FidusPower

MAF300 SERIES

AC-DC

300W

180W

DIMENSIONS:

OPEN FRAME: 4 x 2.09 x 1.32″
(101.6 x 53 x 33.6mm)
BASEPLATE: 4.6 x 2.44 x 1.56″
(116.8 x 62 x 39.7mm)
COVERED: 4.6 x 2.44 x 2.32″
(116.8 x 62 x 59mm)
DIN RAIL: 4.6 x 2.44 x 2.66″
(116.8 x 62 x 66.7mm)

HIGHEST POWER DENSITY 4 X 2″

360W PEAK 5 SEC

EN55032 LEVEL B

2 x MOPP

10% VOLTAGE ADJUST

CLASS I & II

Part numbers

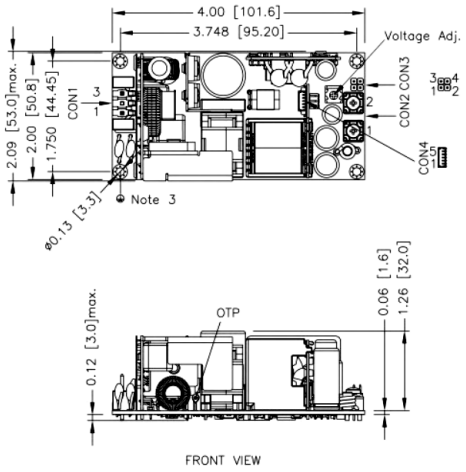
MAF	300	U	S	12	A	-	M	U2	F3	N
Series	Power	Input voltage	Output quantity	Output voltage	Protection type		Input connector	Options	Options	Options
	300W	U = Universal 85-264 VAC	S = Single	12 = 12VDC 15 = 15VDC 18 = 18VDC 24 = 24VDC 28 = 28VDC 36 = 36VDC 48 = 48VDC 53 = 53VDC	A = Class I B = Class II		M = Molex	Blank = Open frame U2 = Baseplate E1 = Enclosed D1 = Din rail	F1/F2 fixed or variable fan for E1 or D1 F3/F4 fixed or variable fan for E1 or open frame	N = no I/O

Key specifications

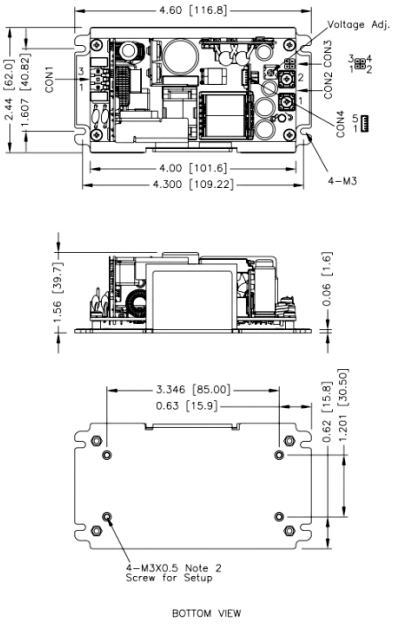
Input range	Safety certification	Features	Efficiency	Environmental performance
85-264VAC	UL/IEC/EN 62368-1 UL/IEC/EN 60601-1	5V / A Standby Remote ON/OFF Power good signal 10% Vout adjust	93% (Max)	Operational: -40 to 85°C

Mechanical

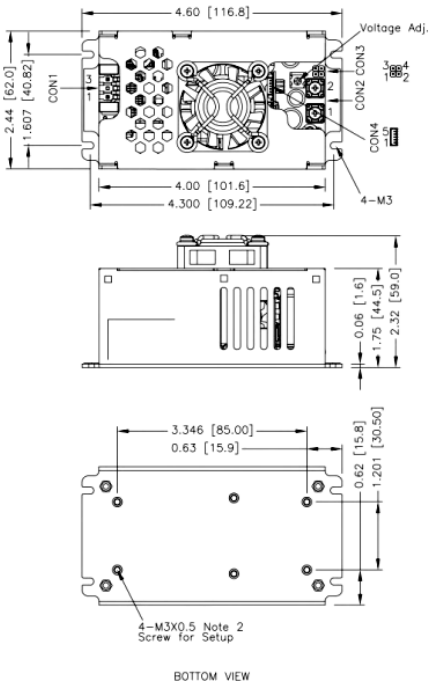
Open frame



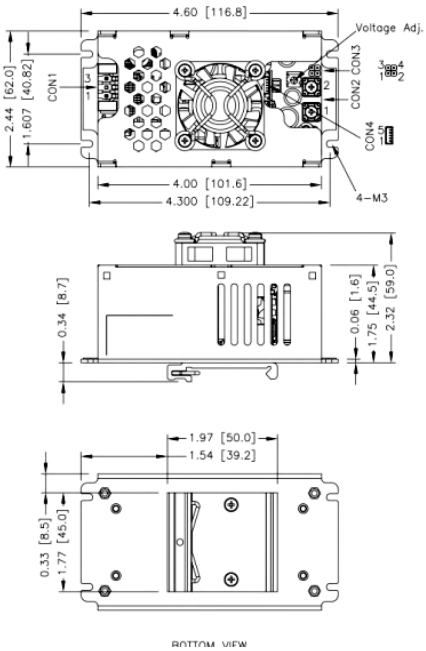
Base plate



Covered



Din rail



Connector	Pin/ Function
CN1	1. Neutral (-DC) 2. N/C 3. Line (+DC)

Connector	Pin/ Function
CN2	1. +Vout 2. -Vout

Connector	Pin/ Function
CN3	1. +Fan 2. -Fan 3. +V Sense 4. -V Sense

Connector	Pin/ Function
CN4	1. +Stanby 2. -Stanby 3. +PG 4. -Control 5. +Control

Notes

1. All dimensions shown in inch [mm]
2. Tolerance 2DP" ±0.02" [1DPmm ±0.5mm], 3DP" ±0.01"[2DPmm ±0.25mm]
3. Mounting screws not to exceed 5Kgf-cm / 0.49Nm on framed units
4. Mounting hole used for PE connections
5. Screw terminal torque 16.8Kgf.cm / 1.65Nm
6. CON1 mates with Molex 09-50-8031
7. CON2 mates with KST ring terminal RVS2-3.7
8. CON3 mates with Molex 90143-0004
9. CON4 mates with Molex 51021-0500

Weight	
Open frame	210g
Base plate	260g
Covered	318g
Din rail	340g

MAF300 SERIES

Models & Ratings

Model Number(1)	Output power 21 CFM	Output voltage	Output Current			Ripple & noise (3)	Efficiency	Capacitive load
			Convection	21 CFM fan	5 sec peak (2)			
MAF300US12A-MF3	300W	12V	15A	25A	30A	120mVp-p	91%	20000uF
MAF300US15A-MF3	300W	15V	12A	20A	24A	150mVp-p	92%	12000uF
MAF300US18A-MF3	300W	18V	10A	16.66A	20A	180mVp-p	93%	9000uF
MAF300US24A-MF3	300W	24V	7.5A	12.5A	15A	240mVp-p	93%	2400uF
MAF300US28A-MF3	300W	28V	6.42A	10.71A	12.85A	280mVp-p	93%	2000uF
MAF300US36A-MF3	300W	36V	5A	8.33A	10A	360mVp-p	93%	1000uF
MAF300US48A-MF3	300W	48V	3.75A	6.25A	7.5A	480mVp-p	93%	650uF
MAF300US53A-MF3	300W	53V	3.4A	5.67A	6.79A	530mVp-p	93%	470uF

1. For class II product change A to B i.e MAF300US12B-M. For baseplate, covered or din rail add U2, E1 or D1 respectively after M. Fan options: F1/F2 fixed or variable fan speed for E1/D1 versions and F3/F4 for fixed or variable fan output for E1 or open frame versions. For cost down version without I/O feature add N to the end i.e MAF300US12A-ME1F2N for 12V output, enclosed, variable fan with no I/O option.
2. Peak max duration is 5sec, 20% duty with average below 50%.
3. Noise is measured with 20HMZ bandwidth and 1uF/100V 1206 X7R MLCC cap
4. All specifications are at full load 230VAC 25°C inless otherwise stated

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	85		264	VAC	See page 5 for derating curve 120-370VDC
Input frequency	47		63	Hz	
Power factor	0.9				EN61000-3-2 class A compliant
Input current (rms)			1.6/3.9	A	240VAC/100VAC
Inrush current			70	A	230VAC cold start at 25°C
No load input power	0.3		3	W	230VAC 3W with fan 0.3W without
Leakage current			100	uA	at 264VAC
Start up time			2	S	
Rise time		30		mS	

Output

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Output voltage	12		53	VDC	See Models & Ratings table
Set point accuracy			±1	%	
Line regulation			±0.2	%	High line to low line full load
Load regulation			±0.4	%	10 - 90% load change
Voltage adjust			±10	%	
Minimum load	0			%	
Transient response			3	%	Recovery within 1% within 600 µs for 100-75% step at 2.5A/us
Ripple & noise		1%		V(Vp-p)	All models measured with 0.1 and 0.47uF capacitor and 20 MHz bandwidth.
Standby power			1000	mA	5V total standby and fan power 8W
Fan power			500	mA	12V (total standby and fan power 8W)

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Overload		150		%	Trip and restart. Automatic recovery
Short circuit					Trip and restart. Automatic recovery
Overvoltage	115		135	%	Shutdown and latch off. AC recycle to reset
Over temperature		125		°C	

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards	UL/IEC/EN 62368-1 UL/IEC/EN 60601-1				
Isolation: Input to output	4000			VAC	2x MOPP
Isolation: Input to ground	2500			VAC	
Insulation resistance		100		MΩ	500VDC

Controls/Functions

Parameter	Min	Typical	Max	Unit	Notes/Conditions
5V / A standby	Power good: low, Power off: open collector referenced to GND				
Voltage adjust	Remote ON/OFF: ON Open or 3-12V OFF Short or 0-1.2V referenced to "-Control" -0.5 to 1mA current draw				

EMC: Immunity

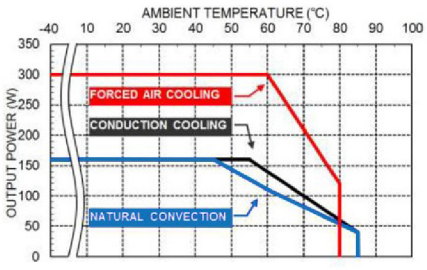
	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	4	A	±8kV contact, ±15kV air
Radiated	EN61000-4-3	3+	A	20V/m
EFT	EN61000-4-4	3	A	±2kV
Surges	EN61000-4-5	Installation class 3	A	±2kV Live-Neutral, ±1kV Live/Neutral—Earth
Conducted	EN61000-4-6	3+	A	20Vrms
PFMF	EN61000-4-8	4	A	30A/m
Voltage dips & interruptions	EN61000-4-11			

EMC: Emissions

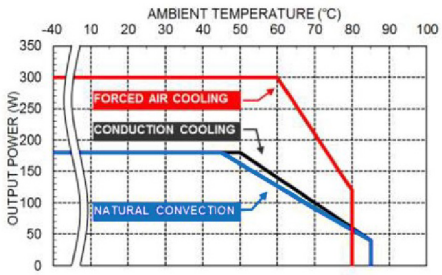
	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55011/32	B		CISPR22/11 EN60601-1-2
Radiated	EN55011/32	A		
Harmonic current	EN61000-3-2	Class A		
Voltage flicker	EN61000-3-3			

Environmental

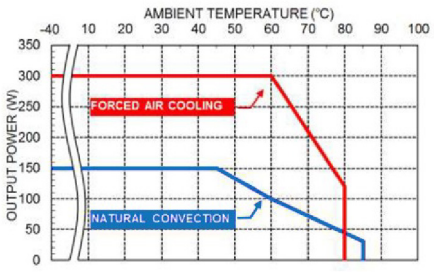
Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-40		85	°C	See derating curve, 80°C with fan
Storage temperature	-40		85	°C	80°C with fan
Cooling					Fan cooled (21CFM), conduction/convection cooled
Temperature coefficient			±0.02	%/°C	
Humidity	5		95	% RH	Non condensing
Operating altitude			5000	m	
MBTF		1056		kHrs	MIL-HDBK-217F 25°C



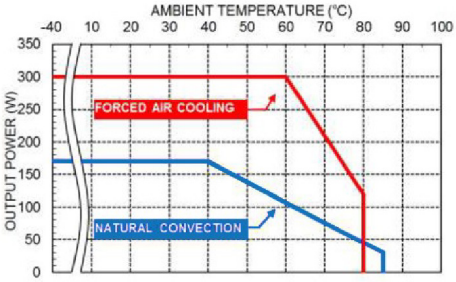
Derating Curve vs. Ambient Temperature
Vin=115VAC Open type



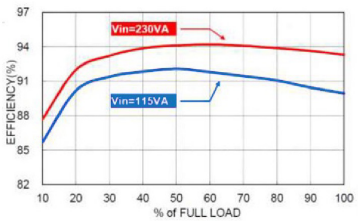
Derating Curve vs. Ambient Temperature
Vin=230VAC Open type



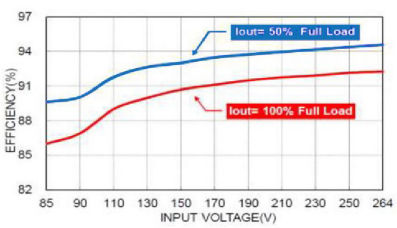
Derating Curve vs. Ambient Temperature
Vin=115VAC Enclosed type / Din rail type



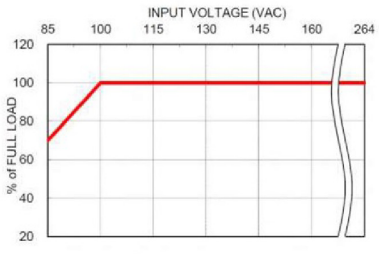
Derating Curve vs. Ambient Temperature
Vin=230VAC Enclosed type / Din rail type



Efficiency vs. Output Load
MAF300US24 with Forced air cooling



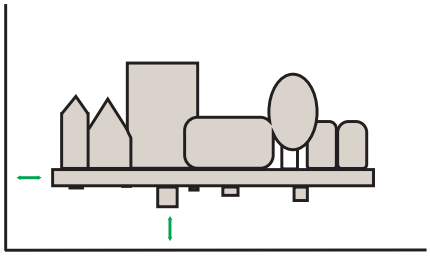
Efficiency vs. Input Voltage
MAF300US24 with Forced air cooling



Derating Curve vs. Input Voltage
MAF300

Installation Advice

Safety

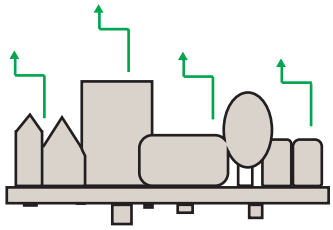


On installation customers must consider the required creepage and clearance distances between the PSU and the end-equipment enclosure. These distances vary depending on the installation class and safety standard requirements.

For **Class I** installations there should be 3-4mm between any part of the PSU and any earthed metal part of the enclosure. 3mm is acceptable for IT applications, 4mm required for medical applications. In Class I installations the PSU earth point must be connected to system safety ground.
For **Class II** installations distances may need to be increased if being installed into a surrounding metal enclosure.
Ensure consideration of components on the underside of the PCB or low lying spills when measuring clearance distances between the PSU and the end-equipment. Also top surface especially in tight enclosures such as 1U boxes. An insulation material can be used between PSU and metal if smaller gap required.

Fidus recommends installing the PSU on 6mm stand offs typically, but check the distances.

EMC

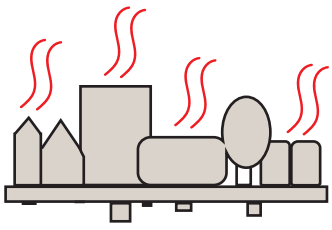


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that 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 capacitors 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.

27th March 2025