168<br>7Amp   | DD12-24 240<br>10Amp  | DD12-24 400<br>17Amp | DD12-24 600<br>25Amp |
| <b>12V-12V</b><br>ISOLATED<br>Converters               | DDi12-12 036<br>3Amp   | DDi12-12 072<br>6Amp | DDi12-12 108<br>9Amp   | DDi12-12 168<br>14Amp |                       |                      |                      |
| <b>24V-24V</b><br>ISOLATED<br>Converters               | DDi24-24 036<br>1.5Amp | DDi24-24 072<br>3Amp | DDi24-24 108<br>4.5Amp | DDi24-24 168<br>7Amp  | DDi24-24 240<br>10Amp |                      |                      |
| <b>48V-12V</b><br>NON-ISOLATED<br>Converters           |                        | DD48-12 072<br>6Amp  | DD48-12 108<br>9Amp    |                       | DD48-12 240<br>20 Amp |                      |                      |
| <b>48V-12V</b><br>ISOLATED<br>Converters               | DDi48-12 036<br>3Amp   | DDi48-12 072<br>6Amp | DDi48-12 108<br>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<br>+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<br>Regulation 10 The automotive directive<br>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

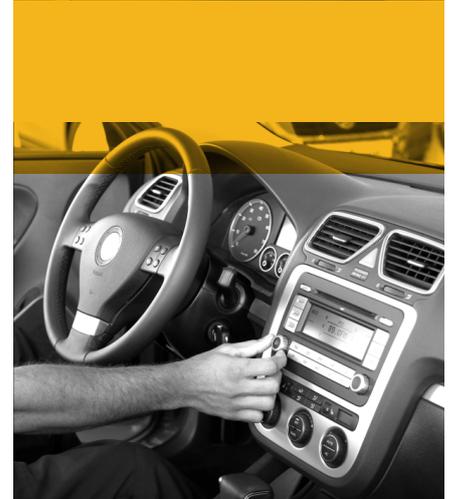
## DUAL OUTPUT 24VDC TO 12VDC CONVERTERS

### 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.



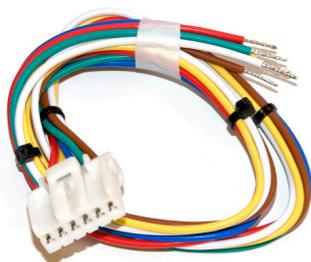
Alfatronix have developed three voltage converters, a 3Amp, 6Amp (continuous) and a 12A (continuous), which overcome these configuration problems. The Alfatronix converters mimic the 12V battery and 12V ignition function by providing two outputs, either of which can provide full power. One output is 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.

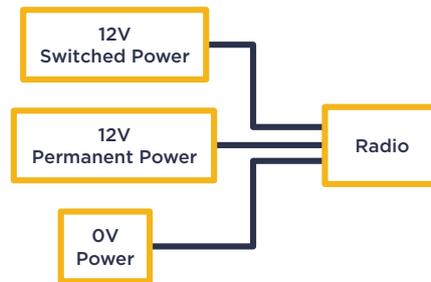
The PV12s-A is ideal for powering in car entertainment systems where a permanent memory circuit is required for security purposes.



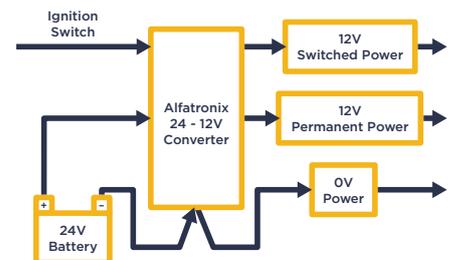
The PV3s-A is ideal for smaller applications where a switched and permanent circuit are both required.



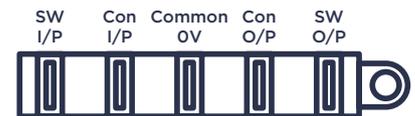
### TYPICAL APPLICATIONS



### 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<br>+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<br>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<br>Regulation 10 The automotive directive<br>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 (EN 50121-3-2) as well as other suitable equipment installations.



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.



POWERVERTER RAILWAY  
PV6i-R

### 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           | Dimensions      | Weight |
|-------------|------------------|---------------------------|-----------------|--------|
| PV6i-R      | 6A/10A isolated  | 24Vdc input, 12Vdc output | 127 x 87 x 50mm | 505g   |
| PV12i-R     | 12A/18A isolated | 24Vdc input, 12Vdc output | 167 x 87 x 50mm | 590g   |

## 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<br>+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<br>93/68/EEC The CE marking directive<br>Railway Standards to EN50155 |
| 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<br>+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<br>Regulation 10 The automotive directive<br>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  | 640g   |
| DD12-24 240 | 240W (10A) Non-Isolated | 12Vdc input, 24Vdc output | 217 x 87 x 50mm  | 800g   |
| DD12-24 400 | 400W (16A) Non-Isolated | 12Vdc input, 24Vdc output | 233 x 125 x 74mm | 1510g  |
| DD12-24 600 | 600W (25A) Non-Isolated | 12Vdc input, 24Vdc output | 283 x 125 x 74mm | 1800g  |

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<br>+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.<br>Ruggedised versions also available to IP65.              |
| Connections                           | Four 6.3mm push on flat blade connectors (72W - 240W)<br>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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive                                   |
| Designed to                           | EN50498, ISO 7637-2  |
| Markings                              | CE and E (automotive) marked   |

# ALFACHARGE WIRELESS CHARGER AL1-H

## 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 0.3mm 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 7.0mm of the passenger accessible area.



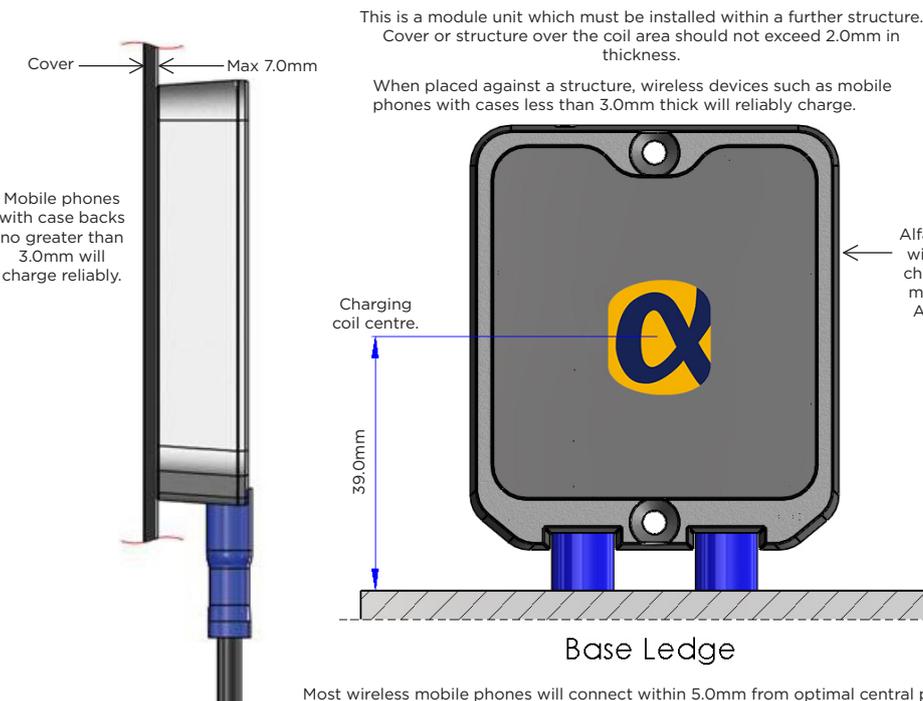
Designed for integration into passenger vehicles.

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 V0 rated (self extinguishing) high impact polycarbonate and the PCB is populated by computer controlled SMT for maximum accuracy and durability.



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

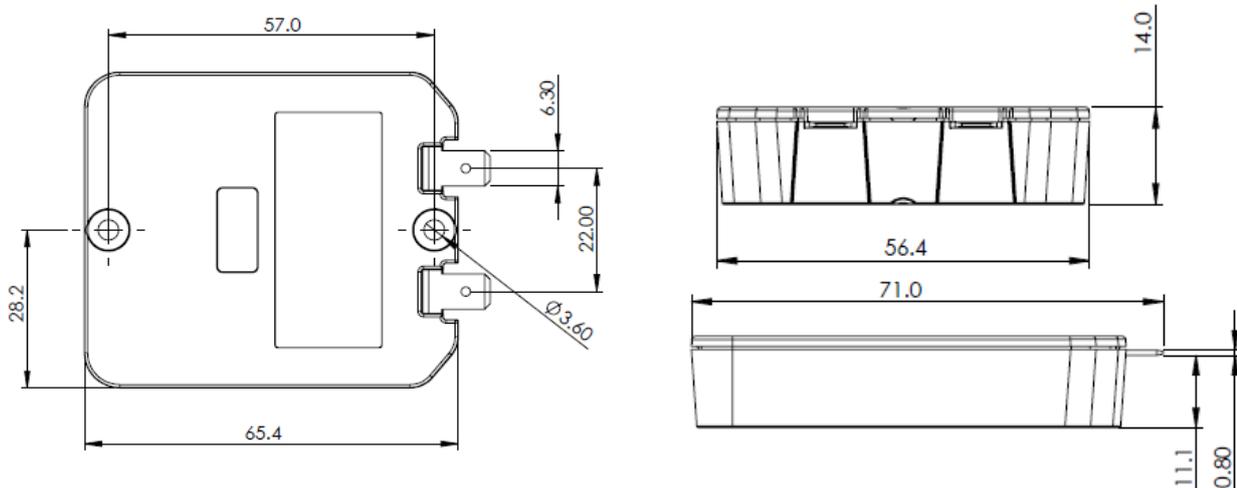
The AL1 Series of wireless chargers are manufactured using rugged components to provide years of services in demanding commercial environments and are covered by a three year return to base warranty.

# 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                             | 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                             | Black polycarbonate body   |
| Connections                          | Input: 6.3mm push-in flat blade connectors<br>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<br>Regulation 10 The automotive directive<br>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).

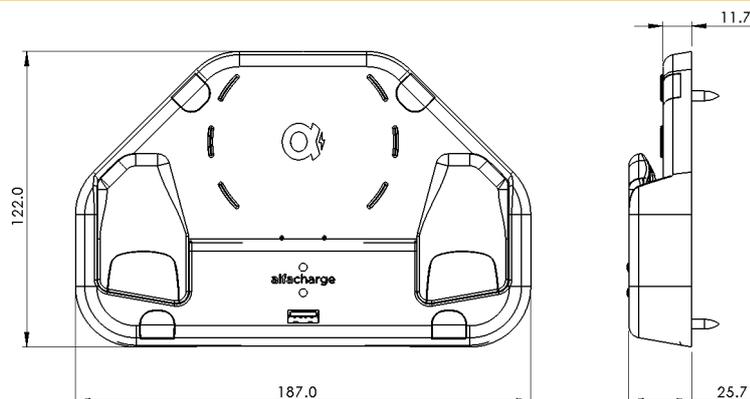
# ALFACHARGE PART SELECTION

| 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                             | 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<br>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<br>Over heat Limited by temperature sensing circuit<br>Overvoltage and Undervoltage Limited by sensing circuit<br>Reverse Polarity Limited by sensing circuit<br>Transients Protected by filters and rugged component selection<br>Catastrophic protection Internal fuse |
| Approvals                            | 2014/30/EU The general EMC directive<br>Regulation 10 The automotive directive<br>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)   |



# ALFACHARGE WIRELESS CHARGER AL3-V

## 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.

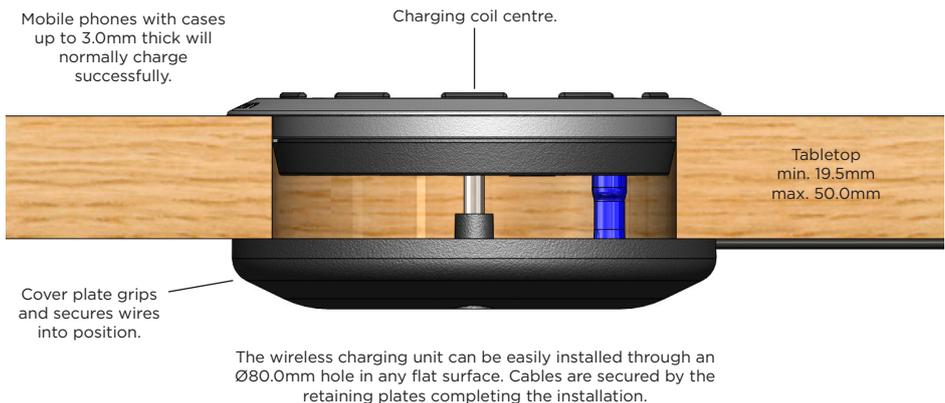
The wireless receiver of the charging unit will automatically detect the presence of suitably enabled mobile devices and will typically charge through a case up to 3.0mm thick.



### 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

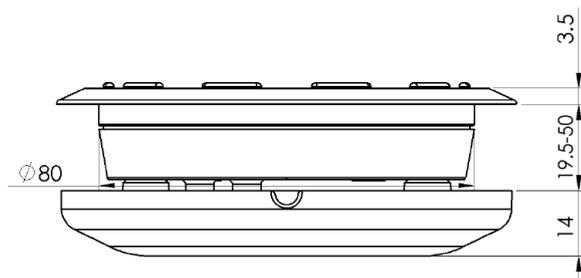
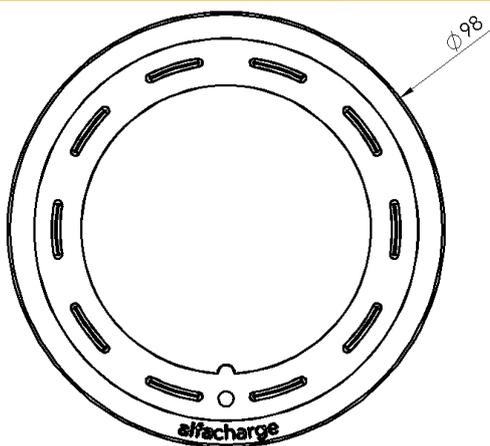
The AL3 Series of wireless chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

# 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                             | 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<br>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<br>Over heat Limited by temperature sensing circuit<br>Overvoltage and Undervoltage Limited by sensing circuit<br>Reverse Polarity Limited by sensing circuit<br>Transients Protected by filters and rugged component selection<br>Catastrophic protection Internal fuse |
| Approvals                            | 2014/30/EU The general EMC directive<br>Regulation 10 The automotive directive<br>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-J

## 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 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 AL4-J

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

Charging coil centre.

Table top  
min. 19.5mm  
max. 50.0mm

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

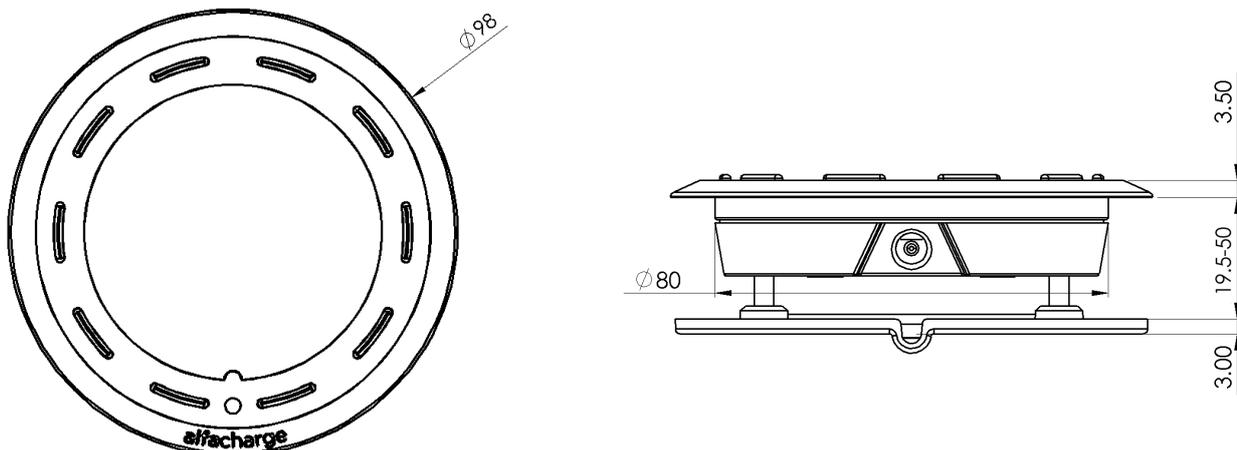
The AL4 Series of wireless chargers are manufactured using rugged components to provide years of service in demanding commercial environments and are covered by a three year return to base warranty.

# 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                             | 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<br>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<br>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.

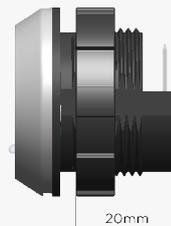


Protective pod for under seat or retrofit installation. Can be supplied with charger, pod & wiring ready assembled.

- 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<br>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:                | <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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive<br>AES5, ECE R118.02 and UL 94: V-0   |
| Designed to                          | EN50498, EN61373 and ISO 7637-2<br>To fully meet railway approval to EN50155 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R or PV12i-R   |
| Markings                             | CE and E (automotive) marked   |
| IP Rating:                           | IP30   |

# POWERVERTER PVPWp

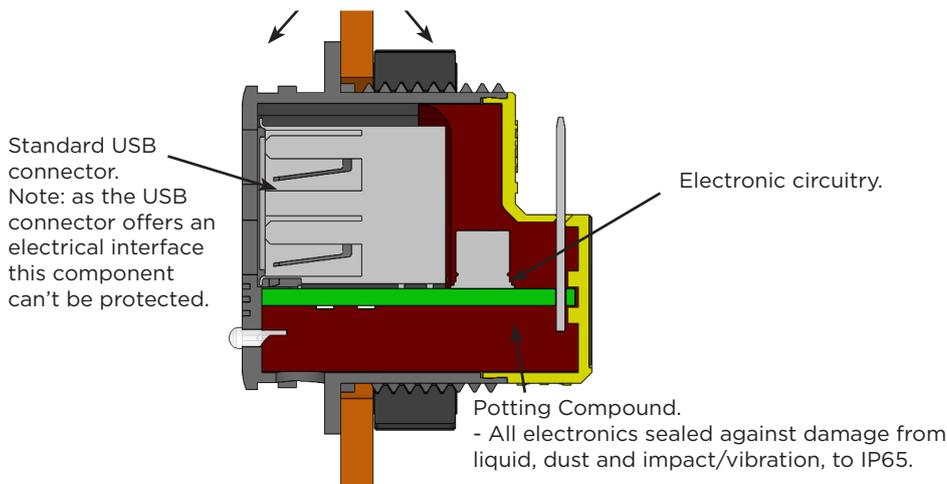
## 12/24VDC USB CHARGERS IP65 PROTECTED

### 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.



### 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.

- 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.



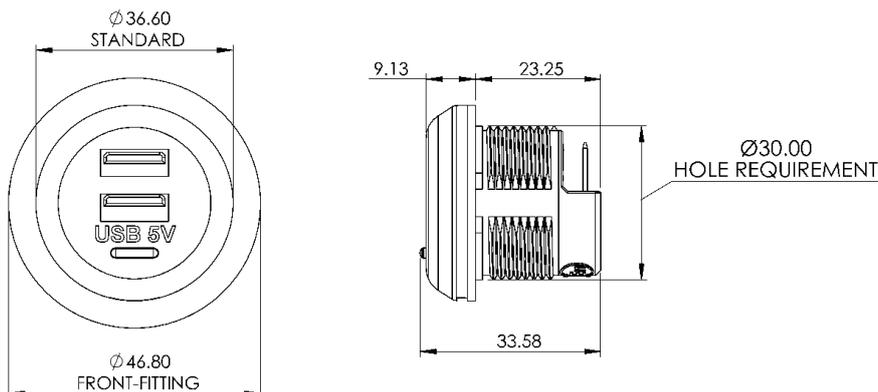
The Front facing version can be screwed in place from the front, then covered with the attractive ring to avoid tampering. Available in both single (PVPWp-SFf) and double outputs (PVPWp-DFf).



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;  
Part Numbers:  
PVP-FUSE 1, PVP-FUSE 2

### 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   | Dimensions (mm)               | Weight |
|-------------|---|-------------------------------|--------|
| PVPWp-S     | Single output 12/24-5V USB Charger 2.1A                   | Ø37 x 33; Hole Ø30            | 21g    |
| PVPWp-D     | Double output 12/24-5V USB Charger 3.0A (1.5A per socket) | Ø37 x 33; Hole Ø30            | 25g    |
| PVPWp-SFf   | Single output 12/24-5V USB 2.1A Front fitting             | Ø47 x 33; Hole Ø30            | 24g    |
| PVPWp-DFf   | Double output 12/24-5V USB Charger 3.0A Front fitting     | Ø47 x 33; Hole Ø30            | 28g    |
| USB-POD     | Under-seat mounting pod for USB Chargers                  | Width 60; Height 52; Depth 80 | 55g    |
| USB-TPOD    | Table mounting pod for USB Chargers                       | 100 x 88 x 44                 | 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%  |
| 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   |
| Connections                          | Input: 6.3mm push-in flat blade connectors<br>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:                | Over Current Limited by current sensing circuit<br>Over heat Limited by temperature sensing circuit<br>Overvoltage and Undervoltage Limited by sensing circuit<br>Reverse Polarity Limited by sensing circuit<br>Transients Protected by filters and rugged component selection<br>Catastrophic protection Internal fuse |
| Approvals                            | 2014/30/EU The general EMC directive<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive   |
| Designed to                          | EN50498, ISO 7637-2 & R118   |
| Markings                             | CE and E marked  |
| IP Rating:                           | IP65 (Not USB connector)   |

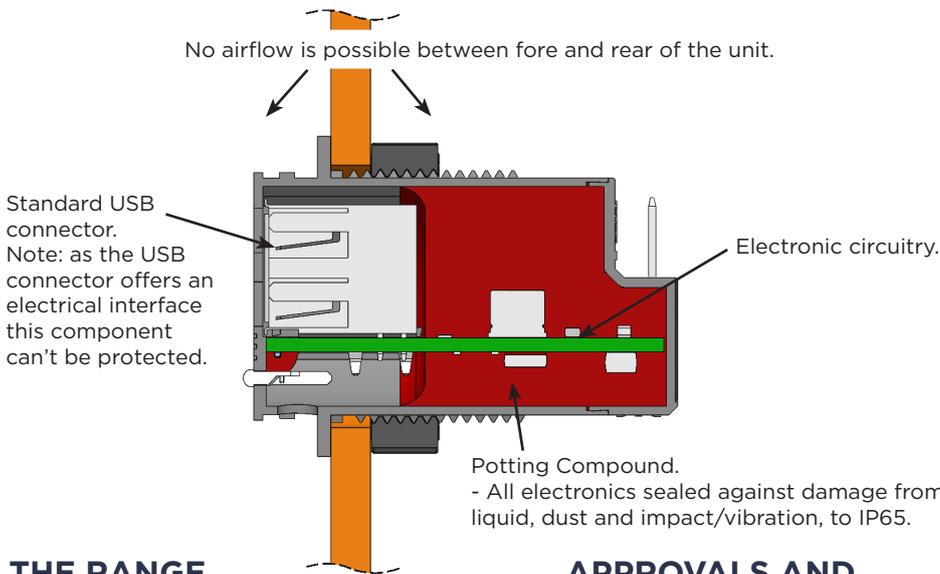
# POWERVERTER PV65R

## 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.



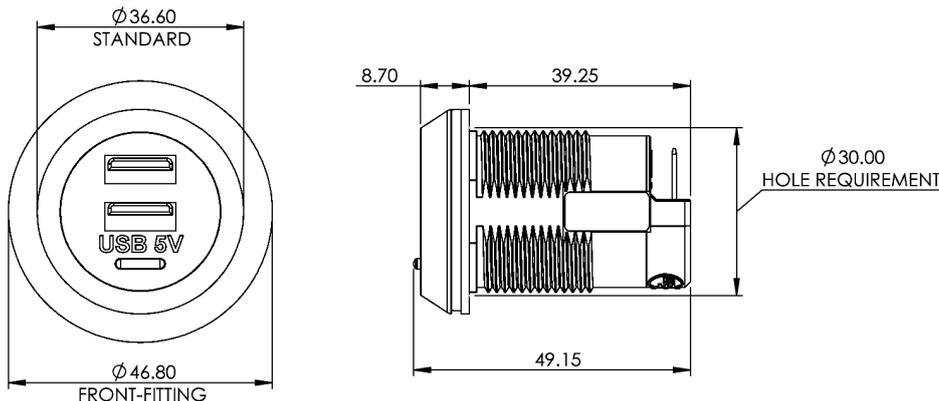
### THE RANGE

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-DF).



### 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   | Dimensions (mm)                             | Weight |
|-------------|---|---|--------|
| PV65R-S     | Single output 12/24-5V USB Charger 2.1A                   | Ø37 x 49; Hole Ø30; Rear space req. typ. 36 | 36g    |
| PV65R-D     | Double output 12/24-5V USB Charger 3.0A (1.5A per socket) | Ø37 x 49; Hole Ø30; Rear space req. typ. 36 | 40g    |
| PV65R-SFf   | Single output 12/24-5V USB 2.1A Front fitting             | Ø47 x 49; Hole Ø30; Rear space req. typ. 36 | 39g    |
| PV65R-DFf   | Double output 12/24-5V USB Charger 3.0A Front fitting     | Ø47 x 49; Hole Ø30; Rear space req. typ. 36 | 43g    |
| USB-POD     | Under-seat mounting pod for USB Chargers                  | Width 60; Height 52; Depth 80               | 55g    |
| USB-TPOD    | Table mounting pod for USB Chargers                       | 100 x 88 x 44                               | 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%  |
| 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   |
| Connections                          | Input: 6.3mm push-in flat blade connectors<br>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:                | Over Current Limited by current sensing circuit<br>Over heat Limited by temperature sensing circuit<br>Overvoltage and Undervoltage Limited by sensing circuit<br>Reverse Polarity Limited by sensing circuit<br>Transients Protected by filters and rugged component selection<br>Catastrophic protection Internal fuse |
| Approvals                            | 2014/30/EU The general EMC directive<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive   |
| Designed to                          | EN50498, EN61373, EN50155, EN50121-3-2, EN45545 & ISO 7637-2, AES5, R118   |
| Markings                             | CE and E marked  |
| IP Rating:                           | IP65   |

# 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.

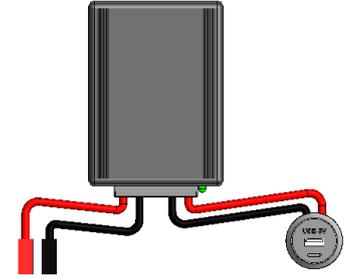
Further general information can be found on the standard PowerVerter Pro leaflet.

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 or PV12i-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.



**PVPro-S with PV6i-R**  
Any product in the PVPro range can be installed with a PV6i-R or PV12i-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

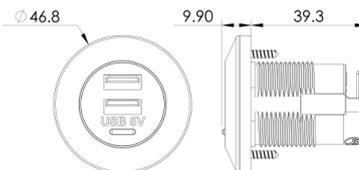
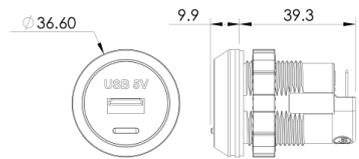


PV65R-S



PV65R-DFf

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



All PV65R units meet EN50121-3-2.

For galvanic isolation use PVPro and PV65R Series with PV6i-R or PV12i-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 fully meet railway approval to EN50155 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R or PV12i-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    |
| PV6i-R   | 6A 24V-12Vdc ISOLATED (PowerVerter Railway Converters)                     | 127 x 87 x 50      | 505g   |
| PV12i-R  | 12A 24V-12Vdc ISOLATED (PowerVerter Railway Converters)                    | 167 x 87 x 50      | 590g   |

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)

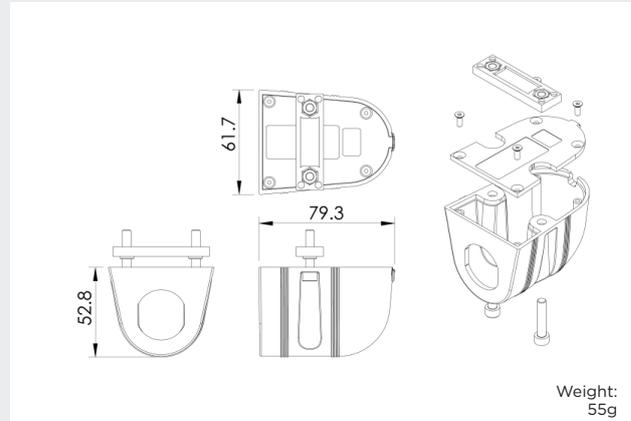
NOTE: Technical specification also applies where PVPro and PV65R series is used with PV6i-R and PV12i-R

|                                      |  |
|--------------------------------------|--|
| 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 EN50155: 2007, EN50121-3-2: 2006   |
| Vibration/Shock                      | EN61373: 2010  |
| 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   |
| Connections                          | Input: 6.3mm push-in flat blade connectors<br>Output: USB type A single socket/double socket - tested to 10,000 mating cycles  |
| Output indicator                     | Blue LED output indication   |
| Mounting method                      | 30mm diameter hole, secured by rear nut or front-fitting bezel   |
| Safe area protection:                | Over Current: Limited by current sensing circuit<br>Over heat: Limited by temperature sensing circuit<br>Overvoltage and Undervoltage: Limited by sensing circuit<br>Reverse Polarity: Limited by sensing circuit<br>Transients: Protected by filters and rugged component selection<br>Catastrophic protection: Internal fuse |
| Approvals                            | 2014/30/EU The general EMC directive<br>93/68/EEC The CE marking directive<br>AES5, ECE R118.02 and UL 94: V-0   |
| Designed to                          | EN50498, EN61373 and ISO 7637-2<br>PV65R and PV6i-R or PV12i-R fully meet railway approval to EN50155, EN45545-2 and EN50121-3-2<br>To fully meet railway approval to EN50155 & EN50121-3-2 the PVPro is to be used in conjunction with a PV6i-R or PV12i-R  |
| Markings                             | CE and E (automotive) marked   |
| IP Rating:                           | PVPro IP30; PV65R IP65; PV6i-R & PV12i-R IP53  |

## USB-POD

FOR UNDERSEAT INSTALLATIONS

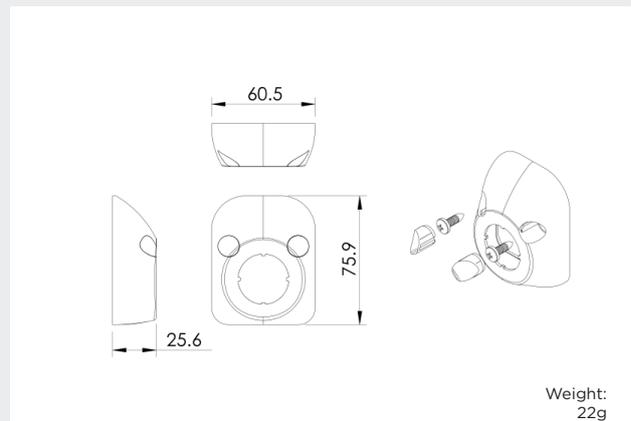
Rugged mounting pod for PVPro USB installation under seats, accessible from the front or rear. It can house PVPro, PV65R and PVPWp USB chargers and is also available as a complete assembly together with 1.2m of fused wiring.



## USB-WPOD

FOR ON WALL INSTALLATIONS

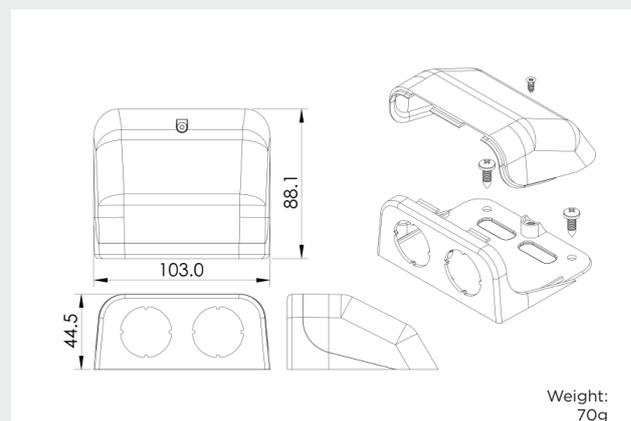
Wall-mounted housing to allow the standard PVPro & PVPWp range to be installed on the wall of the vehicle without the need of a 30mm drilled hole. It is fixed to the wall with screws hidden by tamper-proof overs and space is provided for a fuse to protect the wiring (recommended).



## 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

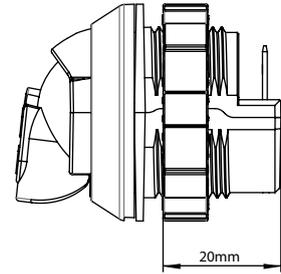
Achieving the correct ambient lighting in buses and coaches while driving at night can be a challenge. Some passengers may wish to rest, others might like to read or check and update mobile devices. This causes the dilemma: lights on or off? At night, typically lights are dimmed and passengers can choose 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.



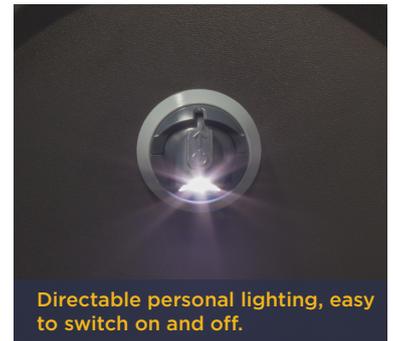
PowerVerter USB PVPro-D and PVPro-L

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 or PV12i-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.

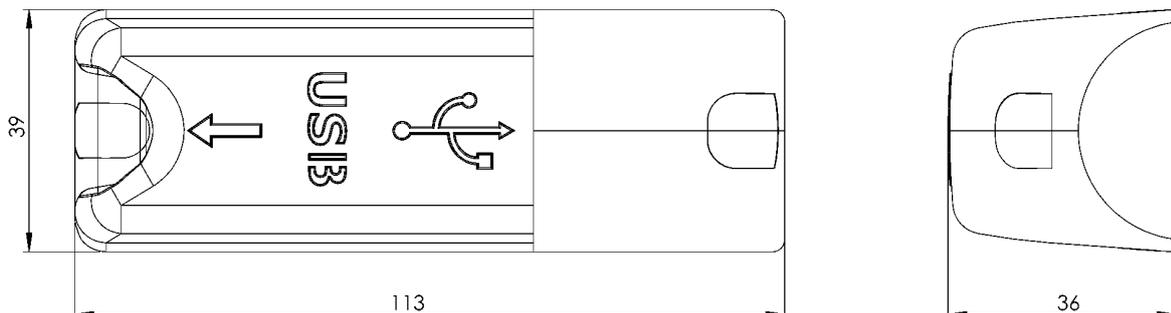


# POLE MOUNTED USB CHARGER

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

## TECHNICAL DATA

|                                      |  |
|--------------------------------------|--|
| Input voltage range                  | 9-32Vdc  |
| Output voltage                       | 5Vdc +/- 0.2V for BC 1.2V and up to 9Vdc for Q.C 3.0   |
| Output power                         | 10W for BC1.2 and 12W for Q.C 3.0  |
| Application                          | Charges all USB devices Including Apple and Android  |
| Transient voltage protection         | Meets ISO7637-2 International standard for 12/24V vehicles and EN61000.4.4 and 4.5   |
| Output noise                         | <50mV pk-pk  |
| Off load current (quiescent current) | <1.7mA   |
| Power conversion efficiency          | 90%  |
| Operating temperature                | -25°C to +55° to meet this specification table   |
| Storage temperature                  | -25°C to +100°C  |
| Operating humidity                   | 95% max., non-condensing   |
| Casework                             | Dark grey polycarbonate body (R118 + EN45545 materials approved)   |
| Connections                          | Input: 6.3mm push-in flat blade connectors<br>Output: USB type 'A' single socket - tested to 10,000 mating cycles  |
| Output indicator                     | LED indicates unit operational   |
| Mounting method                      | Screw mounting to vertical pole (Ø35mm)  |
| 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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive   |
| Designed to                          | EN50498, EN55032, EN50155, EN50121-3-2 & ISO 7637-2.   |
| Markings                             | CE and E marked  |
| IP Rating:                           | IP53   |



# ICI SERIES DC-DC INTELLIGENT BATTERY CHARGERS

## DC-DC INTELLIGENT BATTERY CHARGERS

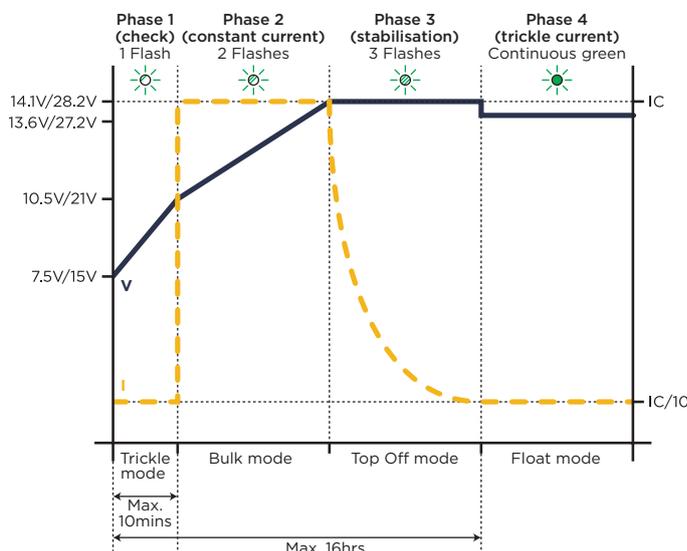
While many applications can be supplied using a standard voltage converter or stabiliser, sometimes there can be a requirement to charge one DC battery from another in order to provide independent power. The Alfatronix range of DC-DC chargers are based on the very successful PowerVerter range but configured 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<br>+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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive   |
| Designed to                          | EN50498, EN55022, ISO 7637-2, EN61204-3  |
| Markings                             | CE and E (automotive) marked   |

### 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.



- 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.

### 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

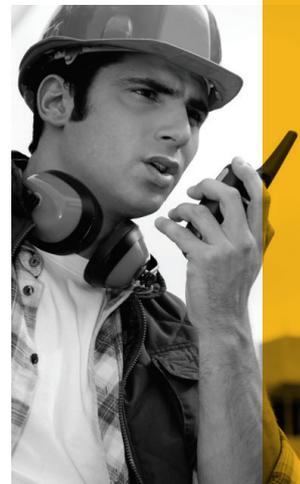
An alarm output is provided which, once the threshold has been reached for 10 seconds, will activate, sounding an alarm or other indicating device for a further 50 seconds prior to disconnection. This allows the operator to restart the engine or take other action to maintain continuous power. (alarm 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.



- 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<br>(% of continuous value) | 110% for 10s<br>200% for 1s<br>300% for <0.5ms<br>On over current shutdown there is a retry every 30s  |
| Quiescent current when shutdown<br>(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<br>PT40/60 M6 ring tongues<br>PT100/200 M10 ring tongues<br>6.3mm push-in flat blade connectors for earth, switch, override and alarm<br>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)<br>PT40/60/100/200 3off half inch No8 pozi pan head screws (supplied)  |
| Safe area protection:                                    | Over current Limited by current sensing circuit<br>Over heat Limited by temperature sensing circuit<br>Transients Protected by filters and rugged component selection<br>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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive<br>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

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

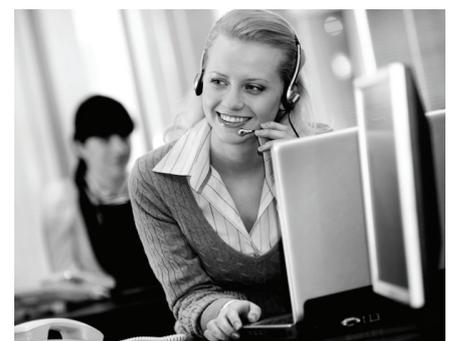
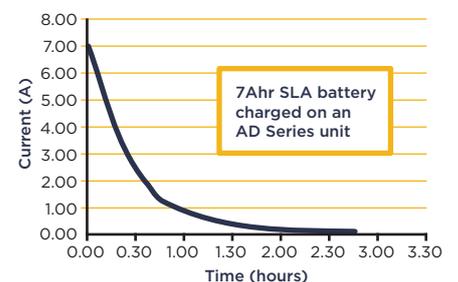
## PRODUCT CODING

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<br>+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<br>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<br>2014/35/EU The low voltage directive<br>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          | 168            | 48          |            |    |     |
|          |                        | PRO7100          | 168            | 48          |            |    |     |
|          |                        | 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/B302     | 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/B360     | 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<br>Hytera TM 800<br>Simoco<br>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.



Motorola  
1400/1600

Motorola  
MTM800 TETRA

Motorola  
DM3400

Hytera  
MD785

Tait  
TM8105

Hytera  
TM600

# 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 PowerVerterers 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<br>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<br>Regulation 10 The automotive directive<br>93/68/EEC The CE marking directive |
| Markings                             | CE and E (automotive) marked   |

## 'T' SHAPED MOUNTING CRADLE

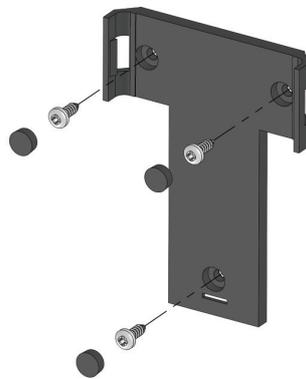
Many Alfatronix products are installed using our 'T' shaped mounting cradle. This is manufactured from VO rated (self-extinguishing) glass filled polycarbonate material and exhibits excellent strength and durability characteristics. The three point design allows for flat installation, even on uneven 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.

1.



2.



3.



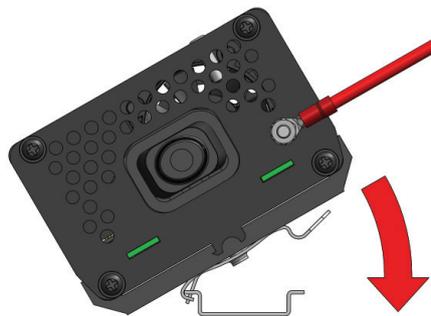
## DIN RAIL MOUNTING CLIP

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.

1.



2.



3.

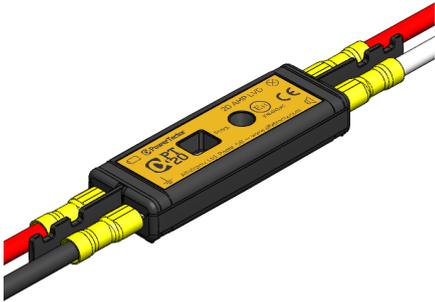


## POWERTECTOR INSTALLATION METHODS

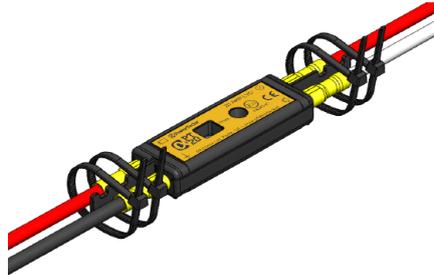
Depending on the size of the units, the PowerTector battery guards use two different mounting methods.

For any units up to 200A, 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.

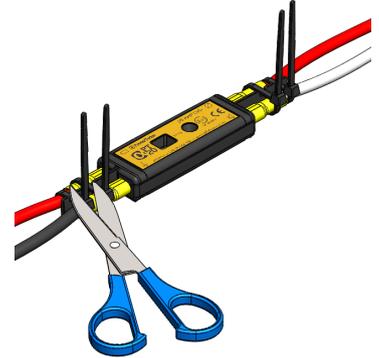
1.



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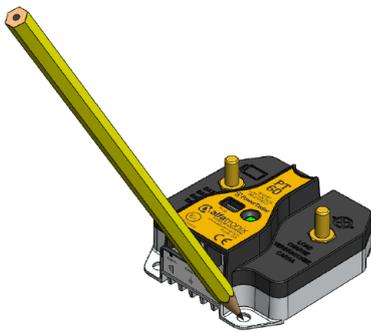


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Units from 40-200A use a die cast aluminium body configured with three mounting holes. These are offset slightly from the heat-sink structure to allow installation onto uneven surfaces and provide for airflow beneath the unit.

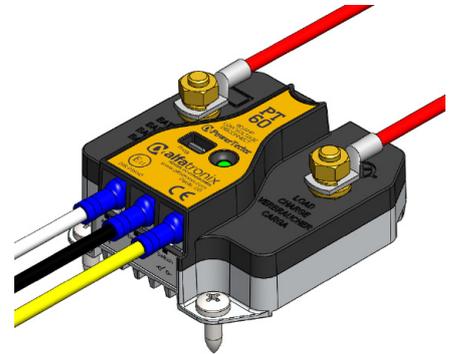
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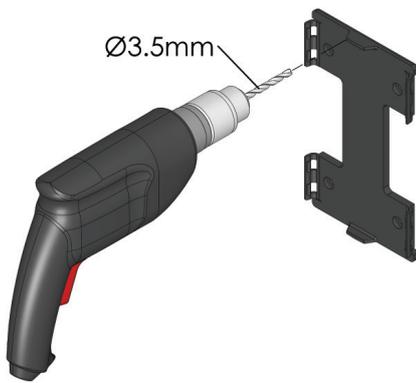
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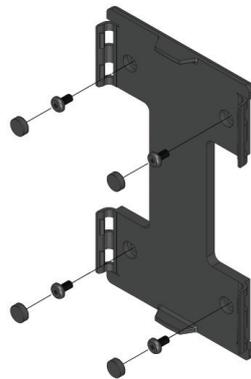
### 'I' SHAPED MOUNTING CRADLE

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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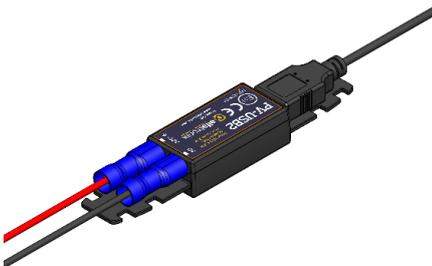
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### PV-USB2 INSTALLATION METHODS

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.

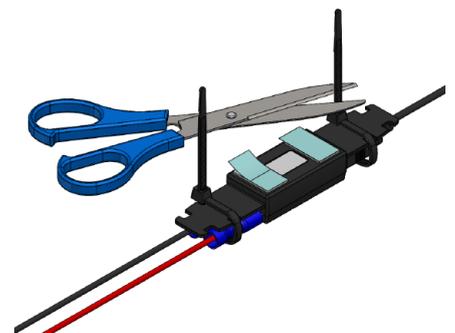
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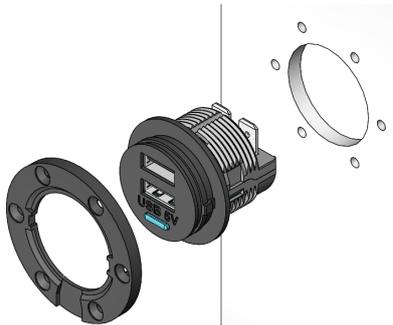
## PVPro & PV65R INSTALLATION METHODS

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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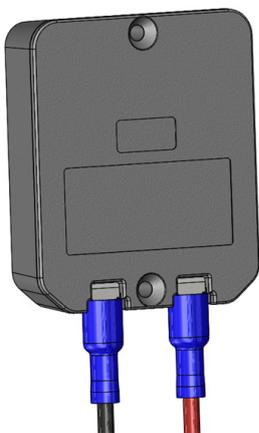


## INTEGRATED WIRELESS CHARGER INSTALLATION

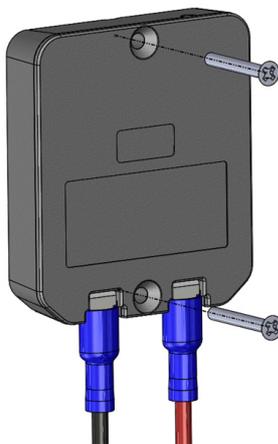
Crimp cables on to blade terminals and plug onto unit. Using screws provided secure the device in desired location. (No.6 x 25 provided)

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

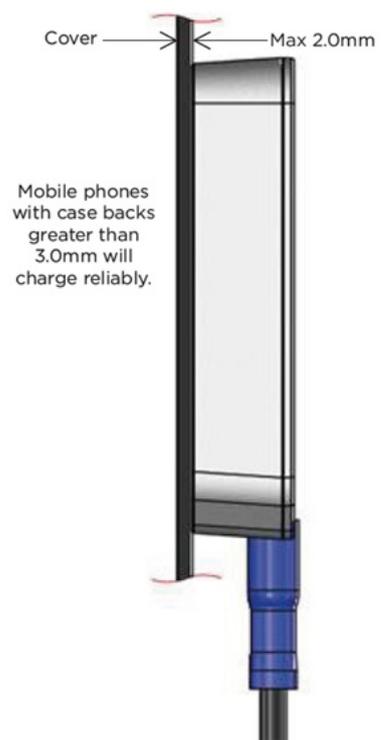
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### WIRELESS CHARGER INSTALLATION

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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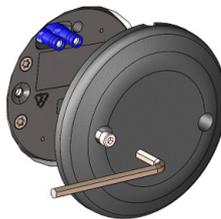
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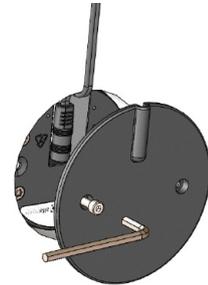
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