

**35W** Convection cooled

AC-DC power supplies

The LBA35 series of compact, convection-cooled 35W AC-DC power supplies are designed to deliver quiet, consistent performance across a wide range of industrial technology applications. With a wide input range, regulated single output voltages from 5V to 48VDC and output voltage adjustment, the LBA35 series provides engineers with a versatile and robust power platform suitable for demanding industrial environments.

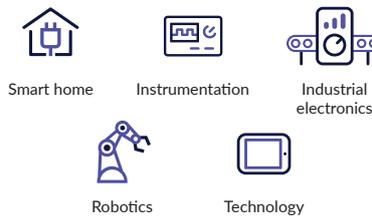
Featuring Class B conducted and radiated emissions, worldwide ITE safety approvals, wide temperature range, compact footprint, a power "ON" LED and an integrated connector cover, the LBA35 is designed for easy integration into applications including auxiliary power units, security and surveillance systems, industrial automation, lighting control, smart home and building control equipment.



## Features

- ▶ 35W convection cooled
- ▶ Universal, single phase input: 90 to 264VAC
- ▶ Regulated single outputs from 5V to 48VDC
- ▶ ITE safety approvals
- ▶ Class B conducted & radiated emissions
- ▶ Integrated connector cover
- ▶ Output voltage trim
- ▶ Efficiency, up to 86%
- ▶ Short circuit, overvoltage & overload protection
- ▶ LED power ON status indicator
- ▶ -30°C to +70°C operating temperature
- ▶ 3 year warranty

## Applications



## Dimensions

99.0 x 82.0 x 30.0 mm (3.89" x 3.22" x 1.18")

## More resources

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→ [xppower.com](http://xppower.com)



## Models & ratings

| Model number <sup>(3)</sup> | Output voltage |                                 | Output current | Ripple & noise pk to pk <sup>(1)</sup> | Efficiency <sup>(2)</sup> | Maximum capacitive load | Efficiency <sup>(3)</sup> |
|-----------------------------|----------------|---------------------------------|----------------|--|---------------------------|-------------------------|---------------------------|
|                             | Nominal        | Adjustment range <sup>(3)</sup> |                |  |                           |                         |                           |
| LBA35US05                   | 5.0V           | 4.5 - 5.5V                      | 7.0A           | 100mV                                  | 82%                       | 6000µF                  | 35W                       |
| LBA35US12                   | 12.0V          | 10.8 - 13.2V                    | 3.0A           | 120mV                                  | 84%                       | 1200µF                  | 36W                       |
| LBA35US15                   | 15.0V          | 13.5 - 16.5V                    | 2.4A           | 150mV                                  | 85%                       | 900µF                   | 36W                       |
| LBA35US24                   | 24.0V          | 21.6 - 26.4V                    | 1.5A           | 150mV                                  | 85%                       | 540µF                   | 36W                       |
| LBA35US48                   | 48.0V          | 44.0 - 52.0V                    | 0.8A           | 200mV                                  | 86%                       | 60µF                    | 38W                       |

### Notes:

1. Ripple & noise measured with 20MHz bandwidth and using 20±2cm twisted pair-wire terminated with 47µF electrolytic capacitor in parallel with 0.1µF ceramic capacitor.
2. Typical efficiencies measured at 230VAC full load.
3. The total output power must not exceed the rated output power.

## Input

| Characteristic            | Minimum                                    | Typical | Maximum | Units | Notes & conditions  |
|---------------------------|--|---------|---------|-------|---|
| Input voltage - operating | 90   | 115/230 | 264     | VAC   | Derate output power linearly from 100% at 100VAC to 80% at 90VAC. |
| Input frequency           | 47   | 50/60   | 63      | Hz    |   |
| Input current             |  |         | 1.4     | A     | 115VAC full load  |
|                           |  |         | 0.7     |       | 230VAC full load  |
| No load input power       |  |         | 1.0     | W     |   |
| Inrush current            |  |         | 30      | A     | 115VAC cold start at +25°C ambient                                |
|                           |  |         | 65      |       | 230VAC cold start at +25°C ambient                                |
| Earth leakage current     |  |         | 0.75    | mA    | 240VAC / 50Hz   |
| Input protection          | T3.15A/250VAC Internal fuse fitted in line |         |         |       |   |

## Output

| Characteristic           | Minimum                              | Typical | Maximum | Units | Notes & conditions  |
|--------------------------|--------------------------------------|---------|---------|-------|---|
| Output voltage           | 5                                    |         | 48      | VDC   | See Models & Ratings table  |
| Initial set accuracy     |                                      |         | ±2      | %     | Full load   |
|                          |                                      |         | ±1      |       | LBA35US05<br>All other models   |
| Voltage adjustment       | See Models & Ratings table           |         |         |       |   |
| Minimum load             | 0                                    |         |         | A     | No minimum load required  |
| Start up time            |                                      |         | 2.5     | s     | 115 / 230VAC full load at +25°C   |
| Rise time                |                                      |         | 50      | ms    | 115 & 230VAC full load  |
| Hold up time             | 12/20                                |         |         | ms    | 115 / 230VAC full load  |
| Drift                    |                                      |         | ±0.03   | %     | After 20 minutes warm up, 230VAC, 0°C to +50°C                          |
| Line regulation          |                                      |         | ±0.5    | %     | 100-264VAC, full load   |
| Load regulation          |                                      |         | 2       | %     | 0-100% load   |
|                          |                                      |         | 1       |       | LBA35US05<br>All other models   |
| Transient response       |                                      |         | 4       | %     | Recovery within 1% in less than 0.5ms for a 50-75% and 75-50% load step |
| Ripple & noise           | See Models & Ratings table           |         |         |       |   |
| Over / Undershoot        |                                      |         | 10      | %     | Full load   |
| Overvoltage protection   | 110                                  |         | 140     | %     | 5V-24V models   |
|                          |                                      |         | 60      | V     | 48V model   |
|                          |                                      |         |         |       | Protection type:<br>Clamp, auto recovery                                |
| Overload protection      | 110                                  |         | 180     | %     | Nominal output current, auto recovery                                   |
| Temperature coefficient  |                                      | ±0.03   |         | %/°C  | 0 to +50°C  |
| Short circuit protection | Continuous hiccup with auto recovery |         |         |       |   |

## General

| Characteristic  | Minimum  | Typical     | Maximum      | Units                                  | Notes & conditions                         |
|---|--|-------------|--------------|--|--|
| Efficiency  | See Models & Ratings table                           |             |              |  |  |
| Isolation: input to output<br>input to ground<br>output to ground | 3000   |             |              | VAC                                    | Class I construction                       |
|   | 1800   |             |              | VAC                                    |  |
|   | 500  |             |              | VAC                                    |  |
| Switching frequency   |  | 65          |              | kHz                                    | Full load                                  |
| Power density   |  |             | 0.144 (2.36) | W/cm <sup>3</sup> (W/in <sup>3</sup> ) |  |
| Mean time between failure   | 500  |             |              | khrs                                   | MIL-HDBK-217F, Notice 2 +25°C GB at 230VAC |
| Weight  |  | 200 (0.441) |              | g (lb)                                 |  |
| Case material   | Aluminium chassis with vented galvanized steel cover |             |              |  |  |

## Environmental

| Characteristic        | Minimum   | Typical | Maximum | Units | Notes & conditions |
|-----------------------|---|---------|---------|-------|--------------------|
| Operating temperature | -30   |         | +70     | °C    | See derating curve |
| Storage temperature   | -40   |         | +85     | °C    |                    |
| Cooling               | Natural convection  |         |         |       |                    |
| Humidity              | 20  |         | 95      | %RH   | Non-condensing     |
| Operating altitude    |   |         | 2000    | m     |                    |
| Vibration             | Tested according to EN60068-2-27, 10-500Hz, 5g (1H) for each X, Y and Z plane |         |         |       |                    |

## EMC: emissions

| Phenomenon        | Standard    | Test level | Notes & conditions |
|-------------------|-------------|------------|--------------------|
| Conducted         | EN55032     | Class B    |                    |
| Radiated          | EN55032     | Class B    |                    |
| Harmonic currents | EN61000-3-2 | Class A    |                    |
| Voltage flicker   | EN61000-3-3 |            |                    |

## EMC: immunity

| Phenomenon        | Standard                 | Test level                | Criteria | Notes & conditions                     |
|-------------------|--------------------------|---------------------------|----------|--|
| ESD immunity      | EN61000-4-2              | 2/3                       | B        | Contact ±4kV / Air ±8kV                |
| Radiated immunity | EN61000-4-3              | 10V/m                     | B        |  |
| EFT               | EN61000-4-4              | ±2kV                      | B        |  |
| Surge             | EN61000-4-5              | Installation class 3      | B        | Line to line ±1kV, line to ground ±2kV |
| Conducted         | EN61000-4-6              | 10Vrms                    | B        |  |
| Magnetic field    | EN61000-4-8              | 30A/m                     | A        |  |
| Dips              | EN61000-4-11<br>(230VAC) | Dip. 100% (0VAC), 10ms    | B        |  |
|                   |                          | Dip. 30% (154VAC), 500ms  | B        |  |
|                   |                          | Dip. 20% (176VAC), 5000ms | B        |  |
| Interruptions     | EN61000-4-11             | Int. 100% (0VAC), 5000ms  | C        |  |

## Safety approvals

| Certification | Standard  | Notes & conditions     |
|---------------|---|------------------------|
| CB            | IEC62368-1  | Information technology |
| UL            | UL62368-1   | Information technology |
| TUV           | EN62368-1   | Information technology |
| CCC           | China Compulsory Certification, GB4943, GB17625.1, GB4943.1, GB/T9254 | Information technology |
| CE            | Meets all applicable directives                                       |                        |
| UKCA          | Meets all applicable legislation                                      |                        |

## Application notes

### Temperature derating

