

## DS750PED

750 Watts

### Distributed Power System

Front-end Bulk Power  
Total Output Power: 750W continuous  
Wide Input Voltage 90 to 264Vac



### Special Features

- 750W output power
- High-power and short form factor
- 1U power supply
- High-density design: 16.4W/in<sup>3</sup>
- Active Power Factor Correction
- EN61000-3-2 Harmonic compliance
- Inrush current control
- 80plus Platinum Efficiency
- N+1 or N+N Redundant
- Active current sharing
- Full Digital control
- PMBus Compliant
- Accurate input power reporting
- Compatible with Emerson's Universal PMBus GUI
- Reverse airflow option
- Two-year Warranty

### Compliance:

- Class A + 6dB margin Conducted/  
Radiated EMI
- EN61000-4-11

### Safety

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

## Electrical Specifications

Input	
Input range:	90 - 264Vac
Frequency:	47Hz to 63Hz
Efficiency:	94.0% peak
Max Input Current:	9.7Arms
Inrush Current:	38A, cold start
Conducted EMI:	Class A
Radiated EMI:	Class A
Power Factor:	>0.9 beginning at 20% load
ITHD:	10%
Leakage Current:	1.4mA
Hold-up Time:	10ms at full load

## Electrical Specifications

Outputs			
Main DC Output	MIN	NOM	MAX
Nominal setting:	-0.20%	12	0.20%
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
Adjustment range:		TBD	
Output current:	0.5A <sup>4</sup>		62.5 A
Current sharing:	Within +/-5% of full load rating		
Capacitive loading:	2,000 uF		40,000 uf
Start-up from AC to output:			2000 ms
Output rise time:	5 ms		50 ms
Standby DC Output			
Output setpoint range:	-1%	12	1%
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
Adjustment range:		N/A	
Output current:	0.1 A		3.0 A
Current sharing:		N/A	
Capacitive loading:	47 uF		680 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 <sup>2</sup> :	120%		150%
Over-voltage protection <sup>1</sup> :	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 <sup>3</sup> :	120%		150%
Over-voltage protection <sup>3</sup> :	13.5 V		15.0 V
Under-voltage protection:	10.0 V		11.0 V

<sup>1</sup> Latch mode

<sup>2</sup> Autorecovery if the overcurrent is less than 120% and last only for <500 ms

<sup>3</sup> Standby protection is auto-recovery

<sup>4</sup> Minimum starting current during transient load. Output stays within regulation range at zero load.

## 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. 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

#### 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 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

### 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 kohm resistor connected to 3.3V inside the power supply. It is recommended that this pin be connected to a 100 pF decoupling capacitor and pulled down by a 100 kohm 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 kohm 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 kohm resistor.

		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		3.3 mA
$I_{SINK}$	Current that may be sunk by this pin at low state		0.7 mA

## Control and Status Signals

### Output Signals

#### PS\_PRESENT\_L

Signal used to indicate to the system that a power supply is inserted in the power bay. This pin is shorted to the standby return in the power supply. 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\_L

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

### 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 I<sup>2</sup>C requirements. It is recommended that these pins be pulled-up to a 2.2 kohm 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.

I<sup>2</sup>C Addressing Table: Not applicable. This power supply has a fixed I<sup>2</sup>C address. In order to support multiple addresses, the system will have to utilize a switcher or an I<sup>2</sup>C expander.

## 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	Solid GREEN
Main output ON	Solid GREEN
Power supply failure (OCP, OVP, OTP, FAN FAULT)	Blinking AMBER

### 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	±1.25 W at <125 W input	±1.25%	
Output voltage	±2%		
Output current	0.3 A fixed error	±2%	
Temperature	±5 degC on the operating range		
$E_{IN}$	±15% from 10% to 20% load	±5%	

PMBus	YES
Remote ON/OFF	YES

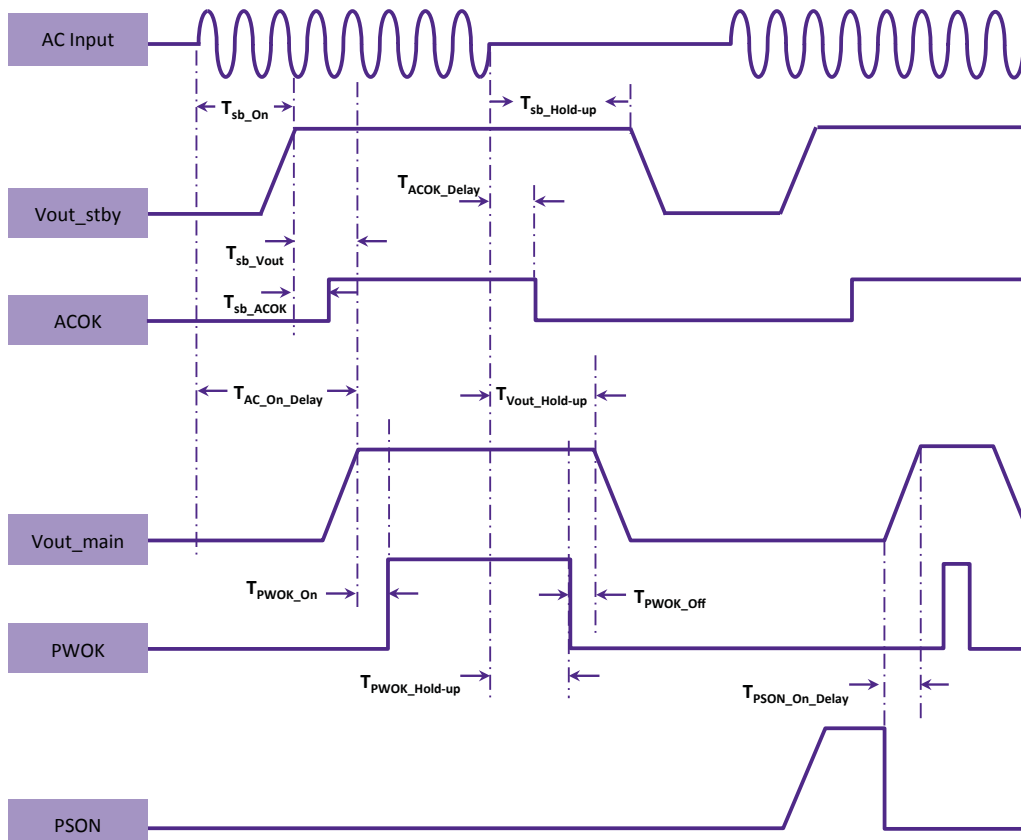
# Electrical Specifications

## Timing Specifications

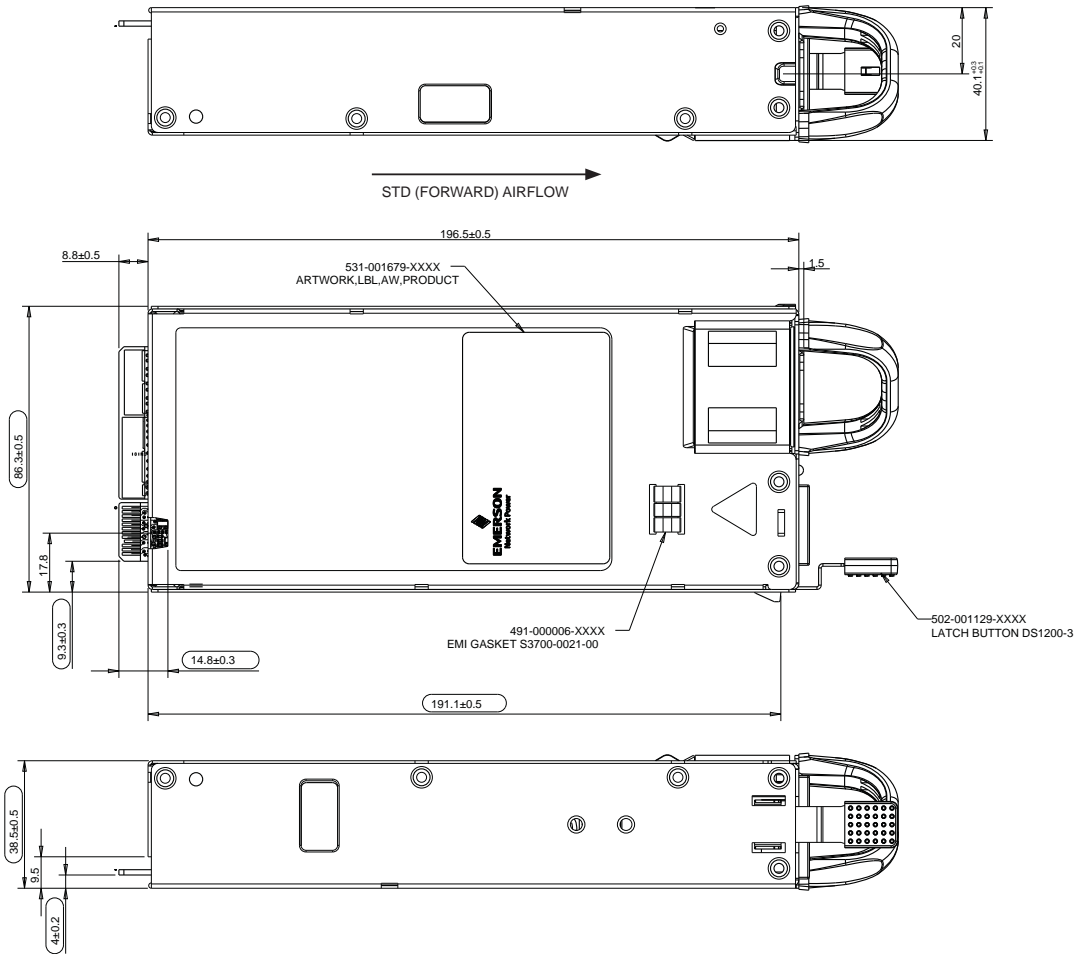
	Description	Min	Max	Unit
$T_{sb\_On}$	Delay from AC being applied to standby output being within regulation	20	1700	ms
$T_{sb\_ACOK}$	Delay from standby output to ACOK assertion	See note below	20	ms
$T_{sb\_Vout}$	Delay from standby output to main output voltage being within regulation		300	ms
$T_{AC\_On\_Delay}$	Delay from AC being applied to main output being within regulation		2000	ms
$T_{PWR\_GOOD\_On}$	Delay from output voltages within regulation limits to PWOK asserted	100	1000	ms
$T_{ACOK\_Delay}$	Delay from loss of AC to assertion of ACOK		6	ms
$T_{PWR\_GOOD\_Hold-up}$	Delay from loss of AC to deassertion of PWOK	10		ms
$T_{Vout\_Hold-up}$	Delay from loss of AC to main output being within regulation	11		ms
$T_{sb\_Hold-up}$	Delay from loss of AC to standby output being within regulation	150		ms
$T_{PWR\_GOOD\_Off}$	Delay from deassertion of PWOK to output falling out of regulation	1		ms
$T_{PSON\_On\_Delay}$	Delay from PSOK assertion to output being within regulation		350	ms
$T_{PWOK\_Low}$	Duration of PWOK being in deasserted state during an ON/OFF cycle of PSU	N/A	N/A	

Note:  $T_{Vout\_hold-up}$ : tested at 1A load on standby output  
 $T_{sb\_ACOK}$ : ACOK can assert earlier than the standby output

## Timing Diagram



## Mechanical Outline



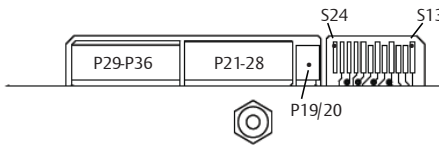
## Environmental Specifications

Operating temperature:	10 to 50 °C
Operating altitude:	up to 10,000 feet
Operating relative humidity:	20% to 95% 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 operating/non-operating random shock/vibration
ROHS compliance:	Yes
MTBF:	200,000 hours per Telcordia Issue 2, Method 1, Case 3 at 25 °C ambient at full load
Operating life:	Minimum of 5 years
Reliability:	All electronic component derating analysis is done at maximum ambient, 80% of maximum rated load, nominal input line voltage.

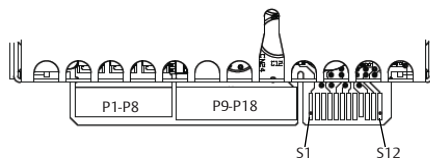
## Connector Definitions

Output Connector Part Number	Card-edge
Mating Connector Part Number	FCI 10107844-002LF or equivalent

Power Supply Output Card Edge (Bottom Side)



Power Supply Output Card Edge (Top Side)



### Output Connector Pin Configuration

S1	PS PRESENT	S13	PS_ON
S2	Reserved	S14	PS_KILL
S3	Reserved	S15	Reserved
S4	Pwr_Good	S16	RTN
S5	ACOK (AC Input Present)	S17	SDA
S6	RTN	S18	RTN
S7	I-SHARE	S19	SCL
S8	RESERVE	S20	RTN
S9	PS INTERRUPT_L	S21	REMOTE SENSE-
S10	RTN	S22	RTN
S11	Reserved	S23	REMOTE SENSE+
S12	Reserved	S24	RESERVE
P1-P8	Vo	P19-P20	VSB
P9-P18	RTN	P21-P28	RTN
		P29-P36	Vo

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