

DS3000PE

High line: 3000W
Low Line: 1350W

Distributed Power Bulk Front-end
Single Output Standard

Total Output Power: 3000 W
continuous

208 Vac to 264 Vac, 3000 W¹
90 Vac to 140 Vac, 1350 W



Special Features

- 3000 W output power
- High-power and narrow form factor
- 6 units can fit in a 19" inch for a total of 16.2 kW
- High-density design: 24 W/in³
- Active Power Factor Correction
- EN61000-3-2 harmonic compliance
- Inrush current control
- 80plus platinum efficiency
- N+1 or N+N redundant
- Hot-pluggable
- Active current sharing
- Full digital control
- PMBus Compliant
- Accurate input power reporting
- Compatible with Emerson's universal PMBus GUI
- Two-year warranty

Compliance

- Conducted/Radiated EMI EN55022 Class A Limits + 6dB margin
- ROHS

Safety

- UL/cUL
- DEMKO+ CB Report EN60950
- BSMI
- CE Mark
- China CQC

Electrical Specifications

Input	
Input voltage range:	90-140 Vac, 1350 W 208 to 264 Vac ¹ , 3000 W
Frequency:	47 Hz to 63 Hz
Efficiency:	94.0% peak
Max input current:	17.5 Arms
Inrush current:	55 Apk
Conducted EMI:	Class A
Radiated EMI:	Class A
Power factor:	>0.97, typical
ITHD:	10%
Leakage current:	0.58 mA
Hold-up time:	11 ms

Ordering Information

DS3000PE-3	Standard Airflow
DS3000PE-3-001	Reverse Airflow

¹ 2700 W output rating at 180 Vac

Electrical Specifications

Outputs			
Main DC Output	MIN	NOM	MAX
Nominal setting:	-0.30%	12	0.30%
Total output regulation range:	11.4 V		12.6 V
Dynamic load regulation range:	11.4 V		12.6 V
Output ripple:			120 mVp-p
Output current:	2 A ⁴		250 A ⁵
Current sharing:	Within +/-5% of full load rating		
Capacitive loading:	1000 uF		15000 uF
Start-up from AC to output:			2100 ms
Output rise time:	2 ms		60 ms
Standby DC Output			
Output setpoint range:	-1%	12	1%
Total output regulation range:	11.4 V		12.6 V
Dynamic load regulation range ¹ :	11.4 V		12.6 V
Output ripple:			120 mVp-p
Output current:	0.5 A		4.5 A
Current sharing:		N/A	
Capacitive loading:	47 uF		560 uF
Start-up from AC to output:			1700 ms
Output rise time:	2 ms		60 ms

Protections			
Main Output	MIN	NOM	MAX
Over-current protection ² :	105%		108%
Over-voltage protection ¹ :	13.5 V		15.0 V
Under-voltage protection:	10.5 V		11.0 V
Over-temperature protection:		Yes	
Fan fault protection:		Yes	
Standby Output			
Over-current protection ⁴ :	120%		150%
Over-voltage protection ³ :	13.5 V		15.0 V
Under-voltage protection:	9.6 V		11.0 V

¹ Latch mode

² Autorecovery if the overcurrent is less than 105% and last only for <500 ms.

³ Standby protection is auto-recovery

⁴ Minimum current for transient load response testing only. Unit is designed to operate and be within regulation range at zero load.

⁵ Reverse airflow model derates to 231.5 A

Control and Status Signals

Input Signals			
PSON			
Active LOW signal which enables/disables the main output. Pulling this signal LOW will turn-on the main output. Recommended pull-up resistor to 12 VSB is 8.2 k with a 3.0 k pull-down to ground. A 100 pF decoupling capacitor is also recommended.			
		MIN	MAX
V_{IL}	Input logic level LOW		0.8 V
V_{IH}	Input logic level HIGH	2.0 V	5.0 V
I_{SOURCE}	Current that may be sourced by this pin		2 mA
I_{SINK}	Current that may be sunk by this pin at low state		0.5 mA
PSKIL			
First break/last mate active LOW signal which enables/disables the main output. This signal will have to be pulled to ground at the system side with a 220 ohm resistor. A 100 pF decoupling capacitor is also recommended.			
		MIN	MAX
V_{IL}	Input logic level LOW		0.8 V
V_{IH}	Input logic level HIGH	2.0 V	5.0 V
I_{SOURCE}	Current that may be sourced by this pin		2 mA
I_{SINK}	Current that may be sunk by this pin at low state		0.5 mA
A0, A1, A2			
Addressing pins of the power supply for I ² C communications. Refer to the addressing tables below.			
		MIN	MAX
	Internal pull-ups to 3.3V. It is recommended for the system to have pull-ups and decoupling on the address lines for better noise immunity.	R = 22 k ohm	C = 47 pF
V_{IL}	Input logic level LOW		0.8 V
V_{IH}	Input logic level HIGH	2.0 V	5.0 V
I_{SOURCE}	Current that may be sourced by this pin		4 mA
I_{SINK}	Current that may be sunk by this pin	4 mA	

Control and Status Signals

Output Signals

ACOK

Signal used to indicate the presence of AC input to the power supply. A logic level HIGH will indicate that the AC input to the power supply is within the operating range while a logic level LOW will indicate that AC has been lost.

This is an open collector/drain output. This pin is pulled high by a 1.0 k ohm resistor connected to 3.3 V inside the power supply. It is recommended that this pin be connected to a 100 pF decoupling capacitor and pulled down by a 100 k ohm resistor.

		MIN	MAX
V_{IL}	Input logic level LOW		0.6 V
V_{IH}	Input logic level HIGH	2.0 V	5.0 V
I_{SOURCE}	Current that may be sourced by this pin		3.3 mA
I_{SINK}	Current that may be sunk by this pin at low state		0.7 mA

PWR_GOOD / PWOK

Signal used to indicate that main output voltage is within regulation range. The PWR_GOOD signal will be driven HIGH when the output voltage is valid and will be driven LOW when the output falls below the under-voltage threshold.

This signal also gives an advance warning when there is an impending power loss due to loss of AC input or system shutdown request. More details in the Timing Section.

This is an open collector/drain output. This pin is pulled high by a 1.0 k ohm resistor connected to 3.3 V inside the power supply. It is recommended that this pin be connected to a 100 pF decoupling capacitor and pulled down by a 10 k ohm resistor.

		MIN	MAX
V_{IH}	Output logic level LOW		0.8 V
I_{SOURCE}	Output logic level HIGH	2.0 V	5.0 V
I_{SINK}	Current that may be sourced by this pin		3.3 mA
V_{IL}	Current that may be sunk by this pin		0.7 mA

Output Signals

PS_PRESENT

Signal used to indicate to the system that a power supply is inserted in the power bay. Recommended pull-up resistor to 12 VSB is 8.2 k with a 3.0 k pull-down to ground. A 100 pF decoupling capacitor is also recommended.

PS_INTERRUPT

Active low signal used by the power supply to indicate to the system that a change in power supply status has occurred. This event can be triggered by faults such as OVP, OCP, OTP, and fan fault. This signal can be cleared by a CLEAR_FAULT command. Recommended pull-up resistor to 12 VSB is 8.2 k with a 3.0 k pull-down to ground. A 100 pF decoupling capacitor is also recommended.

		MIN	MAX
V_{IL}	Input logic level LOW		0.8 V
V_{IH}	Input logic level HIGH	2.0 V	5.0 V
I_{SOURCE}	Current that may be sourced by this pin		4 mA
I_{SINK}	Current that may be sunk by this pin at low state		4 mA

Control and Status Signals

BUS Signals

ISHARE

Bus signal used by the power supply for active current sharing. All power supplies configured in the system for n+n sharing will refer to this bus voltage in order to load share.

Voltage Range: The range of this signal for active sharing will be up to 8.0 V, which corresponds to the maximum output current.

		MIN	MAX
I_{SHARE} Voltage	Input logic level LOW	7.75	8.25
	Voltage at 50% load, stand-alone unit	3.85	4.15
	Voltage at 0% load, stand-alone unit	0	0.3
I_{SOURCE}	Current that may be sourced by this pin		160 mA

SCL, SDA

Clock and data signals defined as per I²C requirements. It is recommended that these pins be pulled-up to a 2.2 k ohm resistor to 3.3 V and a 100 pF decoupling capacitor at the system side.

VL	Input logic level LOW		0.8 V
VH	Input logic level HIGH	2.0 V	5.0 V

Note: All signal noise levels are below 400 mVpk-pk from 0-100 MHz.

I²C Addressing Table

FRU Addressing				PMBus Addressing
A2	A1	A0	Address	Address
High	Low	Low	0xA9	0xB8
High	Low	High	0xAB	0xBA
High	High	Low	0xAD	0xBC
High	High	High	0xAF*	0xBE

* Default address when A0 and A1 are open

Electrical Specifications

LED Indicators				
		AC GOOD LED	DC GOOD LED	FAULT LED
	Color	GREEN	GREEN	AMBER
	No AC input to PSU	Off	Off	Off
	AC present, STBY ON, main output OFF	On	Off	Off
	Main output ON	On	On	Off
	Power supply failure (OVP, OTP, FAN FAULT)	On	Off	Blinking

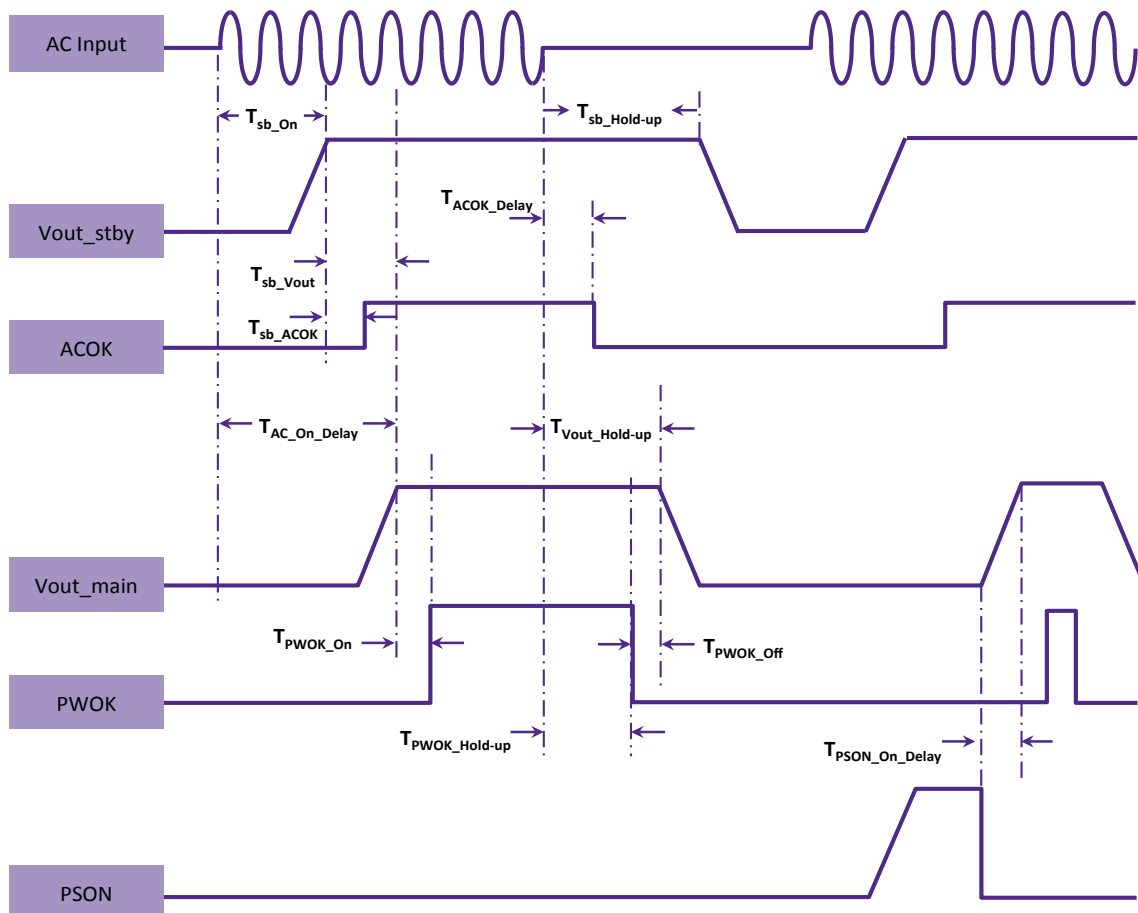
Firmware Reporting And Monitoring			
		Accuracy Range	
Output loading	5 to 20%	20 to 50%	50 to 100%
Input voltage	±5%		
Input current	±0.55 A fixed error	±4%	
Input power	±10 W at <100 W input	±5%	
Output voltage	±2%		
Output current	2.5 A fixed error	±2%	
Temperature	±5 degC on the operating range		
E_{IN}	±15% from 10% to 20% load	±5%	
Fan speed	±250 RPM		
PMBus	YES		
Remote ON/OFF	YES		

Electrical Specifications

Timing Specifications

	Description	Min	Max	Unit
T_{sb_On}	Delay from AC being applied to standby output being within regulation	2	500	ms
T_{sb_Vout}	Delay from standby output to main output voltage being within regulation		1200	ms
T_{sb_ACOK}	Delay from standby output to ACOK assertion		40	ms
$T_{AC_On_Delay}$	Delay from AC being applied to main output being within regulation		2100	ms
T_{PWOK_On}	Delay from output voltages within regulation limits to PWOK asserted	100	1200	ms
T_{ACOK_Delay}	Delay from loss of AC to assertion of ACOK		250	ms
$T_{PWOK_Hold-up}$	Delay from loss of AC to deassertion of PWOK	10		ms
$T_{Vout_Hold-up}$	Delay from loss of AC to main output falling out of regulation	11		ms
$T_{sb_Hold-up}$	Delay from loss of AC to standby output being within regulation	150		ms
T_{PWOK_Off}	Delay from deassertion of PWOK to output falling out of regulation	1		ms
$T_{PSON_On_Delay}$	Delay from PSON assertion to output being within regulation		350	ms

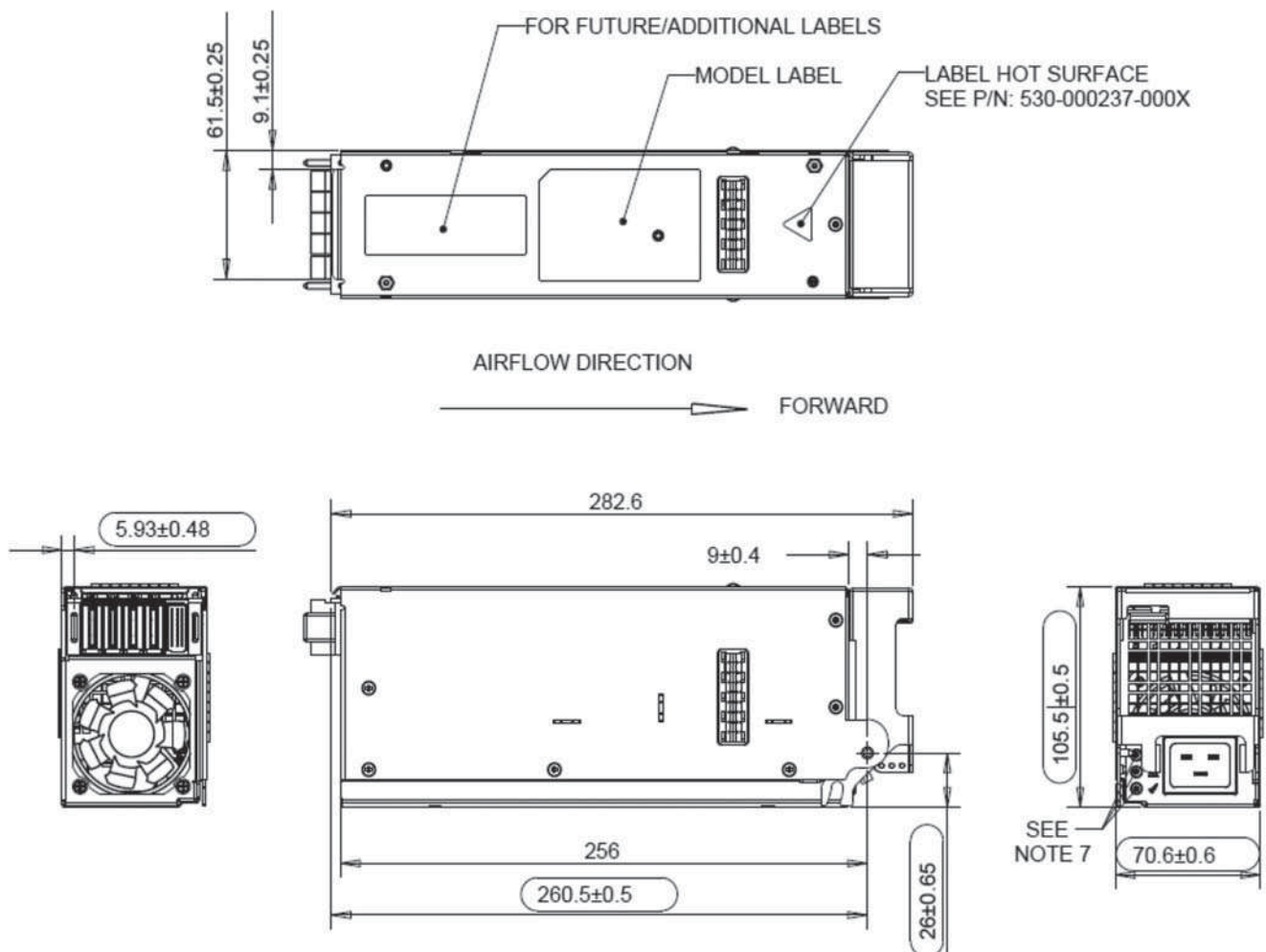
Timing Diagram

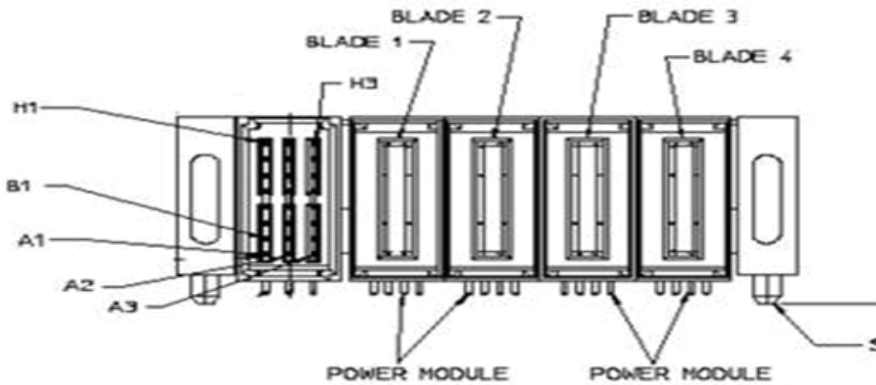


Environmental Specifications

Operating temperature:	Full power from 0 to 40 °C, derate output power by 2.5% per °C from 40 °C to 50 °C
Operating altitude:	up to 10,000 feet
Operating relative humidity:	20% to 80% non-condensing
Non-operating temperature:	-40 to +85 °C
Non-operating relative humidity:	10% to 95% non-condensing
Non-operating altitude:	up to 30,000 feet
Vibration and shock:	Standard operating/non-operating random vibration/shock
ROHS compliance:	Yes
MTBF:	400,000 hours
Operating life:	Minimum of 5 years
Reliability:	All electronic component derating analysis and capacitor life calculation is done at 25 degC ambient, maximum rated load, nominal input line voltage.

Mechanical Outline





Connector Definitions

Output Connector Pin Configuration

Pin	Signal Name	Amps per pin ¹
PB1	RETURN	150
PB2	RETURN	150
PB3	12V	150
PB4	12V	150
A1	PWR GOOD	N/A
A2	PSKILL	N/A
A3	PRESENT	N/A
B1	RETURN	N/A
B2	ISHARE	N/A
B3	RETURN	N/A
C1	PS_INTERRUPT	N/A
C2	RETURN	N/A
C3	ACOK	N/A
D1	RETURN	N/A
D2	PSON	N/A
D3	RESERVED	N/A
E1	SDA	N/A
E2	SCL	N/A
E3	A0	N/A
F1	RESERVED	N/A
F2	A1	N/A
F3	A2	N/A
G1	RESERVED	N/A
G2	RESERVED	N/A
G3	RESERVED	N/A
H1	12VSB	2
H2	12VSB	2
H3	12VSB	2

Output Connector Part Number	75555-104
Mating Connector Part Number	75541-104REVB1 or any other Molex recommended part

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