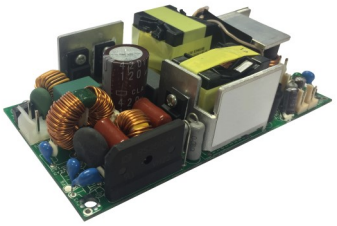
ITL300 Series

FiDUS
power in motion...

300 Watts

- 200W Convection / 300W fan cooled
- 400W Peak for 200ms
- -30 to +85°C Operation
- EN55032 Level B conducted & radiated
- Up to 95% efficient
- 5 Year warranty



Peak Power

The ITL300 series provides 300W (fan cooled) or 200W (convection) from a 3" x 5" package. The unit has an impressive peak rating of 400W for up to 200ms. The units are complete with EN55032 class B conducted and radiated certification and featured with <0.3W stand by power, 12V fan output, remote sense and power OK signal. Units are also covered by the FiDUS 5 year warranty.

Dimensions:

3 x 5 x 1.46" (76 x 127 x 37mm)

Ratings

Model Number	Output Power	Output Voltage	Output Current			Capacitive Load	Efficiency [3]
			Forced Air [1]	Convection	Peak [2]		
ITL30012	300W	12V	25.00A	16.67A	33.30A	22,000uF	93%
ITL30015	300W	15V	18.60A	12.00A	24.00A	15,000uF	91%
ITL30018	300W	18V	16.60A	11.10A	22.20A	11,000uF	93%
ITL30024	300W	24V	12.50A	8.33A	16.66A	6,000uF	95%
ITL30030	300W	30V	10.00A	6.66A	13.30A	6,000uF	94%
ITL30036	300W	36V	8.33A	5.55A	11.10A	3,000uF	94%
ITL30048	300W	48V	6.25A	4.16A	8.33A	1,000uF	94%
ITL30054	300W	54V	5.55A	3.70A	7.40A	800uF	94%

Notes

1. Requires 10 CFM
2. 200ms, <10% duty average power not to exceed 300W
3. At 100% load 230VAC

Key specifications

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
AC Input range	90		264	VAC	No derating
Operating temperature	-30		85	°C	See derating curve
Efficiency	93		95	%	At full load 230VAC
Dimensions	3 x 5 x 1.46" (76 x 127 x 37mm)				
EMC	EN55032 Level B Conducted and Radiated. EN61000-3 and EN61000-4, harmonics, flicker, Surge, EFT, ESD, conducted and radiated,				
Safety	IEC/UL/CSA 60950-1: 2nd edition, CE				

Input

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Input voltage	90		264	VAC	No derating
Input frequency	47		63	Hz	
Power factor			0.93		At 230VAC, EN61000-3-2 class D compliant
Input current			3.6	A	At 100VAC and max load
Inrush current			70	A	At 230 VAC cold start at 25°C
No load input power			0.3	W	Without fan
Earth leakage current			<100	uA	At 264VAC 60Hz

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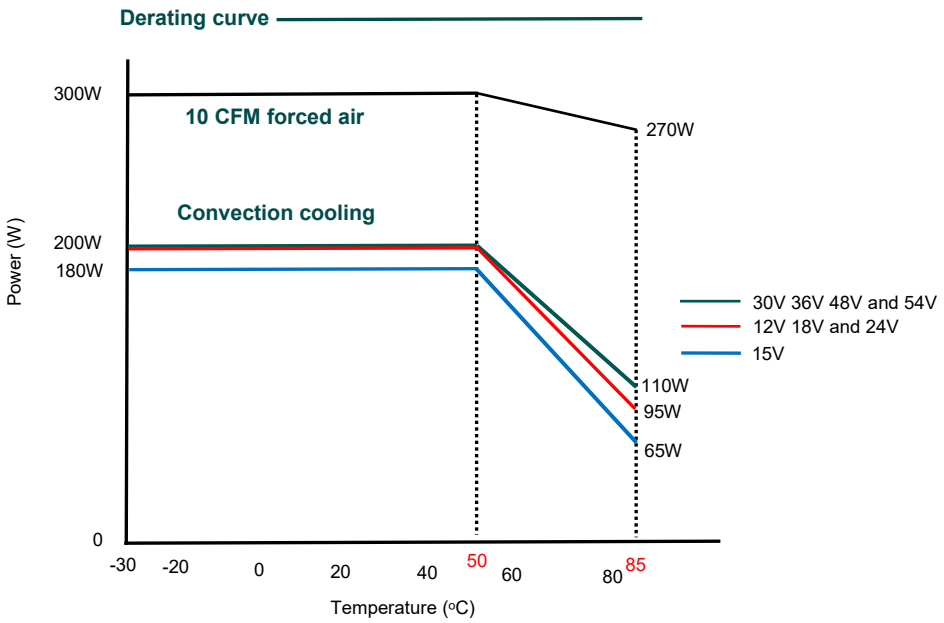
Output

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Regulation			2	%	Line, Load, temperature and setpoint accuracy
Minimum load	0			%	
Transient response			1	%	For 25% load step
Ripple & Noise	100		130	mV pk-pk	20MHz bandwidth, at 230VAC, 0.1uf and 47uf Cap
Hold up time		20		mS	At full load and 110VAC
Short circuit protection					Trip & restart. Automatic recovery
Overload protection	110		125	%	Based on forced air ratings. Automatic recovery
Overvoltage protection					Latch off
Over temperature protection					Latch off
Remote sense		0.5		V	Volt drop compensation on output cable
Power fail signal		0.8		mS	Prior to regulation loss
Fan output			0.3	A	12V
Capacitive Load	800		22,000	uF	See ratings table on page 1

Environmental

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating temperature	-30		85	°C	See derating curve after 50°C
Storage temperature	-30		85	°C	
Cooling					Forced air or convection cooled (ratings differ)
Humidity	10		90	%RH	Non-condensing
Storage Humidity	5		95	%RH	Non-condensing
Operating altitude			5000	M	



General

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	93		95	%	At full load 230VAC
Power density			13.7	W/In^3	
Isolation	4000			VAC	Primary to secondary
	2500				Primary to PE
	1000				Secondary to PE
Insulation resistance	100			MΩ	500VDC for 1 min primary to secondary
MTBF		170		KHrs	MIL HDBK 217F at 50°C ambient
Weight	350			g	

EMC: Emissions

	Standard	Test level	Criteria	Notes & Conditions
Conducted	EN55032	B		FCC part 15 also
Radiated	EN55032	B		FCC part 15 and CISPR 32 also
Harmonic current	EN61000-3-2	Class D		
Voltage flicker	EN61000-3-3			

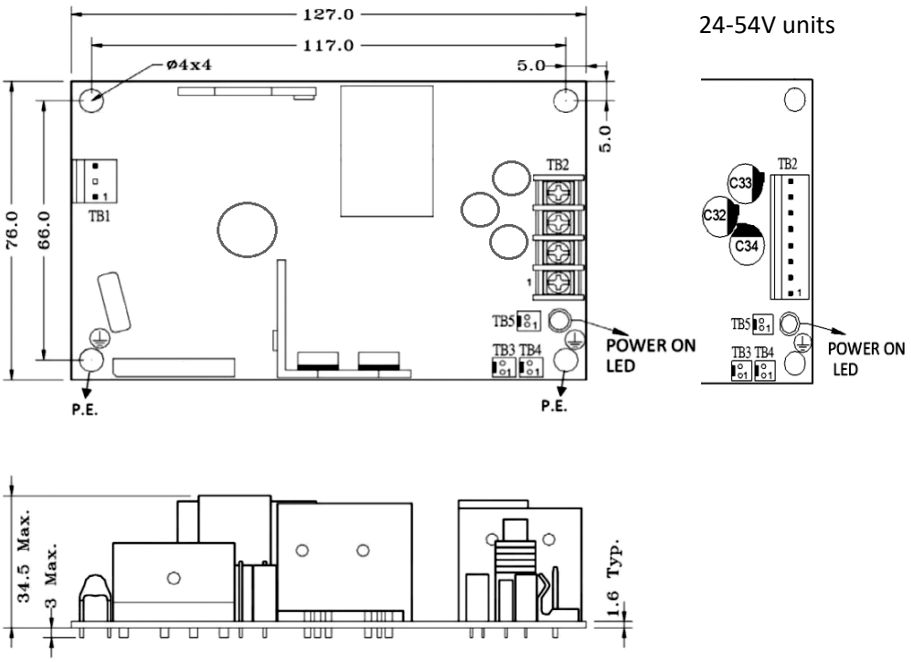
EMC: Immunity

	Standard	Test level	Criteria	Notes & Conditions
ESD	EN61000-4-2	2/3	A	±4kV contact, ±8kV air
Radiated	EN61000-4-3	3	A	10V/m 80% AM
EFT	EN61000-4-4	3	A	±2KV
Surges	EN61000-4-5	Installation Class 3	A	L-N ±1KV, L/N-PE ±2KV
Conducted	EN61000-4-6	3	A	
Dips and interruptions	EN61000-4-11	Dips: 95% 10ms, 30% 100ms, 60% 100ms, 95% 5000ms. Perf criteria A,A,A,B –at 240VAC		

Safety Approvals

	Safety standard	Notes & Conditions
UL	UL/CSA-22.2 No. 60950-1: 2nd edition	
CB	IEC 60950-1, 2nd Edition	
CE		2011/65/EU RoHS Directive and 2014/35/EU Low voltage directive
Equipment Protection Class		Class I

Mechanical Details



Pin Connections TB1[1]	
Pin	Function
1	Neutral
2	Live

Pin Connections TB2 12-18V units	
Pin	Function
1	Vout
2	Vout
3	GND
4	GND

Pin Connections TB2 [2] 24-54V units	
Pin	Function
1	Vout
2	Vout
3	Vout
4	Vout
5	GND
6	GND
7	GND
8	GND

Pin Connections TB3[3]	
Pin	Function
1	+12V fan
2	GND fan

Pin Connections TB4[3]	
Pin	Function
1	Power fail +
2	Power fail GND

Pin Connections TB5[3]	
Pin	Function
1	Sense +
2	Sense -

Notes

1. Molex 09-65-2029 mates with Molex 09-50-1023 or equivalent
2. Molex 09-65-2088 mates with Molex 09-50-1081
3. Molex 5045-02A, mates with Molex 5051-02 or equivalent
4. Tolerance ±0.3mm
5. All marked earthing points are required to be grounded for safety and EMC compliance
6. All dimensions in mm

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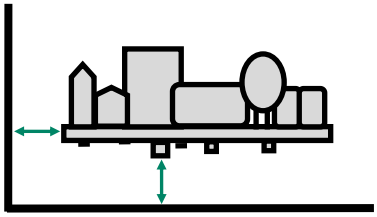
Installation Advice

Safety

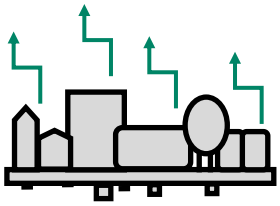


On installation customers must consider the required creepage and clearance distances between the PSU and the end-equipment enclosure. These distances vary depending on the installation class and safety standard requirements.

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

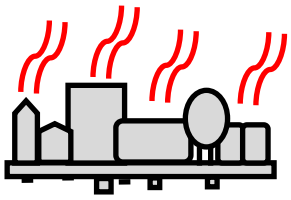


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that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

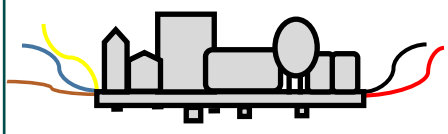
Thermal



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.

Connectivity



All FiDUS Power engineering samples requested will arrive with a free of charge loom kit for ease of testing.

The loom kit connects to the input/output terminals of the PSU and provides the customer with bare wire ends to connect with.

The loom kits can also prove advantageous for ease of installation in production. Please contact sales if you are interested in including the loom kit in your quotation.
Alternatively the input/output connector and mating part details can be found in the attached table.

	Part Number	Mating Part Number
Input	Molex 09-65-2029	Molex 09-50-1023
Output	12-18V: Screw terminal Others: Molex 09-65-2088	Molex 09-50-1081
Loom Kit	ITL300 12-18V LK ITL300 LK	