

The VFL05 series of 5W external AC-DC wall-mount adaptors offer single output voltages ranging from 5V to 12VDC and are available with multiple USB options in addition to the standard jack plug connector. The VFL05 series complies with level VI (level VII ready) energy efficiency standards with high active mode efficiency and extremely low no load power consumption.

The VFL05 series also offers Class B conducted and radiated emissions, Class II construction, worldwide industrial safety approvals, benefiting system designers with easy integration into a wide range of applications in industrial technology, communications, home automation and consumer electronics.



Features

- ▶ Universal, single phase input: 90 to 264VAC
- ▶ Standard barrel jack and USB connectors
- ▶ Level VI (level VII ready) energy efficiency standard
- ▶ Fixed AC mains connector
- ▶ Class B conducted and radiated emissions
- ▶ Class II construction
- ▶ UL/EN/IEC 62368-1 ITE safety approvals
- ▶ Limited Power Source (LPS) approved
- ▶ 0°C to +60°C operating temperature
- ▶ 1 year warranty

Applications



Dimensions

See mechanical details

Models & ratings

| Model number | Output voltage ⁽¹⁾ | Output current | Total regulation ⁽²⁾ | Efficiency ⁽³⁾ | Output connector | Output power |
|---------------------|-------------------------------|----------------|---------------------------------|---------------------------|--------------------------|--------------|
| US plug type | | | | | | |
| VFL05US050-US-BB | 5.0V | 1000mA | ±5% | 77% | USB A in case | 5W |
| VFL05US050-US-MB | 5.0V | 1000mA | | 74% | Mini USB B | |
| VFL05US050-US-UB | 5.0V | 1000mA | | 74% | Micro USB B | |
| VFL05US050-US-JA | 5.0V | 1000mA | | 75% | 5.5 x 2.1 x 12mm DC Jack | |
| VFL05US090-US-JA | 9.0V | 550mA | | 78% | 5.5 x 2.1 x 12mm DC Jack | |
| VFL05US120-US-JA | 12.0V | 420mA | | 79% | 5.5 x 2.1 x 12mm DC Jack | |

Notes:

- Other output voltages available, contact sales for details.
- Total regulation includes initial set accuracy, line and load regulation.
- Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 115VAC input.
- Available for OEM quantities, contact sales.
- AU plug type versions available for OEM quantities, contact sales.

Models & ratings

| Model Number | Output voltage ⁽¹⁾ | Output current | Total regulation ⁽²⁾ | Efficiency ⁽³⁾ | Output connector | Output power |
|---------------------------------|-------------------------------|----------------|---------------------------------|---------------------------|--------------------------|--------------|
| EU plug type | | | | | | |
| VFL05US050-EU-BB | 5.0V | 1000mA | ±5% | 77% | USB A in case | 5W |
| VFL05US050-EU-MB ⁽⁴⁾ | 5.0V | 1000mA | | 74% | Mini USB B | |
| VFL05US050-EU-UB | 5.0V | 1000mA | | 74% | Micro USB B | |
| VFL05US050-EU-JA | 5.0V | 1000mA | | 75% | 5.5 x 2.1 x 12mm DC Jack | |
| VFL05US090-EU-JA | 9.0V | 550mA | | 78% | 5.5 x 2.1 x 12mm DC Jack | |
| VFL05US120-EU-JA | 12.0V | 420mA | | 79% | 5.5 x 2.1 x 12mm DC Jack | |
| UK plug type | | | | | | |
| VFL05US050-UK-BB | 5.0V | 1000mA | ±5% | 77% | USB A in case | 5W |
| VFL05US050-UK-MB ⁽⁴⁾ | 5.0V | 1000mA | | 74% | Mini USB B | |
| VFL05US050-UK-UB ⁽⁴⁾ | 5.0V | 1000mA | | 74% | Micro USB B | |
| VFL05US050-UK-JA | 5.0V | 1000mA | | 75% | 5.5 x 2.1 x 12mm DC Jack | |
| VFL05US090-UK-JA ⁽⁴⁾ | 9.0V | 550mA | | 78% | 5.5 x 2.1 x 12mm DC Jack | |
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Notes:

- Other output voltages available, contact sales for details.
- Total regulation includes initial set accuracy, line and load regulation.
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- Available for OEM quantities, contact sales.
- AU plug type versions available for OEM quantities, contact sales.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---------------------|---------------------|---------|---------|-------|-------------------------|
| Input voltage | 90 | | 264 | VAC | |
| Input frequency | 47 | | 63 | Hz | |
| Power factor | EN61000-3-2 class A | | | | |
| Input current | | | 0.18 | A | 100VAC |
| Inrush current | | | 30 | A | 240VAC cold start, 25°C |
| No load input power | | | 75 | mW | |
| Input protection | Internal fuse | | | | |

Main output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|--------------------------|---|---------|---------|-------------|---|
| Output voltage | 5 | | 12 | VDC | See Models & Ratings |
| Minimum load | No minimum load required | | | | |
| Start up delay | | | 4 | s | |
| Start up rise time | | 50 | | ms | |
| Hold up time | | 8 | | ms | Full load and 100VAC |
| Total regulation | | | 5 | % | See Models & Ratings |
| Transient response | | | 4 | % deviation | Recovery within <1% within 500µs for a 25% step load change for 5V model and a 50% step load change for other models at 0.2A/µs |
| Ripple & noise | | | 200 | mV pk-pk | 20MHz bandwidth measured with 10µF electrolytic in parallel with a 0.1µF ceramic capacitor |
| Temperature coefficient | | | 0.05 | %/°C | |
| Short circuit protection | Continuous, trip and restart (hiccup mode) with auto recovery | | | | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|----------------------------|----------------------------|-----------|---------|--------|------------------------|
| Efficiency | 74 | | 79 | % | See Models & Ratings |
| Energy efficiency | Level VI (level VII ready) | | | | |
| Isolation: input to output | | 3000 | | VAC | |
| Switching frequency | 5 | | 70 | kHz | Variable |
| Mean time between failure | 100 | | | khrs | MIL-HDBK-217F, 25°C GB |
| Weight | | 80 (0.28) | | g (lb) | |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------|---|---------|---------|-------|---|
| Operating temperature | 0 | | +60 | °C | Derate from 100% load at 50°C to 50% load at 60°C |
| Storage temperature | -40 | | +85 | °C | |
| Cooling | Natural convection | | | | |
| Operating humidity | 5 | | 95 | % | RH, non-condensing |
| Shock | 1m drop onto concrete on each of 6 axes | | | | |
| Vibration | 10 | | 300 | Hz | 2g, 15 mins/sweep, 30 mins for each of 3 axes |

EMC: Emissions

| Phenomenon | Standard | Test Level | Notes & conditions |
|-------------------|---------------------------------|------------|--------------------|
| Conducted | EN55032, FCC Part 15, Subpart B | Level B | |
| Radiated | EN55032, FCC Part 15, Subpart B | Level 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 | ±4kV contact, ±8kV air |
| Radiated immunity | EN61000-4-3 | 3V/m | A | |
| EFT/burst | EN61000-4-4 | Level 2 | B | |
| Surge | EN61000-4-5 | Level 2 | A | |
| Conducted | EN61000-4-6 | 3V | A | |
| Magnetic field | EN61000-4-8 | 1A/m | A | |
| Dips and interruptions | EN55035 | Dip: 100% 10ms | A | |
| | | Dip: 30% 500ms | A | |
| | | Int: 100% 5000ms | B | |

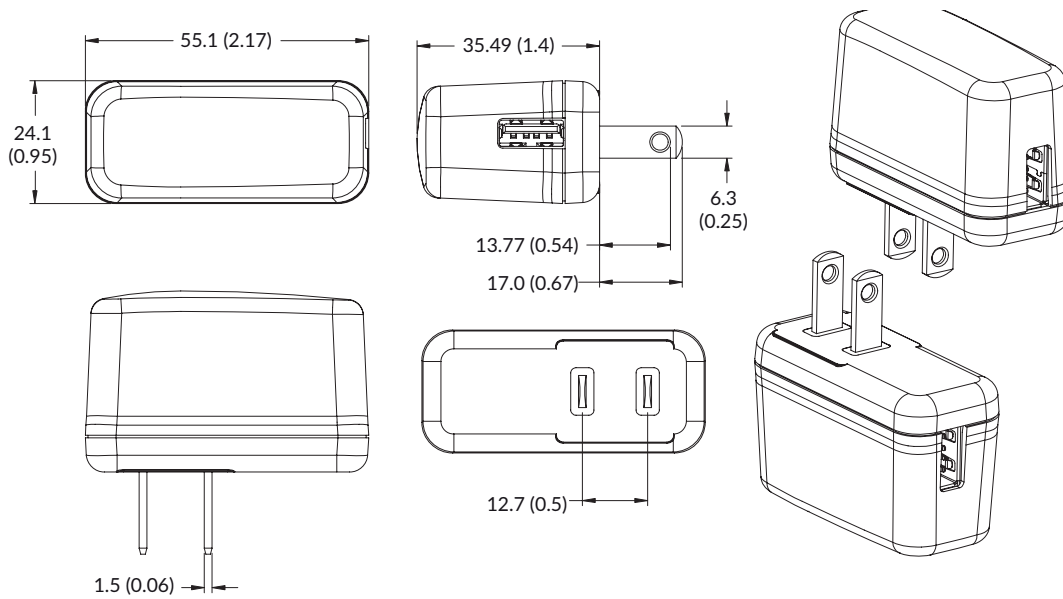
Safety approvals

| Certification | Standard | Notes & conditions |
|---------------|--|--|
| UL | UL/cUL62368-1 | Approved as limited power source (LPS) |
| EN | EN62368-1 | |
| CB | IEC62368-1 | |
| CCC | China Compulsory Certification, GB4943 | |
| AU/NZ | AU/NZ 62368.1 | |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

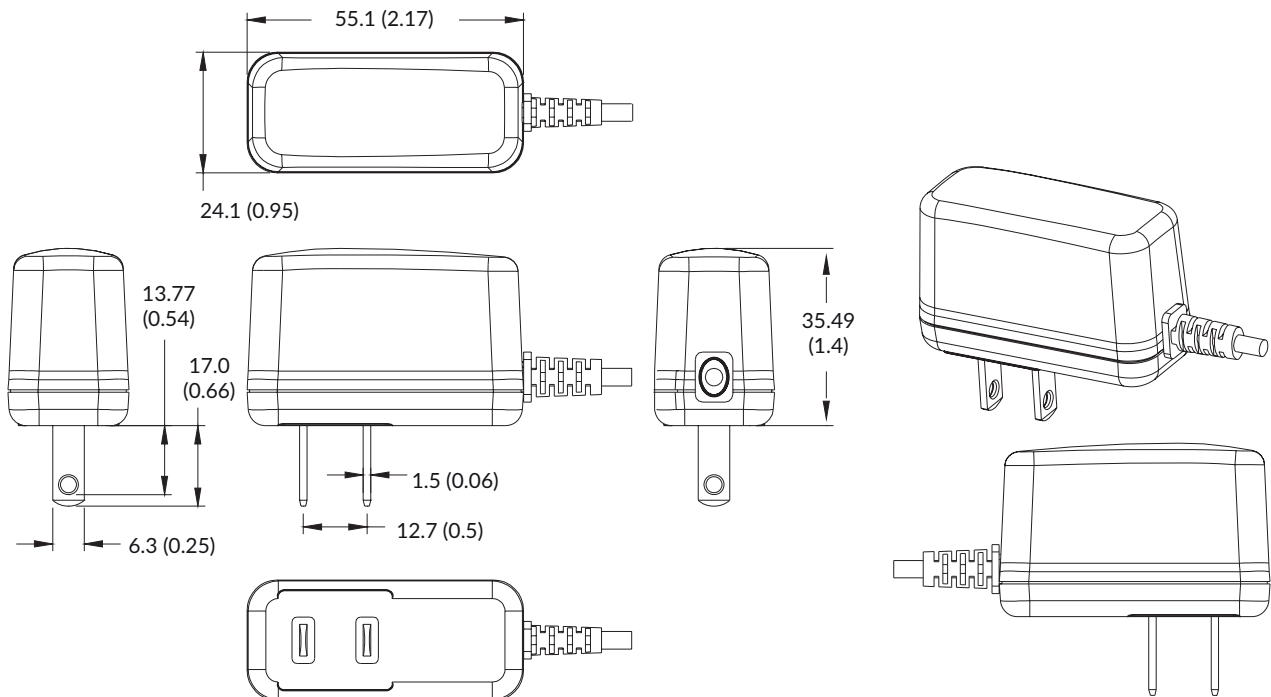
VFL05 series

Mechanical details

VFL05US-US-BB



VFL05US-US-MB/UB/JA



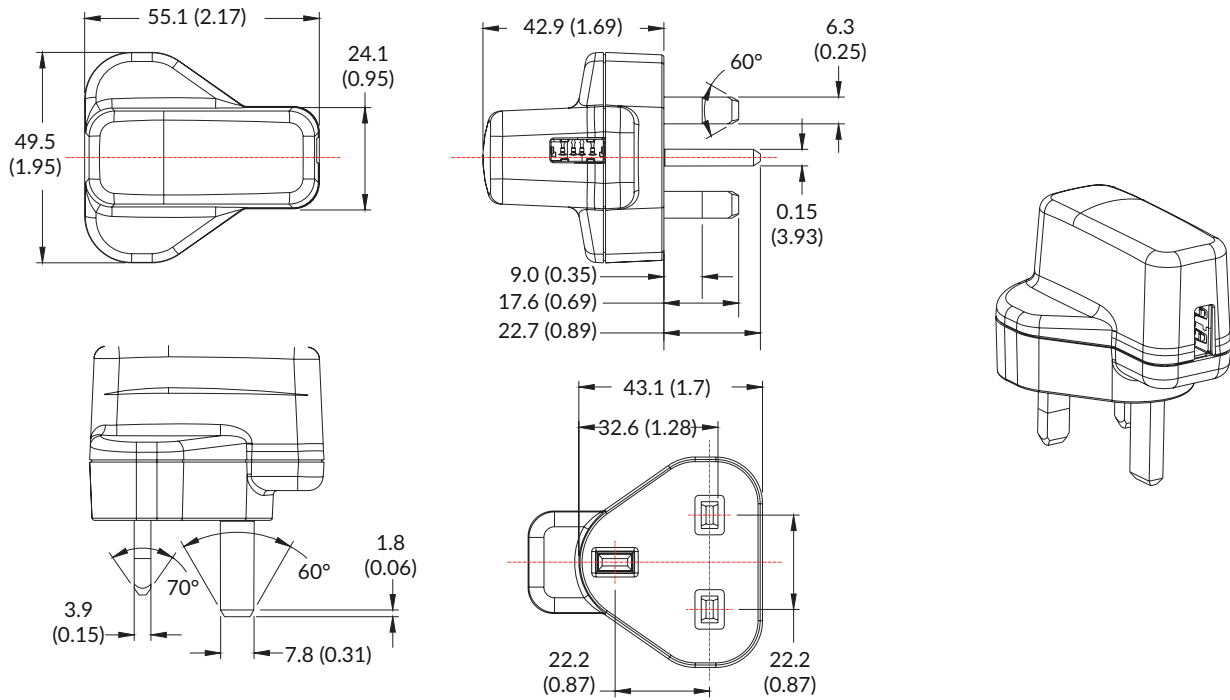
Notes:

1. Dimensions in mm (inches).

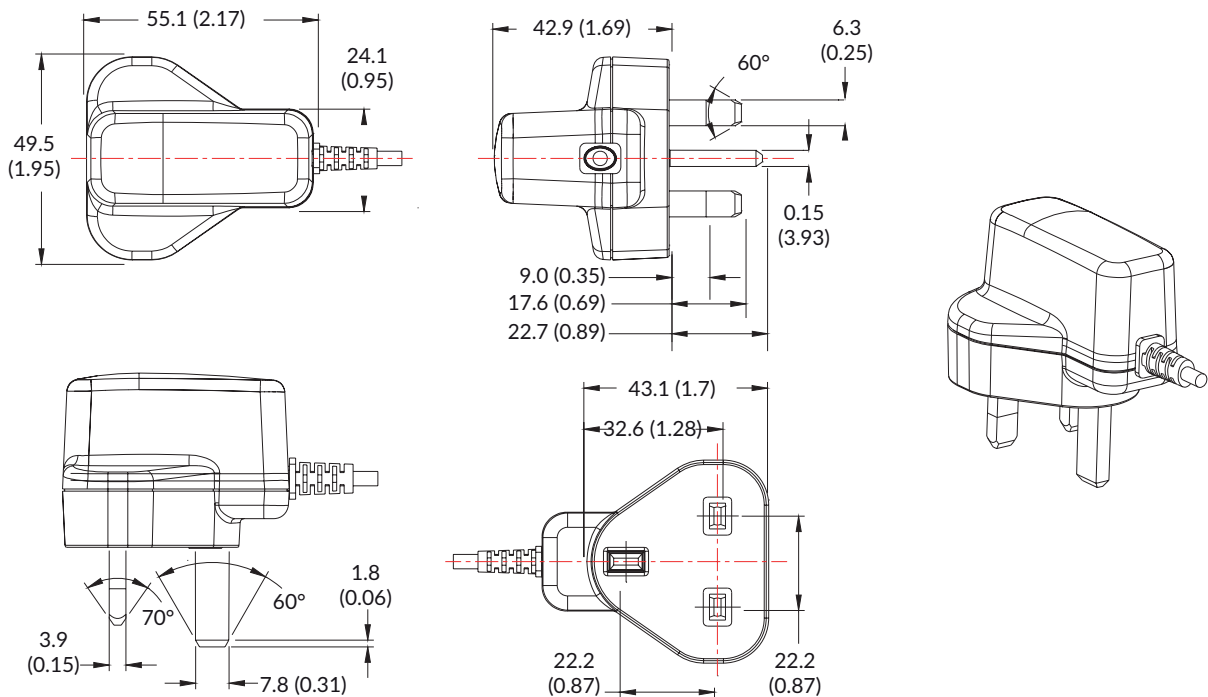
VFL05 series

Mechanical details

VFL05US-UK-BB



VFL05US-UK-MB/UB/JA



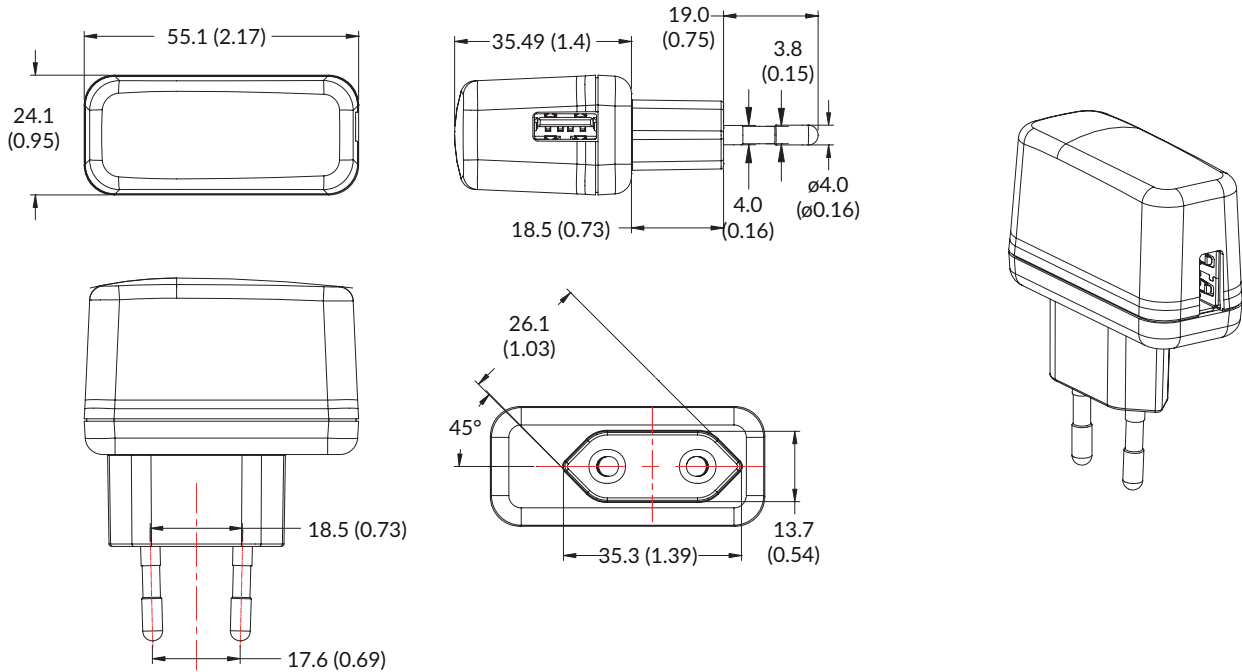
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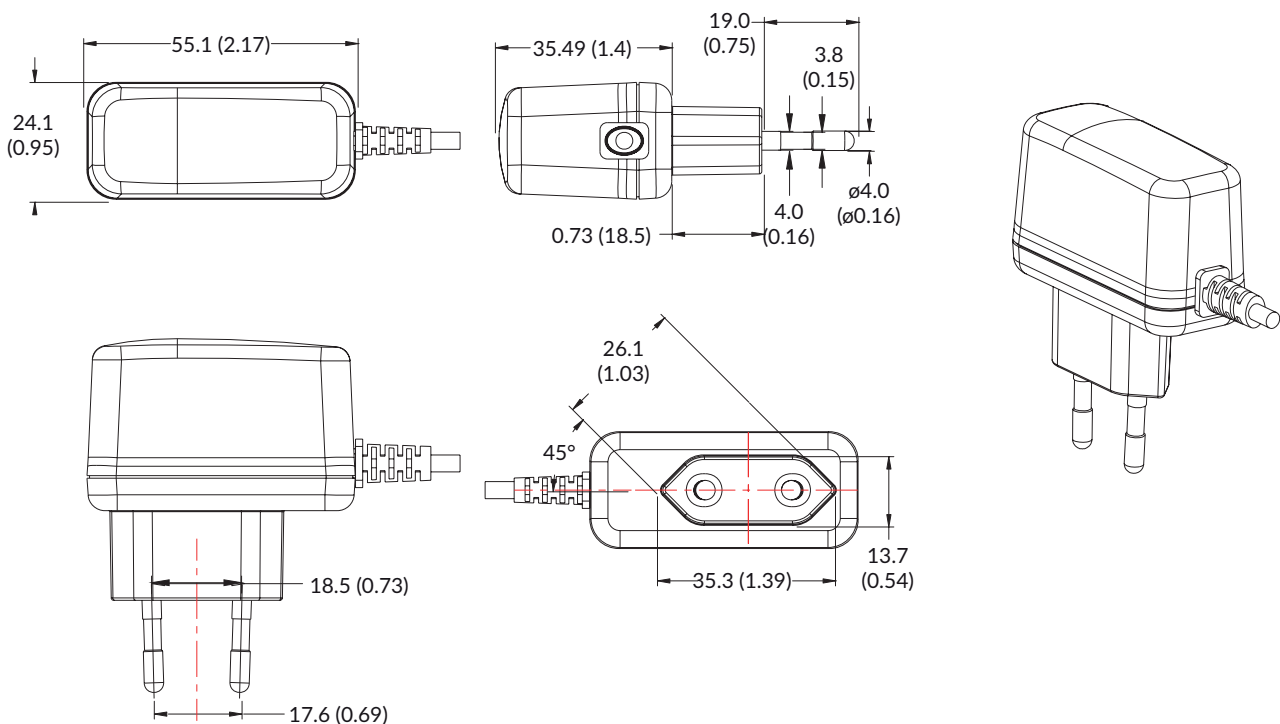
VFL05 series

Mechanical details

VFL05US-EU-BB



VFL05US-EU-MB/UB/JA



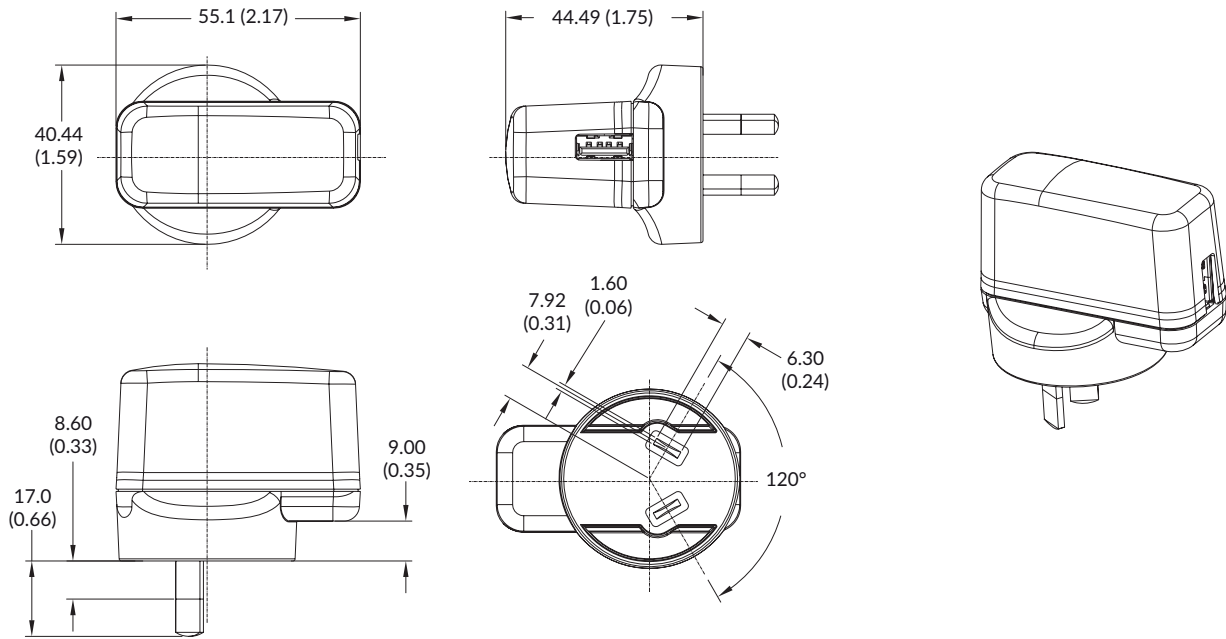
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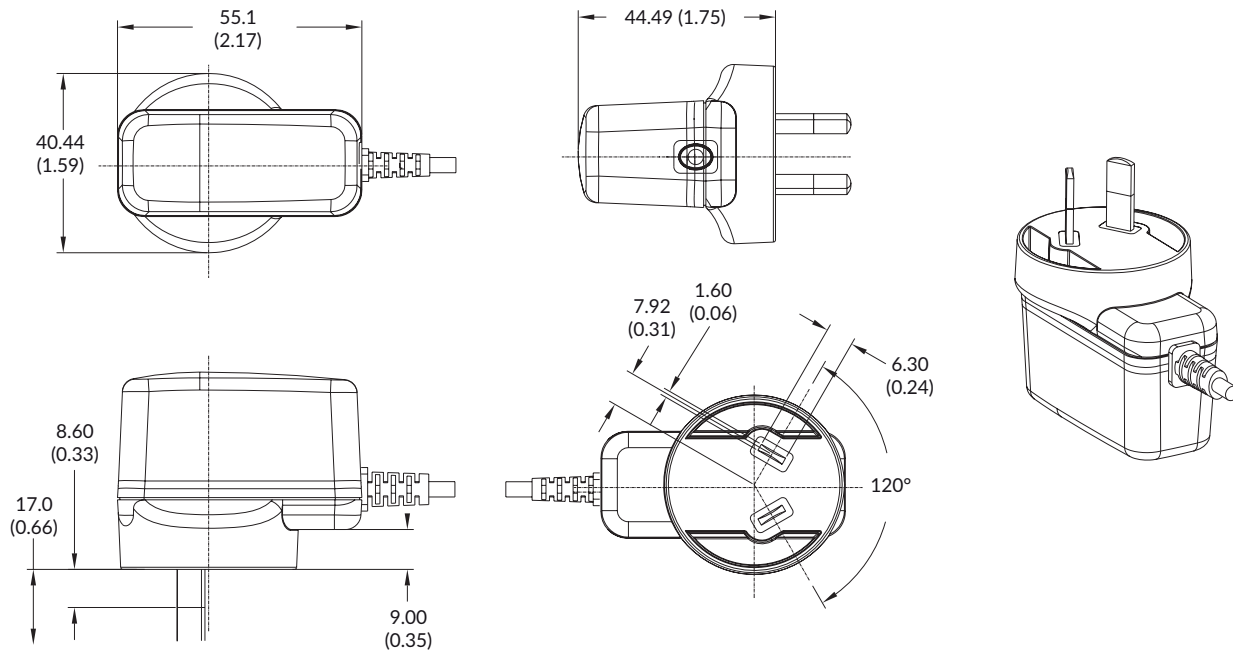
VFL05 series

Mechanical details

VFL05US-AU-BB



VFL05US-AU-MB/UB/JA

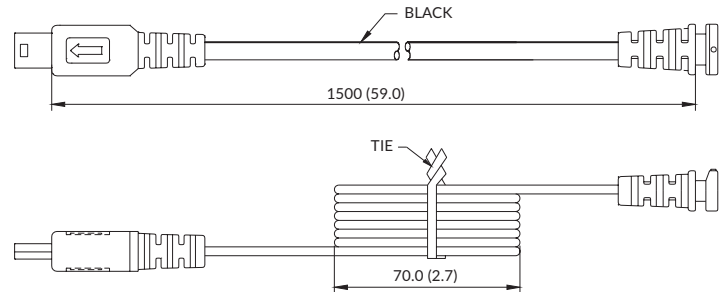
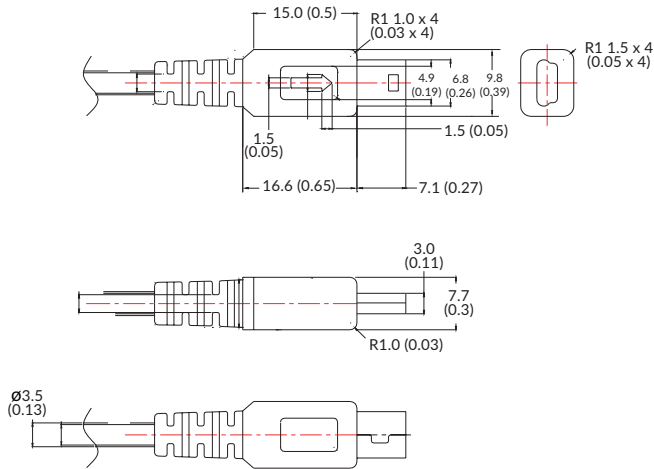


Notes:

1. Dimensions in mm (inches).

Mechanical details

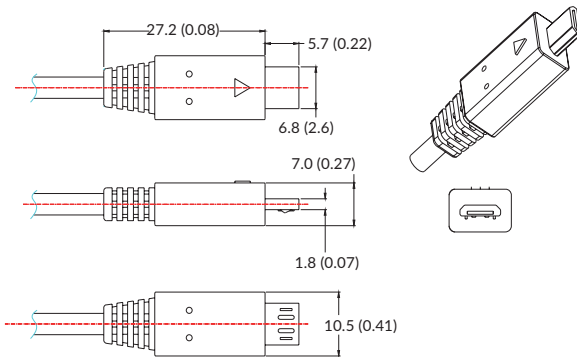
Output lead and connection - mini USB versions (MB)



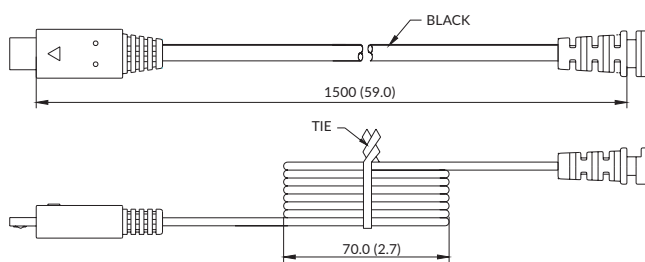
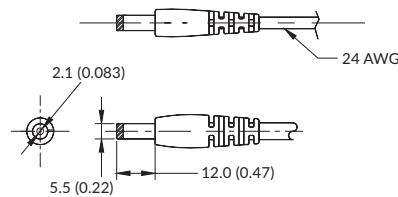
Wire type: VW-1 80°C 300 V L=1500 mm 2464 3.5Ø 24 AWG black



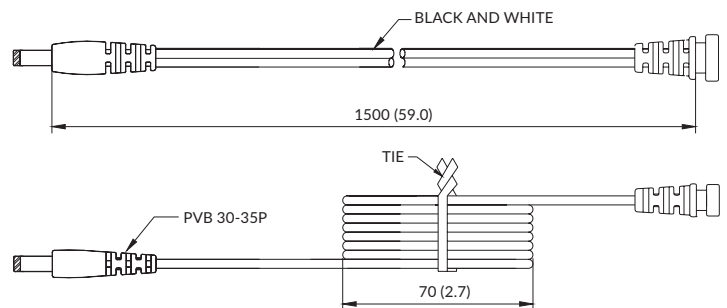
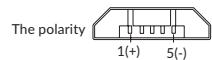
Output lead and connection - micro USB versions (UB)



Output lead and connection - DC jack versions (JA)



Wire type: VW-1 80°C 300 V L=1500 mm 2464 3.5Ø 24 AWG black



Wire type: VW-1 80°C 300 V L=1500 mm 2464 24 AWG 2C Black and White. Black - Negative, White - Positive



Notes:

1. Dimensions in mm (inches).

Specifications subject to change without notice.