

150W FAN COOLED 100W CONVECTION COOLED

AC-DC POWER SUPPLIES

The VFB150 is a series of open frame AC-DC single output power supplies with 100W convection and 150W fan cooled ratings.

This range of cost-competitive, high efficiency, single output AC-DC power supplies are packaged in an industry standard 5.0" x 3.0" footprint making them suitable for industrial, information technology and domestic applications.

With world-wide industrial safety approvals, compliance with class B for conducted and radiated emissions, the VFB150 benefits system designers with easy integration into a wide range of applications.



Features

- Single outputs from 12V to 48VDC
- 90 to 264VAC input range
- 100W convection, 150W fan cooled rating
- High efficiency – up to 91%
- 3kVAC input to output isolation
- 12VDC 0.3A fan supply
- 0.15W no load input power
- Overcurrent, overvoltage and short-circuit protection
- Operating temperature range: -10°C to +70°C
- 3 year warranty

Applications

Industrial Electronics

Instrumentation

Security

Technology

Dimensions

76.2 x 127.0 x 39.0mm (3.00" x 5.00" x 1.53")

Models & Ratings

| Model Number | Output Power ⁽¹⁾ | Output Voltage | Output Current | | Efficiency ⁽²⁾ |
|--------------|-----------------------------|----------------|----------------|-------------------|---------------------------|
| | | | Fan Cooled | Convection Cooled | |
| VFB150PS12 | 150W | 12.0V | 12.5A | 8.3A | 88% |
| VFB150PS15 | | 15.0V | 10.0A | 6.7A | 89% |
| VFB150PS24 | | 24.0V | 6.25A | 4.17A | 91% |
| VFB150PS48 | | 48.0V | 3.13A | 2.08A | 90% |

Notes:

1. Fan cooled rating.
2. Typical efficiency measured at 230VAC and 150W load.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---------------------------|--|---------|---------|-------|----------------------------|
| Input Voltage Range | 90 | | 264 | VAC | |
| Input Frequency | 47 | | 63 | Hz | |
| Input Current - Full Load | | 2.3/1.5 | | A rms | At 115/230VAC |
| No Load Input Power | | | 0.15 | W | |
| Inrush Current | | | 80 | A | At 230VAC, cold start 25°C |
| Earth Leakage Current | | | 500 | µA | At 264VAC, 60Hz |
| Input Protection | Internal T3.15A/300VAC fuse fitted in line | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---|---------|---------|----------|--|
| Output Voltage | 12 | | 48 | VDC | |
| Initial Set Accuracy | | | 1 | % | |
| Minimum Load | No minimum load required | | | | |
| Start Up Delay | | | 2 | s | |
| Start Up Rise Time | | | 35 | ms | Full load, 115VAC |
| Hold Up Time | 8 | 14 | | ms | Full load and 115/230VAC |
| Line Regulation | | | 1 | % | 90-264VAC |
| Load Regulation | | | 3 | % | |
| Transient Response | | | 4 | % | Deviation, recovery within 1% in less than 500µs for a 25% load change |
| Ripple and Noise | | | 200 | mV pk-pk | For 12V & 15V versions, measured with 20MHz bandwidth and 47µF electrolytic in parallel with 0.1µF ceramic |
| | | | 1.0 | % pk-pk | For 24V & 48V versions, measured with 20MHz bandwidth and 47µF electrolytic in parallel with 0.1µF ceramic |
| Overload Protection | 110 | | 180 | % Inom | |
| Overvoltage Protection | 110 | | 140 | % Vnom | |
| Short Circuit Protection | Trip and restart (hiccup), auto resetting | | | | |
| Temperature Coefficient | | | 0.05 | %/°C | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---------------------------|------------------|------------|---------|-------------------|--|
| Efficiency | | 89 | | % | See Models & Ratings table |
| Isolation | Input to Output | 3000 | | VAC | |
| | Input to Ground | 1500 | | | |
| | Output to Ground | 1500 | | | |
| Switching Frequency | 25 | | 80 | kHz | Mains converter, variable PFC, variable |
| | 40 | | 230 | | |
| Power Density | | 6.5 | | W/in ³ | |
| Mean Time Between Failure | | 250 | | khrs | MIL-HDBK-217F, +25°C GB |
| Weight | | 340 (0.75) | | g (lb) | |

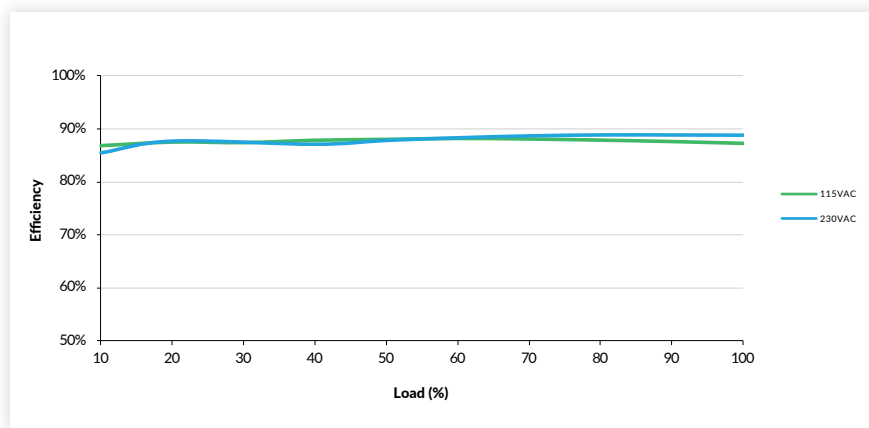
Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|---|---------|---------|-------|---|
| Operating Temperature | -10 | | +70 | °C | Derate linearly from 100% load at 50°C to 50% load at 70°C. |
| Cooling | Convection cooled/fan cooled with 25.4m ³ /h | | | | |
| Operating Humidity | | | 95 | %RH | Non-condensing |
| Operating Altitude | | | 5000 | m | |
| Shock | IEC68-2-27, 30g, 11ms half sine, 3 times in each of 6 axes | | | | |
| Vibration | IEC68-2-6, 10-500Hz, 2g 10 mins/sweep, 60 mins for each of 3 axes | | | | |

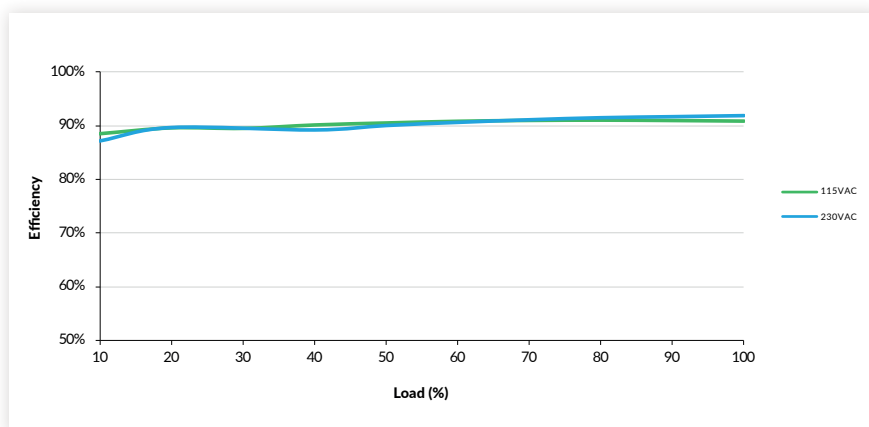
Efficiency Curves

Efficiency vs. Load

VFB150PS12



VFB150PS24



EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & Conditions |
|-------------------|-------------|------------|--------------------|
| Conducted | EN55032 | Class B | |
| Radiated | | | |
| Harmonic Currents | EN61000-3-2 | Class A | |
| Voltage Flicker | EN61000-3-3 | | |

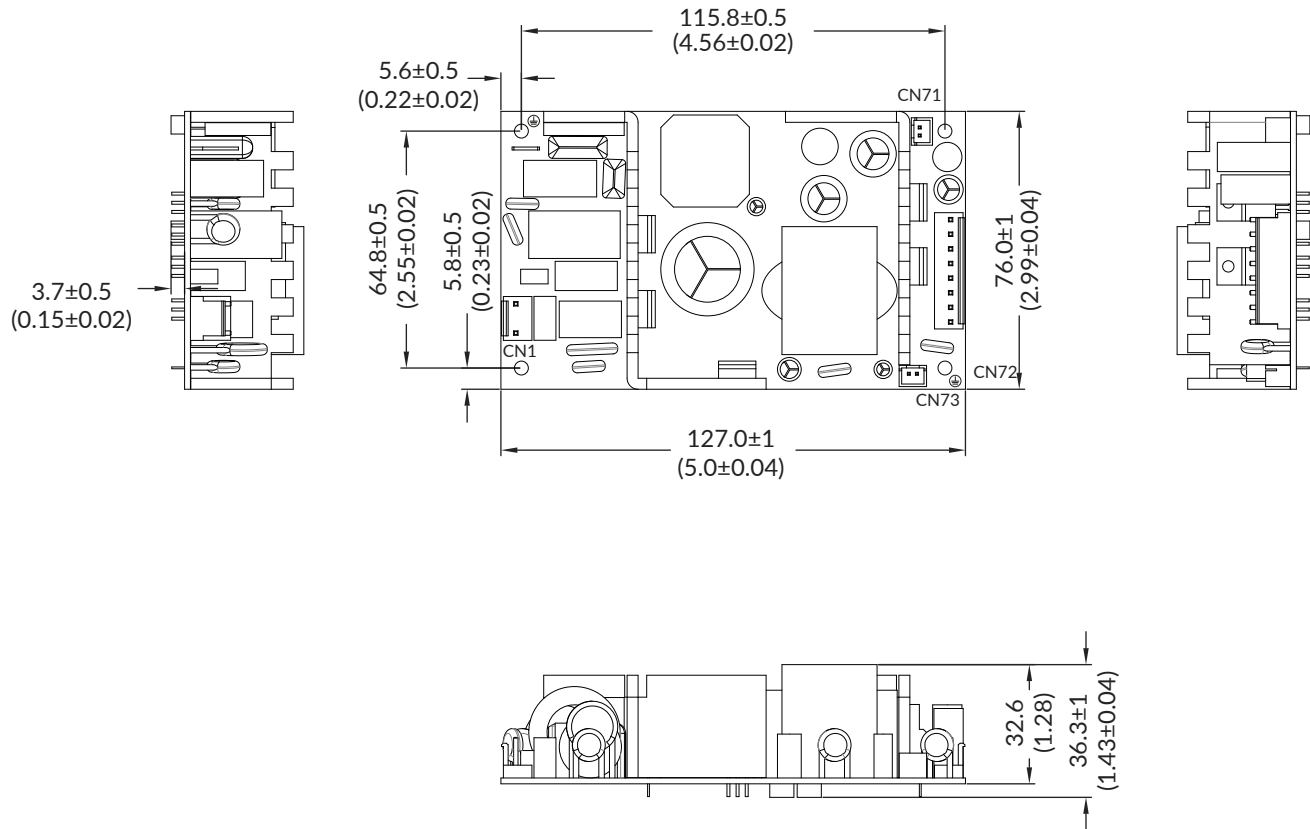
EMC: Immunity

| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|------------------------|--------------------------|--------------------------------------|----------|--------------------|
| | EN55035 | As below | As below | |
| ESD Immunity | EN61000-4-2 | ±6kV contact, ±8kV air discharge | A | |
| Radiated Immunity | EN61000-4-3 | 3V/m | A | |
| EFT/Burst | EN61000-4-4 | 3 | A | |
| Surge | EN61000-4-5 | Installation class 3 | A | |
| Conducted | EN61000-4-6 | 3Vrms | A | |
| Magnetic Field | EN61000-4-8 | 1A/m | A | |
| Dips and Interruptions | EN61000-4-11 (115VAC) | 70% U _T for 500ms | A | |
| | | <5% U _T for 10ms | A | |
| | | <5% U _T for 5000ms | B | |
| | EN61000-4-11 (230VAC) | 70% U _T for 100ms | A | |
| | | <5% U _T (0VAC) for 10ms | A | |
| | | <5% U _T (0VAC) for 5000ms | B | |

Safety Approvals

| Safety Agency | Standard | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| UL | UL62368-1 | ITE |
| TUV | EN62368-1 | |
| CB | IEC62368-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

Mechanical Details



| CN1 - Input Connector | |
|-----------------------|----------|
| Pin | Function |
| 1 | N |
| 2 | |
| 3 | L |

Mates with JST housing VHR-3N and JST series SVH crimp terminals.

| CN72 - Output Connector | | | |
|-------------------------|----------|-----|----------|
| Pin | Function | Pin | Function |
| 1 | +Vout | 5 | -Vout |
| 2 | +Vout | 6 | -Vout |
| 3 | +Vout | 7 | -Vout |
| 4 | +Vout | 8 | -Vout |

Mates with JST housing VHR-8N and JST series SVH crimp terminals.

| CN71 - Sense Connector | |
|------------------------|----------|
| Pin | Function |
| 1 | Sense+ |
| 2 | Sense- |

Mates with JST PHR-2 housing and SPH-002T-PO.5S crimps.

| CN73 - Fan Connector | |
|----------------------|----------|
| Pin | Function |
| 1 | Fan+ |
| 2 | Fan- |

Mates with JST XHP-2 housing and SXH-002T-PO.6 crimps.

Notes:

- Dimensions in mm (inches).
- Weight: 340g (0.75lbs).
- Tolerances: $x.xx = \pm 0.5$ ($x.x = \pm 0.02$), $x.xxx = \pm 0.25$ ($x.xx = \pm 0.01$).
- Mounting holes marked with \oplus must be connected to safety earth.