# JHM06 series

XP Power

## 6W

DC-DC converters

The 6W JHM06 series is designed for medical applications with 2 x MOPP 3kVAC reinforced isolation and 2µA patient leakage current, it is housed in a DIP24 PCB mount plastic case.

Featuring a 1.5:1 input voltage range of 10 to 17VDC or 20 to 30VDC with regulated single outputs of 5, 12 & 15VDC, dual outputs ±12 & ±15VDC, adjustable ±10% with a trim resistor.

Short circuit, overload & over voltage protection are standard. Operating temperature range is from -20°C to +100°C, with derating above +60°C.


### Features

- Regulated single & dual outputs
- 1.5:1 input range
- Single outputs 5.0 to 15VDC
- Dual outputs ±12 & ±15VDC
- DIP24 package
- International medical safety approvals
- 3.0kVAC reinforced isolation
- 2µA patient leakage current
- EN55011 Class A with no external components
- -20°C to +100°C operating temperature
- Full power to +60°C
- 3 year warranty

### Applications

Healthcare

Home healthcare

Medical diagnostics

### Dimensions

31.75 x 20.32 x 10.4mm (1.25” X 0.6” X 0.4”)

### Documentation

For further information click the link or scan the code

→ xppower.com

### Models & ratings

| Model number | Input voltage | Output voltage | Output current | Input current | | Max capacitive load | Efficiency[3] |
|---|---|---|---|---|---|---|---|
| | | | | No Load[1] | Full Load[2] | | |
| JHM0612S05 | 10-17VDC | 5.0VDC | 1200mA | 72mA | 790mA | 1200µF | 78% |
| JHM0612S12 | | 12.0VDC | 500mA | 86mA | 750mA | 500µF | 80% |
| JHM0612S15 | | 15.0VDC | 400mA | 85mA | 740mA | 400µF | 83% |
| JHM0612D12 | | ±12.0 VDC | ±250mA | 60mA | 730mA | ±250µF | 83% |
| JHM0612D15 | | ±15.0 VDC | ±200mA | 80mA | 730mA | ±200µF | 84% |

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**Notes:**

1. Input current measured at nominal input voltage.
2. Input current measured at lowest input voltage.
3. Typical values.

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## Models & ratings

| Model number | Input voltage | Output voltage | Output current | Input current | | Max capacitive load | Efficiency[3] |
|---|---|---|---|---|---|---|---|
| | | | | No Load[1] | Full Load[2] | | |
| JHM0624S05 | 20-30VDC | 5.0VDC | 1200mA | 44mA | 380mA | 1200µF | 78% |
| JHM0624S12 | | 12.0VDC | 500mA | 39mA | 360mA | 500µF | 83% |
| JHM0624S15 | | 15.0VDC | 400mA | 27mA | 350mA | 400µF | 85% |
| JHM0624D12 | | ±12.0 VDC | ±250mA | 37mA | 360mA | ±250µF | 83% |
| JHM0624D15 | | ±15.0 VDC | ±200mA | 39mA | 360mA | ±200µF | 83% |

**Notes:**

1. Input current measured at nominal input voltage.
2. Input current measured at lowest input voltage.
3. Typical values.

## Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---|---|---|---|---|---|
| Input voltage range | 10 | | 17 | VDC | 12V nominal |
| | 20 | | 30 | | 24V nominal |
| Input current | See models and ratings table | | | | |
| Inrush current | | | 25 | A | At 30V |
| Input filter | Pi type | | | | |
| Patient leakage current | | | 25 | µA | |
| Input surge | | | 25 | VDC | 12V models for 3s |
| | | | 50 | | 24V models for 3s |
| Undervoltage lockout | ON: <9V, OFF: >8.5V | | | | 12V models |
| | ON: <18.8V, OFF: >16V | | | | 24V models |

## Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---|---|---|---|---|---|
| Output voltage | See models & ratings table | | | | |
| Output voltage trim | | | ±10 | % | |
| Initial set accuracy | | | ±1 | % | |
| Minimum load | 0 | | | % | No minimum load required |
| Start up delay | | 5 | | ms | |
| Start up rise time | | 2 | | ms | |
| Line regulation | | | ±0.3 | % | |
| Load regulation | | | ±2 | % | 0% to 10% load |
| | | | ±1 | % | 10% to 100% load |
| Cross regulation | | | ±4 | % | On dual with one output set to 50% load and the other varied from 0% to 100% load |
| Transient response deviation | | | 4 | % | Deviation, recovery to within 1% in <500µs for a 50% load change at 0.25A/µs rate |
| Ripple & noise | | | 1.0% | pk-pk | 20MHz bandwidth |
| Short circuit protection | Trip & restart (hiccup mode), auto recovery | | | | |
| Temperature coefficient | | | ±0.03 | %/ °C | |
| Overload protection | 120 | | 200 | % | |
| Overvoltage protection | 120 | | 140 | % | |

# JHM06 series

## General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---|---|---|---|---|---|
| Efficiency | | 88 | | % | See Models & ratings table |
| Isolation | | 5000 | | VAC | For 10ms (acc. to IEC60664-1), 3000VAC reinforced isolation for 1 min. |
| Input to output capacitance | | | 20 | pF | |
| Power density | | | 1.03 (17.0) | W/cm³ (W/in³) | |
| Mean time between failure | | >1 | | Mhrs | MIL-HDBK-217F, +25°C GB |
| Switching frequency | | 200 | | kHz | 1.6MHz variable |
| Weight | | 20 (0.04) | | g (lb) | |

## Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---|---|---|---|---|---|
| Operating temperature | -20 | | +100 | °C | Derate from 100% load at +60°C to no load at 100°C |
| Storage temperature | -40 | | +100 | °C | |
| Case temperature | | | +100 | °C | |
| Operating humidity | 5 | | 90 | %RH | Non-condensing |
| Cooling | Natural convection | | | | |

## Safety approvals

| Safety agency | Standard | Notes & conditions |
|---|---|---|
| UL | ANSI/AMMI ES60601-1 3rd Edition<br>CSA-22.2 No.60601-1:2008 | |
| CB | IEC60601-1 3rd Edition | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

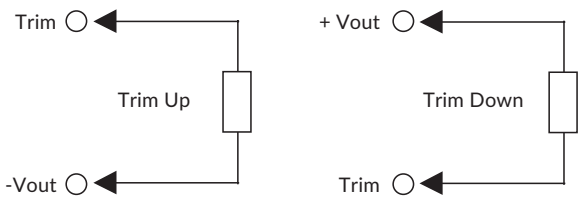
## Emissions - EMC

| Phenomenon | Standard | Test level | Notes & conditions |
|---|---|---|---|
| Conducted | EN55011/32 | Level A | With no external components |
| Radiated | EN55011/32 | Level A | |

## Immunity - EMC

| Phenomenon | Standard | Test level | Criteria | Notes & conditions |
|---|---|---|---|---|
| Immunity | IEC60601-1-2, EN61204-3 | | | |
| ESD immunity | EN61000-4-2 | 2 | A | |
| Radiated immunity | EN61000-4-3 | 10V/m | A | |
| EFT/Burst | EN61000-4-4 | 3 | A | |
| Surge | EN61000-4-5 | 1 | A | |
| Conducted immunity | EN61000-4-6 | 10Vm | A | |
| Magnetic fields | EN61000-4-8 | 3A/m | A | |

## Application notes




For 5V output:
Trim +10%, R = 3.4kΩ typical
Trim -10%, R = 1kΩ typical

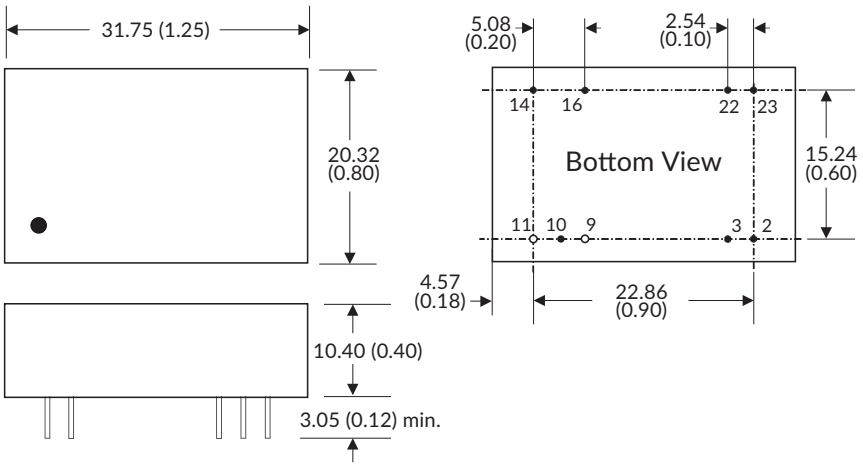
For 12V output:
Trim +10%, R = 5.9kΩ typical
Trim -10%, R = 11.3kΩ typical

For 15V output:
Trim +10%, R = 8.3kΩ typical
Trim -10%, R = 10kΩ typical

For ±12V output:
Trim +10%, R = 12.8kΩ typical
Trim -10%, R = 9.5kΩ typical

For ±15V output:
Trim +10%, R = 18kΩ typical
Trim -10%, R = 14.8kΩ typical

## Mechanical details




| Pin connections | | |
|---|---|---|
| **Pin** | **Single** | **Dual** |
| 2 | -Vin | -Vin |
| 3 | -Vin | -Vin |
| 9 | No Pin | Common |
| 10 | Trim | Trim |
| 11 | No Pin | -Vout |
| 14 | +Vout | +Vout |
| 16 | -Vout | Common |
| 22 | +Vin | +Vin |
| 23 | +Vin | +Vin |

**Notes:**

1. All dimensions are in mm (inches)
2. Weight: 20g (0.04lbs) approx.
3. Pin diameter: 0.5 ±0.05 (0.02 ±0.002)
4. Pin pitch tolerance: ±0.35 (±0.014)
5. Case tolerance: ±0.5 (±0.02)