

## DC/DC Converters with Wide Input Range for Industrial Applications Standard Stock Models



F2: 200W; F1: 150W; F0: 100W

### Features

- Field-proven converter topology
- Wide input range: 20-60Vdc or 65-160Vdc
- Custom inputs available upon request
- EMI: EN55022 Class B for most models
- Designed to meet EN60950 safety
- Double regulator overvoltage protection
- Overload protection
- Inrush current limiting
- Convection/conduction cooled - no fan
- Single output. Custom outputs available
- Designed for heavy industrial and other harsh environment applications

### GCW Series Key

Model	DC - Input	Output V/A	Power
GCW 100-12 FT	20-60V	12V/8A	100W
GCW 100-24 FT	20-60V	24V/4	100W
GCW 100-48 FT	20-60V	48V/2	100W
GCW 150-12 FT	20-60V	12V/12	150W
GCW 150-24 FT	20-60V	24V/6	150W
GCW 150-48 FT	20-60V	48V/3	150W
GCW 200-12 FT	20-60V	12V/16A	200W
GCW 200-24 FT	20-60V	24V/8A	200W
GCW 200-48 FT	20-60V	48V/4A	200W
GCW 100-110/12 FT	65-160V	12V/8	100W
GCW 100-110/24 FT	65-160V	24V/4	100W
GCW 100-110/48 FT	65-160V	48V/2	100W
GCW 150-110/12 FT	65-160V	12V/12	150W
GCW 150-110/24 FT	65-160V	24V/6	150W
GCW 150-110/48 FT	65-160V	48V/3	150W
GCW 200-110/12FT	65-160V	12V/16A	200W
GCW 200-110/24FT	65-160V	24V/8A	200W
GCW 200-110/48FT	65-160V	48V/4A	200W

### Input:

<b>Input Voltages</b>	20...60Vdc and 65...160Vdc
<b>Input Protection</b>	Reverse polarity protection by crossbar diode on 20-60V input and series diode on 65-160V input; inrush current limiting; thermal fuse; varistor
<b>Isolation</b>	Input to chassis/output: 1500Vdc; Output to chassis: 500Vdc
<b>EMI</b>	EN 55022 Class A as a minimum

### Output:

<b>Output Power</b>	100W (GCW 100), 150W (GCW 150), 200W (GCW200)
<b>Output Voltage</b>	12V, 24V or 48Vdc are standard. Other voltages available upon request
<b>Line Regulation</b>	0.5%
<b>Load Regulation</b>	Maximum $\pm 1\%$ from no load to full load
<b>Over-voltage Protection</b>	Double regulator loop
<b>Over-load protection</b>	Rectangular current limiting with hiccup type short circuit protection.
<b>Output Ripple/Noise</b>	High frequency ripple is better than 30mVrms or 200mVpp (20 MHz BW).
<b>Operating Temperature Range</b>	0°C to +50°C for full specifications with convection/conduction cooling. Extended temperature ranges available
<b>Temperature Drift</b>	0.03% per °C over operating temperature range
<b>Efficiency</b>	Minimum 80% at full load
<b>MTBF</b>	150,000 hours at 45°C
<b>Input/Output Connection</b>	Screw-type terminal block, 3/8" spacing
<b>Mechanicals 100W</b>	Enclosed F0 package: 3.4" x 6.1" x 1.9". Weight: 1.2 lbs; PCB Size: 3" x 5". Component height: 1.5"
<b>Mechanicals 150W</b>	Enclosed F1 package: 7.8" x 4.4" x 2.0". Weight 1.64 lb; PCB Size: 100mm x 160mm; Component height: 1.5"
<b>Mechanicals: 200W</b>	Enclosed F2 package: 10" x 4.425" x 2.25". Weight 2.5 lb; PCB Size: 100mm x 220mm; Component height: 1.75"
<b>Warranty</b>	Twelve months subject to application within good engineering

Enhancements to these general specifications and customizing can be accommodated upon request.  
Designed to meet common approval requirements. Specifications subject to change.



## 300W, RUGGED CONVECTION/ CONDUCTION COOLED DC/DC CONVERTER GCW300 SERIES – DATA-SHEET



- Single regulated and adjustable output
- 300W output power
- Rugged industrial quality
- Full electronic protection
- Field-proven design in a wide range of applications

The GCW300 Series DC/DC converter uses a field proven high frequency push-pull topology to generate 300W output power with convection/conduction cooling. Any DC input/output configuration is possible. The chassis-mount design features low component count and high efficiency. The use of high quality components and rigorous quality control results in a demonstrated MTBF exceeding 1,000,000 hours confirmed by a track record established in hundreds of applications. Additional ruggedizing and conformal coating are available for applications requiring higher immunity to shock, vibration, humidity, moisture, dust and insects.

### SPECIFICATIONS

**Input Voltage**

Any DC input from 24V to 125Vdc  $\pm$  15% range  
At 12Vdc input the output power is reduced to 250W

**Input Protection**

Internal safety fuse  
Inrush current limiting  
Reverse polarity  
Lower voltage than specified input min. will not damage unit

**Input Isolation**

Appropriate to the input/output configuration to meet safety standards

**Standards**

Designed to meet EN60950 and related UL & CSA standards

**EMI**

EN 55022 Class A as a minimum

**Switching Frequency**

50kHz +/- 3kHz

**Output Voltage**

Any DC output from 12V to 125VDC, 300W without fan cooling.

**Redundancy diode**

Optional

**Line/Load Regulation**

+/-1% combined

**Dynamic Response**

Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time

**Output Ripple/Noise**

Better than 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHZ BW)

**Output Overvoltage Protection**

Double regulator loop

**Overload Protection**

Current limiting with hiccup type short circuit protection  
Self-resetting thermostat for thermal protection

**Efficiency**

Min 80% at full load

**Operating Temperature**

0 to +50°C with convection.  
Extended temperature range available

**Temperature Drift**

0.03% per °C over operating temperature range

**Cooling**

Convection and conduction cooling via base plate

**MTBF**

200,000 hours @ 45 °C (calculated)  
Demonstrated MTBF exceeds 1,000,000 hours at typical operating temperatures

**Indicators**

Optional

**Control Input**

None

**Alarm Outputs**

Optional

**Environmental Protection**

Basic ruggedizing  
Optional heavy ruggedizing and conformal coating is available

**Dimensions**

F3: 5.2" x 11.4" x 2.4"

**Weight** 1.8 kg

**Connections**

12 pole barrier type terminal block with 3/8" spacing

**Warranty**

Two Years subject to application within good engineering practice

## GCW 500 Series

### 500W, Rugged, Conduction/Convection Cooled DC/DC Converter

- Rugged industrial quality
- Conduction/convection cooled
- Full electronic protection
- Field-proven design in a wide range of applications
- Cost optimized



The GCW 500 Series rugged, industrial quality DC/DC converter use a field proven topology to generate 500W output power. It is a mature design with a track record in numerous applications. This chassis-mount design is optimized for cost efficiency. The use of components with established reliability results in a high demonstrated MTBF. The series has large design headroom and is rated for operation over a wide temperature range without derating. Cooling is by conduction via baseplate to a heatsinking surface and by natural convection. Additional ruggedizing and conformal coating are available for applications requiring higher immunity to shock, vibration and humidity. The GCW 500 is manufactured at our plant under strict quality control.

## SPECIFICATIONS

### Input Voltage

Any DC input from  
24V to 125Vdc  
typically -13%, +25%  
For other inputs contact factory

### Input Protection

Inrush current limiting  
Varistor  
Reverse polarity  
Internal safety fuse  
Lower voltage than specified  
minimum input will not damage  
unit

### Input Isolation

Appropriate to the input/output  
configuration to meet safety  
standards

### Standards

Designed to meet EN60950 and  
related UL & CSA standards

### EMI

EN 55022 Class A as a minimum

### Switching Frequency

55kHz +/- 3kHz

### Output Voltage

Any DC output from 24V to  
125Vdc, 500W without fan cooling

### Redundancy diode

Optional

### Line/Load Regulation

7/-1% combined

### Dynamic Response

Max 5% voltage deviation for 10%  
to 50% load step, with better than  
1msec recovery time

### Output Ripple/Noise

Better than 1% of output voltage  
peak to peak or 0.2% RMS of the  
output voltage (20MHz BW)

### Overload Protection

Current limiting with hiccup  
type short circuit protection  
Thermal shut-down with automatic  
recovery in case of insufficient  
cooling.

### Output Overvoltage Protection

Double regulator loop

### Efficiency

Typically min 80% at full load  
(depending on input/output  
configuration)

### Operating Temperature

0 to +50°C with convection.  
Extended temperature range  
available

### Temperature Drift

0.03% per °C over operating  
temperature range

### Cooling

Conduction to customer heatsink  
or chassis and natural convection

### Environmental Protection

Basic ruggedizing  
Optional heavy ruggedizing and  
conformal coating is available

### MTBF

160,000 hours @ 45°C  
Demonstrated MTBF is  
significantly higher

### Indicators

Green "Power ON" LED, visible  
through the cooling slots

### Control Input

None

### Alarm Outputs

Optional (Form C alarm)

### Package / Dimensions (W x H x L)

F4: 130 x 62 x 353 mm  
(5.1" x 2.43" x 13.9") including  
terminal block and flanges.  
Mounting holes are clear

### Weight

2.2 kg (5 lbs) approx.

### Connections

12-pole barrier type terminal block  
with 3/8" spacing for input/output

### RoHS

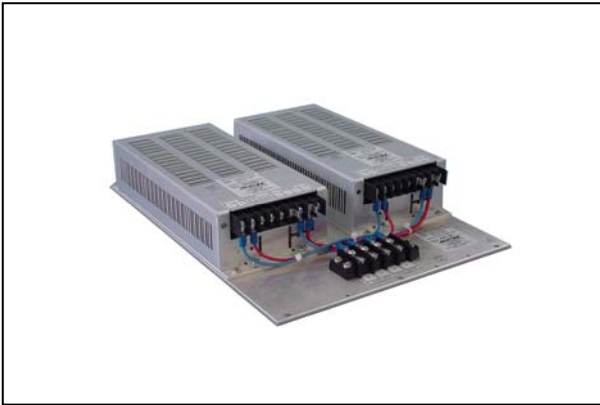
Fully compliant

### Warranty

Two years subject to application  
within good engineering practice

# GCW1000 SERIES

DC / DC Single Output: 1000 Watts



## Features

- Wide range of input / output voltage combinations
- 1000 watt output power
- Convection cooled: No fans
- Built-in isolation diode
- Output Fail alarm: standard
- Fully isolated input – output
- Over voltage protection
- Overload and short circuit protection
- MTBF > 200,000hrs
- Any output from 24dc ~ 110vdc possible

## General Specifications

<b>Input Voltage</b>	24VDC ( 20 ~ 30 ) 48VDC ( 38 ~ 60 ) 110VDC ( 88 ~ 135 )
<b>Output voltage</b>	24V, 48V, 110V are standard
<b>Output Power</b>	1000 Watts
<b>Voltage Adjust.</b>	-1% to +15% ( GCW500 modules )
<b>Output Protection</b>	Over current protection Over voltage protection
<b>Operating Temp</b>	0°C to 50°C at 100% load
<b>Isolation</b>	Input – Output: 1500VDC
<b>Cooling</b>	Convection cooled
<b>Parallel Operation</b>	N / A.
<b>Alarm</b>	YES, Build-in Voltage Free Contacts
<b>Dimensions</b>	450 x 350 x 66mm 5.2kg

## Description

The GCW1000 Series DC/ DC converters use a combination of two GCW500 models, with their outputs **connected in series** to provide a 1kw solution from standard 500W modules.

This solution provides a field proven high frequency push-pull topology to generate 1000 watts output power with convection / conduction cooling, offering a range of standard input / output configurations.

The chassis-mount design features low component count and high efficiency, resulting in a demonstrated MTBF >200,000hrs confirmed by a track record established in hundreds of applications.

A built-in isolation diode on each of the GCW500 modules, provides further system reliability and output dc fail alarm for external signalling.

Model 1000W	Input V	Output		Power W
		V	A	
GCW1000 -24-24FT	24V	24V	40A	960W
GCW1000 -24-48FT	24V	48V	20A	960W
GCW1000 -24-110FT	24V	110V	9A	1000W
GCW1000 -48-24FT	48V	24V	40A	960W
GCW1000 -48-48FT	48V	48V	20A	960W
GCW1000 -48-110FT	48V	110V	9A	1000W
GCW1000 -110-24FT	110V	24V	40A	960W
GCW1000 -110-48FT	110V	48V	20A	960W
GCW1000 -110-110FT	110V	110V	9A	1000W

