

Features

- 4:1 Wide Input Range
- Operating Temperature Range: -40~105°C
- Approved to UKCA, CE, RoHS & REACH
- Approved to IEC/UL/EN62368-1 & EN50155
- Efficiency upto 92%
- EMC Class A
- Single 300W Output Models
- OCP, OTP, OVP, SCP & UVP



Ideal Power's 43WAF300-xSyW-DR 300W Series Metal DC/DC Converters are certified to cURus, UKCA, CE, RoHS, REACH & IEC/UL/EN 62368-1, EN 50155 Standards and comply with the relevant Efficiency Regulations. These are primarily used in ITE, Video & Audio, Railway Industries and customised solutions are available upon request.

Part Number Structure

| 43WAF300 | - | 48 | S | 05 | W | - | N | S | DR |
|-------------|---|--|------------------|---|-------------|---|---|---|--|
| Series Name | | Output Power (VDC) | Output Quantity | Output Voltage (VDC) | Input Range | | Remote Control Options | Load Share Options | Assembly Options |
| | | 48: 18 ~ 75 110: 43 ~ 160 | S: Single | 12: 12 15: 15 24: 24 28: 28 48: 48 | 4 : 1 | | □ : Positive Logic N: Negative Logic | □ : None S: Load Share | □ : Chassis Mount DR: Din Rail Type |

Models

| Model Number | Input Range VDC | Output Voltage VDC | Output Current @ Full Load mA | Input Current @ No Load % | Efficiency % |
|---------------------|--------------------|--------------------------|-------------------------------------|---------------------------------|-----------------|
| 43WAF300-48S12W-DR | 18 ~ 75 | 12 | 25 | 30 | 89 |
| 43WAF300-48S15W-DR | 18 ~ 75 | 15 | 20 | 30 | 90 |
| 43WAF300-48S24W-DR | 18 ~ 75 | 24 | 12.5 | 30 | 92 |
| 43WAF300-48S28W-DR | 18 ~ 75 | 28 | 10.8 | 30 | 91 |
| 43WAF300-48S48W-DR | 18 ~ 75 | 48 | 6.3 | 30 | 92 |
| 43WAF300-110S12W-DR | 43 ~ 160 | 12 | 25 | 20 | 89 |
| 43WAF300-110S15W-DR | 43 ~ 160 | 15 | 20 | 20 | 90 |
| 43WAF300-110S24W-DR | 43 ~ 160 | 24 | 12.5 | 20 | 91 |
| 43WAF300-110S28W-DR | 43 ~ 160 | 28 | 10.8 | 20 | 91 |
| 43WAF300-110S48W-DR | 43 ~ 160 | 48 | 6.3 | 20 | 92 |

Input Specifications

| Parameter | Conditions | Min | Typ | Max | Unit | |
|-------------------------------|-------------------------|------------------------------|-----------|---------------------|------|----|
| Operating input voltage range | 48Vin(nom) | 18 | 48 | 75 | | |
| | 110Vin(nom) | 43 | 110 | 160 | | |
| Start-up voltage | 48Vin(nom) | | | 18 | VDC | |
| | 110Vin(nom) | | | 43 | | |
| Shutdown voltage | 48Vin(nom) | 15.6 | 16.2 | 16.8 | | |
| | 110Vin(nom) | 33 | 34.5 | 36 | | |
| Start-up time | Constant resistive load | Power up | | 140 | ms | |
| | | Remote ON/OFF | | | | |
| Input surge voltage | 100 ms, max. | 48Vin(nom) | | 100 | VDC | |
| | | 110Vin(nom) | | 185 | | |
| Input filter | | Common choke + Pi type | | | | |
| Remote ON/OFF | Referred to -Vin pin | Positive logic (Standard) | DC-DC ON | Open or 3.0 ~ 12VDC | | mA |
| | | | DC-DC OFF | Short or 0 ~ 1.2VDC | | |
| | | Negative Logic (Option) | DC-DC ON | Short or 0 ~ 1.2VDC | | |
| | | | DC-DC OFF | Open or 3.0 ~ 12VDC | | |
| | | Input current of Ctrl pin | | -0.5 | -0.5 | |
| Remote off input current | | 2.5 | | | | |

Output Specifications

| Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------------------|--|----------------|-----|-------|-------------------------------|
| Rated Output Power | Normal Vout and Iout | | 300 | | W |
| Voltage accuracy | | -1.0 | | +1.0 | |
| Line regulation | Low Line to High Line at Full Load | -0.2 | | +0.2 | |
| Load regulation | No Load to Full Load | -0.5 | | +0.5 | |
| Voltage adjustability | Maximum output deviation is inclusive of remote sense | -20 | | +20 | % |
| Remote Sense | % Of Vout(nom) If remote sense is not being used, Sense terminals should be connected to corresponding polarity Vout terminals. | | | 10 | |
| Ripple and Noise | Measured by 20MHz bandwidth | 12Vout, 15Vout | 100 | 125 | mVp-p |
| | | 24Vout, 28Vout | 200 | 250 | |
| | | 48Vout | 300 | 350 | |
| Temperature coefficient | | -0.02 | | +0.02 | %/°C |
| Transient response recovery time | 25% Load step change | | 250 | | µs |
| Over voltage protection | % Of Vout(nom); Latch mode | 105 | | 140 | |
| Overload protection | % Of Iout rated * "C.C. Mode" is "Constant Current Mode" and test by nominal input. | 105 | | 115 | % |
| Short circuit protection | | | | | C.C. mode, automatic recovery |
| Load Share accuracy | Full Load *Connect the LS (Terminal 11) from each converter. The converter can parallel to increase output current. It has internal load share function in this converter. (This function is only for suffix "-S" part.) | -10 | | -10 | % |

General Specifications

| Parameter | Conditions | Min | Typ | Max | Unit |
|-----------------------|--------------------------|------------------------|-------|-----|---|
| Isolation voltage | 1 minute | Input to Output | 3000 | | V DC |
| | | Input (Output) to Case | 2100 | | |
| Isolation resistance | 500VDC | 1 | | | GΩ |
| Isolation capacitance | | | 14000 | | |
| Switching frequency | 48V DC Input | 203 | 225 | 248 | kHz |
| | 110V DC Input | 180 | 200 | 220 | |
| Safety approvals | IEC/ EN/ UL62368-1 | | | | UL:E193009 UL:E468443 CB:UL (Demko) |
| Standard approvals | EN50155 EN45545-2 | | | | |
| Case material | | | | | Aluminum |
| Potting material | | | | | Silicone (UL94 V-0) |
| Weight | | | | | 900g (31.74oz.) |
| MTBF | MIL-HDBK-217F, Full load | | | | 1.490 x 10 ⁵ hrs |

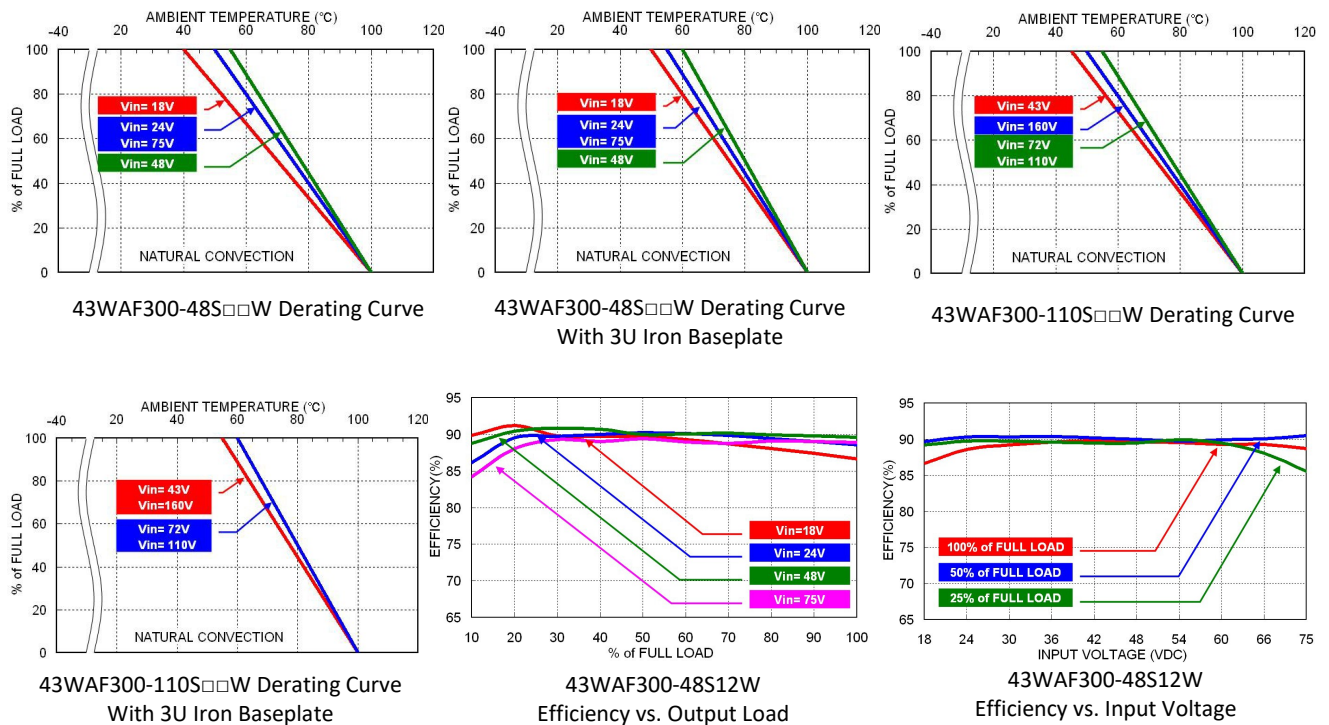
Environmental Specifications

| Parameter | Conditions | Min | Typ | Max | Unit |
|-------------------------------|--|-----|-----|------|-----------------------|
| Operating ambient temperature | | -40 | | +100 | |
| Maximum case temperature | | | | 100 | °C |
| | | | 150 | | |
| Storage temperature range | | -40 | | +105 | |
| Thermal impedance | Mounted on the iron baseplate * The iron base-plate dimension is 19" X 5.25" X 0.063" (The height is EIA standard 3U). | | 1.1 | | °C/W |
| Thermal Shock | | | | | MIL-STD-810F |
| Shock | | | | | EN61373, MIL-STD-810F |
| Vibration | | | | | EN61373, MIL-STD-810F |
| Relative humidity | | | | | 5% to 95% RH |

EMC Specifications

| Parameter | Conditions | Level |
|--------------------------------|---|------------------------------------|
| EMI | EN55032, EN50121-3-2 Without external components | Radiation Conduction Class A |
| EMS | EN55024, EN50121-3-2 | |
| ESD | EN61000-4-2 Air ± 8kV and Contact ± 6kV | Perf. Criteria A |
| Radiated immunity | EN61000-4-3 10 V/m | Perf. Criteria A |
| Fast transient | EN61000-4-4 ± 2kV | Perf. Criteria A |
| Surge | EN61000-4-5 EN55024 ±1kV and EN50121-3-2 ±2kV | Perf. Criteria A |
| Conducted immunity | EN61000-4-6 10 Vr.m.s | Perf. Criteria A |
| Power frequency magnetic field | EN61000-4-8 100A/m continuous; 1000A/m 1 second | Perf. Criteria A |

CAUTION: This power module is not internally fused. An input line fuse must always be used.

Characteristic Curve


Fuse Consideration

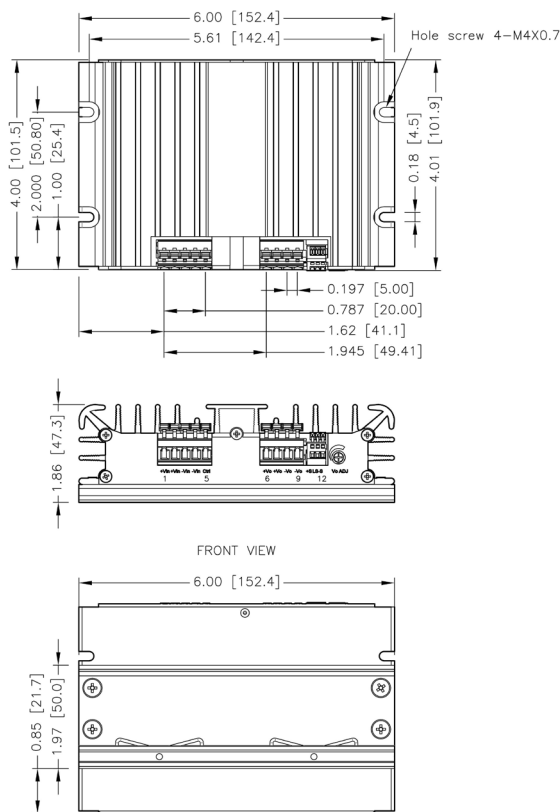
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This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse. The input line fuse suggest as below:

| Model | Fuse Rating | Fuse Type |
|------------------|-------------|-------------|
| 43WAF300-48S□□W | 25 | Fast-Acting |
| 43WAF300-110S□□W | 12 | Fast-Acting |

Mechanical Drawing



- All dimensions in inch [mm]
- Tolerance: $x.xx \pm 0.02$ [$x.x \pm 0.5$]
i. $x.xxx \pm 0.010$ [$x.xx \pm 0.25$]
- The screw locked torque: MAX 14kgf-cm/1.37N.m

Terminal Connection

| Terminal | Define | Recommend Matching Wire |
|----------|-------------|-------------------------|
| 1, 2 | +Vin | 12-16 AWG |
| 3, 4 | -Vin | 12-16 AWG |
| 5 | Ctrl | 12-28AWG |
| 6, 7 | + Vout | 12-16 AWG |
| 8, 9 | - Vout | 12-16 AWG |
| 10 | + Sense | 20-28 AWG |
| 11 | LS (option) | 20-28 AWG |
| 12 | - Sense | 20-28 AWG |

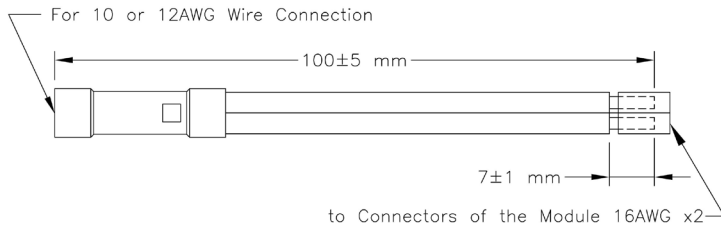
- * The current rating of the terminal block is 15 amps/pole.
- * Using 2 poles at the same time when operating is recommended if the total current are more than 15 amps or choose optional 2-way splitter. (Please refer to the diagram below)
- * Input voltage vs. Input terminal, refer to the table below.

| Output power | Input voltage | Input terminal |
|-----------------|---------------|----------------|
| 300W; Full load | $\geq 23V$ | 1 pole |
| | $< 23V$ | 2 poles |
| 400W; C.C. mode | $\geq 32V$ | 1 pole |
| | $< 32V$ | 2 poles |

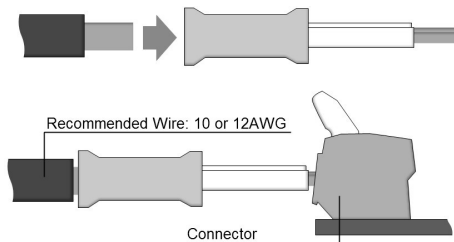
2-Way Splitter (Optional Accessory)

The 2-way splitter can be used for transforming a thick wire into 2 thin wires to the terminal block. The 2-way splitter P/N:5J-C0045-F.

2-Way Splitter Mechanical Drawing



Connection Configuration



Thermal Considerations

The power module operates in a variety of thermal environments. However, sufficient cooling should be provided to help ensure reliable operation of the unit. Heat is removed by conduction, convection, and radiation to the surrounding Environment. Proper cooling can be verified by measuring the point as the figure below. The temperature at this location should not exceed “Maximum case temperature”. When operating, adequate cooling must be provided to maintain the test point temperature at or below “Maximum case temperature”. You can limit this Temperature to a lower value for extremely high reliability.

