WAF300W Series

FiDUS
power in motion...

300 Watts

- EN50155 complete solution for rail applications
- Wide input 4:1 (18-75V, 43-160V)
- EN55011, EN55032 Class A emissions with no external components
- -40 to 100°C Operation
- Remote on/off and sense
- 3 Year warranty

The WAF300W series is a 4:1 input DC-DC converter that provides a complete solution to meet the requirements of EN50155. There are 2 input models with outputs from 12V to 48V and conform to EN55032 class A conducted. The units operate from -40 to +100°C and come complete with remote on/off and sense. All models have a Fidus 3 year warranty.

Dimensions:

6.00 x 4.01 x 1.86" (152.4 x 101.9 x 47.30mm)

Models & Ratings

Model Number (1)	Input Voltage	Output Voltage	Output Current	No Load Current	Efficiency
WAF300-48S12W	18-75V	12V	25A	30mA	89%
WAF300-48S15W		15V	20A	30mA	90%
WAF300-48S24W		24V	12.5A	30mA	92%
WAF300-48S28W		28V	10.8A	30mA	91%
WAF300-48S48W		48V	6.3A	30mA	92%
WAF300-110S12W	43-160V	12V	25A	20mA	89%
WAF300-110S15W		15V	20A	20mA	90%
WAF300-110S24W		24V	12.5A	20mA	91%
WAF300-110S28W		28V	10.8A	20mA	91%
WAF300-110S48W		48V	6.3A	20mA	92%

Notes

1. For positive enable logic add **-P** or leave blank for default negative switching logic. For load share option add **-S**. For DIN rail mount add **-DR**.

Input

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Input voltage range	18	48	75	VDC	48V Nominal
	43	72	160		110V Nominal
Start up voltage			18	VDC	48V Nominal
			43		110V Nominal
Shut down voltage	15.6	16.2	16.8	VDC	48V Nominal
	33	34.5	36		110V Nominal
Start up time		140		ms	Constant resistive load
Input filter					Common choke + Pi type
Input surge voltage			100	VDC	48V Nominal. 1s max
			185		110V Nominal. 1s max
Remote ON/OFF Negative logic (standard)	0		1.2	VDC	Or short for ON
	3		12		Or open for OFF
Remote ON/OFF Positive logic (add **–P**)	3		12	VDC	Or open for ON
	0		1.2		Or short for OFF
Control pin current	-0.5		1	mA	
Remote off input current		4.0		mA	

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Output

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Rated output power		300		W	Nominal Vout and Iout
Output voltage	12		48	VDC	See Model & Ratings table
Voltage accuracy	-1.0		+1.0	%	
Line regulation	-0.2		+0.2	%	Low line to high line at full load
Load regulation	-0.5		+0.5	%	0 to 100% load change
Voltage adjust	-20		+20	%	Via trim pot. Max output adjust inclusive of remote sense
Remote sense			10	%	If remote sense not being used, sense terminals to be connected to corresponding Vout terminals
Ripple & Noise (20MHz bandwidth)		100	125	mV pk-pk	12Vout, 15Vout
		200	250		24Vout, 28Vout
		300	350		48Vout
Transient response		250		us	For a 25% load change
Overvoltage protection	125		140	%	% of Vout (nom); Latch mode
Overload protection	105		115	%	% of Iout rated; CC mode
Short circuit protection					Continuous with automatic recovery
Load share accuracy	-10		+10	%	Connect terminal 11 to each converter **-S** option only

General

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	89		92	%	See Model & Ratings table
Isolation	3000			VAC	Input to output
	2100				Input (output) to base-plate
Isolation resistance	1000			MOhm	At 500VDC
Isolation capacitance		14000		pF	
Switching frequency	203	225	248	kHz	48VDC input
	180	200	220	kHz	110VDC input
MTBF		149		kHrs	As per MIL-HDBK-217F, 25°C GB
Weight			900	g	
Case material	Aluminium				
Potting material	Silicone (UL94 V-0)				
Safety approvals	IEC/ UL/ EN62368-1 (UL: E193009)				
	UL508 (UL: E468443)				
Standards	EN50155, EN45545-2				

Environmental

Parameter	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating case temperature	-40		100	°C	Base-plate temp. See de-rating curve
Max case temperature		100		°C	
Over temperature protection		105		°C	
Storage temperature	-40		105	°C	
Thermal impedance		1.1		°C/W	Mounted on iron base-plate
Relative humidity	5		95	% RH	
Thermal shock and vibration	EN61373, MIL-STD-810F				
Temperature coefficient	-0.02		+0.02	%/°C	

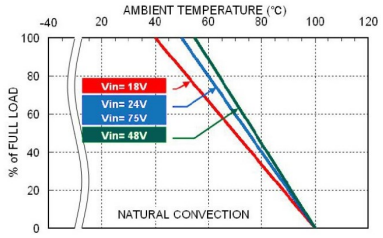
EMC: Emissions

	Standard	Notes & Conditions
Conducted	EN55011, EN55032	Class A
Radiated	EN55011, EN55032	Class A

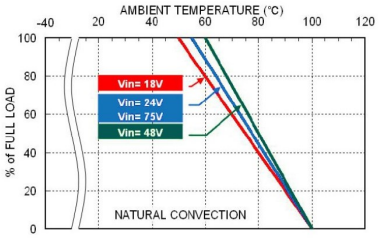
EMC: Immunity

	Standard	Criteria	Notes & Conditions
ESD	EN61000-4-2	A	Air ±8kV, Contact ±6kV
Radiated	EN61000-4-3	A	20V/m
EFT/Burst	EN61000-4-4	A	±2kV
Surges	EN61000-4-5	A	EN55024 ±1kV and EN50155 ±2kV
Conducted	EN61000-4-6	A	10Vrms
Magnetic fields	EN61000-4-8	A	100A/m continuous. 1000A/m 1 sec

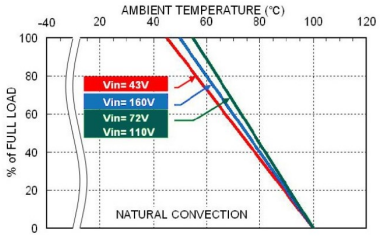
Derating curves



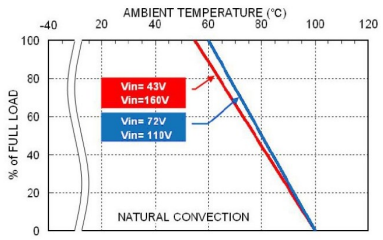
WAF300-48S□□W Derating Curve



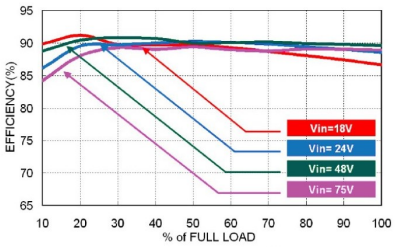
WAF300-48S□□W Derating Curve
With 3U Iron Base-Plate



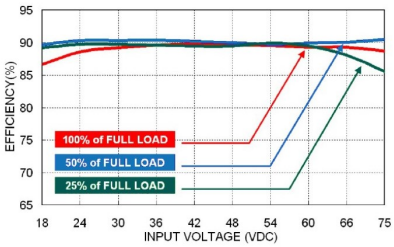
WAF300-110S□□W Derating Curve



WAF300-110S□□W Derating Curve
With 3U Iron Base-Plate



WAF300-48S12W
Efficiency vs. Output Load



WAF300-48S12W
Efficiency vs. Input Voltage

Fuse Considerations

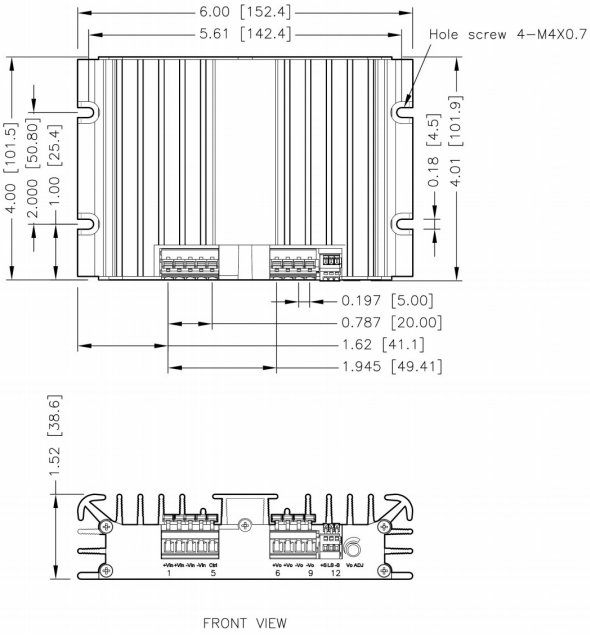
This power module is not internally fused. An input line fuse must always be used. This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture. To maximum flexibility, internal fusing is not included, however, to achieve maximum safety and system protection, always use an input line fuse. Input line fuse suggestion in table below;

Model	Fuse Rating (A)	Fuse Type
WAF300–48S□□W	25	Fast acting
WAF300–110S□□W	12	Fast acting

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

Mechanical Details

Wall Mount

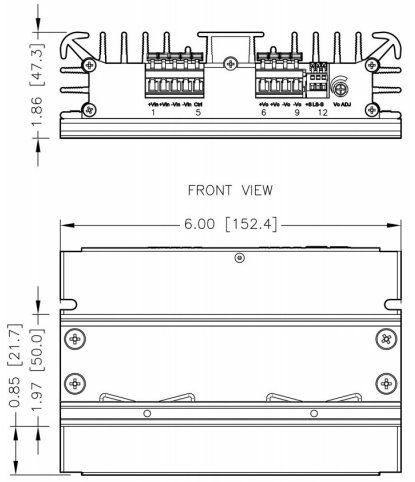


Pin Connections		
Pin	Function	Wire Gauge
1, 2	+Vin	1216AWG
3, 4	-Vin	12-16AWG
5	Ctrl	12-28AWG
6, 7	+Vout	12-16AWG
8, 9	-Vout	12-16AWG
10	+Sense	20-28AWG
11	LS (Option)	20-28AWG
12	-Sense	20-28AWG

The current rating of the terminal block is 15A per pole.
Use 2 poles when current exceeds max rating.

1. All dimensions in inch (mm)
2. Tolerance x.xx±0.02 (x.x±0.5)
   x.xxx±0.02 (x.xx±0.5)
3. Screw locked torque Max 14.0kgf-cm(1.37N-m)

DIN Rail Mount



Thermal Considerations

Sufficient cooling should be provided by conduction, convection and radiation to ensure reliable operation. Sufficient cooling is monitored by measuring the temperature of the at the points shown in the diagram. This temperature should not exceed max case temperature. A lower temperature will improve reliability.