

# ultra small, high efficiency power supplies XL275 Series

- 275 W AC-DC / 3" X 5" FOOTPRINT
- UP TO 90% EFFICIENCY
- HIGH POWER DENSITY: OVER 12 W / in<sup>3</sup>
- ALL OUTPUTS MAY BE
  PARALLELED
- REMOTE ON / OFF
- 5W 5V STANDBY SUPPLY
- UNIVERSAL AC INPUT
- ACTIVE PFC (90 264 VAC)
- BUILT IN OR'ING MOSFET FOR N, N+1
- INRUSH CURRENT PROTECTION
- RoHS COMPLIANT
- I<sup>2</sup>C INTERFACE FOR DIGITAL POWER MANAGEMENT

### **POWER SUPPLY DESIGN LEADER**

N2Power leads the power density race with its latest small, high efficiency XL275 Series AC-DC power supplies. Our advanced technology yields a very small footprint, reduces wasted

#### TWICE THE POWER IN HALF THE SPACE

power, and offers the highest power density in its class. This efficient design means reduced energy costs, a greater return on your investment, greater reliability and longer product life.

#### **UNMATCHED POWER DENSITY**

With an overall height of 1.5" and a 3" x 5" footprint, the XL275 Series boasts a power density over 12 watts per cubic inch. It is ideally suited for OEMs using the industry standard 1U chassis.

#### HIGH EFFICIENCY IN A SMALL PACKAGE

The XL275 Series provides up to 90% efficiency. Our unique design reduces energy consumption and generates less wasted heat. It requires little forced air cooling, decreases AC loading, increases reliability and economy of operation. Comparisons of efficiencies show that our supplies can reduce losses up to 50%.

#### ADVANCED DIGITAL CONTROLLER

Power supplies have traditionally been controlled and protected by analog circuitry that does well under one set of conditions (such as cold startup), but suffers from stored charges in components that do not discharge quickly enough to respond to power line dropouts and load glitches. The XL275 is the first power supply in this class to use a dedicated digital microcontroller to supervise the unit's

#### Typical Mechanical Drawing:

Connectors and pinouts may vary with model. Refer to XL275 Product Specification for complete information.



operation. The microcontroller monitors the following parameters:

- DC voltage on the bulk capacitor (supplied by the AC mains)
- Output voltage
- Output current
- Auxiliary 12V output voltage

- Transformer temperature
- Ambient temperature
- Fan tachometer

Unlike conventional analog circuitry that can provide timing accuracies in the range of  $\pm 10\%$ -20%, the microcontroller can





provide accuracies in the 1% range and does not suffer from stored charge memory. It responds to changing conditions 500 times each second with knowledge of the past but without being slowed by its knowledge.

#### **COMPLETE PROTECTION**

The microcontroller is responsible for enabling the main output whenever all of the required startup conditions are met, and shutting it down upon command, loss of input power or whenever excessive loads or temperatures are sensed. It always provides the host system with advanced warning of an impending shutdown to enable it to perform housekeeping before power is lost.

#### **REDUCED NOISE**

To minimize acoustic noise, the microcontroller can turn a 12V fan on or off based upon the present load conditions and the amount of cooling air available.

INPUT SPECIFICATIONS	
Nominal Input Voltage:	100 – 240 VAC
Tested Input Limits:	90 – 264 VAC
Input Frequency Range:	47 – 63 Hz
Input Current:	3.5 A @ 100 VAC
Input Protection:	5 A fuse
Safety Isolation:	3000 VAC input to output 1500 VAC input to ground
Inrush Current:	13 A @ 240 VAC <sup>+</sup>
Power Factor Correction:	Active PFC circuitry, meets or exceeds EN61000-3-2
OUTPUT SPECIFICATIONS	
Total Output:	275 W
Hold-up Time:	Minimum 22 mS
Efficiency:	Up to 90% <sup>†</sup>
Minimum Load:	No load
Over / Under Shoot:	Maximum 10% at turn-on

#### COMPLIANCE:

USA/Canada:

UL60950-1 / C22.2, 60950 (Bi-National Standard) Safety of Information Technology Equipment



### **I<sup>2</sup>C BUS OPTION**

An optional I<sup>2</sup>C digital communications interface is also provided to allow up to four XL275 to communicate over the same bus using the PMBus<sup>™</sup> protocol. This interface allows routine remote control of the main outputs and the 12V fans. It can also notify the host if a fan fails (lost tachometer pulses). The host can also query the microcontroller for its output voltage and current plus the ambient and transformer temperatures.

#### **OEM CUSTOMIZATION**

Because it is programmable, the microcontroller code can be customized to meet unique **OEM** requirements.

MODEL	OUTPUT	VOLTAGE	<b>REGULATION (%)</b>	MAXIMUM CURRENT (A)	RIPPLE & NOISE (P-P)	$\begin{array}{c} \text{DIMENSIONS} \\ \text{W} \times \text{L} \times \text{D} \end{array}$
XL275-3 +12 VDC	V1	12	±3	22.9	100 mV	
	V2	12	±5	1.0	80 mV	3" x 5" x 1.5"
	V3	5 SB	±5	1.0	50 mV	
VI 275 5	V1	24	±3	11.5	200 mV	
+24 VDC	V2	12	±5	1.0	80 mV	3" x 5" x 1.5"
	V3	5 SB	±5	1.0	50 mV	
VI 275 6	V1	48	±3	5.7	200 mV	
+48 VDC	V2	12	±5	1.0	80 mV	3" x 5" x 1.5"
	V3	5 SB	±5	1.0	50 mV	
VI 275 7	V1	56	±3	4.9	200 mV	
+56 VDC	V2	12	±5	1.0	80 mV	3" x 5" x 1.5"
	V3	5 SB	±5	1.0	50 mV	

All outputs isolated from the chassis and share a common return

PROTECTION	
Overvoltage Protection:	V1 (latches off)
Overpower Protection:	Protected / Auto Recovery
Short Circuit Protection:	Auto recovery of all outputs protected against short circuit
Thermal Shutdown:	Auto recovery protection against over temperature conditions
<b>OPERATING SPECIFICATIO</b>	NS
Operating Temperature:	-25°C to +50°C
Operating Temperature: Temperature Derating:	–25°C to +50°C 2.5% / degree 50°C to 70°C
Operating Temperature: Temperature Derating: Storage Temperature:	-25°C to +50°C 2.5% / degree 50°C to 70°C -40°C to +85°C
Operating Temperature: Temperature Derating: Storage Temperature: Forced Air Cooling:	-25°C to +50°C 2.5% / degree 50°C to 70°C -40°C to +85°C 10 CFM minimum <sup>+</sup>
Operating Temperature: Temperature Derating: Storage Temperature: Forced Air Cooling: Convection Cooling:	-25°C to +50°C 2.5% / degree 50°C to 70°C -40°C to +85°C 10 CFM minimum <sup>†</sup> 150W
Operating Temperature: Temperature Derating: Storage Temperature: Forced Air Cooling: Convection Cooling: Leakage Current:	-25°C to +50°C 2.5% / degree 50°C to 70°C -40°C to +85°C 10 CFM minimum <sup>†</sup> 150W 0.7mA <sup>†</sup>

† See Product Specification

Europe: 73/23/EEC "Low Voltage Directive" (Safety) 19/2014CC 1000 Volage of leaving (Janety) Equipment. CB certificate and report available. 89/33/6/ECC "Electromagnetic Compatibility Directive" (EMC) EN61204-3 (2001) Stabilized Power Supplies, d.c. Outputs EMC Standards Specification EN61204 (2001) is a product family EMC standard which references the following specifications: EN61000-3-3 (1995) Limits of Voltage Fluctuations & Flicker EN61000-3-2 (2000) Harmonic Current Emissions (Power Factor Correction EN61000-4-2 (1995) ESD

SIGNALS Remote Sense: V1 and Return Active Current Sharing: V1 using OR'ing MOSFET V2 and V3 outputs Passive Redundancy: may be wire OR'ed Fan Output 1: V2 on a 2-pin keyed connector Fan Output 2: On above 45°C ambient or hot transformer Fan Tachometer Input: (Optional) Reports fan speed via PMBus<sup>\*</sup> Optional I<sup>2</sup>C Data / Clock: Provides PMBus™ control / status interface Power Good (PG) Output: High-true CMOS logic and LED drive outputs Standby Output: LED drive on when V1 and V2 outputs disabled Low-true input enables Remote Enable Input: V1 and V2 outputs Onboard LED Indicators: AC On, Power Good

EN61000-4-3 (1996) +A1 (1998) Radiated Radio Frequency Electromagnetic Field Immunity EN61000-4-4 (1995) Fast Transient / Burst Immunity

EN61000-4-6 (1996) had mansler(r) biotaminutiny EN61000-4-6 (1996) Immunity to Conducted Disturbances EN61000-4-11 (1994) Voltage Dips, Short Interrupts & Voltage Variations

Safety Approvals: UL, cUL, DEMKO, CB Scheme, CE Mark Emissions: FCC Class B



For complete specifications on all models, please visit our website at: www.N2Power.com

## N2Power

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