

**SERIES UWD**  
**UNIVERSAL AC-DC SWITCHING POWER SUPPLIES**

**Hi Reliability**  
**Industrial Grade**  
**Input Voltage (85 - 265V AC, 47 - 440Hz)**  
**Isolated 1500 VRMS**  
**Fully Regulated -- Up to 50 Watts**  
**Short Circuit Protected**

This series of switching AC-DC power supplies are available in 13 different models. All single and dual outputs are isolated and offer excellent line and load regulation. These units have continuous short circuit protection and will operate from 0°C to +85°C baseplate. The hi reliability UWD Series, up to 50 Watts, is the design choice for your most stringent industrial applications.

**Typical Characteristics:**

- **Test Conditions:** 25°C Ambient
- **Input Voltages:** 85 - 265V AC, 47 - 440Hz
- **Converter Frequency:** 100KHz
- **Operating Temperature:** 0°C to +85°C baseplate
- **Storage Temperature:** -55°C to +105°C baseplate
- **Output Voltage Temperature Coefficient:** 0.02% per 0°C
- **Isolation:** 1500VRMS
- **Electrolytic Capacitor:** 270µF, 400V or greater required or damage will occur.

**Features:**

- **Excellent Line Regulation:**  $\pm 1\%$  (85 - 265V AC)
- **Excellent Load Regulation:** 10% - 100%,  $\pm 2\%$
- **Continuous Short Circuit Protection**
- **Encapsulated Semiconductors:** Conservatively rated for maximum reliability
- **Wide Input Range:** 85 - 265V AC, 47 - 440Hz
- **Expanded Operating Temperature:** Consult Factory

## SERIES UWD - SINGLE OUTPUT - 50 WATTS MAX.

PICO PART NUMBER	OUTPUT VOLTAGE (VDC)	MAX. LOAD CURRENT (A)	MAX. OUTPUT POWER (watts)***	EFF. @ FULL LOAD TYPICAL (%)*	OUTPUT VOLTAGE Tolerance (±%)**	LOAD Regulation 10%-100% LOAD (±%)**	LINE Regulation @ FULL LOAD (±%)	OUTPUT VOLTAGE RIPPLE TYPICAL (mv p-p)*	PRICE (US \$)
UWD3.3S	3.3	9.09	30	68	2	2	1	75	210.17
UWD5S	5	8.00	40	74	2	2	1	75	210.17
UWD5.2S	5.2	7.70	40	74	2	2	1	75	210.17
UWD12S	12	4.16	50	80	2	2	1	125	210.17
UWD15S	15	3.33	50	80	2	2	1	150	210.17
UWD24S	24	2.08	50	84	1	1	1	250	210.17
UWD28S	28	1.79	50	85	1	1	1	250	210.17
UWD48S	48	1.04	50	85	1	1	1	400	210.17

\*Measurement taken at 115V AC at 60Hz

\*\*10% minimum load required at all times

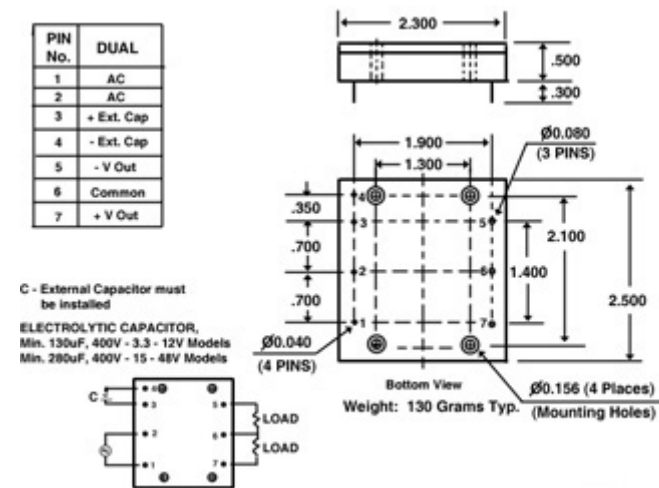
\*\*\*Using proper thermal management, maximum baseplate temperature of +85°C

## SERIES UWD - DUAL OUTPUT - 50 WATTS MAX.

PICO PART NUMBER	OUTPUT VOLTAGE (VDC)	MAX. LOAD CURRENT PER OUTPUT (A)	MAX. OUTPUT POWER PER OUTPUT (watts)***	EFF. @ FULL LOAD TYPICAL (±%)*	OUTPUT VOLTAGE Tolerance (±%)**	LOAD Regulation 10%-100% LOAD ***** (±%)**	LINE Regulation @ FULL LOAD (±%)	OUTPUT VOLTAGE RIPPLE TYPICAL (mv p-p)*	PRICE (US \$)
UWD5D	±5	4.00	20	75	2	2	1	75	228.50
UWD12D	±12	2.08	25	80	2	2	1	100	228.50
UWD15D	±15	1.66	25	80	2	2	1	150	228.50
UWD24D	±24	1.04	25	84	2	2	1	250	228.50
UWD28D	±28	0.892	25	84	2	2	1	250	228.50

\*\*\*\*Balanced loads

## SERIES UWD DUAL OUTPUT



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**C- External electrolytic 270 uF 400V DC capacitor or greater must be installed before operation**

$T_c - T_a = \Delta T = T_{rca} P_{out} (1/n - 1)$  where,  
 $T_{rca}$  = Thermal Resistance of case to air

Pout = Output Power in Watts  
n = Efficiency  
Tc = Case temperature in °C  
Ta = Ambient Temperature in °C

Table 1

Trca	UWD SERIES		
	Baseplate	Heatsink LCV	Heatsink LCH
Free Air	7.9	4.2	4.0
200 LFM	4.9	1.6	1.6
400 LFM	2.5	1.6	1.3
600 LFM	2.2	0.9	0.9
800 LFM	1.5	0.7	0.7
1000 LFM	1.2	0.6	0.6

[View Heat Sinks](#)

### Example 1:

A UWD24S module has an efficiency of 78%. What is the maximum ambient temperature if 50 Watts of power is needed?

A) In free air.

From Table 1: Trca = 7.9

Using relation (2)

$$\Delta T = 7.9(50)^{[1/.78 - 1]} = 111.4^{\circ}\text{C}$$

$$T_a = 85 - 111.4 = -26.4^{\circ}\text{C}$$

B) In free air with heatsink LCV

Trca = 4.2

$$\Delta T = 4.2(50)^{[1/.78 - 1]} = 59.2^{\circ}\text{C}$$

$$T_a = 85 - 59.23 = 25.8^{\circ}\text{C}$$

C) With 400 LFM of air flow.

Trca = 2.5

$$\Delta T = 2.5(50)^{[1/.78 - 1]} = 35.3^{\circ}\text{C}$$

$$T_a = 85 - 35.3 = 49.7^{\circ}\text{C}$$

### Example 2:

What would be the maximum output power for a UWD24S module at an ambient temperature of 50°C with an efficiency of 78%?

A) If the module is used in free air.

From Table 1: Trca = 7.9

Using relation (2)

$$85 - 50 = 7.9 \text{ Pout}^{[1/.78 - 1]}$$

$$\text{Pout} = \sqrt[35]{7.9(.282)} = 16\text{W}$$

B) If the module with heatsink LCV is used with free air.

Trca = 4.2

$$\text{Pout} = \sqrt[35]{4.2(.282)} = 30\text{W}$$

C) If the module is used in an area with forced air at 400 LFM with no heatsink.

Trca = 2.5

$$\text{Pout} = \sqrt[35]{2.5(.282)} = 49.6\text{W}$$

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**For immediate Engineering Assistance:**

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