AFR130-U/C SERIES

AC-DC

130W

119-125W

DIMENSIONS:

U Channel: 3.15 x 2.35 x 1.5″
(80 x 59.7 x 38mm)
Covered: 3.15 x 2.35 x 1.7″
(80 x 59.7 x 43.2mm)

-30 to 80°C OPERATION

CONVECTION OR FAN COOLED

UP TO 91% EFFICIENCY

IEC62368-1

EN55032 LEVEL B

NO LOAD POWER <0.3W

Part numbers

AFR	130	12	-	U
Series	Power	Output voltage		Options
		12 = 12VDC 24 = 24VDC 48 = 48VDC		U = U Channel C = Covered

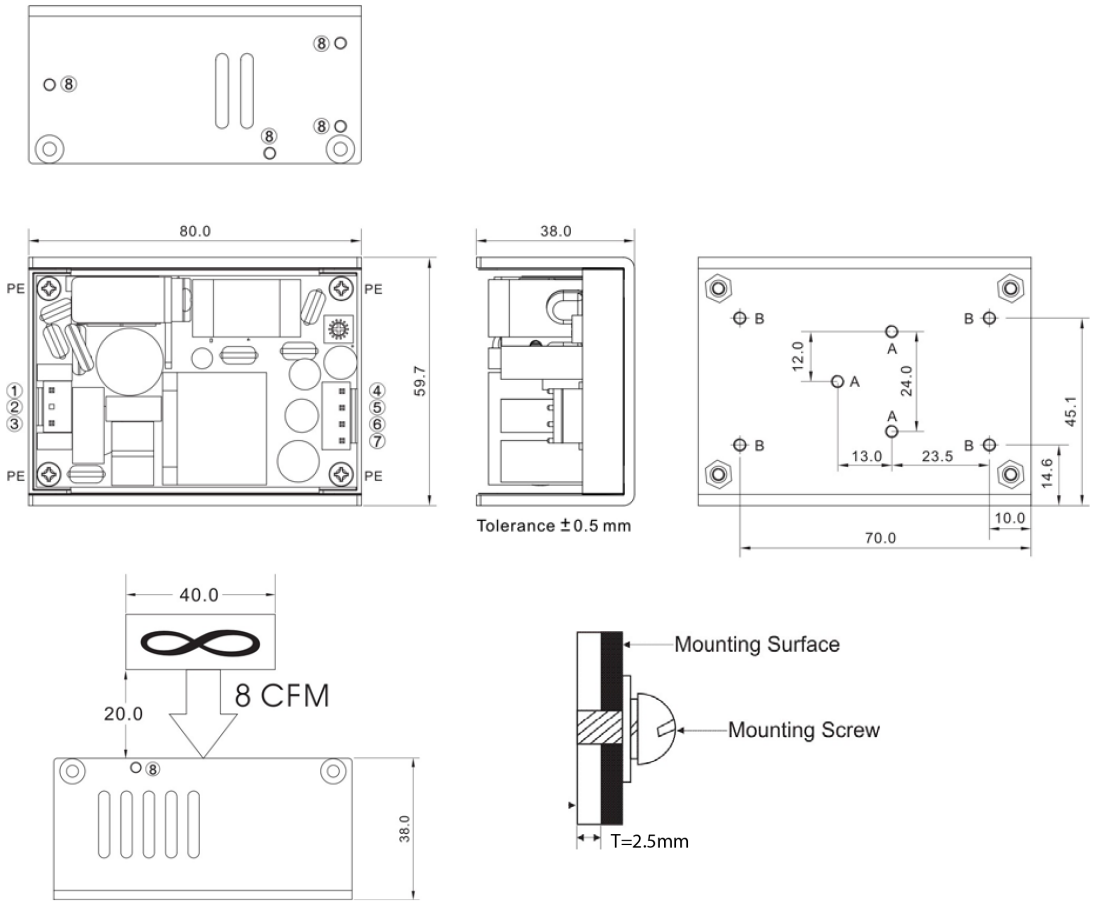
Key specifications

Input range	Safety certification	Efficiency	Environmental performance
90-264VAC	UL62368-1 2nd ed, I EC/EN62368-1:2014	Up to 91%	Operational: -30 to 80°C

AFR130-U/C SERIES

Mechanical

U Channel



Connector CN1	Function	Connector CN2	Function
1	AC Neutral	4	+DC Out
2	NC	5	+DC Out
3	AC Line	6	-DC Out
		7	-DC Out

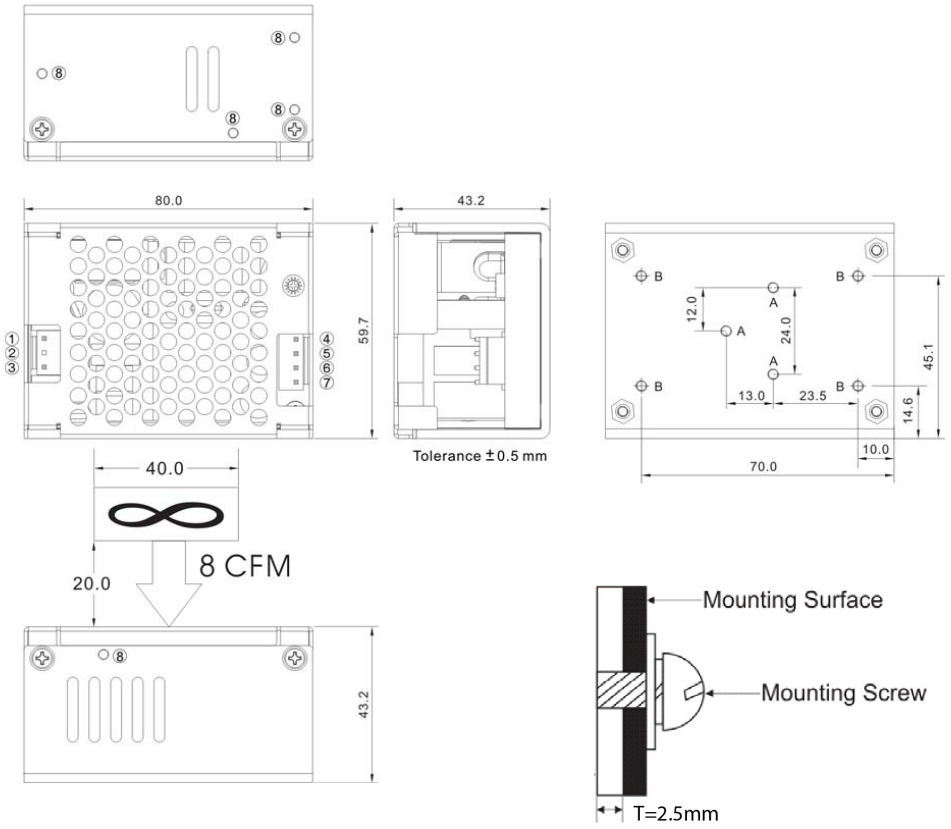
Notes
1. All dimensions show in mm 2. Input connector mates with VHR-3N 3. Output connector mates with VHR-4N

Weight
280g

AFR130-U/C SERIES

Mechanical

Covered



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Notes
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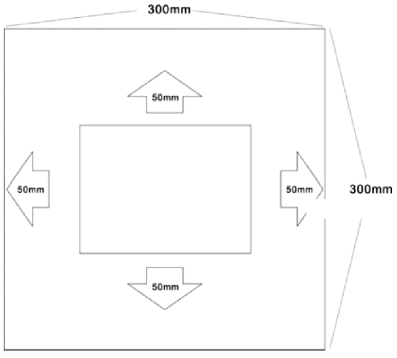
Base Plate



Notes
Size of aluminium base plate required for best thermal performance. Base plate is 3mm thick and the AFR130 is thermally bonded using paste or thermal pad to ensure an even thermal conductivity.

AFR130-U/C SERIES

Models & Ratings

Model Number(1)	Output Voltage	Output Current			Efficiency(2)	Capacitive Load
		Convection 100 VAC	Convection 230VAC	10CFM or conduction		
AFR13012-U	12V	9.167A	9.917A	10.833A	90%	4000uF
AFR13024-U	24V	4.792A	5.000A	5.417A	90%	1000uF
AFR13048-U	48V	2.500A	2.604A	2.708A	91%	330uF
AFR13012-C	12V	8.75A	9.917A	10.833A	90%	4000uF
AFR13024-C	24V	4.563A	5.000A	5.417A	90%	1000uF
AFR13048-C	48V	2.396A	2.604A	2.708A	91%	330uF

1. Open frame version available. Please see AFR130 datasheet
2. At 230VAC max load

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	90		264	VAC	See page 6 for derating curve
Input frequency	47		63	Hz	
Input current			2/1	A	1A at 230VAC 2A at 115 VAC
Inrush current			50/85	0A	85A at 230VAC 50 at 115 VAC. Cold start at 25°C
Power factor	0.9			ms	EN61000-3-2 class A compliant
No load power			0.3	W	

Output

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Output voltage	12		48	VDC	See Models & Ratings table
Output voltage adjust		±10		%	
Set point accuracy			±2	%	
Line regulation			±1	%	
Load regulation			±1	%	0-100% load.
Minimum load	0			%	
Ripple & noise	160	240	340	mVp-p	All models measured with 0.1uF ceramic and 47uF electrolytic capacitor. 20 MHz bandwidth.
Hold up time	8			mS	At 115VAC to 90%Vout

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Overload					Trip and restart. Automatic recovery
Short circuit					Trip and restart. Automatic recovery. High current latch
Overvoltage					Latching, requires manual power reset

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards	UL62368-1 2nd ed, IEC/EN62368-1:2014				
Isolation: Input to output	4000			VAC	Or 5656VDC - test with DC only or remove Y caps
Isolation: Input to ground	2000			VAC	Or 2828VDC - test with DC only or remove Y caps
Isolation: Output to ground	1500			VAC	Or 2121VDC - test with DC only or remove Y caps

EMC: Immunity

	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	3	A	±8kV air, ±4kV contact
Radiated	EN61000-4-3	3	A	10V/m 80-1000Mhz 3V/m 1800-5000Mhz
EFT	EN61000-4-4	3	A	2kV
Surges	EN61000-4-5	Instalation class 3	A	±1kV Live-Neutral, Line-PE ±2kV
Conducted	EN61000-4-6	2	A	3Vrms
PFMF	EN61000-4-8	3	A	30A/m
Dips & interruptions	EN61000-4-11	>95% 0.5 cycles, 30% 25 cycles, >95% 250 cycles: 110V: A,B,B 240V:A,A,B		

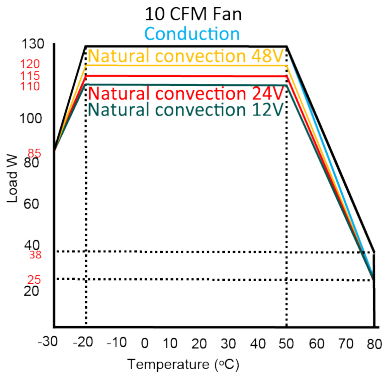
EMC: Emissions

	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55032	B		CISPR22-B, FCC part 15-B
Radiated	EN55032	B		Class A for Class II
Harmonic current	EN61000-3-2	Class A		
Voltage flicker	EN61000-3-3			

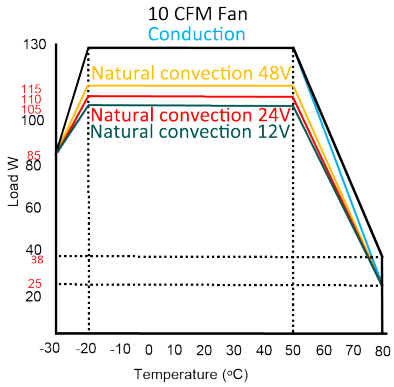
Environmental

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-30		80	°C	See derating curve
Storage temperature	-30		80	°C	
Cooling					Convection or fan cooled
Temperature coefficient		±0.05		%/°C	
Humidity	20		90	%RH	Non condensing
Operating altitude			5000	M	Derate 3.5W/km fanless operation above 2km Derate 5W/km fan cooling above 2km
MBTF	250			kHrs	MIL-HBDK-217F, 25°C
Shock & Vibration	IEC 60068-2-27 (2G 10-500MHz x,y,z) and IEC 60068-2-6				

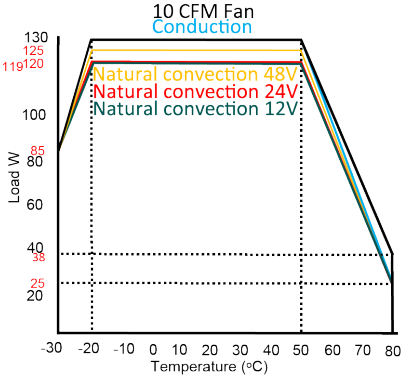
Thermal Derating Curve 100-115VAC U Channel



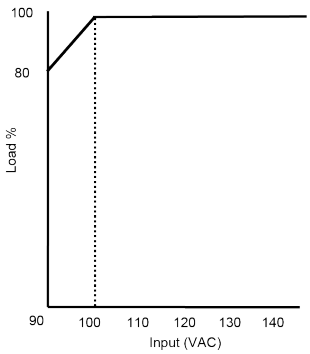
Thermal Derating Curve 100-115VAC Covered



Thermal Derating Curve 115-264VAC

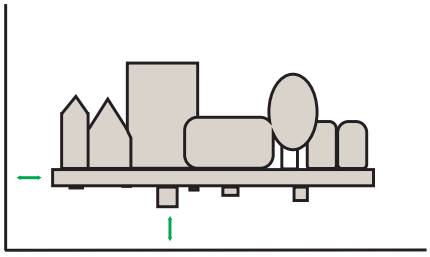


AC Input Derating Curve <110VAC



Installation Advice

Safety

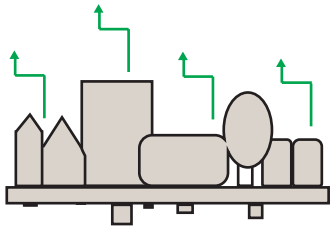


On installation customers must consider the required creepage and clearance distances between the PSU and the end-equipment enclosure. These distances vary depending on the installation class and safety standard requirements.

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

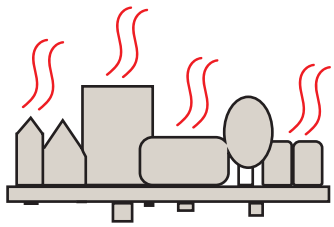


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that 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 January 2026