YEF200 SERIES

AC-DC

200W

DIMENSIONS:

7.68 x 2.16 x 1.02"
(195 x 54.8 x 26mm)

SEMI-POTTED FANLESS

EN55032 LEVEL B

-30 to 70°C OPERATION

REDUNDANCY (OPTIONAL)

OUTPUT ADJUST POT

UP TO 94% EFFICIENCY

Part numbers

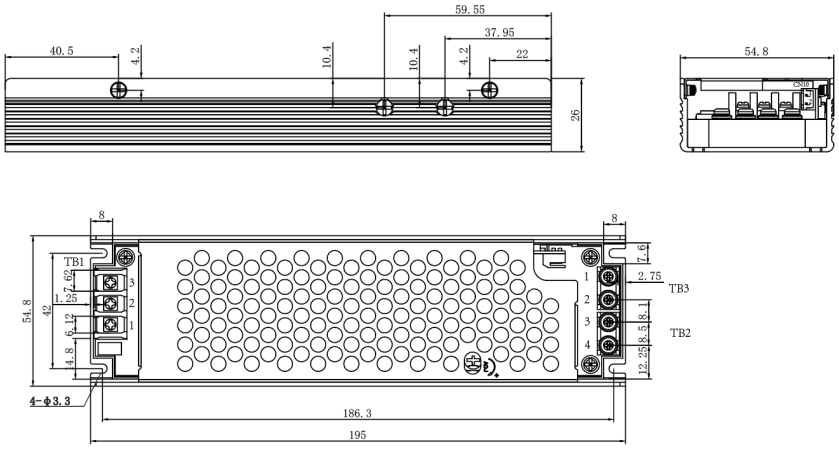
YEF	200	-	12	R
Series	Power (W)		Output voltage (V)	Option
			5 = 05VDC 12 = 12VDC 15 = 15VDC 24 = 24VDC 36 = 36VDC 48 = 48VDC 55 = 55VDC	R = Redundancy

Key specifications

Input range	Safety certification	Features	Efficiency	Environmental performance
90-264VAC	EN62368-1, EN60335 EN61558-1 EN61558-2-16 UL62368-1 (pending)	Voltage Adjust DC OK (option) Redundancy (option)	91-94%	Operational: -30 to 70°C

YEF200 SERIES

Mechanical

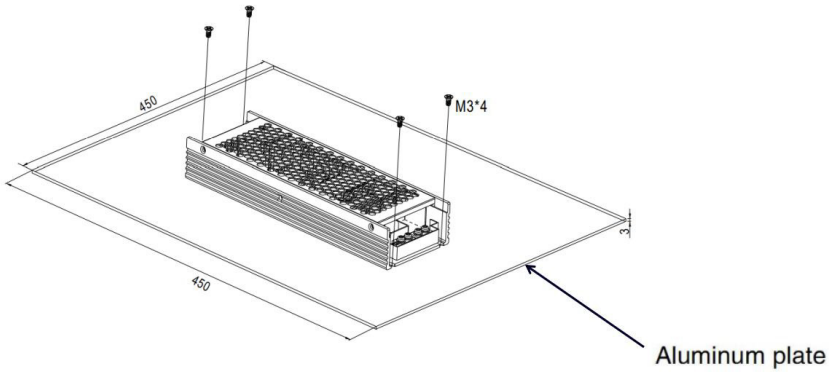


Input Connector	Pin/Function
1	AC L
2	AC N
3	GND

Ouput Connector	Pin/Function
1 ,2	-VO
3, 4	+VO

CN1 Connector	DC OK
1	DC COM1
2	DC COM2

Application Notes

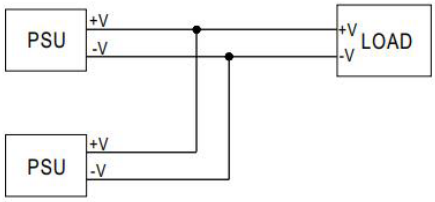


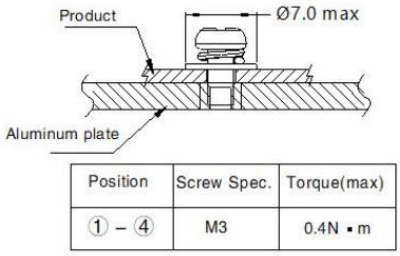
Notes

1. All dimensions shown in mm
2. General tolerance ±1.00
3. Max torque Output 8Kgf-cm
   Input 5Kgf-cm
4. CN1 mates with JST PHR-2

Weight	500g

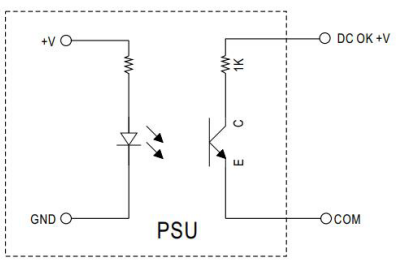
Redundant function (optional)





Position	Screw Spec.	Torque(max)
① – ④	M3	0.4N ▪ m

DC OK relay contact



Notes

Redundancy option permits the direct connection of two units. The maximum power of the system should be no greater than the power output of one unit

Open	PSU Off/Fail
Closed	PSU On/ OK

YEF200 SERIES

Models & Ratings

Model Number (1)	Output power	Output voltage	Output voltage adjustable range	Output current	Efficiency (2)	Ripple and noise (3)	Capacitive Load
YEF200-5	200W	5V	4.5-5.5V	40A	91%	200mVp-p	10000uF
YEF200-12	200.4W	12V	11.4-12.6V	16.7A	93%	240mVp-p	8000uF
YEF200-15	201 W	15V	14.3-15.8V	13.4A	94%	240mVp-p	7000uF
YEF200-24	201.6W	24V	22.8-25.2V	8.4A	94%	240mVp-p	5000uF
YEF200-36	201.6W	36V	34.2-37.8V	5.6A	94%	240mVp-p	3000uF
YEF200-48	201.6W	48V	45.6-50.4V	4.2A	94%	300mVp-p	2000uF
YEF200-55	198W	55V	45-58V	3.6A	94%	360mVp-p	1000uF

1. For redundancey and DC OK option add R. For example YEF200-5R
2 Typical at 100% load 230V
3. 20MHz BW 0.1uF and 47uF capacitors in parallel

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	90		264	VAC	See page 5 for derating curve, 127-370VDC
Input frequency	47		63	Hz	
Input current (rms)		2.2		A	115VAC
		1.1			230VAC
Inrush current	40		80	A	±10%. 80A at 230VAC and 40A at 115VAC at 25°C
Power factor		0.98			At full load 115VAC
		0.94			At full load 230VAC
Leakage current			<0.75	mA	

Output

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Output voltage	5		55	VDC	See Models & Ratings table
Set point accuracy	±0.5	±1	±2	%	±2% for 5V only. ±0.5 for 55V only
Line regulation		±0.5		%	
Load regulation		±0.5	±1	%	±1% for 5V only
Ripple & noise	200	240	360	mVp-p	20 MHz bandwidth, 47uF, 0.1uF cap See model table above
Hold up time	10			mS	115VAC full load room temp

Controls/Functions

Parameter	Notes/Conditions
DC OK	Contact rating 15Vdc 10mA. Open = Fail
Redundancy	Redundancy option permits the direct connection of two units. The maximum power of the system should be no greater than the power output of one unit

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Short circuit					Trip and restart
Overload	110		140	%	
Overvoltage	5V model - 6.75V 12V model - 15.6V 15V model - 19.5V 24V model - 31.2V 36V model - 46.8V 48V model - 62.4V 55V model - 69V			VDC	Max figures. Latch reset
Over temperature protection					Self recovery after temperature drops

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards					EN 62368-1. EN 61558-1, EN 60335-1, EN 61558-2-16, UL 62368-1 (pending)
Isolation: Input to output	3750			VAC	
Isolation: Input to ground	2000			VAC	
Isolation: Output to ground	1250			VAC	
Insulation resistance	100			MΩ	500VDC, 25°C and 70%RH
Over voltage category				III	According to EN62368-1, altitude up to 2000m

EMC: Emissions

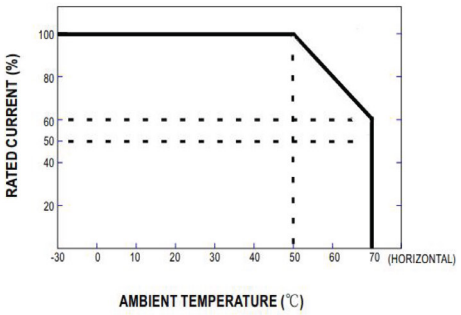
	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55032	B		
Radiated	EN55032	B		
Harmonic current	EN61000-3-2			Class A
Voltage flicker	EN61000-3-3			Compliant

EMC: Immunity - TBC

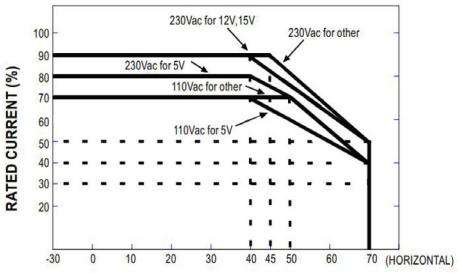
	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	3	A	±6kV contact, ±8kV air
Radiated	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±4kV
Surges	EN61000-4-5		A	Line to line ±2kV, common ±4kV
Conducted	EN61000-4-6	3	A	10Vrms
Voltage dips & interruptions	EN61000-4-11	0% 70%	B	

Environmental

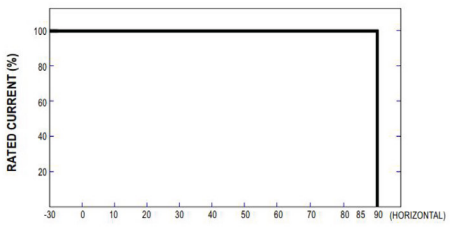
Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-30		70	°C	See derating curve.
Humidity	20		95	% RH	
Cooling					Base plate and convection cooled
Storage temperature	-40		85	°C	10-95% RH non-condensing
Operating altitude			5000	M	3.5°C/1000m derating above 2000m
MTBF	250			kHrs	As per MIL DHBK-217F
Temperature coefficient			±0.03	%/°C	0-50°C



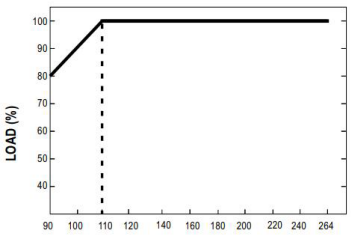
AMBIENT TEMPERATURE (℃)



AMBIENT TEMPERATURE WITHOUT ALUMINUM PLATE(℃)



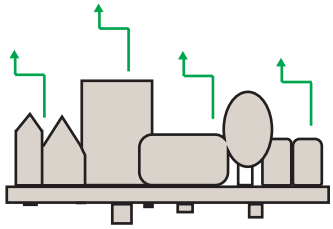
Tcase (℃)



INPUT VOLTAGE (V) 60Hz

Installation Advice

EMC

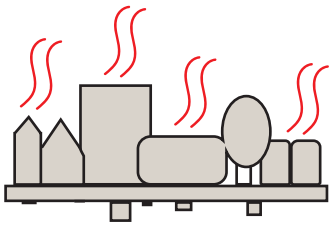


Conducted and radiated emissions compliance is a common application consideration. It is important to remember that even when using a properly filtered PSU, an application may still not achieve compliance if it is not designed to minimise emissions. That being said, there are a number of things that 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 capaciters 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 capaciters, as low as possible is paramount. As a general rule, for every 10°C drop in the operating temperature of the electrolytic capaciters 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.