User Manual
DC/ DC Converters
DCW300 / DCW500
300 / 500 watts
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1: **General:**
The DCW300 & DCW500 Series product is a range of dc/dc converters, designed for use in industrial (fixed) applications. They are designed to step up or step down dc voltages.

2: **Input Voltage options:**
These units are offered with a range of “standard” input voltages, as illustrated in the general product data sheet table, but can also be manufactured to customer’s special input voltage.

3: **Output Voltage options:**
These units are offered with a range of “standard” output voltages, as illustrated in the general product data sheet table, but can also be manufactured to customer’s special input voltage.

4: **Output Voltage Adjustment:**
The output voltage is user adjustable via a trim pot on the side of the unit.

The output adjustment is typically 0% ~ 15%, but can be customised to suit customer requirements. **Warning:** If the output voltage is adjusted too high, the unit will shut down to protect the load connected to it. Should this occur, turn the input power off, wind back the voltage trim pot to approximately where it should be and turn the power back on after approximately 30 seconds.

5: **Over Voltage Protection (OVP)**
Overvoltage protection is by way of double regulator loop, which will shut down the output voltage. Should this occur, turn the input power off, for approximately 30 seconds and then turn power back on. If the unit fails to power up, it needs to be returned to service department for investigation.

6: **Over Current Protection (OCP)**
The DCW300 / 500 employ a constant current with hiccup mode (over load / short circuit) protection. At approximately 60% of the output voltage, the unit operates in constant current mode and then enters hiccup mode for short circuit protection.

7: **Cooling:**
Cooling by way of conduction (to customer chassis) and natural convection. ...NO fans.
For reliable operation the power supply should be mounted such that:
There is no obstruction to convected air for units cooled by natural convection.
Air temperature does not exceed maximum rated ambient.

8: **Operating Temperature:**
Figure 8-1 is a typical illustration of the derating required if the unit operates in high ambient environments.

![Fig 4-1](image-url)
![Fig 8-1](image-url)
9: **Connections:**

The connection details illustrated in Fig 9-1 is of a typical standard model and it may vary from unit to unit and or design.

**DC Input:** + - & Earth

**Alarm:** The units are supplied with a Power Fail Alarm. This will operate if the Input power is lost, or the output voltage fails. The alarm is by way of "voltage free" change over contacts. User can select to use FAIL OPEN or FAIL CLOSE in reference to COM.

**Negative Output:** - - load connection for –VE output.

**Positive output:** The standard units are designed with built-in isolation diode. This allows the connection of two units in parallel for **N+1 Redundancy** applications.

10: **Single Unit Operation:**

**Note:**
- The terminals are rated at 25A each. In some input / output configurations, where the current is above 20A, all the –VE & +VE terminals should be used.
- Input and output cables should be separated from one another for minimum interference and continued safety.
- Cables should be short and of adequate cross section to minimise voltage drop and resistive heating. Source and return cables should be run together for minimum pickup and radiation.
11: Parallel Operation of two units:
The DCW300 / 500 units have built-in output isolation diodes that allow two units (maximum) to be connected in parallel for N+1 Redundancy applications. This ensures that the output power to the load is available, in the event one of the units should fail. 

**Note:** Units are not to be connected in parallel for increase power

The two alarms can be connected in series or parallel to provide one common alarm if required.
12: **Series Operation of two units:**
The DCW300 / 500 units can be connected in series as per Fig 12.1. This allows for example two 24V output models to be connected in series for 48V output. Output diodes to prevent reverse voltage applied to each unit under certain conditions.

![Fig 12-1](image)

13. **Safety:**

In general these units are designed to be built into customer equipment and are therefore often of an open frame construction. Hazardous voltages and surface temperatures are therefore accessible on the printed circuit boards and exposed components. The user must ensure that these are not accessible after installation.

These hazards may still be present for a period of time after input disconnection. Therefore access to exposed unit should not be attempted until at least 2 minutes after disconnection and then only by qualified personnel.

The input voltage, requirements are specified on the unit rating label. Failure to operate within these ratings may result in a safety hazard, and the unit may be permanently damaged.

For continued protection against electric shock user must not allow units to operate in high moisture environments (see product specification for humidity rating). If exposed to such, remove supply voltage and allow to dry out before further use

**Fuses:** Most units will have an on-board input fuse. **WARNING:** Should this fuse blow, **DO NOT** replace the fuse. The units needs to be returned to a qualified service technician for investigation, before fuse is replaced. For continued protection against fire hazard replace fuses only with correct type and rating (fast 'F' HRC). See label for fuse rating.

**Environment**
Fire hazard may occur if power supply is operated in atmospheres designated explosive or highly corrosive, or atmospheres containing a high level of abrasive dust, or in extremes of temperatures outside specified limits (see product specification), or environments unprotected from severe impact.
DCW300-500 SERIES
DC/DC Converters Single Output: 300 ~ 500 Watts

Features
- Wide range of input / output voltage combinations
- 300 and 500 watt power options
- Convection cooled: No fans
- N+1 redundancy: standard
- Output Fail alarm: standard
- Fully isolated input – output
- Over voltage & short circuit protection
- MTBF > 200,000hrs
- Specials input / output combinations on request.
- Any output from 12vdc ~ 120vdc possible

Specifications

<table>
<thead>
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<th>Model</th>
<th>Input V</th>
<th>Output V</th>
<th>A</th>
<th>Power W</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCW300-24-12FT</td>
<td>24V</td>
<td>12V</td>
<td>25A</td>
<td>300W</td>
</tr>
<tr>
<td>DCW300-24-15FT</td>
<td>24V</td>
<td>15V</td>
<td>20A</td>
<td>300W</td>
</tr>
<tr>
<td>DCW300-24-24FT</td>
<td>24V</td>
<td>24V</td>
<td>12.5A</td>
<td>300W</td>
</tr>
<tr>
<td>DCW300-24-48FT</td>
<td>24V</td>
<td>48V</td>
<td>6.2A</td>
<td>300W</td>
</tr>
<tr>
<td>DCW300-24-110FT</td>
<td>24V</td>
<td>110V</td>
<td>2.7A</td>
<td>300W</td>
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<tr>
<td>DCW300-48-12FT</td>
<td>48V</td>
<td>12V</td>
<td>25A</td>
<td>300W</td>
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<td>DCW300-48-15FT</td>
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<td>110V</td>
<td>2.7A</td>
<td>300W</td>
</tr>
<tr>
<td>DCW300-110-12FT</td>
<td>110V</td>
<td>12V</td>
<td>25A</td>
<td>300W</td>
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<tbody>
<tr>
<td>DCW500-24-12FT</td>
<td>24V</td>
<td>12V</td>
<td>40A</td>
<td>480W</td>
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<tr>
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<td>15V</td>
<td>33A</td>
<td>500W</td>
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<tr>
<td>DCW500-24-24FT</td>
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<td>24V</td>
<td>20A</td>
<td>500W</td>
</tr>
<tr>
<td>DCW500-24-48FT</td>
<td>24V</td>
<td>48V</td>
<td>10A</td>
<td>500W</td>
</tr>
<tr>
<td>DCW500-24-110FT</td>
<td>24V</td>
<td>110V</td>
<td>4.5A</td>
<td>500W</td>
</tr>
<tr>
<td>DCW500-48-12FT</td>
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<td>12V</td>
<td>40A</td>
<td>500W</td>
</tr>
<tr>
<td>DCW500-48-15FT</td>
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<td>500W</td>
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<td>20A</td>
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<td>48V</td>
<td>10A</td>
<td>500W</td>
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<td>DCW500-48-110FT</td>
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<td>4.5A</td>
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Model Input V Output V A Power W
DCW300-24-12FT 24V 12V 25A 300W
DCW300-24-15FT 24V 15V 20A 300W
DCW300-24-24FT 24V 24V 12.5A 300W
DCW300-24-48FT 24V 48V 6.2A 300W
DCW300-24-110FT 24V 110V 2.7A 300W
DCW300-48-12FT 48V 12V 25A 300W
DCW300-48-15FT 48V 15V 20A 300W
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DCW300-110-12FT 110V 12V 25A 300W
DCW300-110-15FT 110V 15V 20A 300W
DCW300-110-24FT 110V 24V 12.5A 300W
DCW300-110-48FT 110V 48V 6.2A 300W
DCW500-24-12FT 24V 12V 40A 480W
DCW500-24-15FT 24V 15V 33A 500W
DCW500-24-24FT 24V 24V 20A 500W
DCW500-24-48FT 24V 48V 10A 500W
DCW500-24-110FT 24V 110V 4.5A 500W
DCW500-48-12FT 48V 12V 40A 500W
DCW500-48-15FT 48V 15V 33A 500W
DCW500-48-24FT 48V 24V 20A 500W
DCW500-48-48FT 48V 48V 10A 500W
DCW500-48-110FT 48V 110V 4.5A 500W
DCW500-110-12FT 110V 12V 40A 500W
DCW500-110-15FT 110V 15V 33A 500W
DCW500-110-24FT 110V 24V 20A 500W
DCW500-110-48FT 110V 48V 10A 500W

Line Regulation ±1% over input range
Load Regulation ±2% from no load to full load.
Output Protection
- Over voltage protection
- Current limiting with hiccup mode.
- Thermal protection
Short Circuit Protection
Current limiting with hiccup mode
EMI EN55022 class A
Immunity EN61000-4
Output Ripple & Noise 1% pk-pk maximum of output voltage setting
Operating Temp. 0°C to +50°C at full load.
Derate 2.5% per °C from 50° -70°C.
Humidity 10-95% non-condensing (Conformal Coating optional)
Cooling Conduction cooled or Convection cooled.
Output Alarm Built-in Voltage free relay contacts
Terminals Screw-type terminal block (other options on request)
Dimensions & Weight
DCW300: 290 x 132 x 62mm 2Kg
DCW500: 352 x 132 x 62mm 2.5Kg

REV (20-03-19)
DCW300-500 SERIES
DC/DC Converters Single Output: 300 ~ 500 Watts

DCW300

DCW500