TAF300 Series

FiDUS
power in motion...

300 Watts

- High power density 4 x 2”
- 180W Convection / 300W Fan cooled / 360W peak for 5 sec
- Latest safety approval UL/EN/IEC 62368-1
- PG, Ctrl, 5V / 1A SB, Class I and II versions
- 10% Voltage adjust
- EN55032 Level B conducted & radiated

The TAF300 series of chassis mount AC-DC PSUs provide 180W convection, 300W fan cooled with a peak load of 360W from a market leading 4” x 2” package. The range is approved for use in ITE and AV applications, available in 12-53V output models. The units are available in many variants; Featured I/O version, class I & II, conduction cooling, enclosed or DIN rail with/without fan speed control. They are fully featured with 10% voltage output adjust and a full suite of protections

Dimensions:
Open: 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: 4.6 x 2.44 x 2.66” (116.8 x 62 x 66.7mm)

Models & Ratings

INSTALLATION ADVICE PG 6

Model Number (1)	Output Power 21CFM	Output Voltage	Output Current			Ripple & Noise(3)	Efficiency	Capacitive load
			Convection	21 CFM fan	5 sec Peak(2)			
TAF300US12A-MF3	300W	12V	15A	25A	30A	120mVp-p	91%	20000uF
TAF300US15A-MF3	300W	15V	12A	20A	24A	150mVp-p	92%	12000uF
TAF300US18A-MF3	300W	18V	10A	16.66A	20A	180mVp-p	93%	9000uF
TAF300US24A-MF3	300W	24V	7.5A	12.5A	15A	240mVp-p	93%	2400uF
TAF300US28A-MF3	300W	28V	6.42A	10.71A	12.85A	280mVp-p	93%	2000uF
TAF300US36A-MF3	300W	36V	5A	8.33A	10A	360mVp-p	93%	1000uF
TAF300US48A-MF3	300W	48V	3.75A	6.25A	7.5A	480mVp-p	93%	650uF
TAF300US53A-MF3	300W	53V	3.4A	5.67A	6.79A	530mVp-p	93%	470uF

Notes

1. For class II product change **A** above for **B**. For example TAF300US12**B**-M. For baseplate, enclosed or DIN rail type 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. For example TAF300US12**A**-M**E1F2N** for 12V output, enclosed, variable fan with no I/O option.
2. Peak max duration is 5 sec, 20% duty with average below 50%
3. Noise is measured with 20MHZ bandwidth and 1uF/100V 1206 X7R MLCC cap.
4. All specifications are at full load 230VAC 25°C unless otherwise stated.

Key specifications

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
AC Input range	85		264	VAC	See page 3 for derating curve. 120-370V DC
Operating temperature	-40		80/85	°C	See page 3 for derating curve
Efficiency	91		93	%	See models and ratings table above
Dimensions	Open: 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: 4.6 x 2.44 x 2.66” (116.8 x 62 x 66.7mm)				
EMC	EN 55032 Level B conducted and level A radiated. EN61000-3 and EN61000-4, harmonics, flicker, Surge, EFT, ESD, conducted and radiated. EN60601-1-1 4th edition immunity.				
Safety	IEC/ EN/ ANSI/AMMI ES 60601-1, IEC /EN /UL 62368-1				

Input

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
AC Input voltage	85		264	VAC	2x Internal fuse T5A/250VAC
DC Input voltage	120		370	VDC	
Input frequency	47		63	Hz	
Power factor	0.9				EN61000-3-2 class A
Input current			1.6/3.9	A	1.6A at 240VAC, 3.9A at 100VAC
Inrush current			70	A	230VAC cold start at 25°C
Leakage current			100	uA	At 264VAC full load
Start up time			2	S	
Rise time		30		mS	
No load input power	0.3		3	W	230VAC 3W with fan 0.3W without

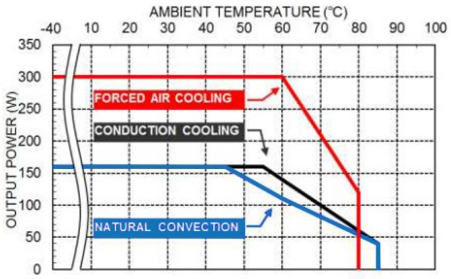
Output

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Output voltage	12		53	VDC	See Model & Ratings table
Set point accuracy			±1	%	
Line regulation			±0.2	%	High line to low line full load
Load regulation			±0.4	%	10% to 90% load change
Voltage adjust			±10	%	
Minimum load	0			%	
Transient response			3	%	Recovery within 1% within 600 µs for 50-75% step at 2.5A/us
Hold up time		10		mS	At 225W load and 115VAC
Overload protection		150			Trip & restart. Automatic recovery
Overvoltage protection	115		135		Latch off. AC reset required,
Short circuit protection					Automatic recovery, for high current latch off
Over temperature protection		125		°C	
Standby power			1000	mA	5V (total standby and fan power 8W)
Fan Power			500	mA	12V (total standby and fan power 8W)
Remote on off	ON Open or 3-12V OFF Short or 0-1.2V referenced to "–Control" –0.5 to 1mA current draw.				
Power good signal	Power good : low, Power off : Open collector referenced to GND				

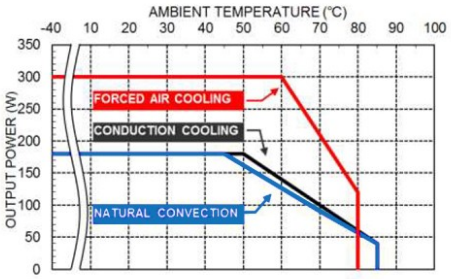
Environmental

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating temperature	-40		80/85	°C	See derating curve page 3. 80°C with fan
Storage temperature	-40		80/85	°C	80°C with fan
Cooling					Fan cooled (requires 21CFM), conduction or convection cooled
Temperature coefficient			±0.02	%/°C	
Humidity	5		95	%RH	Non-condensing
Operating altitude			5000	M	
Thermal Shock					MIL-STD-810F
Vibration					IEC60068-2-6
Shock					IEC60068-2-27

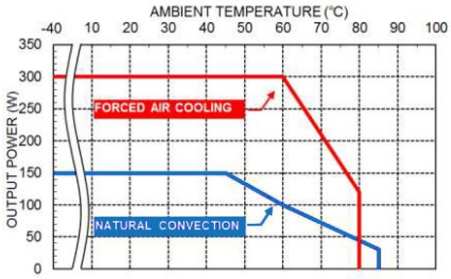
Derating Curves



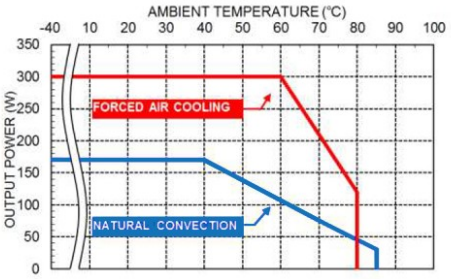
Derating Curve vs. Ambient Temperature
Vin=115VAC Open type



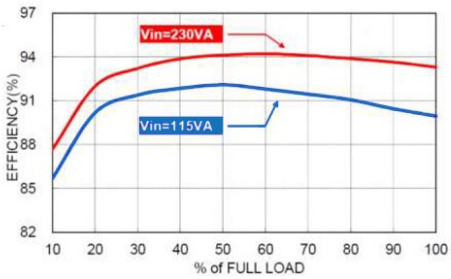
Derating Curve vs. Ambient Temperature
Vin=230VAC Open type



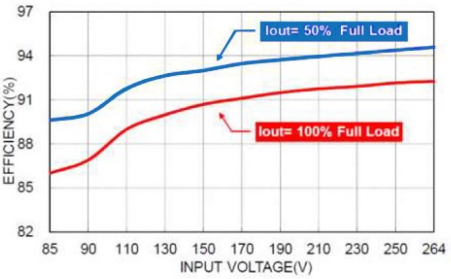
Derating Curve vs. Ambient Temperature
Vin=115VAC Enclosed type / Din rail type



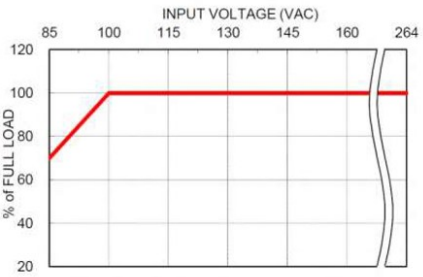
Derating Curve vs. Ambient Temperature
Vin=230VAC Enclosed type / Din rail type



Efficiency vs. Output Load
TAF300US24 with Forced air cooling



Efficiency vs. Input Voltage
TAF300US24 with Forced air cooling



Derating Curve vs. Input Voltage

General

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	91		93	%	See models & Ratings table
Isolation: Input to output	3000			VAC	2x MOPP
Input/output to ground	2500			VAC	
Isolation resistance	100			MΩ	At 500VDC
Power density			28.4	W/In^3	
Switching frequency		140		KHz	Full load 230VAC
MTBF		1056		Khrs	MIL-HDBK-217F 25°C
Weight	Open frame 210g, base plate 260g, enclosed 318g and DIN 340g				

EMC: Emissions

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

EMC: Immunity

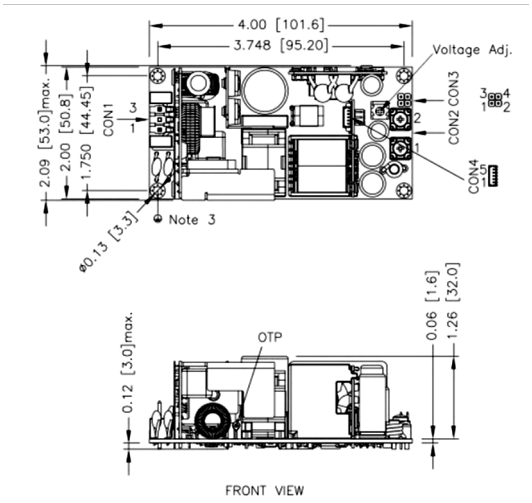
	Standard	Test level	Criteria	Notes & Conditions
ESD	EN61000-4-2	4	A	±8kV contact, ±15kV air
Radiated	EN61000-4-3	3+	A	20V/m
EFT	EN61000-4-4	3	A	±2KV
Surges	EN61000-4-5	Installation Class 3	A	±2KV line—neutral, ±1KV line/neutral—earth
Conducted	EN61000-4-6	3+	A	20Vrms
PFMF	EN61000-4-8	4	A	30A/rm
Dips and interruptions	EN61000-4-11			Compliant

Safety Approvals

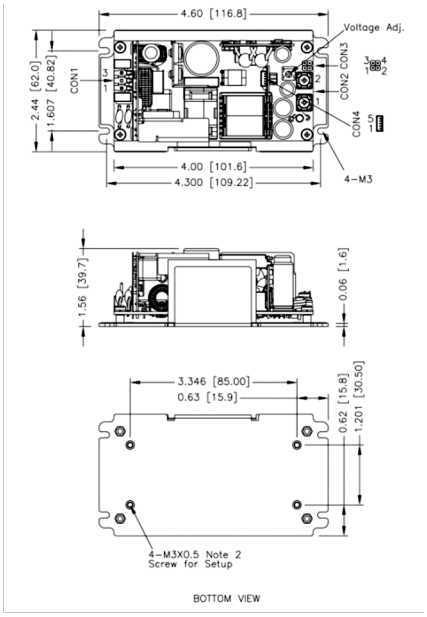
	Safety standard	Notes & Conditions
UL	UL 62368-1	E193009
CB	IEC 62368-1	
TUV	EN 62368-1	
CE /UKCA		2014/35/EU Low voltage directive
Equipment protection class		Class I or II (specify when ordering, see models table)

Mechanical Details

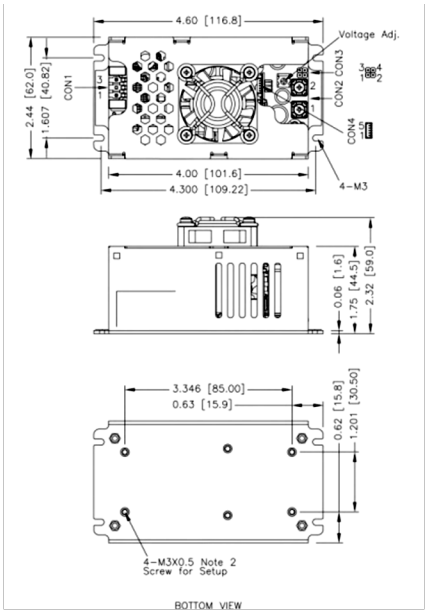
Open Frame



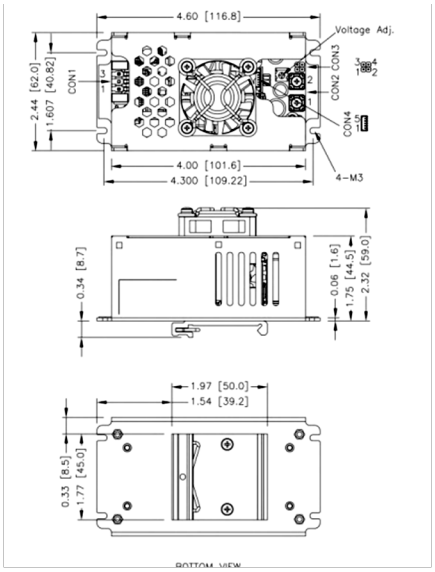
Base plate



Enclosed



DIN



CON1: Pin Connections Input [5]

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

CON2: Pin Connections Output[6]

Pin	Function
1	+Vout
2	-Vout

CON3: Pin Connections fan / aux power [7]

Pin	Function
1	+Fan
2	-Fan
3	+V Sense
4	-V Sense

CON4: Pin Connections I/O control [8]

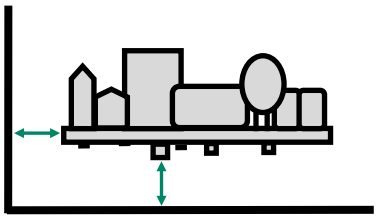
Pin	Function
1	+Standby
2	-Standby
3	+PG
4	-Control
5	+Control

Notes

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

Installation Advice

Safety

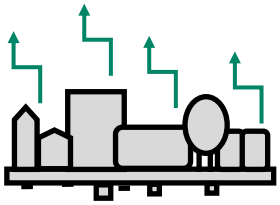


On installation customers must consider the required creepage and clearance distances between the PSU and the end-equipment enclosure. These distances vary depending on the installation class and safety standard requirements.

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

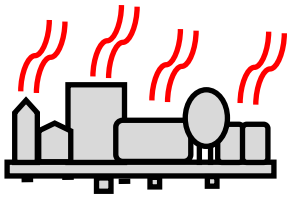


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that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