

**160W** Baseplate cooled

AC-DC power supplies 

The ASB160 series is a range of complete low profile, full brick, base-plate cooled AC-DC power supplies which require 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 +85°C on the module base-plate.



## 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  $\pm 5\%$
- ▶ High efficiency - up to 93%
- ▶ Over current, over voltage and over temperature protection
- ▶ Optional heat sink available
- ▶ -40 to +90°C baseplate operating temperature
- ▶ 3 year warranty

## Applications



Industrial electronics



Instrumentation



Railway



Security



Technology

## Dimensions

116.8 x 61.0 x 19.7 mm (4.60" x 2.40" x 0.78")  
Full Brick

## Documentation

For further information click the link or scan the code

→ [xppower.com](http://xppower.com)



## Models & ratings

| Model number <sup>(1)</sup> | Output power | Output voltage | Output current | Noise & ripple | Efficiency <sup>(2)</sup> |
|-----------------------------|--------------|----------------|----------------|----------------|---------------------------|
| 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

## 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     | 115/230VAC                   |
| Inrush current        |                                       |          | 100     | A     | 230 VAC, cold start at +25°C |
| Earth leakage current |                                       |          | 750     | μA    | 264 VAC, 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<br>input to ground<br>output to ground |         |            | 3000    | VAC               |  |
|   |         |            | 1500    | VAC               |  |
|   |         |            | 500     | VDC               |  |
| Switching frequency   | 180     |            | 250     | kHz               | Main converter, variable, load dependant |
|   | 100     |            | 150     |                   | PFC                                      |
| Power density   |         | 18.5       |         | W/in <sup>3</sup> |  |
| Mean time between failure   | 160     |            |         | khls              | MIL-HDBK-217F at +25°C GB and 115VAC     |
| Weight  |         | 280 (0.62) |         | g (lb)            |  |

## 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 & 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 & restart (hiccup), auto resetting          |         |         |         |   |
| Thermal protection       | Measured internally at baseplate, auto resetting |         |         |         |   |
| Temperature coefficient  |  | 0.02    |         | %/°C    | After 20 minute warm up   |
| Remote sense             |  |         | 5       | %       | Maximum compensation  |

## 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     | Class B    |                    |
| Radiated          |             |            |                    |
| Harmonic currents | EN61000-3-2 | Class A    |                    |
| Voltage flicker   | EN61000-3-3 |            |                    |

## EMC: immunity

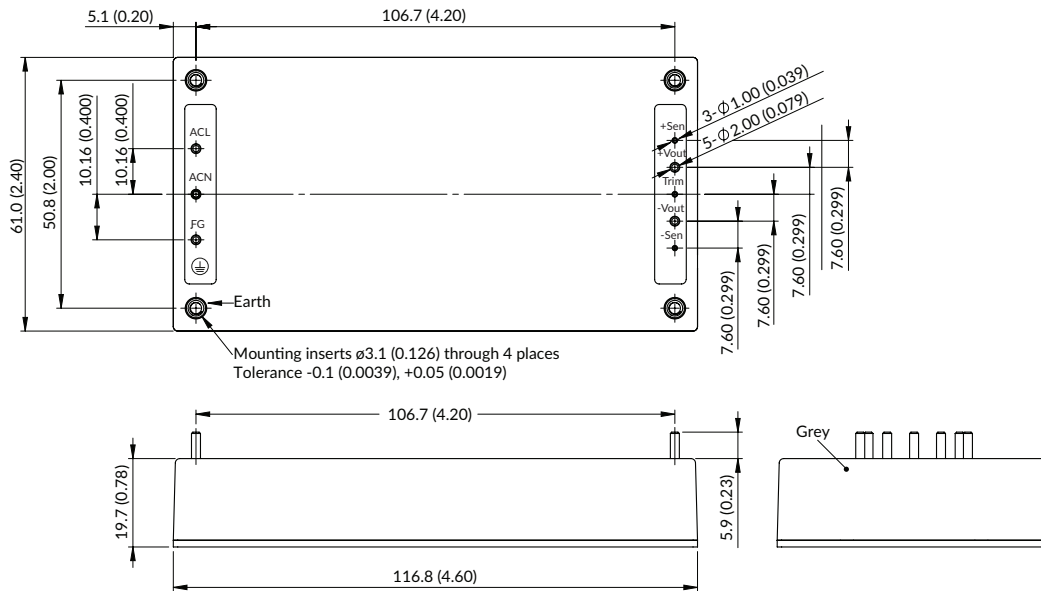
| Phenomenon             | Standard     | Test level           | Criteria | Notes & conditions      |
|------------------------|--------------|----------------------|----------|-------------------------|
| ESD                    | EN61000-4-2  | 3/2                  | A        | ±8kV air / ±4kV contact |
| 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

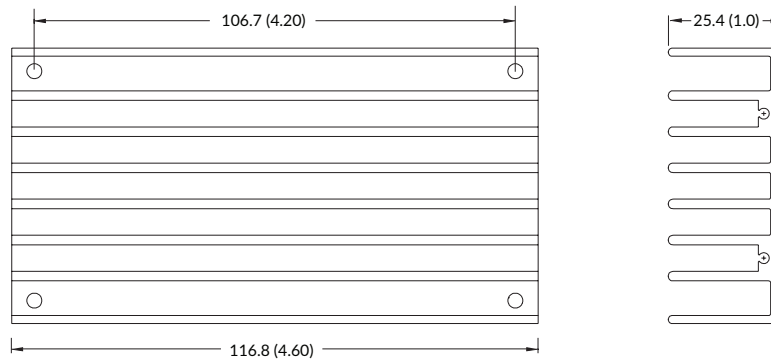
| Safety agency | Standard                         | Notes & conditions |
|---------------|----------------------------------|--------------------|
| UL            | UL62368-1                        |                    |
| TUV           | EN62368-1                        |                    |
| CB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



## Mechanical details



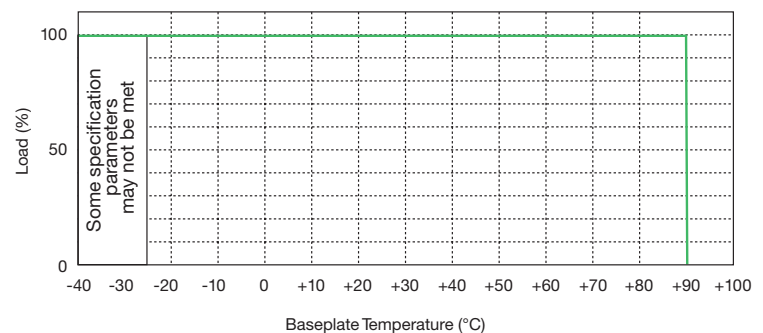
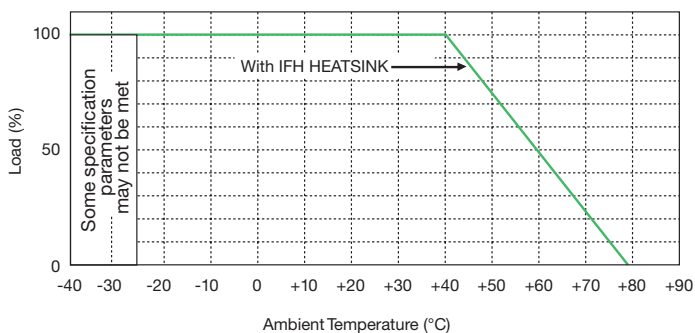
## Heatsink option



## Notes:

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

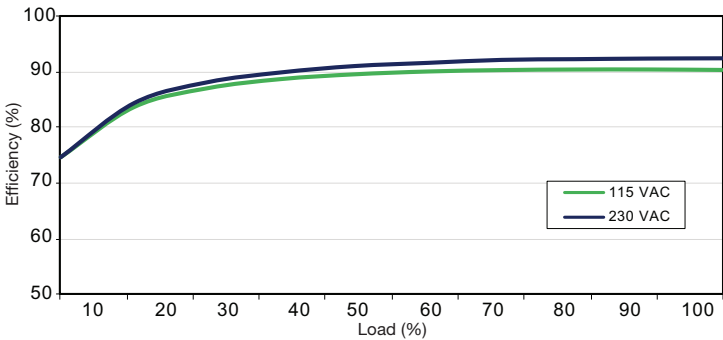
## Derating curve



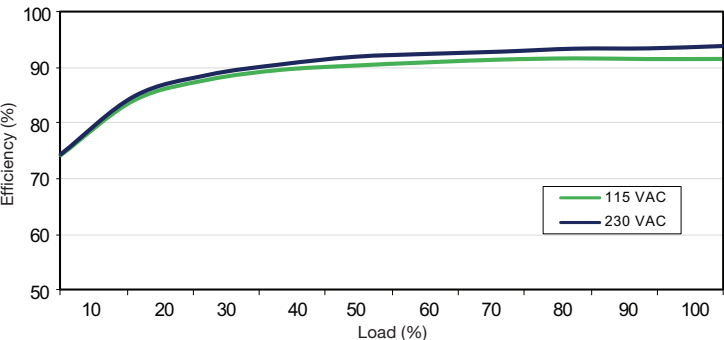
When ASB160 is fitted with IFH HEATSINK and mounted in horizontal position with heatsink upper most, the baseplate temperature will typically be +85°C in an ambient of +40°C.

Efficiency curves

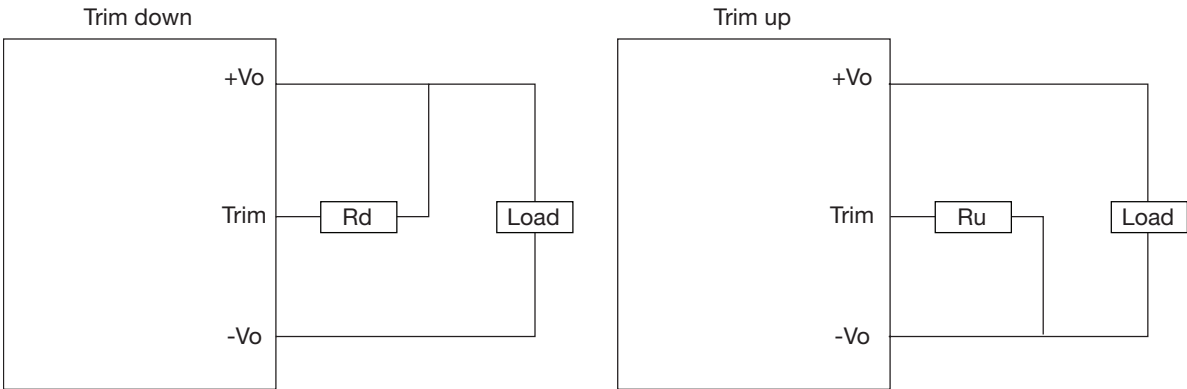
ASB150PS12



ASB160PS24



Output voltage adjustment



To Trim Down

Connecting an external resistor ( $R_d$ ) 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 ( $R_u$ ) 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 down (%) | 12V     | 15V | 24V  | 36V  | 48V  | 54V  |
|---------------|---------|-----|------|------|------|------|
|               | Ru (kΩ) |     |      |      |      |      |
| 5             | 79      | 84  | 90.8 | 92.8 | 89.4 | 90.8 |