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# ASB160 Series

XP Power

AC-DC POWER SUPPLIES

## 160W BASEPLATE COOLED



The ASB160 series is a range of complete low profile, full brick, baseplate cooled AC-DC power supplies which requires no external components.

The series includes a complete built in EMC filter and AC fuse as well as bulk storage capacitor providing a complete AC-DC power solution ready for installation into end applications.

The ASB160 offers high efficiency to minimise waste heat and heat sinking requirements and operates from -40°C to +90°C on the module baseplate.

## Features

- Complete AC-DC power supply
- No extra components required
- Baseplate cooled full brick package
- Low profile
- Input range 90 to 264VAC
- Single outputs from 12 to 54VDC
- Output voltage trim ±5%
- High efficiency - up to 93%
- Over current, over voltage and over temperature protection
- Optional heatsink available
- -40 to +90°C baseplate operating temperature
- 3 year warranty

## Applications

AC-DC Converters

Industrial Electronics

Instrumentation

Railway

Security

Technology

## Dimensions

2.40 x 4.60 x 0.78” (61.0 x 116.8 x 19.7 mm)

## Models & Ratings

| Model number(1) | Output Power | Output Voltage | Output Current | Ripple & Noise | Efficiency(2) |
|---|---|---|---|---|---|
| ASB160PS12 | 160W | 12.0V | 13.30A | 120mV | 92.0% |
| ASB160PS15 | | 15.0V | 10.66A | 150mV | 93.0% |
| ASB160PS24 | | 24.0V | 6.66A | 240mV | 92.0% |
| ASB160PS36 | | 36.0V | 4.44A | 360mV | 93.0% |
| ASB160PS48 | | 48.0V | 3.33A | 480mV | 93.0% |
| ASB160PS54 | | 54.0V | 2.96A | 540mV | 91.0% |

**Notes:**

1. Add suffix ‘-HK’ to receive with optional heat-sink fitted.
2. Typical efficiency with 230VAC input and full load.
3. Optional heatsink can be ordered as a separate item using part number IFH HEATSINK

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## Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Input Voltage | 90 | | 264 | VAC | |
| Input Frequency | 47 | | 63 | Hz | |
| Input Current | | 1.7/0.82 | | A | 115VAC/230VAC |
| Inrush Current | | | 100 | A | 230VAC, cold start at 25°C |
| Earth Leakage Current | | | 750 | µA | 264VAC, 60Hz |
| Power Factor | 0.9 | | | | Full load |
| No Load Input Power | | | 0.5/0.7 | W | 12V-48V/54V |
| Input Protection | Internal T3.15A/250VAC fitted in line | | | | |

## General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Efficiency | | 92 | | % | See models and ratings table |
| Isolation: Input to Output | | | 3000 | VAC | |
| Input to Ground | | | 1500 | VAC | |
| Output to Ground | | | 500 | VAC | |
| Switching Frequency | 180 | | 250 | kHz | Main converter, variable, load dependant |
| | 100 | | 150 | | PFC |
| Power Density | | 18.5 | | W/in³ | |
| Mean Time Between Failure | 160 | | | khrs | MIL-HDBK-217F at 25°C GB and 115VAC |
| Weight | | 0.62 (280) | | lb(g) | |

## Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Output Voltage | 12 | | 54 | VDC | See Models and Ratings table |
| Initial Set Accuracy | | 1 | | % | At 60% load |
| Output Voltage Trim | 95 | | 105 | % | Of nominal output voltage. See application note |
| Minimum Load | | | | | No minimum load required |
| Start Up Delay | | | 1.3 | s | |
| Start Up Rise Time | | | 10 | ms | |
| Hold Up Time | 8 | 10 | | ms | Full load and 115VAC |
| Line Regulation | | | ±0.5 | % | |
| Load Regulation | | | ±0.5 | % | |
| Transient Response | | | 2 | % | Maximum deviation, recovering to less than 1% within 300µs for 25% step load |
| Ripple and Noise | | | 1 | % pk-pk | 20MHz bandwidth, measured with 20MHz Bandwidth and 10µF electrolytic in parallel with 0.1µF ceramic capacitor |
| Overload Protection | 110 | | 140 | % | |
| Overvoltage Protection | 110 | | 150 | % | Auto recovery except 54V version recycle AC to reset |
| Short Circuit Protection | Trip and restart (hiccup), auto resetting | | | | |
| Thermal Protection | Measured internally at the baseplate, auto resetting | | | | |
| Temperature Coefficient | | 0.02 | | %/°C | After 20 minute warm up |
| Remote Sense | | | 5 | % | Maximum compensation |

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## Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---|---|---|---|---|---|
| Operating Temperature | -40 | | +90 | °C | Baseplate Temperature, see derating curve |
| Cooling | Conduction cooled via baseplate | | | | |
| Operating Humidity | 5 | | 90 | %RH | Non-condensing |
| Storage Temperature | -40 | | +90 | °C | |
| 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 | | | | |

## EMC: Emissions

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

## EMC: Immunity

| Phenomenon | Standard | Test Level | Criteria | Notes & Conditions |
|---|---|---|---|---|
| Radiated | EN61000-4-2 | 3/2 | A | ±8kV air/±4kV contact |
| Radiated Immunity | EN61000-4-3 | 3V/m | A | |
| EFT/Burst | EN61000-4-4 | 2 | A | |
| Surge | EN61000-4-5 | Installation Class 3 | A | |
| Conducted | EN61000-4-6 | 3V | A | |
| Dips and Interruptions | EN61000-4-11 | Dip: 100% 10ms | A/B | High Line/Low Line |
| | | Dip: 30% 500ms | A/B | High Line/Low Line |
| | | Int: 100% 5000ms | B | |

## Safety Approvals

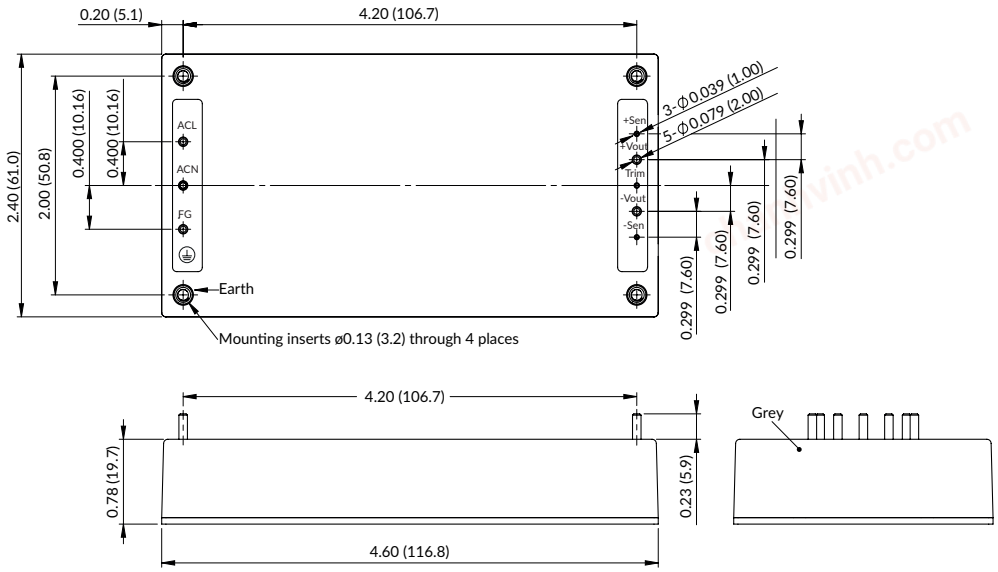
| Safety Agency | Standard | Notes & Conditions |
|---|---|---|
| UL | UL62368-1 | |
| TUV | EN62368-1 | |
| CB | IEC62368-1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

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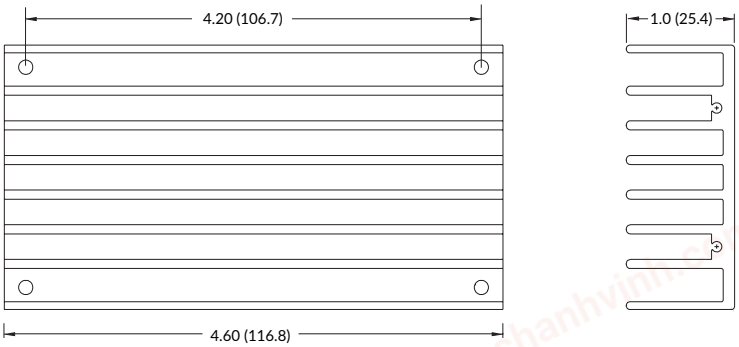
# ASB160 Series

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## Mechanical Details



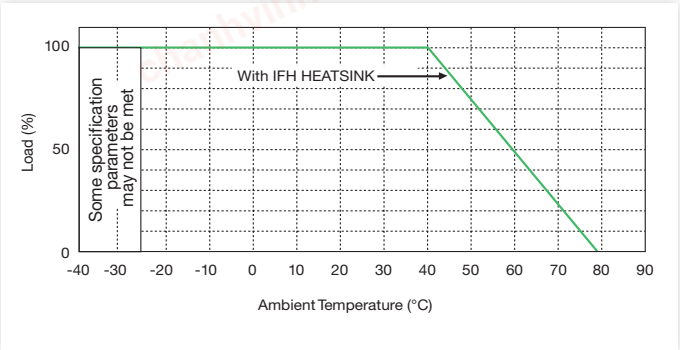

**Heatsink Option**

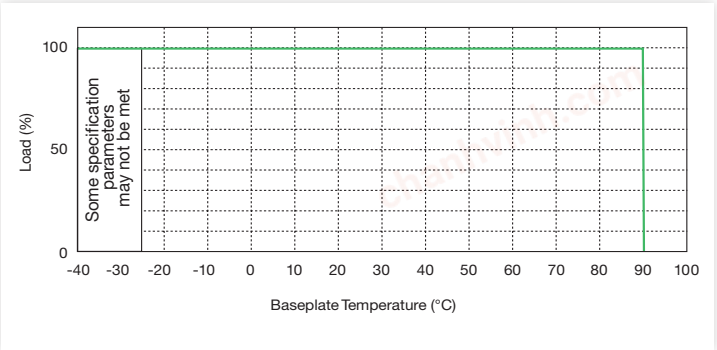



**Notes:**

1. Dimensions shown in inches (mm).
2. Weight: 0.62lb (280g)
3. Pin diameter: 0.08 ±0.002 (2.0 ±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)
6. Baseplate is connected to FG Pin

## Derating Curve



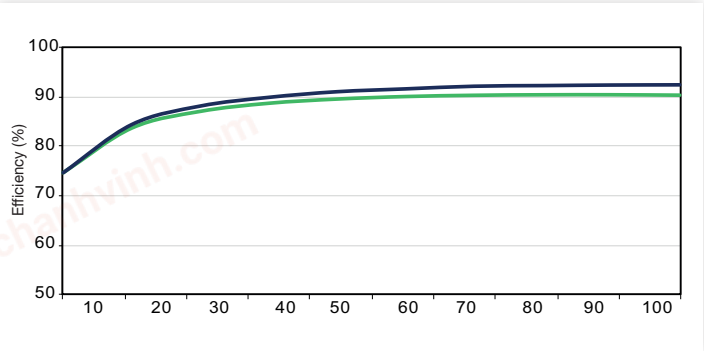




When ASB160 is fitted with IFH HEATSINK and mounted in horizontal position with heatsink upper most, the baseplate temperature will typically be 85°C in an ambient of 40°C.

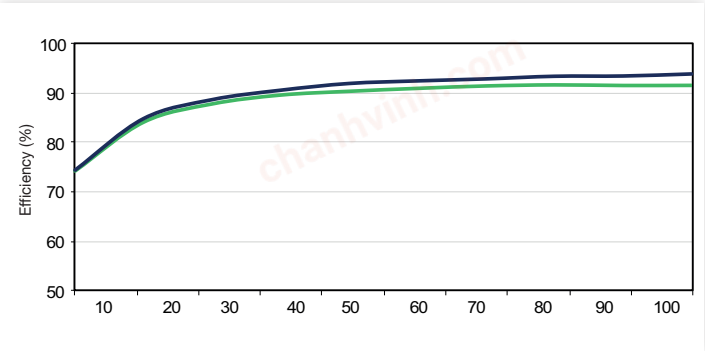
# ASB160 Series

## Efficiency Curves

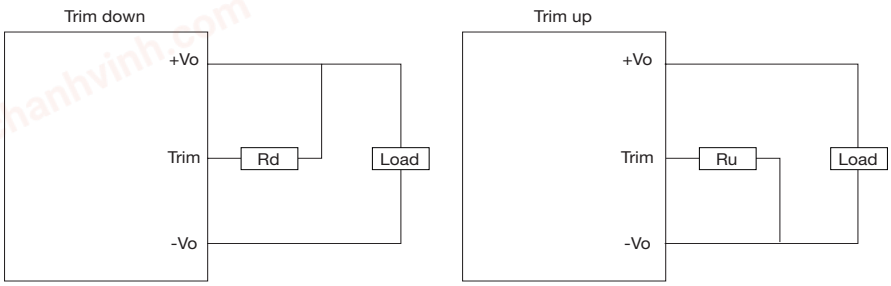
**ASB160PS12**




**ASB160PS24**




## Output Voltage Adjustment




**To Trim Down**

Connecting an external resistor (Rd) between the Trim pin and the +Vo pin decreases the output voltage. The following table can be used to determine the required external resistor value to obtain a percentage output voltage change of 5%.

| Trim Down (%) | 12V | 15V | 24V | 36V | 48V | 54V |
|---|---|---|---|---|---|---|
| | Rd (kΩ) | | | | | |
| 5 | 288.7 | 398.5 | 738 | 1215 | 1776 | 2005 |

**To Trim Up**

Connecting an external resistor (Ru) between the Trim pin and the -Vo pin increases the output voltage. The following table can be used to determine the required external resistor value to obtain a percentage output voltage change of 5%.

| Trim Up (%) | 12V | 15V | 24V | 36V | 48V | 54V |
|---|---|---|---|---|---|---|
| | Ru (kΩ) | | | | | |
| 5 | 79 | 84 | 90.8 | 92.8 | 89.4 | 90.8 |