DS1200HE

1200 Watts

Distributed Power System

Front-end Bulk Power
Total Output Power:
180 to 264Vac: 1200W continuous
90 to 140Vac: 1000W/1200W[1] continuous

RoHS

PMBus

Special Features

- 1200W output power
- High-power
- 1U x 2U power supply
- High-density design: 21.66W/in3
- Active Power Factor Correction
- EN61000-3-2 Harmonic compliance
- Inrush current control
- 80plus Platinum Efficiency
- N+1 or N+N Redundant
- Hot plug operation
- N + 1 redundant
- Active current sharing
- Full Digital control
- PMBus Compliant
- Input power reporting
- Compatible with Emerson's Universal PMBus GUI
- Reverse airflow option
- Two-year Warranty

Compliance

- Conducted/Radiated EMI Class B
- ROHS

Safety

- UL/cUL 60950 (UL Recognized)
- NEMKO+ CB Report EN60950
- CE Mark
- China CCC

Electrical Specifications

Input	
Input Voltage range:	90-140Vac: 1000W / 1200W[1] 180-264Vac: 1200W
Frequency:	47Hz - 63 Hz
Efficiency:	94.0% peak
Max Input Current:	15 Arms
Inrush Current:	55Apk at 240Vac, cold start
Conducted EMI:	Class B
Radiated EMI:	Class B
Power Factor:	0.9 typical
ITHD:	10%
Leakage Current:	1.4mA
Hold-up Time:	12ms

[1] 1000W at forward air, 1200W at reverse air. See power derating table

Ordering Information	
DS1200-3	3.3V Stby, Forward airflow
DS1200-3-002	5.0V Stby, Forward airflow
DS1200-3-003	3.3V Stby, Reverse airflow
DS1200-3-004	5.0V Stby, Reverse airflow

EMERSON
Network Power

Electrical Specifications

OUTPUTS			
Main DC Output	MIN	NOM	MAX
Nominal Setting:	-0.50%	12	0.50%
Total Output Regulation Range:	11.4V		12.6V
Dynamic Load Regulation Range:	11.4V		12.6V
Output Ripple:			120mVp-p
Output Current:	0A[4]		100.0A
Current Sharing:	Within +/-5% of full load rating		
Capacitive Loading:	2,000uF		40,000uF
Start-up from AC to Output:			2000ms
Output Rise Time:	5ms		50ms
Standby DC Output (VSB)			
Output Setpoint Range:	-1%	3.3V (5.0V)	1%
Total Output Regulation Range:	+5%		-5%
Dynamic Load Regulation Range:	+5%		-5%
Output Ripple:			50mVp-p
Output Current:	0		6.0A (4A)
Current Sharing:		N/A	
Capacitive Loading:	0uF		680uF
Start-up from AC to Output:			1000ms
Output Rise Time:	2ms		50ms
PROTECTIONS			
Main Output			
Over-Current Protection[2]:	120%		150%
Over-Voltage Protection[1]:	13.5V		15.0V
Under-Voltage Protection:	10.5V		11.0V
Over-Temperature Protection:		Yes	
Fan Fault Protection:		Yes	
Standby Output			
Over-Current Protection[3]:			
Over-Voltage Protection[3]:			

[1]Latch mode
[2]Autorecovery if the overcurrent is less than 130% and last only for <1000ms. Otherwise, latch mode
[3]Standby protection is auto-recovery
[4]For output transient testing, the minimum load shall be at 10A

Electrical Specifications

CONTROL AND STATUS SIGNALS

Input Signals

PSON_L			
Active LOW signal which enables/disables the main output. Pulling this signal LOW will turn-on the main output. A 100pF decoupling capacitor is recommended at the system side.			
		MIN	MAX
V_{IL}	Input logic level LOW		0.8V
V_{IH}	Input logiv level HIGH	2.0V	5.0V
I_{SOURCE}	Current that may be sourced by this pin		2mA
I_{SINK}	Current that may be sunk by this pin at low state		0.5mA

PSKILL_L			
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 220ohm resistor. A 100pF decoupling capacitor is also recommended.			
		MIN	MAX
V_{IL}	Input logic level LOW		0.8V
V_{IH}	Input logic level HIGH	2.0V	5.0V
I_{SOURCE}	Current that may be sourced by this pin		2mA
I_{SINK}	Current that may be sunk by this pin at low state		0.5mA

VSENSE+, VSENSE-, STBY_VSENSE+			
VSENSE+, VSENSE-, and STBY_VSENSE+ lines are the remote sense lines for regulation. Each line will compensate for a maximum of 100mV.			

Output Signals

ACOK_L			
Signal used to indicate the presence of AC input to the power supply. A logic level LOW will indicate that the AC input to the power supply is within the operating range while a logic level HIGH will indicate that AC has been lost. This is an open collector/drain output. This pin is pulled high by a 1.0kohm resistor connected to 3.3V inside the power supply. It is recommended that this pin be connected to a 100pF decoupling capacitor and pulled down by a 100kohm resistor at the system side.			
		MIN	MAX
V_{IL}	Output logic level LOW		0.6V
V_{IH}	Output logic level HIGH	2.0V	5.0V
I_{SOURCE}	Current that may be sourced by this pin		3.3mA
I_{SINK}	Current that may be sunk by this pin at low state		0.7mA

PWR_GOOD / PWOK_H			
"Signal used to indicate that main output voltage is within regulation range. The PWR_GOOD/PWOK_H 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 1.0kohm resistor connected to 3.3V inside the power supply. It is recommended that this pin be connected to a 100pF decoupling capacitor and pulled down by a 10kohm resistor."			
		MIN	MAX
V_{IL}	Output logic level LOW		0.8V
V_{IH}	Output logic level HIGH	2.0V	5.0V
I_{SOURCE}	Current that may be sourced by this pin		3.3mA
I_{SINK}	Current that may be sunk by this pin		0.7mA

Electrical Specifications

CONTROL AND STATUS SIGNALS

Output Signals

PS_PRESENT			
Signal used to indicate to the system that a power supply is inserted in the power bay. This signal is pulled down to ground within the power supply.			
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. A 100pF decoupling capacitor is recommended.			
		MIN	MAX
V_{IL}	Output logic level LOW		0.8V
V_{IH}	Output logic level HIGH	2.0V	5.0V
I_{SOURCE}	Current that may be sourced by this pin		4mA
I_{SINK}	Current that may be sunk by this pin at low state		4mA

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 inorder to load share.			
VOLTAGE RANGE	The range of this signal for active sharing will be up to 8.0V, which corresponds to the maximum output current.		
		MIN	MAX
I_{SHARE} Voltage	Voltage at 100% load, stand-alone unit	7.65	8.35
	Voltage at 50% load, stand-alone unit	3.65	4.35
	Voltage at 0% load, stand-alone unit	0	0.5
I_{SOURCE}	Current that may be sourced by this pin		80mA
SCL, SDA			
Clock and data signals defined as per I2C requirements. It is recommended that these pins be pulled-up to a 2.2kohm resistor to 3.3V and a 100pF decoupling capacitor at the system side.			
		MIN	MAX
V_L	Logic level LOW		0.8V
V_H	Logic level HIGH	2.0V	5.0V

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

I2C Addressing Table

PMBUS ADDRESSING		
A1	A0	Address
LOW	LOW	0xB0
LOW	HIGH	0xB2
HIGH	LOW	0xB4
HIGH	HIGH	0xB6

Electrical Specifications

LED INDICATORS

A single bi-color LED is used to indicate the power supply status.

	Status LED
NO AC INPUT TO PSU	Off
AC PRESENT, STBY ON, MAIN OUTPUT OFF	Blinking GREEN
MAIN OUTPUT ON	Solid GREEN
OVER-VOLTAGE/UNDER-VOLTAGE FAILURE	Blinking AMBER
POWER SUPPLY FAILURE (OCP, OTP, FAN FAULT)	Solid AMBER

FIRMWARE REPORTING AND MONITORING

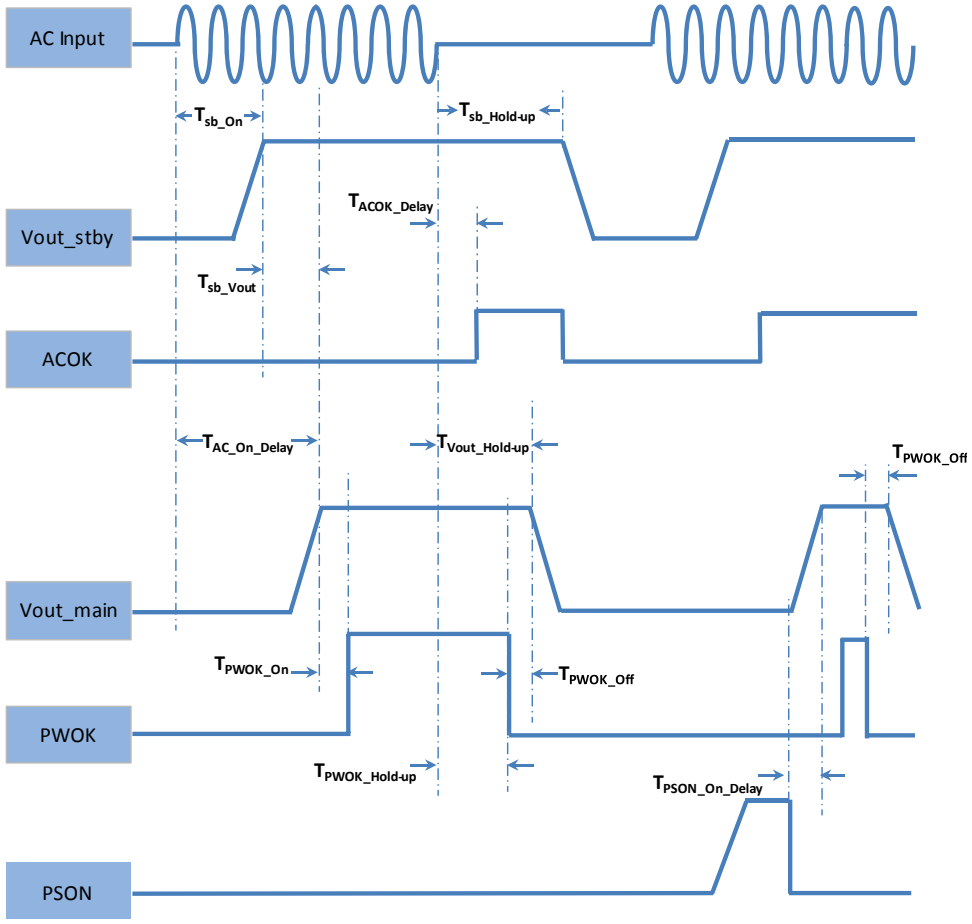
OUTPUT LOADING	5 to 20%	20% to 50%	50% to 100%
INPUT VOLTAGE	+/-5%		
INPUT CURRENT	+/-0.7A fixed error	+/-5%	
INPUT POWER	+/-10W at <125W input	+/-5%	
OUTPUT VOLTAGE	+/-4%		
OUTPUT CURRENT	0.5A fixed error	+/-5%	
TEMPERATURE	+/-5degC on the operating range		
FAN SPEED	Actual +/-250RPM		
PMBUS	YES		
REMOTE ON/OFF	YES		

Electrical Specifications

Timing Specifications

	DESCRIPTION	MIN	MAX	UNIT
Tsb_On	Delay from AC being applied to standby output being within regulation		1700	ms
$T_{AC\_On\_Delay}$	Delay from AC being applied to main output being within regulation		2000	ms
T_{PWOK_On}	Delay from output voltages within regulation limits to PWOK asserted	100	1000	ms
T_{ACOK_Delay}	Delay from loss of AC to deassertion of ACOK	7	14	ms
$T_{PWOK\_Hold-up}$	Delay from loss of AC to deassertion of PWOK	11		ms
$T_{Vout\_Hold-up}$	Delay from loss of AC to main output falling out of regulation	12		ms
$T_{sb\_Hold-up}$	Delay from loss of AC to standby output falling out of regulation	400		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
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

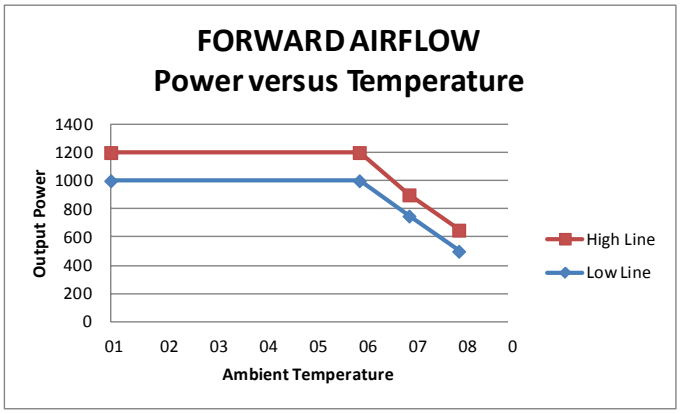
TIMING DIAGRAM

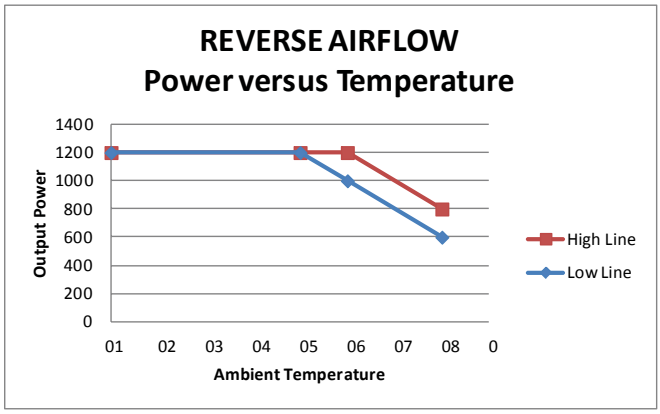


Environmental Specifications

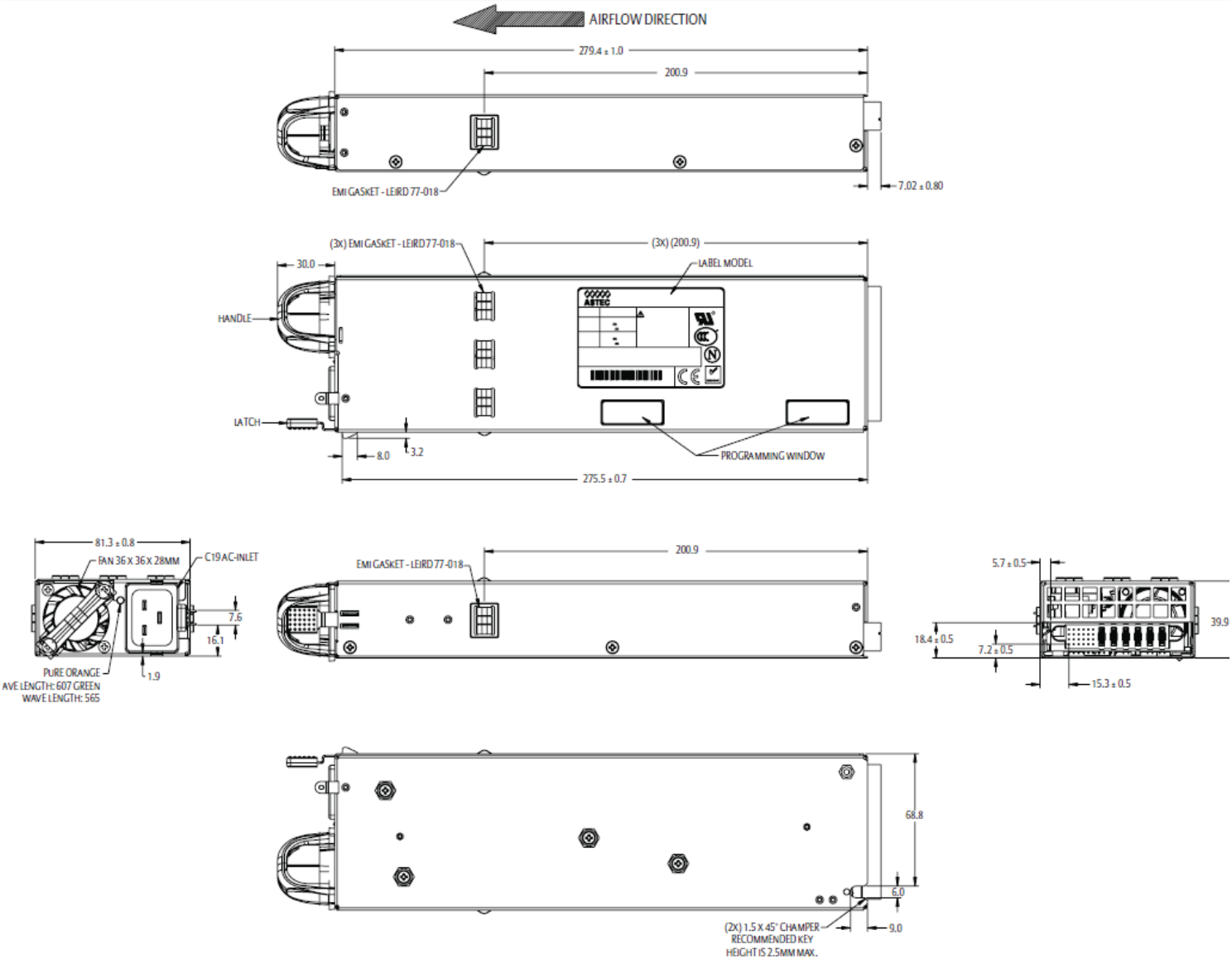
Operating Temperatue:	-10 to 50°C, can provide derated power up to 70°C. See power derating curve
Operating Altitude:	up to 10,000 feet
Operating Relative Humidity:	10% to 90% non-condensing
Non-operating Temperature:	-40 to 85°C
Non-operating Relative Humidity:	10% to 95% non-condensing
Non-operating Altitude:	up to 50,000 feet
Vibration and Shock:	Standard oprating/non-operating random shock and vibration
ROHS Compliance:	Yes
MTBF	200,000 hours using Bell Core TR-332, issue 6 specification, Method 1 Case 3 at 25degC ambient at full load.
Operating Life	Minimum of 5 years
Reliability	All electronic component derating analysis and capacitor life calculation is done as per Emerson Network Power standards. The QAV report will be available upon request.

POWER DERATING CURVE





Mechanical Specifications



Mechanical Specifications

DC Output Connector Pinout Assignment

Male connector as viewed from the rear of the supply:

D1	D2	D3	D4	D5	D6	PB1	PB2	PB3	PB4	PB5	PB6
C1	C2	C3	C4	C5	C6						
B1	B2	B3	B4	B5	B6						
A1	A2	A3	A4	A5	A6						

Power Supply Side	
1.	FCI Power Blade 51721 series 51721-10002406AA
2.	Molex Power Connector SD-87667 series 87667-7002

Mating Connector (System Side)	
1.	FCI Power Blade 51741-10002406CC Straight Pins
2.	FCI Power Blade 51761-10002406AALF Right Angle
3.	Any other approved equivalent

Pin Assignments	
Pin	Signal Name
PB 1	Main output return
PB 2	Main output return
PB 3	Main output return
PB 4	+ Main output
PB 5	+ Main output
PB 6	+ Main output
A1	PSON_L
A2	Main output remote sense return, VSENSE-
A3	Spare
A4	PS_PRESENT
A5	STAND-BY, +VSB
A6	STAND-BY RETURN, -VSB
B1	ACOK_H (AC Input Present)
B2	Main output remote sense, VSENSE+
B3	ISHARE
B4	PS_INHIBIT / PSKILL_LI
B5	STAND-BY
B6	STAND-BY RETURN
C1	SDA (I^2C Data Signal)
C2	SCL (I^2C Clock Signal)
C3	POWER GOOD/ PWOK_H
C4	Spare
C5	STAND-BY, +VSB
C6	STAND-BY RETURN
D1	A0 (I^2C Address BIT 0 Signal)
D2	A1 (I^2C Address BIT 1 Signal)
D3	PS_INTERRUPT (Alarm)
D4	STAND-BY RMT SENSE, VSENSE_STBY
D5	STAND-BY, +VSB
D6	STAND-BY RETURN, -VSB

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