

676-494  
723-939 to 976



# **P**owerVerter



**24/12V Converters  
for the mobile  
telecommunications  
industry**



$\alpha$   
**Alfa**TRONIX  
CE

## *Users of PowerVerter converters benefit from the following features:*

### ● **Conservative**

#### **CONTINUOUS rating**

Permits use of a lower rated unit for intermittent power requirements. Saves you money.

### ● **High Conversion EFFICIENCY**

Low quiescent current conserves battery power. Regulated and filtered outputs ensure peak appliance performance whilst converter remains cool and reliable.

### ● **CORROSION problems eliminated**

Aluminium and automotive grade, glass filled nylon casework, is designed to be dust and splash proof.

### ● **Savings on INSTALLATION Costs**

Push-on terminals, remote 'power on' switching, integral earthing resistor and earthing lead fitted with grounding tag makes installation easy, even in confined spaces.

### ● **MECHANICAL Simplicity**

Three point fixing of universal mounting clip with simple click location.

### ● **Output Voltage INDICATOR**

Built in LED indicator monitors the converter output to assist fault tracing by non-technical personnel. This saves engineer call outs and reduces maintenance costs.

### ● **Can be SOLD anywhere**

Tested to international standards and compatible with other electronic equipment. All embracing circuit protection for itself and attached systems.

## *Why buy an Isolated Switchmode Converter?*

Switchmode Converters, when compared to conventional 'linear' converters, are smaller, run cooler and are more efficient under load. Cool running prevents the need for ventilation which means the units can be sealed against damp and dust. Their sophisticated circuitry, however, usually results in an unacceptably high quiescent (off load) current. The PowerVerter range has an inherently low quiescent current which can be avoided by using the remote switching facility. This signal line also simplifies the installation by eliminating the need for relays and allowing shorter routing of heavy supply cables.

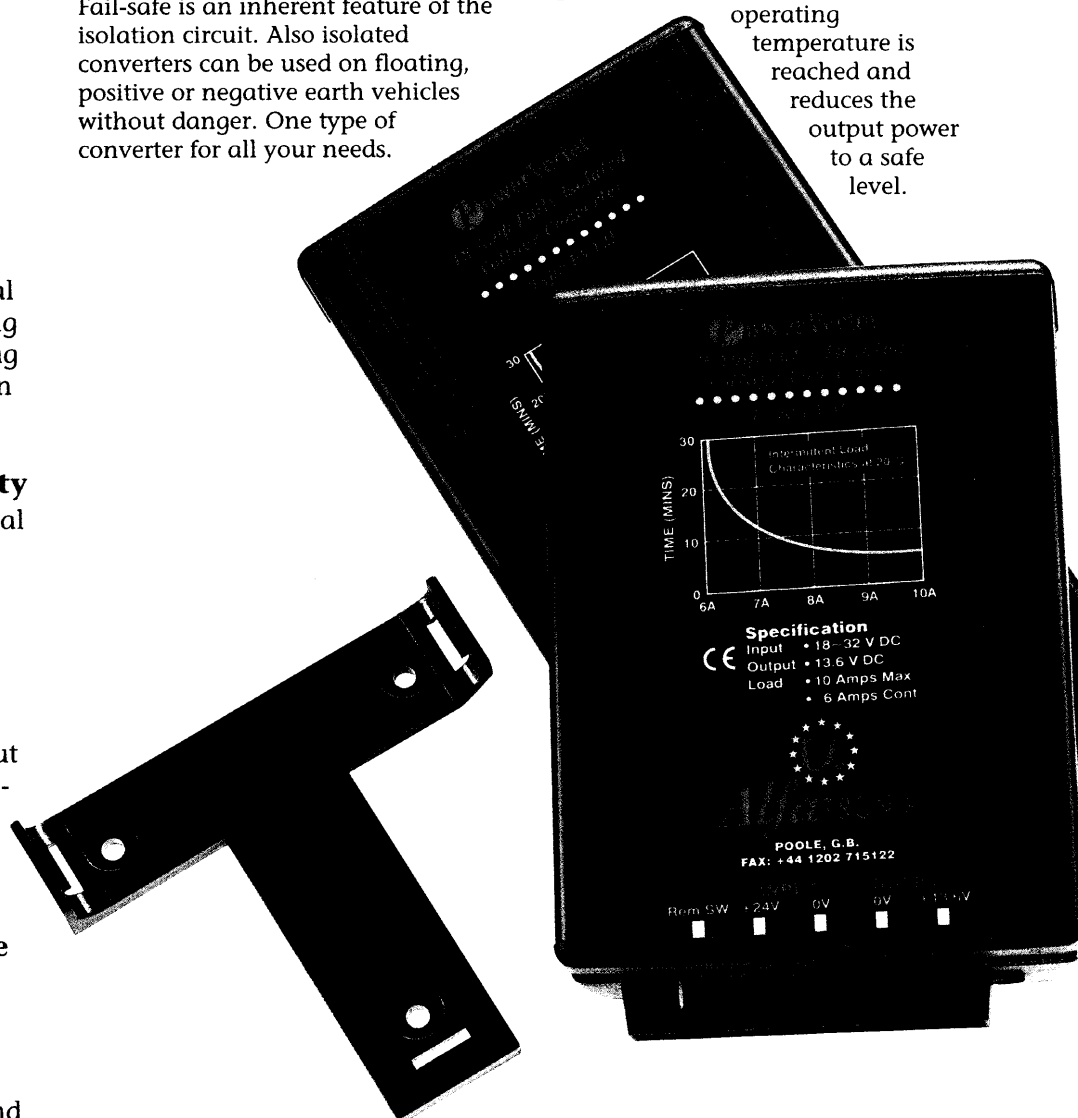
The most highly stressed components in a converter are the power devices. If these fail the output of an isolated converter falls to zero. Fail-safe is an inherent feature of the isolation circuit. Also isolated converters can be used on floating, positive or negative earth vehicles without danger. One type of converter for all your needs.

## *Why buy a Linear Converter?*

Linear Converters are low cost and do not generate any radio interference, but they have no inherent input to output isolation so they can only be used on negative earth vehicles. Unlike switchmode converters which convert input power to output power, linear converters simply "burn off" the excessive power. Above six amps continuous operation, switchmode becomes the only practical option, the heat generated by linears would cause practical installation difficulties.

However, given the inherent practical limitations of linear circuits, AlfaTronix linear converters are carefully designed to run as cool as size limitations allow and have devices to protect against incorrect installation, operation or device failure. A temperature sensing circuit operates if the maximum safe

operating temperature is reached and reduces the output power to a safe level.



## Technical Data

Model	PV3I	PV6I	PV12I	PV2L	PV4L	PV6L
Type:	ISOLATED SWITCHMODE			NON-ISOLATED LINEAR		
Load: Intermittent:	6A	10A	18A	10A	10A	10A
Continuous:	3A	6A	12A	2A	4A	6A
Intermittent time at 33% Duty Ratio:	5 min	5 min	5 min	1 min	2 min	3 min
Quiescent Current:	<70mA	<70mA	<70mA	<35mA	<35mA	<35mA
If Rem. Sw. off:	<100µA	<100µA	<100µA	<100µA	n/a	n/a
Remote Switch:	yes	yes	yes	yes	no	no
Isolation:	>400Vrms	>400Vrms	>400Vrms	n/a	n/a	n/a
Earthing Resistor:	yes	yes	yes	no	no	no
Length mm (L):	88	126	166	88	96	156
Width mm (W):	87	87	87	87	87	87
Depth mm (D):	50	50	50	50	58	58

Input Voltage Range:	Operating: 17Vdc to 32Vdc.
Output Voltage:	The output voltage is at least half the input voltage, up to a maximum of 14.4Vdc.
Output Noise:	< 50mV peak to peak at rated current.
Remote Switch Voltage:	> 16Vdc switches unit on.
Remote Switch Current:	< 100µA when unit switched on.
Remote Switch line permits quick installation to MPT 1362 Code of Practice.	
Operating Temperature:	-25°C to +30°C Derate linearly to 0A at 80°C.
Storage Temperature:	-25°C to +100°C.
Operating Humidity:	95%.
Max. Case Temperature:	100°C at full load at 20°C ambient. Automatically limited if overload attempted.
Switchmode Efficiency:	>80%.
Transient Protection:	ISO 7637-2 Transient Protection on 24V vehicles. Static: 8KV ESD.
Casework:	Marine grade anodised aluminium. Isolated Units are protected against dust and water. Linear units are protected against dripping water.
Output Indicator:	Red LED adjacent to 12V output.
Installation fixings:	3 hole mounting clip.
Connections:	6.3mm Push-on terminals.
Electro Magnetic Compatibility:	General EMC Directive 89/336/EEC. Automotive EMC Directive 95/54/EC.
Isolation on switchmode units:	Between Input, Output and Case >400Vrms (meets Institute of Petroleum Specification DOC-1.92.1). Internal 1K earthing resistor connected to external flying lead and tag.
Case Isolation on all units:	Between case and circuitry >400Vrms.
Protection:	
Overcurrent:	Internally limited.
Overheat:	Internally controlled by thermal sensor.
Overvoltage:	Linears: protected by Zener crowbar circuit. Isolated: by close down circuit.
Transients:	By filters and component selection.
Reverse Connection:	By protection diodes.

**α**  
**AlfaTRONIX**

**POWER. No compromise**

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## I need a model suitable for a hazardous environment

The PV3I, PV6I and PV12I meet the isolation specification of the Institute of Petroleum and all other petrochemical and vehicle regulations known to us. They are thus suitable for all forms of 24Vdc supplies irrespective of the earthing used: positive, negative or floating earth such as found on petrol tankers, fire fighting-, airport-, public service vehicles, fishing boats, commercial and pleasure vessels. They are designed to meet EU EMC requirements for Information Technology Equipment.

## How do I know that my appliance will not be damaged?

PowerVerterers contain electronic protection circuits for most eventualities (including up to 400Vrms input/output isolation on the isolated units). Some circuits protect against accidental damage such as reverse polarity or input/output interchange whilst others ensure no damage can occur to the appliances connected to it by RF, power transients/ surges or electrostatic discharges. Should the converter be overloaded or fail itself, its output inherently falls to zero (isolated units) or a protection circuit will blow the input fuse (non isolated units).

## What is the value of the CE Mark?

The CE Mark carried by a converter guarantees that it has been tested to international standards and that it is compatible with other electronic equipment. It will incorporate transient and overload protection for itself and attached appliances.

## How easy is the installation?

Comprehensive installation instructions are provided with self-explanatory diagrams and international text. To meet British Petro-Chemical regulations, isolated converters are supplied with labels to be fitted to converter and radio, a tamperproof seal to be attached between converter and vehicle, an insulated mounting clip to act as a mounting board, and an internal 1K $\Omega$  connected to a flying earth lead terminated in a tag to be attached to vehicle chassis.

System	Load	Suitable Unit	Suitable Unit	Suitable Unit	Suitable Unit
Cellular (GSM/ETACS) CB Radio	0.5 A Rx 2 A Tx	•			
Private Mobile R (VHF) Marine Mobile R (VHF)	0.5 A Rx 5 A Tx		•		
Public Access Mobile R (MPT1327)	2 A Rx 8 A Tx			•	
Multiple Loads	12 A Aveg 18 A Pk				•
Isolated Electrical System	Light Duty Intensive	PV3I PV3I	PV3I PV6I	PV6I PV12I	PV12I PV12I
Negative Earth Electrical System	Light Duty Med Duty Intensive	PV2L PV2L PV4L	PV2L PV4L PV6L	PV4L PV6L PV12I	PV12I PV12I PV12I

There will be a PowerVerter to suit your requirements for radio installation in 24V vehicles, for transmitters up to 50 Watts, on positive, negative or isolated earth vehicles, with or without remote control. Choosing from the PowerVerter range will simplify your training requirements, reduce the possibility of fitting the wrong type of converter and reduce the variety of parts that you have to stock.

The economies achieved will enhance your reputation with your customers and provide you with better profits.

## Which PowerVerter is for me?

### 1. What type of vehicle electrical system?

- a) **Isolated or positive earth?**  
Choose an isolated converter.
- b) **negative earth?**  
Choose an isolated or linear converter.
- c) **do not know?**  
No problem, play safe, choose an isolated converter.

### 2. What equipment is the converter to be used with?

See the table below

