

700PW Series

Distributed By:
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- **10 W/In³ Power Density**
- **1400 VDC Input/Output Isolation**
- **Wide 2:1 Input Voltage Range**
- **UL 1950 Approved**
- **CSA 22.2-950 Approved**
- **VDE / EN60950 Approved**
- **>1,100,000 Hours MTBF**

General Description

The **700PW** series is a family of compact 7.5W DC/DC converters that combine economy with high power density and high performance features at no sacrifice to field reliability. Eighteen models operate over 2:1 input voltage ranges of 9 to 18, 18 to 36 or 36 to 72 VDC; providing single and dual outputs of 5, 12, 15, ± 5 , ± 12 or ± 15 VDC. All models meet the requirements of IEC 950, and are fully approved to the latest revisions of UL 1950 (File No. E140645), CSA 22.2-950 (File No. LR89494) and VDE / EN60950.

Standard features include 1400 VDC input/output isolation, efficiency as high as 82%, tight line/load regulation and low output ripple and noise. Continuous short circuit protection (all outputs by input current limiting), undervoltage protection and an internal filter to reduce reflected ripple current are standard on all units.

Long field life is insured by extensive reliability screening performed at **CDI**. As part of normal production processing, each unit is subjected to burn-in that includes power cycling and load switching. This results in a Mean Time Between Failure (MTBF) per MIL-HDBK-217F which is over 1,100,000 hours (@ +25°C, ground benign).

All **700PW** series models are packaged in compact, low profile 1 x 2 x 0.375 inch metal cases. Continuous six-sided shielding virtually eliminates radiated emissions. This miniature size yields a power density as high as 10 W/In³. Operation is specified over the wide operating temperature range of -30°C to +75°C with no derating required. Cooling is by free air convection.

Electrical Specifications

Input Specifications:

| | |
|--------------------------------------|---------------------------|
| Input Voltage Range | See Model Selection Guide |
| Input Filter | LC Type |
| Reverse Polarity Input Current | 6A, Max. |
| Short Circuit Current Limit | 150% of I_{in} |
| Undervoltage Shutdown | 8 VDC |
| Reflected Ripple Current | See Model Selection Guide |
| Soft Start | 15 μ Sec to 1% |

Output Specifications:

| | |
|--|--|
| Voltage and Current Ratings ⁽¹⁾ | See Model Selection Guide |
| Output Voltage Accuracy | $\pm 1\%$, Max. |
| Voltage Balance, Dual Outputs | $\pm 2.0\%$, Max. |
| Ripple & Noise (20 MHz BW) ⁽²⁾ | 1% of V_{out} Pk-Pk |
| Line Regulation; Single Output Models | $\pm 0.5\%$, Max. |
| Dual Output Models | $\pm 1.0\%$, Max. |
| Load Regulation; Single Output Models | $\pm 0.2\%$, Max. |
| Dual Output Models | $\pm 1.0\%$, Max. |
| Minimum Load | 10% of Full Load |
| Temperature Coefficient @ FL | $\pm 0.02/^\circ\text{C}$, Max. |
| Transient Response ⁽³⁾ | 200 μ Sec, Max. |
| Short Circuit Protection (to 150% of P_{out}) | All Outputs, by Input Current Limiting |
| Short Circuit Duration | Continuous |
| Short Circuit Restart | Automatic |
| Over Voltage Protection | See Model Selection Guide |

General Specifications:

| | |
|----------------------------------|---------------------------|
| Efficiency | See Model Selection Guide |
| Isolation Voltage (1 min.) | 1400 VDC |
| Isolation Resistance | $10^9\Omega$ |
| Isolation Capacitance | 80 pF |
| Switching Frequency | 100 kHz, Min. |

Environmental Specifications:

| | |
|---|--|
| Operating Temperature Range (Ambient) | -30°C to +75°C |
| Storage Temperature Range | -40°C to +125°C |
| Derating | None Required |
| Relative Humidity | Up to 95%, Non-Condensing |
| Cooling ⁽⁴⁾ | Free-air Convection |
| EMI/RFI | Six-sided Continuous Shielded Metal Case |

Physical Characteristics:

| | |
|-----------------------------|--|
| Case Size | 1 x 2 x 0.375 inches (25.5 x 51 x 9.52 mm) |
| Case Material | Metal, Coated |
| Weight | 1.5 Oz (42.5g) |
| Shielding | Six-sided, Continuous |
| Shielding Connection; | |
| 12V, 24V Input Models | Pin 2 (- Input) |
| 48V Input Models | Pin 1 (+ Input) |

Reliability Specifications: ⁽⁵⁾

| | |
|--|------------------|
| MTBF; Ground Benign, @ +25°C Ambient | >1,100,000 Hours |
|--|------------------|

Model Selection Guide

| Model Number | Input | | | | Reflected Ripple (mA Pk-Pk) | Output | | | Efficiency @FL (%) |
|--------------|---------------|---------|--------------------|-----------|-----------------------------|---------------|--------------|--------------------|--------------------|
| | Voltage (VDC) | | Current (mA, Max.) | | | Voltage (VDC) | Current (mA) | Over Voltage (VDC) | |
| | Nominal | Range | No-Load | Full-Load | | | | | |
| 705S12PW | 12 | 9 - 18 | 46 | 791 | 120 | 5 | 1500 | 6.8 | 79 |
| 712S12PW | 12 | 9 - 18 | 46 | 791 | 120 | 12 | 625 | 15.0 | 79 |
| 715S12PW | 12 | 9 - 18 | 46 | 791 | 120 | 15 | 500 | 18.0 | 79 |
| 705D12PW | 12 | 9 - 18 | 46 | 791 | 120 | ±5 | ±750 | ±6.8 | 79 |
| 712D12PW | 12 | 9 - 18 | 46 | 783 | 120 | ±12 | ±313 | ±15.0 | 80 |
| 715D12PW | 12 | 9 - 18 | 46 | 783 | 120 | ±15 | ±250 | ±18.0 | 80 |
| 705S24PW | 24 | 18 - 36 | 50 | 386 | 60 | 5 | 1500 | 6.8 | 81 |
| 712S24PW | 24 | 18 - 36 | 50 | 386 | 60 | 12 | 625 | 15.0 | 81 |
| 715S24PW | 24 | 18 - 36 | 50 | 386 | 60 | 15 | 500 | 18.0 | 81 |
| 705D24PW | 24 | 18 - 36 | 50 | 382 | 60 | ±5 | ±750 | ±6.8 | 82 |
| 712D24PW | 24 | 18 - 36 | 56 | 382 | 60 | ±12 | ±313 | ±15.0 | 82 |
| 715D24PW | 24 | 18 - 36 | 50 | 382 | 60 | ±15 | ±250 | ±18.0 | 82 |
| 705S48PW | 48 | 36 - 72 | 36 | 198 | 30 | 5 | 1500 | 6.8 | 79 |
| 712S48PW | 48 | 36 - 72 | 36 | 198 | 30 | 12 | 625 | 15.0 | 79 |
| 715S48PW | 48 | 36 - 72 | 42 | 198 | 30 | 15 | 500 | 18.0 | 79 |
| 705D48PW | 48 | 36 - 72 | 35 | 204 | 30 | ±5 | ±750 | ±6.8 | 78 |
| 712D48PW | 48 | 36 - 72 | 37 | 198 | 30 | ±12 | ±313 | ±15.0 | 79 |
| 715D48PW | 48 | 36 - 72 | 42 | 198 | 30 | ±15 | ±250 | ±18.0 | 79 |

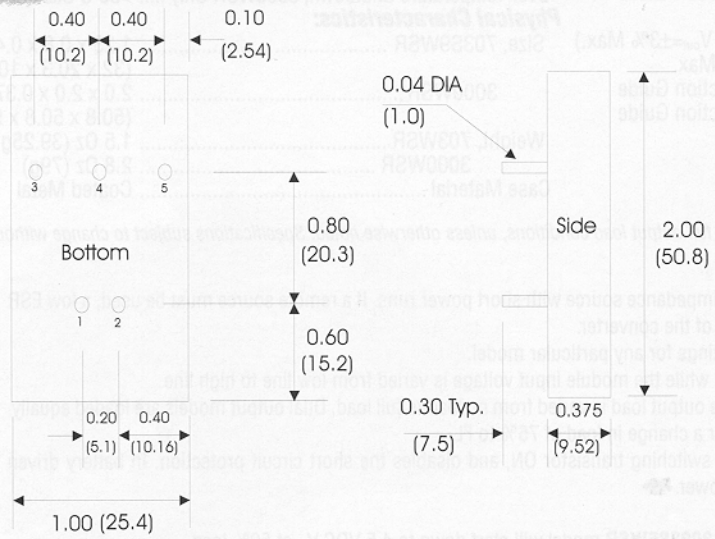
Specification Notes

- Care should be taken not to exceed the maximum power ratings for any particular model.
- These units operate as complete converters with no need for external components. However, in some noise sensitive analog applications it is recommended that a 15 µF - 25V tantalum electrolytic capacitor be placed in parallel with a 0.1 µF ceramic capacitor as close to the load as possible. This will reduce the output ripple to approximately 25 mV Pk-Pk.
- Transient response of the primary output is measured to within a 1% error band for a step change in output load of 25% load to full load.
- Free-air convection cooling requires that the application be properly ventilated. Using a converter in a sealed application, or one in which air movement is severely restricted, could cause thermal runaway. The use of a ground plane under the converter is recommended for heatsinking and to reduce EMI.
- MTBF calculations are made per MIL-HDBK-217F

Note:

For information on the standard conditions and methods used or approved by CDI to test DC/DC converter parameters, see the application note "DC/DC Converter Test Methods" on page 104.

Mechanical Configuration:



Pin-Out

| Pin | Single Output | Dual Output |
|-----|---------------|-------------|
| 1 | +Input | +Input |
| 2 | -Input | -Input |
| 3 | +Output | +Output |
| 4 | N/C | Common |
| 5 | -Output | -Output |

Note: All dimensions are typical in inches (mm).
Tolerance: X.XX = ± 0.02, (± 0.05)
X.XXX = ± 0.010, (± 0.25)
N/C = No Connection

