LMF3000-20Bxx SERIES

AC-DC

3000W

DIMENSIONS:

11.189 x 7 x 2.5"
(284.2 x 117.8 x 63.5mm)

ORING DIODE BUILT IN

CURRENT SHARE FOR 7 UNITS

85-277VAC

PROGRAMMABLE OUTPUT VIA I2C

4000VAC ISOLATION

-40 to 85°C OPERATION

Part numbers

LMF	3000	-	20B	24
Series	Power (W)		Input voltage	Output voltage
			85-277VAC	24 = 24VDC 48 = 48VDC

Key specifications

Input range	Safety certification	Features	Efficiency	Environmental performance
85-277VAC	Designed to meet: UL/IEC/EN 62368-1 UL 60601-1	Voltage adjust Current adjust Remote on-off Remote sense DC OK I2C	92-93%	Operational: -40 to 85°C

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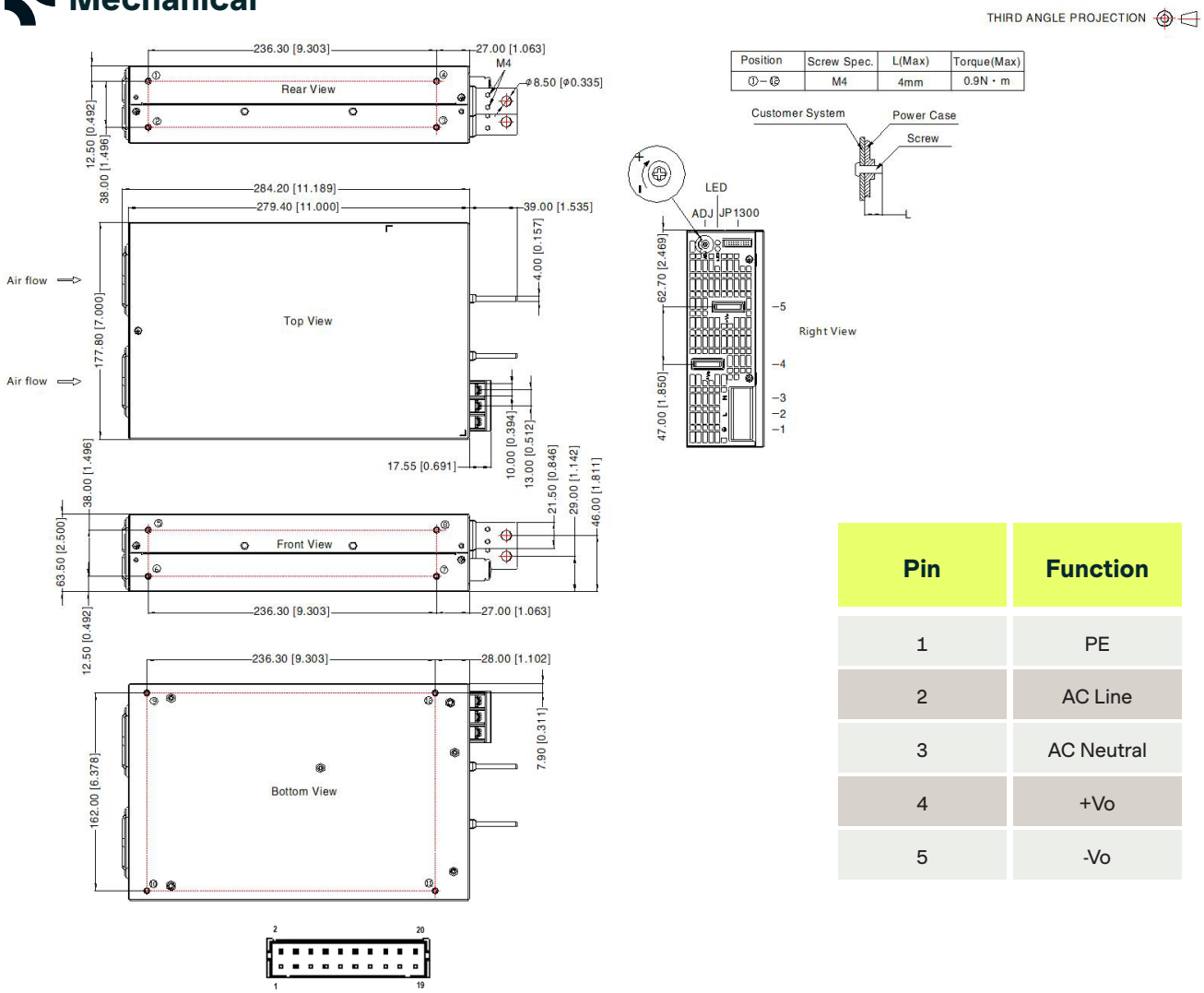
Mechanical



Pin	Function
1	PE
2	AC Line
3	AC Neutral
4	+Vo
5	-Vo

JP1300 Signal: JST PHDR-20VS			
Pin	Function	Pin	Function
1	PS_ON/OFF	2	SGND
3	AGND	4	AC_OK
5	WP_EN	6	SGND
7	+Vo2	8	DC_OK
9	+Vo2	10	SGND
11	SCL	12	VS+
13	SDA	14	VPROG
15	Current share	16	AO
17	A1	18	VS-
19	A2	20	AGND

Notes

1. All dimensions shown in mm [Inch]
2. Input: 16-10AWG
   Output: 12V 00AWG
   24V 2-00AWG
   48V 8-00AWG
3. Input torque: Max 0.9Nm
Output torque M8 13.5Nm M4 0.9Nm
4. General tolerance ±1.00 [±0.039]
5. Case material SUS 304

Weight	3400g

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Models & Ratings

Part number	Output Power (W)	Output voltage/current (V,I)		Adjustable Vout range (V)		Max capacitive load (uF)		Efficiency @230VAC Typ (%)
		Vo1/Io1	Vo2/Io2	ADJ	Programmable	Vo1	Vo2	
LMF3000-20B24	3010	24V/125A	12V/0.8A	18-30V	4.8-30V	20000uF	470uF	92%
LMF3000-20B48	3010	48V/62.5A	12V/0.8A	36-60V	9.6-60V	10000uF	470uF	93%

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	85		277	VAC	120-390VDC also accepted. Certified from 100-240VAC See page 5 for derating curve.
Input frequency	47		63	Hz	
Power factor	0.95		0.99		0.95 at 230VAC and 0.99 at 115VAC
Input current (rms)		16.5/17.5		A	115VAC/230VAC. 20A for certified VAC input range
Inrush current		20/40		A	115/230VAC cold start at 25°C
Start up delay			3	S	115/230VAC room temperature rated load.
Earth leakage current			<0.5	mA	240VAC
Touch current			0.1	mA	240VAC 60Hz
Input fuse		25		A	Internal
Input under voltage protection	60			VAC	Under voltage protection
			85	VAC	Under voltage protection release

Output

Parameter			Min	Typical	Max	Unit	Notes/Conditions
Minimum load			0			%	See Models & Ratings table
Set point accuracy				±1		%	
Line regulation				±0.5		%	Rated load
Load regulation				±0.5		%	0-100% load
Ripple & noise	Vo1	24V			150	mV	All models measured with 0.1uF ceramic and 47uF low ESR electrolytic capacitor. 20 MHz bandwidth. At rated line and full load.
		48V			250	mV	
	Vo2				100	mV	
Hold up time				14		ms	25°C full load 115VAC
Temperature coefficient				0.03		%/°C	

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Features

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Remote control	PS_ON /OFF(JP1300 Pin1) and SGND (JP1300 Pin2) are short				Power on
	PS_ON/OFF (JP1300 Pin1) and SGND (JP1300 Pin2) are open				Power off
DC OK signal		0	0.5	VDC	Power on
	10		12	VDC	Power off
Current share accuracy		±10		%	Output >50%lo1
Remote sense		200		mV	The total compensated voltage value of Vs+ and Vs- (Pin12 and Pin18 of the JP1300) when they are shorted to both ends of the output load (Vs+ to +Vo, Vs- to -Vo) respectively
Oring					Support direct parallel use, achieve 7+1 parallel redundancy
SDA, SCL for I2C					Internal 2.4 kΩ pull-up resistor to internal 3.3V

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Overload					Constant current limit, or automatic recovery
Short circuit					Automatic recovery
Overvoltage	24V <35V 48V <70V			VDC	Latch off reset
Over temperature			65	°C	Release at 50°C 230VAC 100% load

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards	UL60601-1 UL/IEC/EN62368-1				Designed to meet
Isolation: Input to output	4000			VAC	Leakage current <10mA
Isolation: Input to ground	2000			VAC	Leakage current <10mA
Isolation: Output to ground	1500			VAC	Leakage current <10mA
Insulation resistance	100			MΩ	Rated load insulation 25°C ±5, RH <95% at 500VDC

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EMC: Immunity

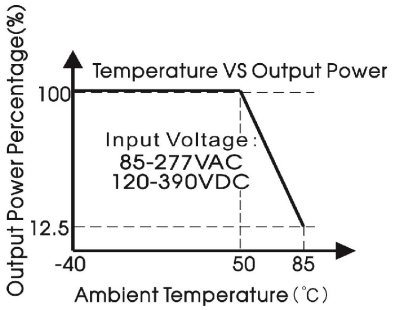
	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	4	A	±8kV contact, ±15kV air.
Radiated	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±4kV
Surges	EN61000-4-5	Installation class 3	A	±2kV Live-Neutral, ±4kV Live/Neutral—Earth
Conducted	EN61000-4-6	3	A	10Vrms
PFMF	EN61000-4-8	4	A	30A/m
Voltage dips & interruptions	EN61000-4-11	3	B	

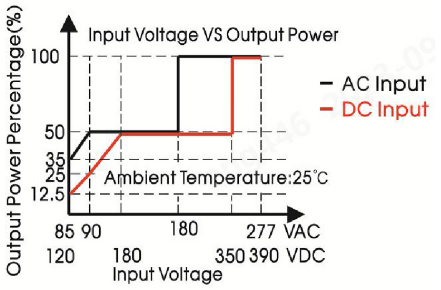
EMC: Emissions

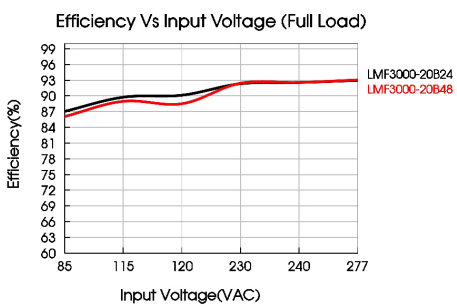
	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55032	B		
Radiated	EN55032	B		
Harmonic current	EN61000-3-2	Class A & D		
Voltage flicker	EN61000-3-3			

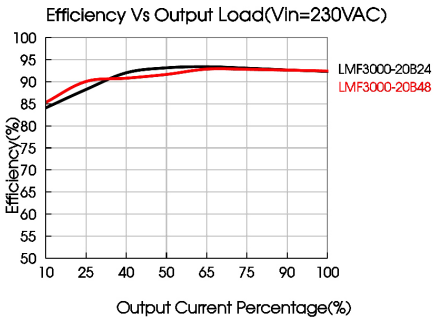
Environmental

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-40		85	°C	See derating curve
Storage temperature	-40		85	°C	
Cooling					Forced cooling
Temperature coefficient		±0.03		%/°C	
Humidity	20		90	% RH	Non condensing. Storage 10-95%
Operating Altitude			5000	M	5°C /1000m derating above 2000m
MBTF	>250			kHrs	As per MIL-HDBK-217F@25°C



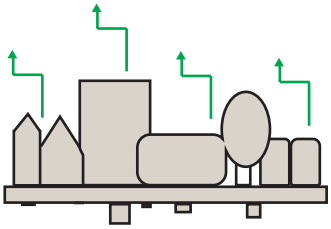






Installation Advice

EMC

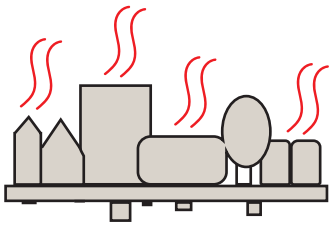


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that can be done to optimise EMC performance either as best practice, or if you are struggling for compliance:

1) Connect all marked EMI ground points to earth. Often these are combined with the safety earth point (in class I installations), but on some power supplies there may be additional earth tags or mounting points.
2) Minimise the length of input/output wiring where possible and try to maintain max distance of the conductors from the PSU, to prevent noise pick up. Avoid bundling input and output cables together. A common component to avoid placing wiring near is the PFC inductor in power factor corrected power supplies.
3) Apply additional filtering before the PSU input (ensure consideration of which frequencies there are issues with before selecting a filter).
4) When using an open frame PSU, mount the supply on a metal plate and connect EMI mounting points.
5) In multi circuit systems, decouple the circuits locally.
6) Ferrites added between the PSU and system input connector and/or the DC output cables can help in reducing radiated noise issues in systems. If seen, issues are commonly in the 30-150MHz area.

For more detailed assistance, if you still have any concerns with compliance, please get in contact with our Engineering department who are on hand to assist with any queries.

Thermal



Thermal management is an important consideration when thinking about equipment service life. Electrolytic capacitors within the PSU wear with time and are typically the first end-of-life failure. Keeping the operation temperature of key components within the PSU, such as the electrolytic capacitors, as low as possible is paramount. As a general rule, for every 10°C drop in the operating temperature of the electrolytic capacitators you double their lifetime, and thus the lifetime of the power supply. When looking at thermal performance it is helpful to test under a worst-case set of conditions, to ensure component temperatures are in an acceptable range for the required service life. Then consider the impact of operational time, load and temperature profile to estimate a more realistic lifetime for your PSU.

Also, many Fidus power supplies offer a Peak Power rating to provide for customers with pulsing loads. When using a peak power capability customers must consider:
1) Peak duration rating: the maximum length of time the peak can be drawn for
2) Duty cycle: the frequency with which the peak can be drawn. (e.g. 10% duty cycle, 1 second on:9 seconds off)
3) Average power value: datasheets will state the maximum average power acceptable with peak power PSUs. If any of these elements are exceeded the supply may overheat, with performance and lifetime suffering as a result.