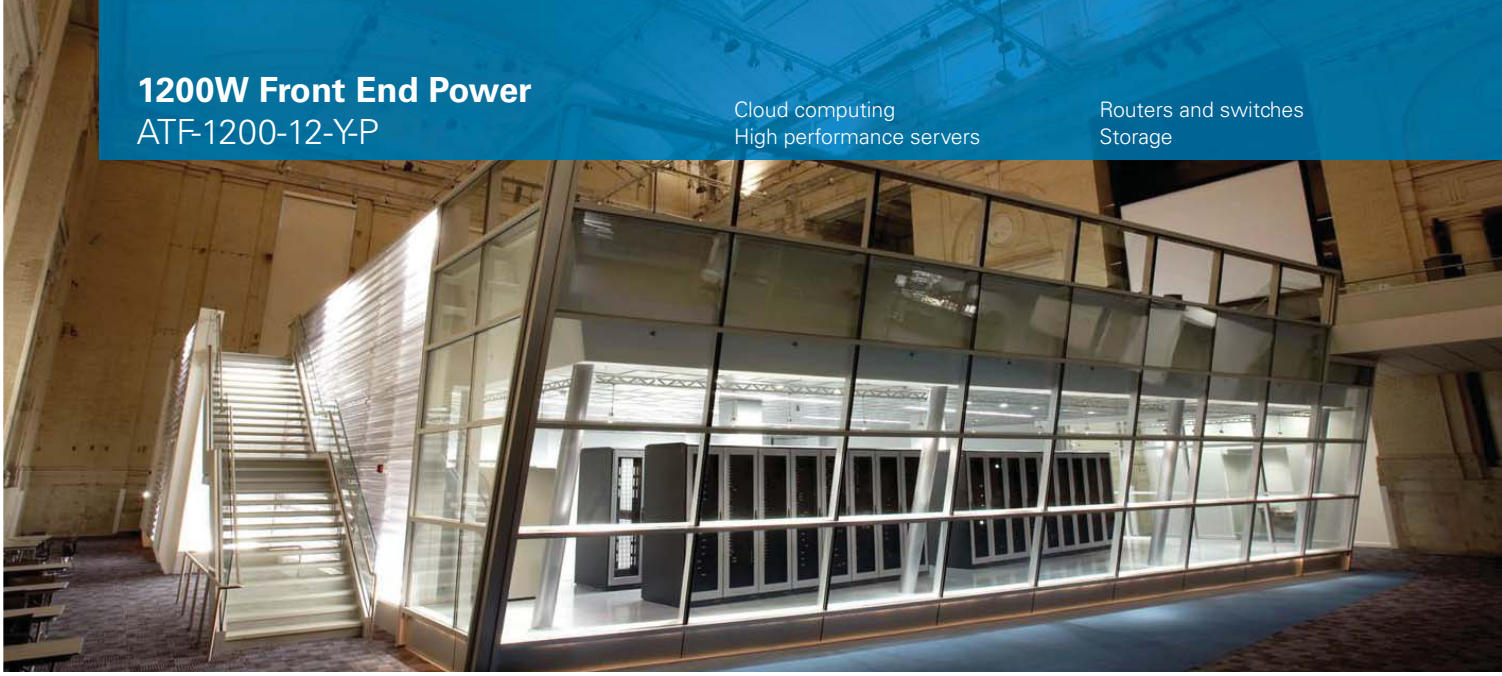
1200W Front End Power
ATF-1200-12-Y-P

Cloud computing
High performance servers
Routers and switches
Storage



Eaton introduces the new AC 80-plus platinum certified front end power supply ATF-1200-12-Y-P.

Featuring hot pluggable, N+1 redundant and power factor corrected capabilities, the high power density AC front end power with multiple output is ideal for cloud computing, high performance servers, routers, switches, storage or any other application requiring 24/7 performance operation.

Eaton's ATF-1200-12-Y-P front end power employs full digitally controlled bridgeless boost PFC stage, highly optimized LLC converter stage and synchronous rectification to achieve high power density and high efficiency that modern systems can benefit from.

Features

- 80 PLUS certified "Platinum" efficiency
- Wide input voltage range: 90-264 VAC
- AC input with power factor correction
- Always-On, auxillary standby output (3.3/5.0V)
- Hot-plug capability
- Parallel operation with active digital current sharing
- Full digital controls for optimum performance
- High density design: 29.0 W/in3
- Small form factor: 2.1in x 1.6in x 12.6in
- I2C communication interface for control, programming and monitoring with PSMI protocol
- Over temperature, output overvoltage and overcurrent protection
- 256 Bytes of EEPROM for user information
- Two status LEDs: AC OK and DC OK with fault signaling

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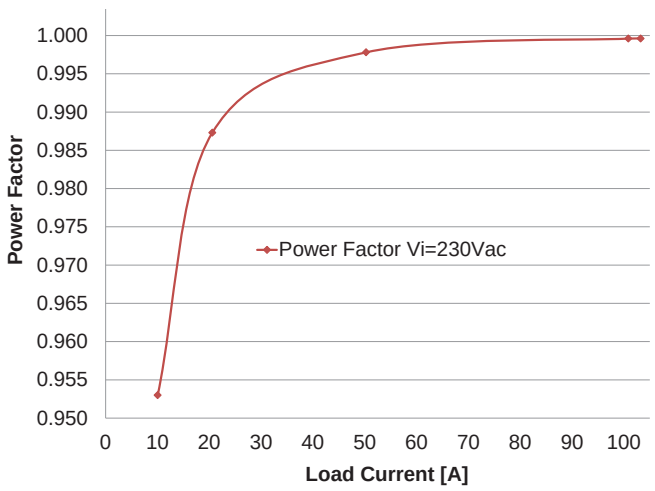
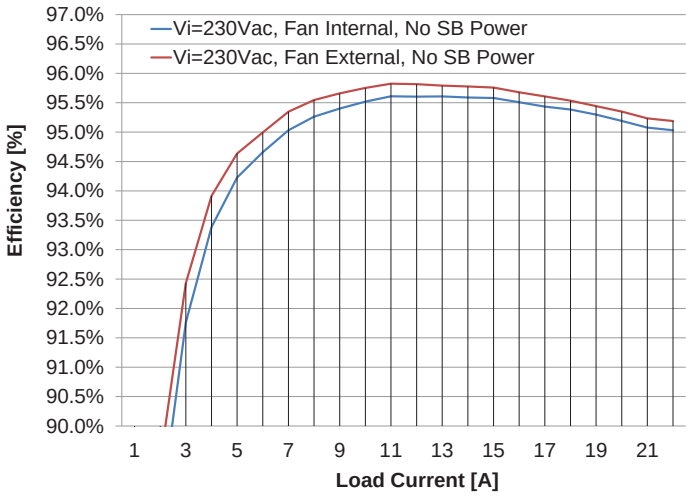
For a free sample and feasibility discussion of your application, please contact Eaton at 310-542-8561x4276

Power factor chart



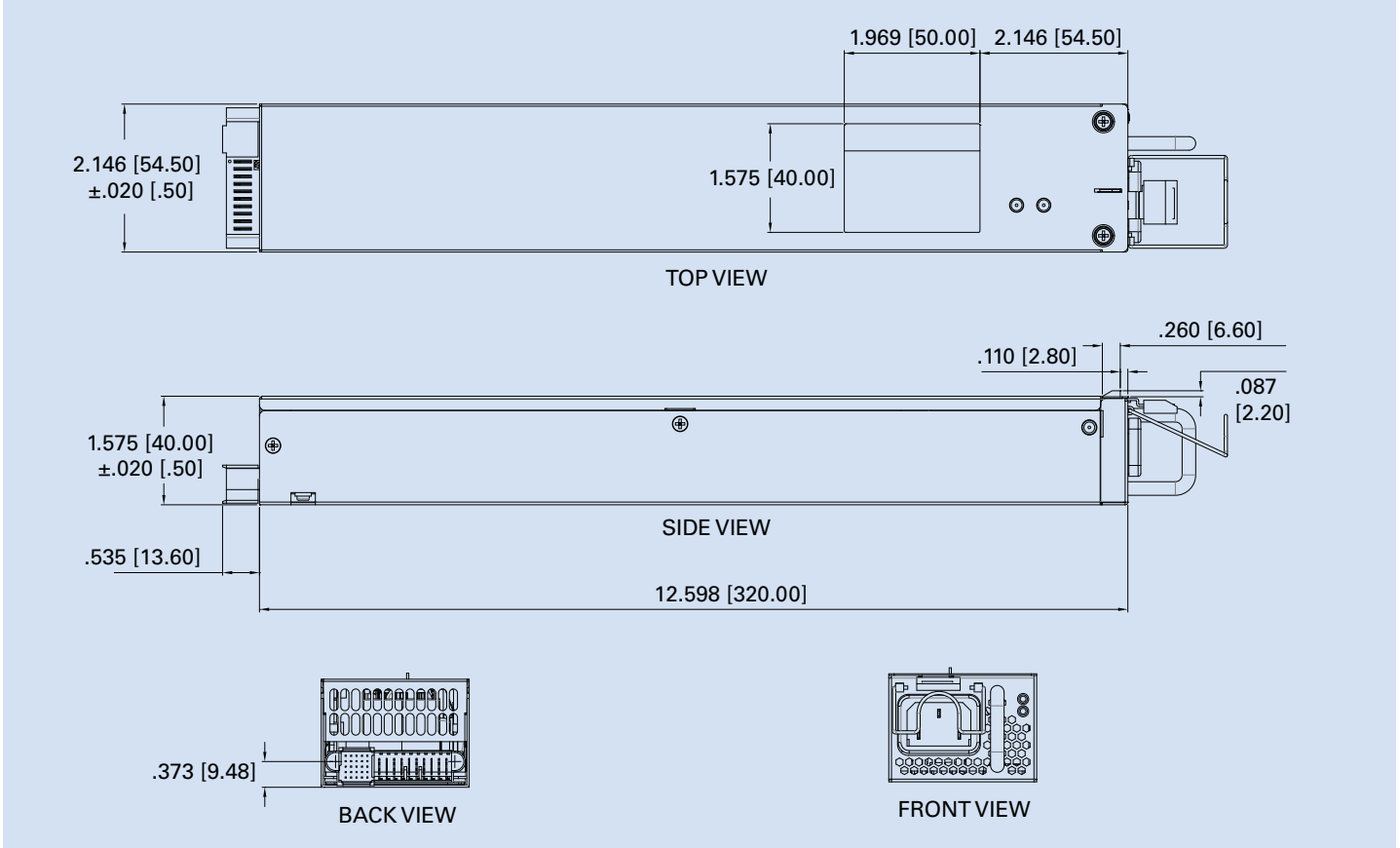
Efficiency performance overall



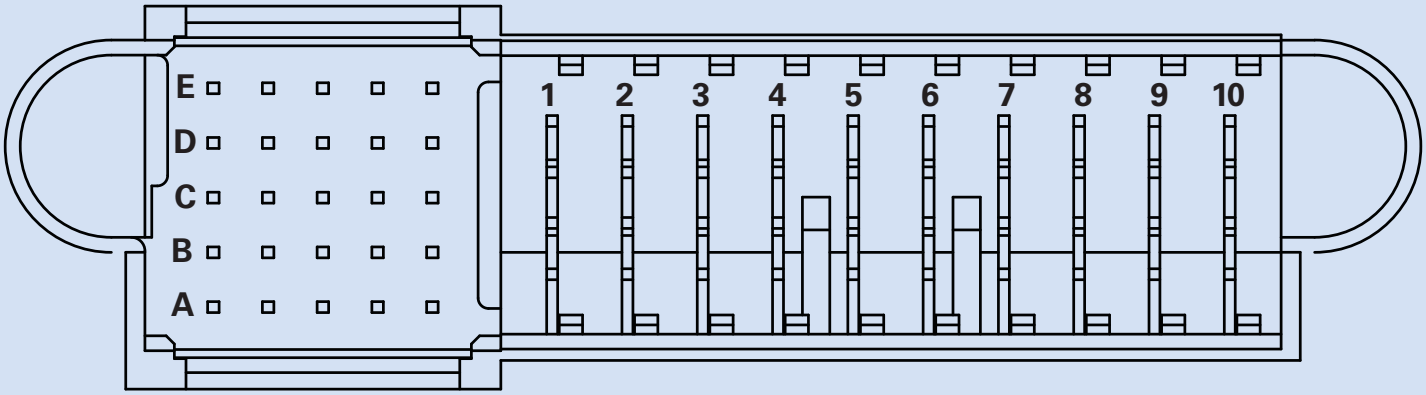
Mechanical specifications

Parameter	Specification	Comments
Dimensions	2.1in x 1.6in x 12.6in	See mechanical drawing for details
Construction	Combination of stamped steel case with steel front panel	
RoHS & WEEE	Compliant	
Weight	2.25lbs	
Cooling	Fan forced - temperature controlled	1x 1.42in fan
Hot swap	Hot swappable without disturbance to input/output lines	
Mounting	Rack mount in custom sub-rack	Horizontal and vertical mounted

Mechanical dimensions - inches (mm)



Output connector & control signal



Unit: Tyco Electronics 1926736-3 / FCI 10121382-R10253SLF
Mating connector: Tyco Electronics 1926739-5 / FCI 10108888-R10253SLF

Pin	Name	Description
Output		
6, 7, 8, 9, 10	12V	+12VDC main output
1, 2, 3, 4, 5	12VRTN	+12VDC power ground (return)
Control pins		
A1	3.3V/5.0V	Standby positive output (+3.3V/5.0V)
B1	3.3V/5.0V	Standby positive output (+3.3V/5.0V)
C1	3.3V/5.0V	Standby positive output (+3.3V/5.0V)
D1	3.3V/5.0V RTN	3.3V/5.0V ground (return)
E1	3.3V/5.0V RTN	3.3V/5.0V ground (return)
A2	SGND	Signal ground (return)
B2	SGND	Signal ground (return)
C2	HOTSTANDBYEN	Hot standby enable signal: active-high
D2	3.3V/5.0V RTN	3.3V/5.0V ground (return)
E2	3.3V/5.0V RTN	3.3V/5.0V ground (return)
A3	APS	I2C address and protocol selection

Pin	Name	Description
B3	N/C	Reserved
C3	SDA	I2C data signal line
D3	12V_SENSE_R	Main output negative sense
E3	12V_SENSE	Main output positive sense
A4	SCL	I2C clock signal line
B4	PSON	Power supply on input (connect to A2/B2 to turn unit on): active-low
C4	SMB_ALERT	SMB Alert signal output: active-low
D4	N/C	Reserved
E4	ACOK	AC input OK signal: active-high
A5	PSKILL	Power supply kill (lagging pin): active-high
B5	ISHARE	Current share bus (lagging pin)
C5	PWOK	Power OK signal output (lagging pin): active-high
D5	N/C	Reserved
E5	PRESENT	Power supply present (lagging pin): active-low

Parameter		Condition/Description	Min	Nom	Max	Unit
PSKILL / PSON / HOTSTANDBYEN Inputs						
V_{IL}	Input Low Level Voltage		-0.2		0.8	V
V_{IH}	Input High Level Voltage		2.4		3.5	V
$I_{IL, H}$	Maximum Input Sink or Source Current		0		1	mA
$R_{puPSKILL}$	Internal Pull Up Resistor on PSKILL			100		kΩ
R_{puPSON}	Internal Pull Up Resistor on PSON			10		kΩ
$R_{puHOTSTANDBYEN}$	Internal Pull Up Resistor on HOTSTANDBYEN			10		kΩ
R_{LOW}	Resistance Pin to SGND for Low Level		0		1	kΩ
R_{HIGH}	Resistance Pin to SGND for High Level		50			kΩ
PWOK Output						
V_{OL}	Output Low Level Voltage		0		0.4	V
V_{OH}	Output High Level Voltage	$I_{sink} < 4mA$	2.6		3.5	V
R_{puPWOK}	Internal Pull Up Resistor on PWOK	$I_{source} < 0.5mA$		1		kΩ
ACOK Output						
V_{OL}	Output Low Level Voltage	$I_{sink} < 2mA$	0		0.4	V
V_{OH}	Output High Level Voltage	$I_{source} < 50\mu A$	2.6		3.5	V
R_{puACOK}	Internal Pull Up Resistor on ACOK			10		kΩ
SMB_ALERT Output						
V_{ext}	Maximum External Pull Up Voltage	$I_{source} < 4mA$			12	V
V_{OL}	Output Low Level Voltage		0		0.4	V
I_{OH}	Maximum High Level Leakage Current				10	μA
R_{puSMB_ALERT}	Internal Pull Up Resistor on SMB_ALERT			None		kΩ

Input Specification

Parameter		Conditions/Description	Min	Nom	Max	Unit
$V_{i\ nom}$	Nominal input voltage			120 / 230		VAC
$V_{i\ rated}$	Rated input voltage Range		100		240	VAC
V_i	Input voltage ranges	Normal operating (V_i min to V_i max)	90		264	VAC
$V_{i\ red}$	Low line input voltage range	Derated output (600W output power)	90		135	VAC
I_{max}	Max input current				8	Arms
I_p	Inrush current limitation	$V_{i\ min}$ to $V_{i\ max}$, 90°, TNTC=25°C			40	Ap
F_i	Input frequency		47	50/60	64	Hz
PF	Power factor	$V_{i\ nom}$, 50Hz, >0.2 $I_{1\ nom}$	0.96			W/VA
THDi	Total Input Current Harmonic Distortion	From 50%-100% of rated output power at nominal input voltage			5	%
$V_{i\ on}$	Turn-on input voltage	Ramping up	80		87	VAC
$V_{i\ off}$	Turn-off input voltage	Ramping down	75		85	VAC
η	Efficiency	$V_{i\ nom}$, 0.1 ·I_{1nom}, 0.1 ·$I_{SB\ nom}$, TA=25°C	90			%
		$V_{i\ nom}$, 0.2 ·I_{1nom}, 0.2 ·$I_{SB\ nom}$, TA=25°C	94			%
		$V_{i\ nom}$, 0.5 ·I_{1nom}, 0.5 ·$I_{SB\ nom}$, TA=25°C	95.5			%
		$V_{i\ nom}$, $I_{1\ nom}$, $I_{SB\ nom}$, TA=25°C	92			%
T_{hold}	Hold-up Time	After last AC zero point, V1>10.8V, V_{SB} within regulation, Vi=230 VAC, $P_{x\ nom}$	12			ms

Output specification

Parameter		Conditions/Description	Min	Nom	Max	Unit
Main Output V1						
$V_{1\ nom}$	Nominal Output Voltage	0.5 ·$I_{1\ nom}$, T_{amb} = 25 °C		12		VDC
$P_{1\ nom}$	Nominal Output Power	V_1 = 12 VDC (180-264 VAC)		1,200		W
$I_{1\ nom}$	Nominal Output Current	V_1 = 12 VDC (180-264 VAC)		100		ADC
$P_{1\ nom}$	Nominal Output Power	V_1 = 12 VDC (90-135 VAC)		600		W
$I_{1\ nom}$	Nominal Output Current	V_1 = 12 VDC (90-135 VAC)		50		ADC
$V_{1\ pp}$	Output Ripple Voltage	$V_{1\ nom}$, $I_{1\ nom}$, 20MHz BW			150	mVpp
dV_1	Total Regulation	Vi = $V_{i\ min}$~~ $V_{i\ max}$, 0 - 100 % $I_{1\ nom}$	-2	0	2.0	%V1 nom
N_{share}	Redundant parallel operation unit number				6.0	PCS
dI_{share}	Current Sharing	Deviation from $I_{1\ tot}$ / N, I_1 > 10% *I_{nom}	-5		5.0	% I1 nom
dV_{dyn}	Dynamic Load Regulation	ΔI1 = 50% $I_{1\ nom}$, I_1 = 5…100% $I_{1\ nom}$,dI_1/dt = 1A/µs, recovery within 1% of $V_{1\ nom}$	-0.6		0.6	V
T_{rec}	Recovery Time				4.0	ms
$t_{AC\ V1}$	Start-up Time from AC	V_1 = 90% $V_{1\ nom}$			2.0	sec
$tV_{1\ rise}$	Rise Time	V_1 = 10…90% $V_{1\ nom}$			20	ms
C_{Load}	Capacitive Loading	T_a = 25°C			30,000	uF
Standby Output VSB						
$V_{SB\ nom}$	Nominal output voltage	0.5·$I_{SB\ nom}$, T_{amb} = 25 °C		3.3 / 5.0		VDC
$P_{SB\ nom}$	Nominal output power			3.3 / 5.0		W
$I_{SB\ nom}$	Nominal output current			1.0		ADC
$V_{SB\ PP}$	Output ripple voltage	$V_{SB\ nom}$, $I_{SB\ nom}$, 20MHz BW			100	mVpp
dV_{SB}	Droop	0-100% $I_{SB\ nom.}$		67		mV
d $V_{SB\ dyn}$	Dynamic load regulation	ΔI1 = 50% $I_{SB\ nom}$, ISB = 5…100% $I_{SB\ nom}$, dI_0/dt = 0.5 A/µs, recovery within 1% of $V_{1\ nom}$	-3		3.0	% VSB nom
T_{rec}	Recovery time				1.0	ms
$t_{AC\ VSB}$	Start-up time from AC	V_{SB}=90% $V_{SB\ nom}$			2.0	sec
$tV_{SB\ res}$	Rise time	V_{SB}=10…90% $V_{SB\ nom}$		4.0	20	ms
C_{Load}	Capacitive loading	T_{amb} =25 °C			10,000	µF

Electromagnetic compatibility

1. Immunity

Parameter	Conditions/Description	Criterion
ESD Contact Discharge	IEC / EN 61000-4-2, ±8kV, 25+25 discharges per test point	B
	(metallic case, LEDs, connector body)	
ESD Air Discharge	IEC / EN 61000-4-2, ±15kV, 25+25 discharges per test point	B
	(non-metallic user accessible surfaces)	
Radiated Electromagnetic Field	IEC / EN 61000-4-3, 10V/m, 1kHz/80% Amplitude Modulation, 1 us Pulse Modulation, 80MHz…2GHz	B
EFT	IEC / EN 61000-4-4, level 3	B
	AC port ±4kV, 1 minute	
	DC port ±1kV, 1 minute	
Surge	IEC / EN 61000-4-5	B
	Line to earth: level 3, ±2kV	
	Line to line: level 2, ±1kV	
RF Conducted Immunity	IEC/EN 61000-4-6, Level 3, 10Vrms, CW, 0.1 … 80 MHz	B
Voltage Dips and Interruptions	IEC/EN 61000-4-11	
	1: Vi 230 V, 100% Load, Phase 0°, 0% during ½ cycle	VSB: A, V1: A
	2: Vi 230 V, 100% Load, Phase 0°, 0% during 1 cycle	VSB: A, V1: B
	3: Vi 230 V, 100% Load, Phase 0°, 40% during 10/12 cycles	VSB: A, V1: B
	4: Vi 230 V, 100% Load, Phase 0°, 70% during 25/30 cycles	VSB: A, V1: B
	5: Vi 230 V, 100% Load, Phase 0°, 80% during 250/300 cycles	VSB: A, V1: A

2. Emissions

Parameter	Conditions/Description	Criterion
Conducted Emission	EN55022/FCC/CISPR 22: 0.15 … 30 MHz, QP and AVG, single unit	Class A
		6 dB margin (typical)
Radiated Emission	EN55022/FCC/CISPR 22: 30 MHz … 1 GHz, QP, single unit	Class A
		6 dB margin (typical)
Harmonic Emissions	IEC61000-3-2, Vin = 100 VAC /120VAC/ 60 Hz, 50% Load & Vin = 230VAC/240VAC/ 50 Hz, 100% Load	Class A
Acoustical Noise	Sound power statistical declaration(ISO 9296,ISO 7779,IS9295), (at 1 meter, 25C, 50% load)	46dB
AC Flicker	IEC61000-3-3, dmax<3.3%	Pass

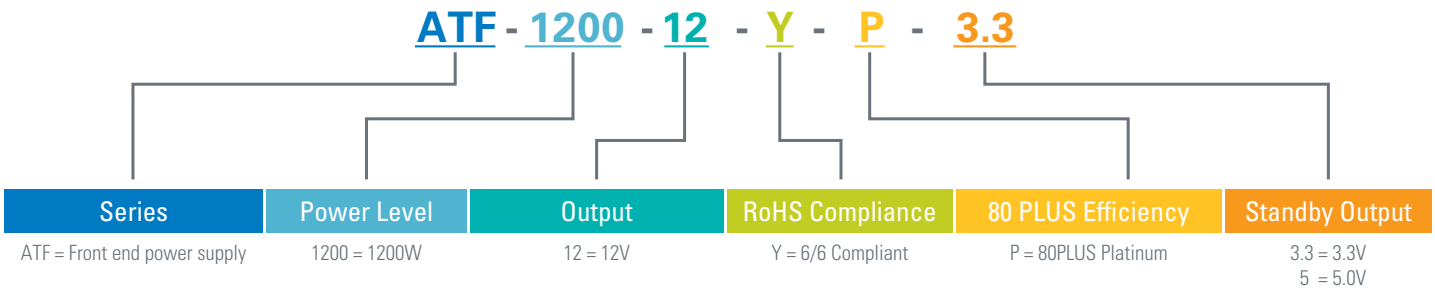
Environmental

Parameter		Conditions/Description	Min	Nom	Max	Unit
T_A	Ambient temperature	$V_{i\ min}$ to $V_{i\ max}$,$I_{1\ nom}$, $I_{SB\ nom}$	0		55	°C
T_S	Storage temperature	Non-operational	-20		70	°C
T_O	Operating Temperature	Normal work/Derating will apply for above 50°C	-10		70	°C
	Maximum Altitude	For Normal operation			10,000	Feet
	Maximum Altitude	For Non-operation			35,000	Feet
	IP requirement	No conformal coating			Class 2	
Hum	Humidity	Relative humidity, non-condensing, both operating and non-operating.	5		95	%

LED display

Operation Condition	LED Signaling
AC LED	
AC Line within range	Solid Green
AC Line Fail (<75V)	Off
AC line over range (OV & UV)	Blinking Green(1:1)
DC LED	
PSON High	Blinking Yellow (1:1)
Hot-Standby Mode	Blinking Yellow/Green (1:2)
V1 out of regulation	Solid Yellow
Over temperature shutdown	
Output over voltage shutdown (V1)	
Output over current shutdown (V1)	
Fan fail	
Over temperature warning	Blinking Yellow/Green (2:1)

Ordering information



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