YEL50 SERIES

AC-DC

50W

DIMENSIONS:

3.89 x 3.22 x 1.18"
(99 x 82 x 30mm)

EN55032 LEVEL B | **90 to 264 VAC** | **-30 to 70°C OPERATION**

LOW NOISE | **OVC III** | **OUTPUT VOLTAGE ADJUST**

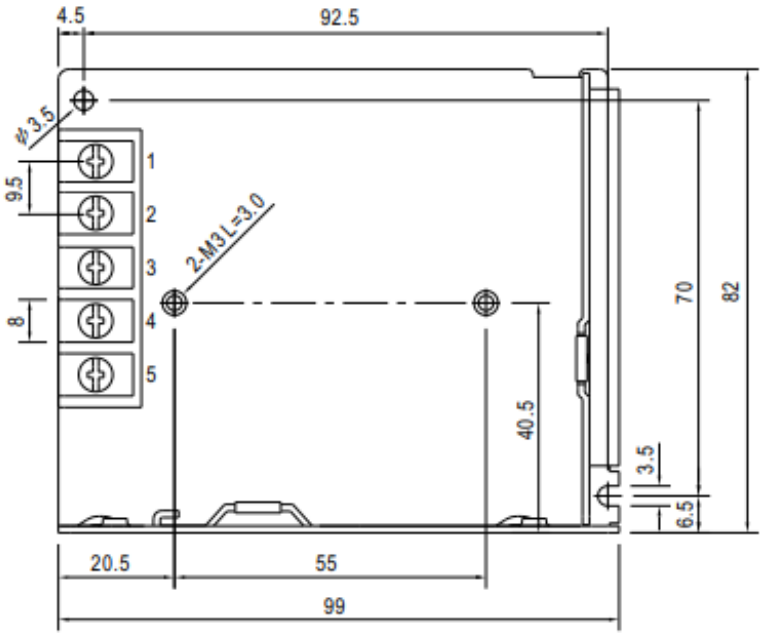
Part numbers

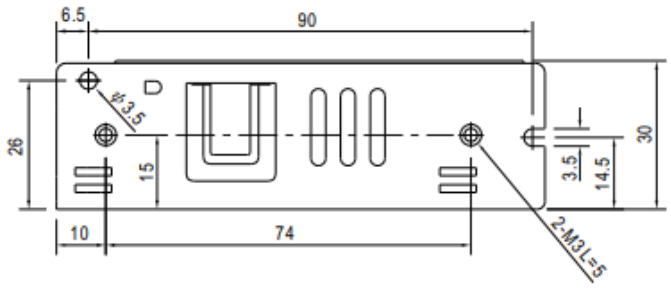
YEL	50	-	12
Series	Power (W)		Output voltage
			5 = 05VDC 12 = 12VDC 15 = 15VDC 24 = 24VDC 36 = 36VDC 48 = 48VDC

Key specifications

Input range	Safety certification	Features	Efficiency	Environmental performance
90-264VAC	EN 62368-1, EN 61558-1 (designed to meet) UL 62368-1	Output Voltage Adjust	83-90%	Operational: -30 to 70°C

Mechanical





Connector	Pin/Function
1	AC(L)
2	AC(N)
3	GND
4	-VO
5	+VO

Notes
1. All dimensions shown in mm 2. General tolerance ±1.00 3. Wire range: 22-12AWG 4. Connector lightening torque: M3.5, 0.8N-m

Weight	230g

Models & Ratings

Model Number	Output power	Output voltage	Output voltage adjustable range	Output current	Efficiency (1)	Noise and ripple (2)
YEL50-5	50W	5V	4.5-5.5V	10A	83%	80mVp-p
YEL50-12	50.4W	12V	10.2-13.8V	4.2A	86%	120mVp-p
YEL50-15	51W	15V	13.5-18V	3.4A	88%	120mVp-p
YEL50-24	52.8W	24V	21.6-28.8V	2.2A	88%	150mVp-p
YEL50-36	52.2W	36V	32.4-39.6V	1.45A	89%	200mVp-p
YEL50-48	52.8W	48V	43.2-52.8V	1.1A	90%	200mVp-p

1. Typical at 100% load 230VAC
2. 20MHz BW 0.1uF and 47uF/ 50V capacitors in parallel

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	90		264	VAC	See page 5 for derating curve
Input frequency	47		63	Hz	
Input current (rms)		0.56/0.95		A	230VAC/115VAC
Inrush current		25/45		A	115/230VAC cold start at 25°C
Leakage current		<750		uA	
No-load power			0.3	W	

Output

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Output voltage	5		48	VDC	See Models & Ratings table
Set point accuracy	±1		±2	%	5V ±2%, all others ±1%
Line regulation			±0.5	%	
Load regulation	±0.5		±1	%	5V ±1%, all others ±0.5%
Minimum load	0			%	
Ripple & noise	80		200	mVp-p	20 MHz bandwidth, 47uF, 0.1uF cap
Hold up time	12		30	ms	12ms at 115VAC and 30ms at 230VAC

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Overload	110		150	%	Trip and restart
Short circuit					Trip and restart
Overvoltage	5V model - 6.75V 12V model - 16.2V 15V model - 21.75V 24V model - 33.6V 36V model - 48.6V 48V model - 64.8V			VDC	Max figures. Latch reset

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards	EN 62368-1, EN61558-1 (designed to meet), OVC III, UL 62368-1				
Isolation: Input to output	4000			VAC	
Isolation: Input to ground			2000	VAC	
Isolation: Output to ground	1250			VAC	
Insulation resistance	100			MΩ	500VDC. 25°C. 70% RH

EMC: Immunity

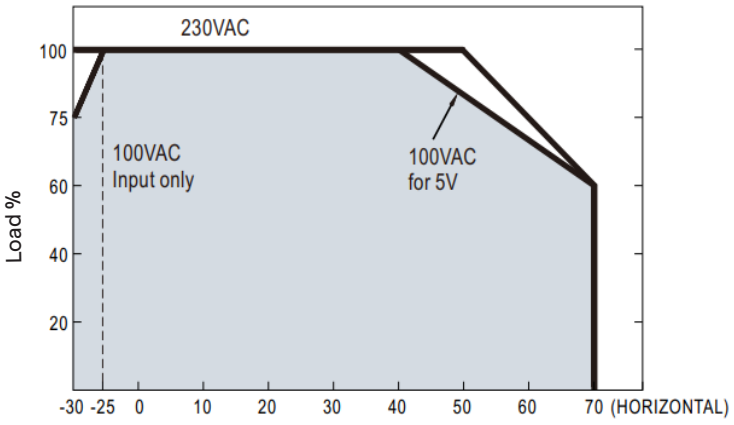
	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	3	A	±4kV contact, ±8kV air.
Radiated	EN61000-4-3	2	A	3V/m
EFT	EN61000-4-4	2	A	Line to neutral ±1kV, Line/Neutral to PE ±0.5kV
Surges	EN61000-4-5	Installation class 2	B	Line to line ±1kV, common ±2kV
Conducted	EN61000-4-6	2	A	3Vrms
PFMF	EN61000-4-8	1	A	1A/M
Voltage dips & interruptions	EN61000-4-11	0% 0.5 cyc, 70% 25 cyc, 0% 250 cyc. Pref criteria A,A,B		

EMC: Emissions

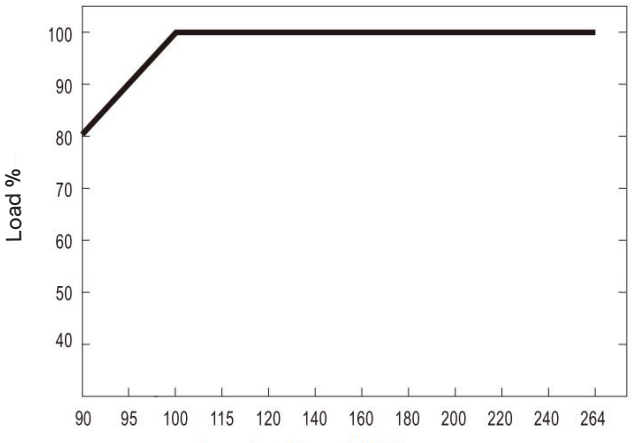
	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55032	B		
Radiated	EN55032	B		on 360 x 360 x 1mm plate

Environmental

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-30		70	°C	See derating curve.
Storage temperature	-40		85	°C	Humidity 10-95% RH non-condensing
Cooling					Convection cooled
Temperature coefficient			±0.03	%/°C	0-50 °C
Humidity	20		90	% RH	Non condensing.
Operating altitude			2000	M	2000m max for OVC III applications 5 °C/1000m derating applies above 2000m
MTBF	600			kHrs	As per MIL-HDBK-217F. 25 °C



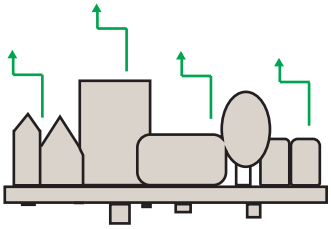
Ambient Temperature °C



Input Voltage VAC

Installation Advice

EMC

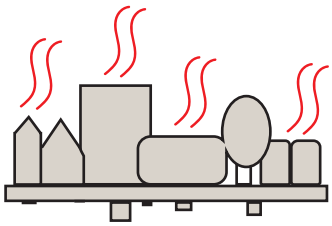


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that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