

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.

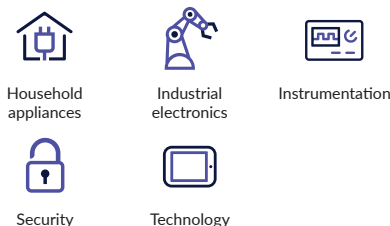
The VFL05 series also offers Class B conducted and radiated emissions, Class II construction, worldwide industrial safety approvals, benefiting system designers with easy integration into a wide range of applications in industrial technology, communications, home automation and consumer electronics.



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:**
1. Other output voltages available, contact sales for details.
 2. Total regulation includes initial set accuracy, line and load regulation.
 3. Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 115VAC input.
 4. Available for OEM quantities, contact sales.
 5. 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	
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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	
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- 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	

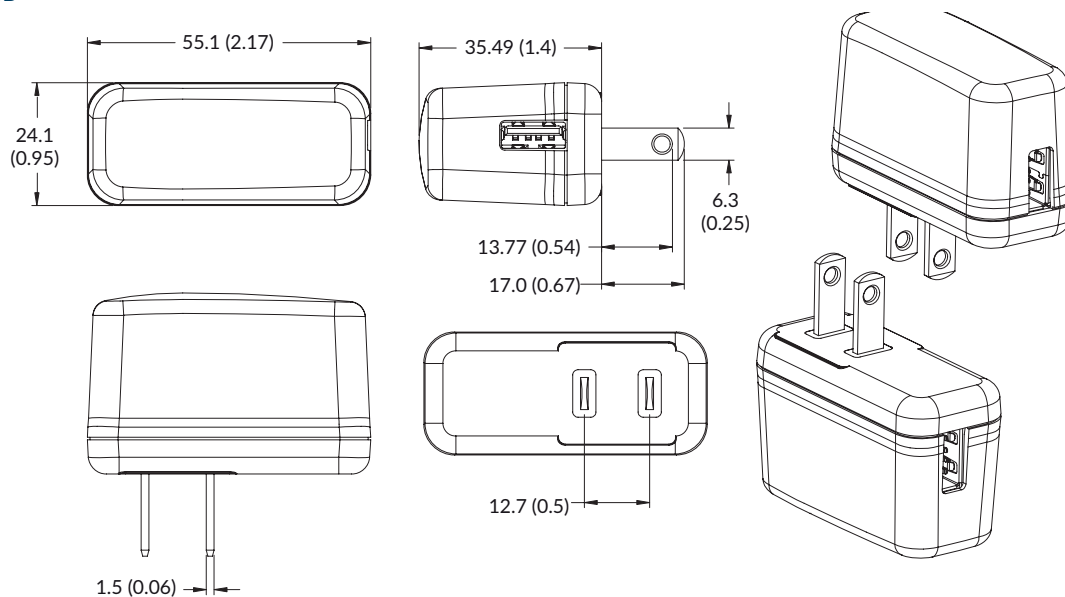
Safety approvals

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	

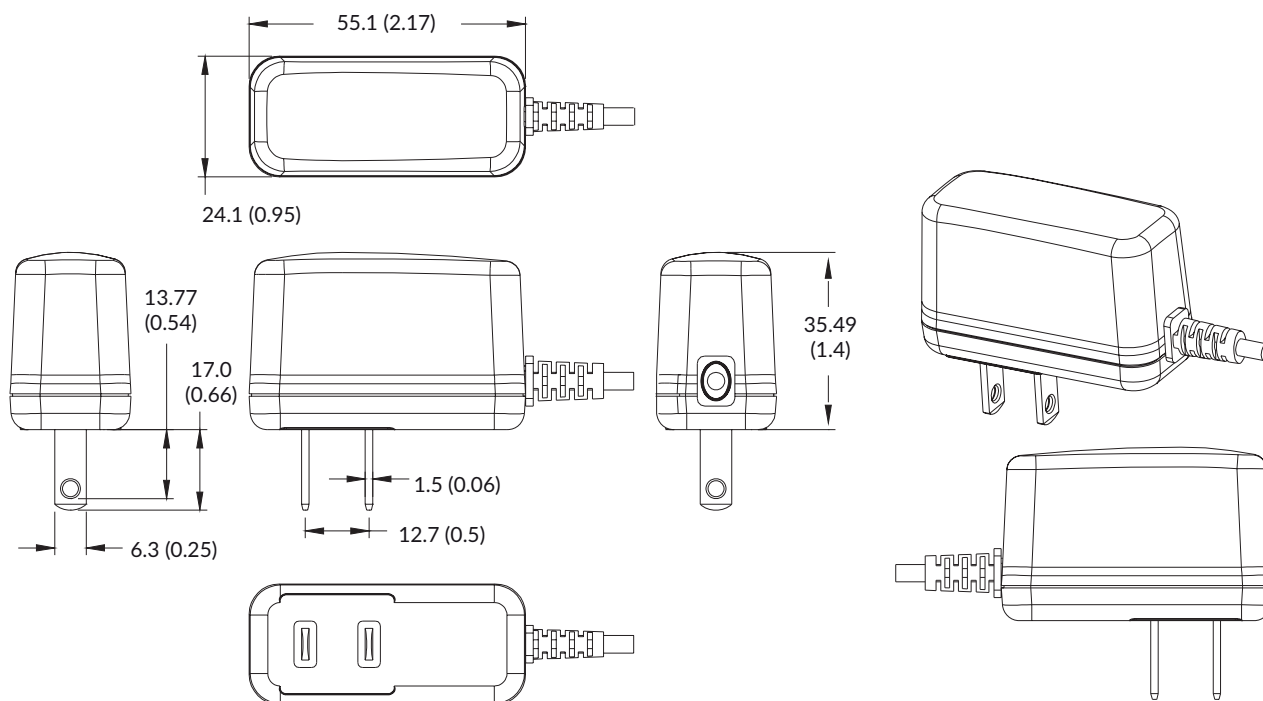
VFL05 series

Mechanical details

VFL05US-US-BB



VFL05US-US-MB/UB/JA

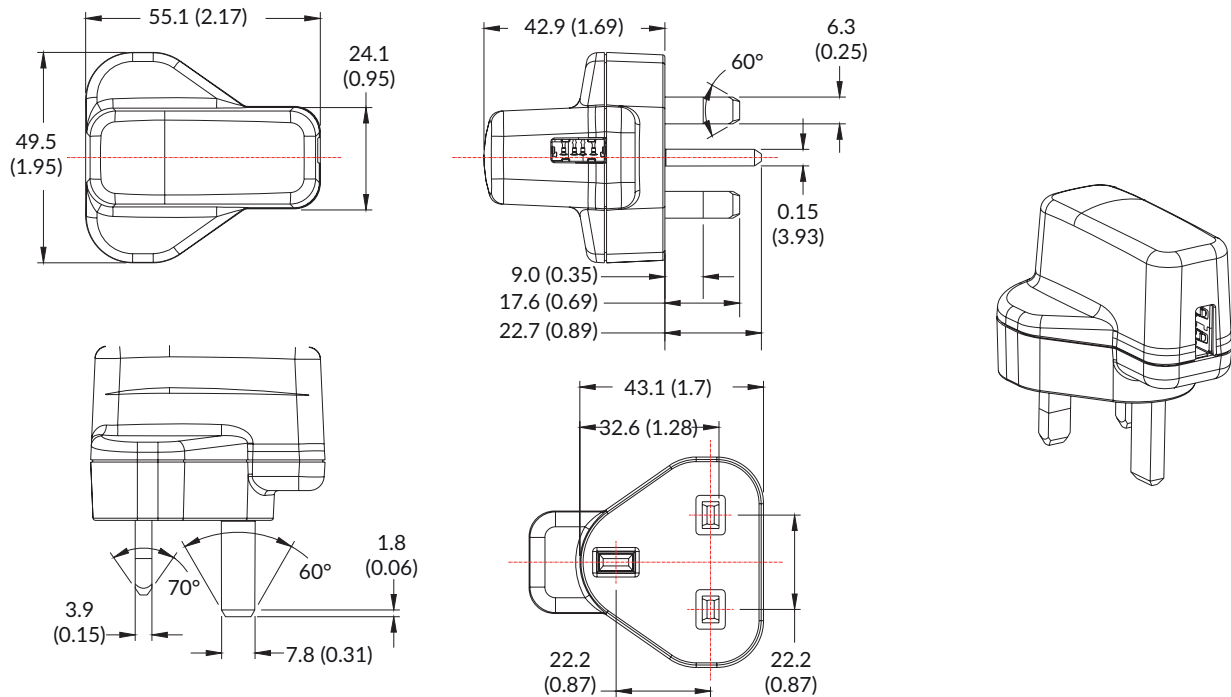


Notes:

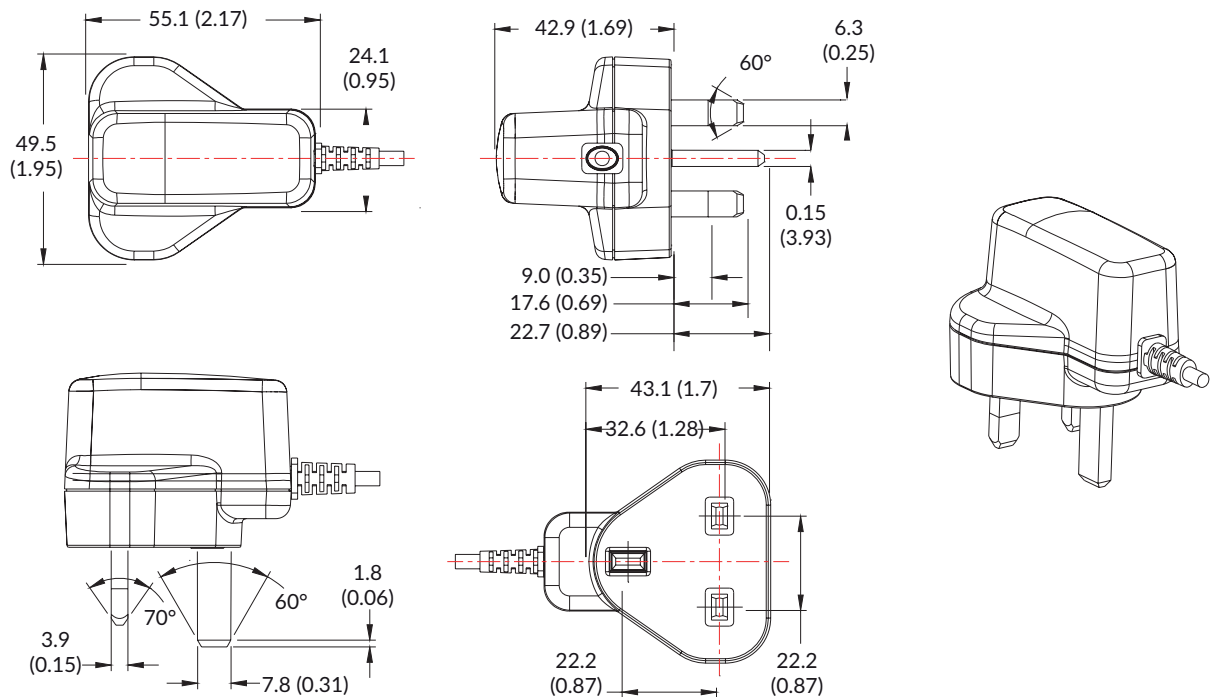
1. Dimensions in mm (inches).

Mechanical details

VFL05US-UK-BB



VFL05US-UK-MB/UB/JA



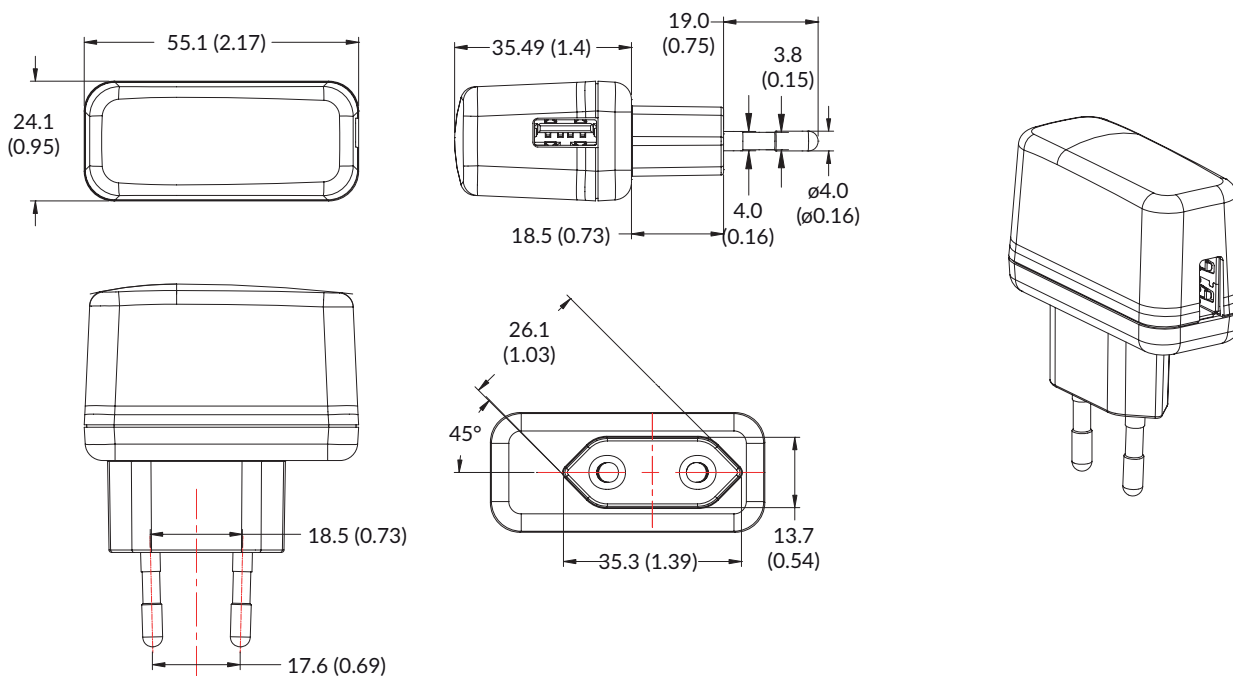
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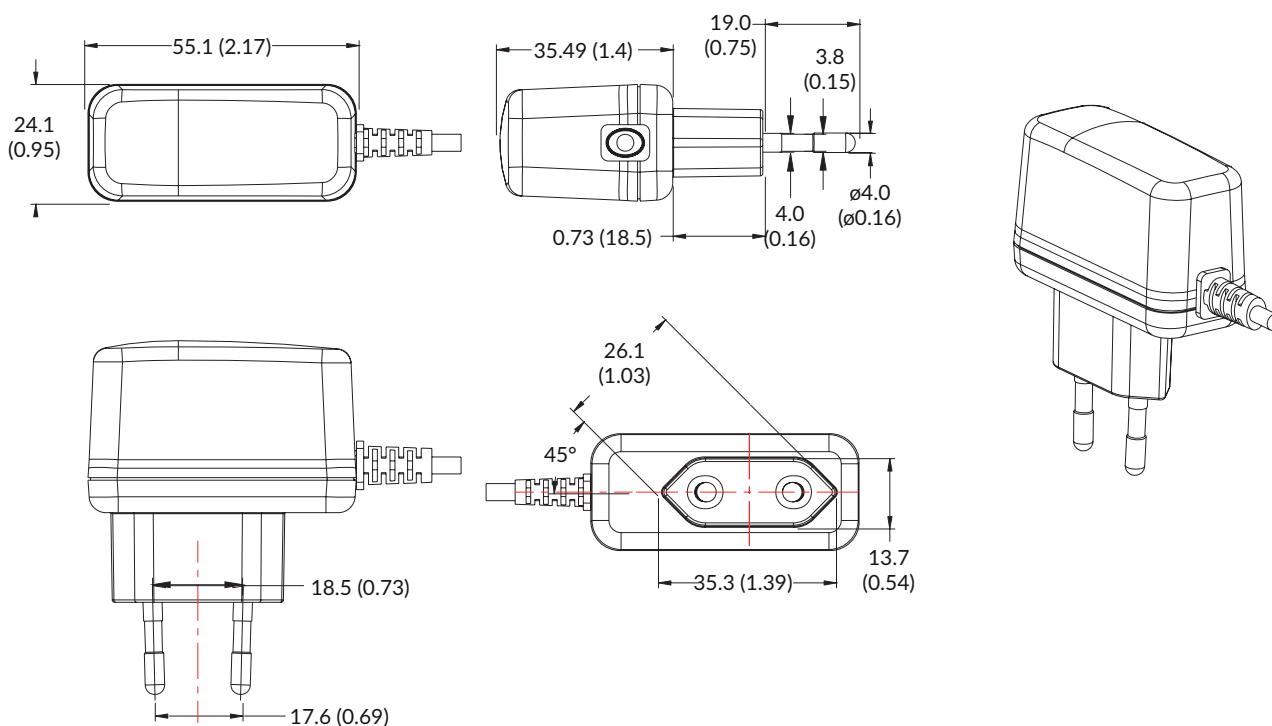
VFL05 series

Mechanical details

VFL05US-EU-BB



VFL05US-EU-MB/UB/JA



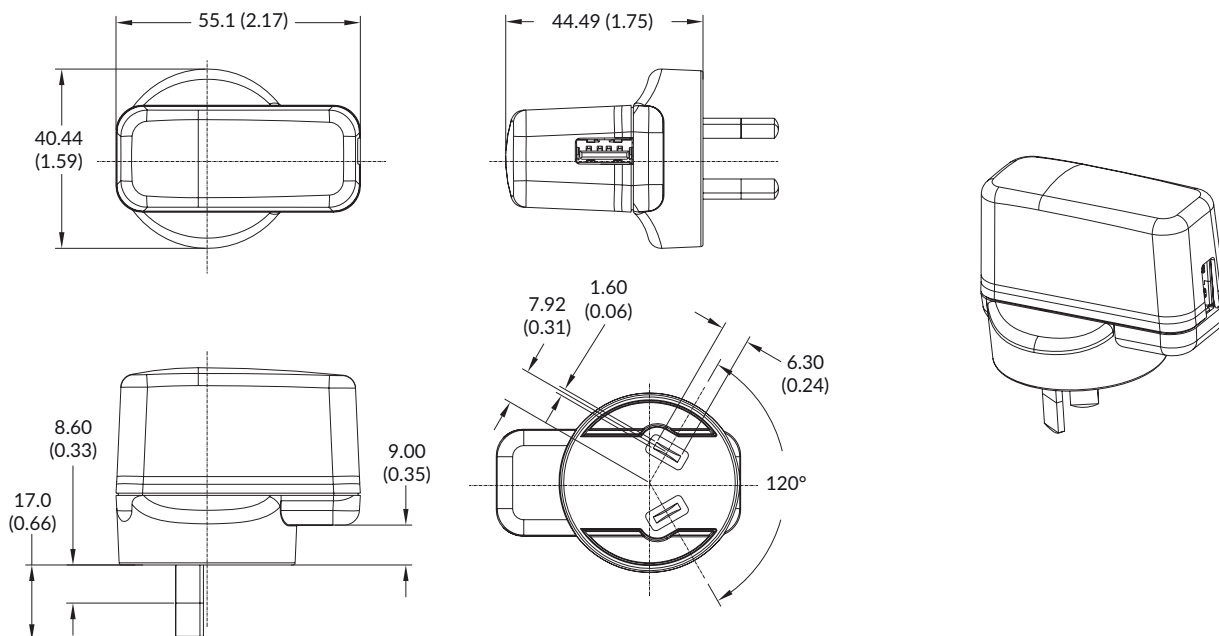
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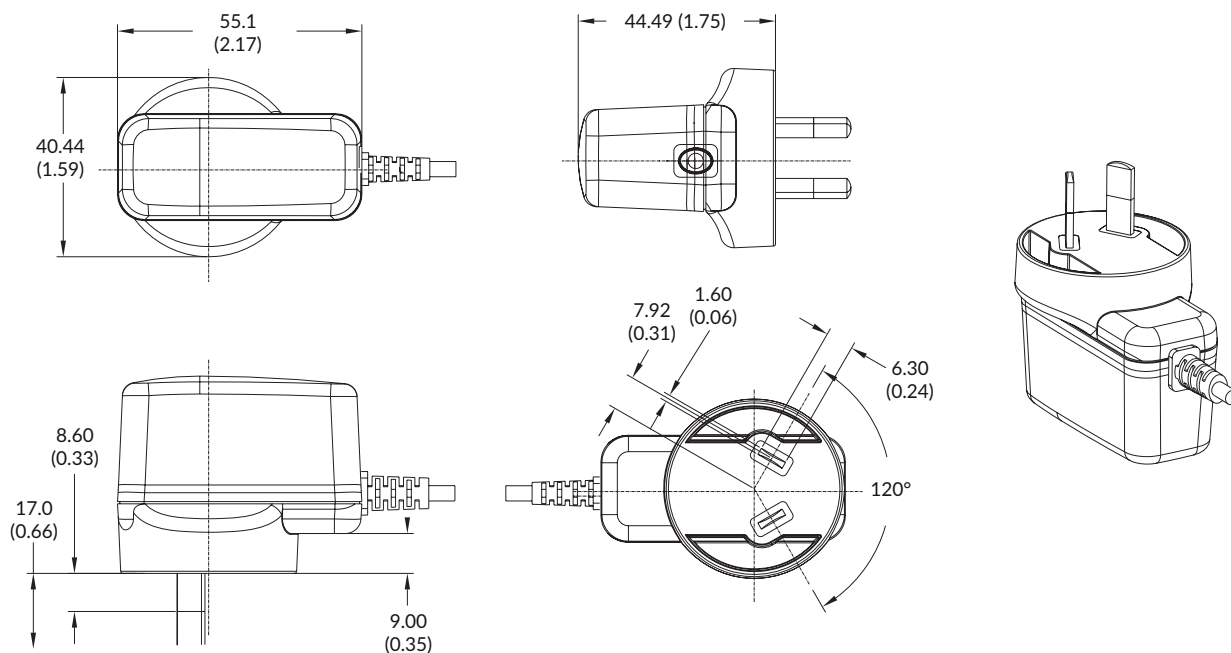
VFL05 series

Mechanical details

VFL05US-AU-BB



VFL05US-AU-MB/UB/JA

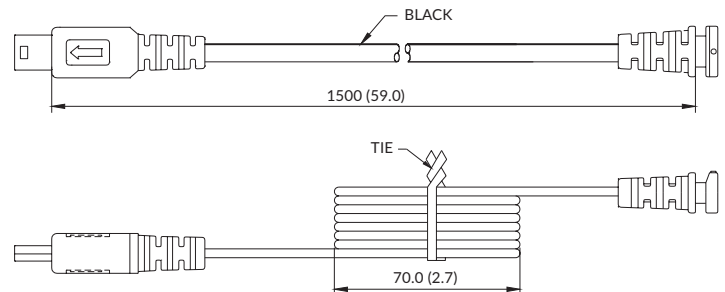
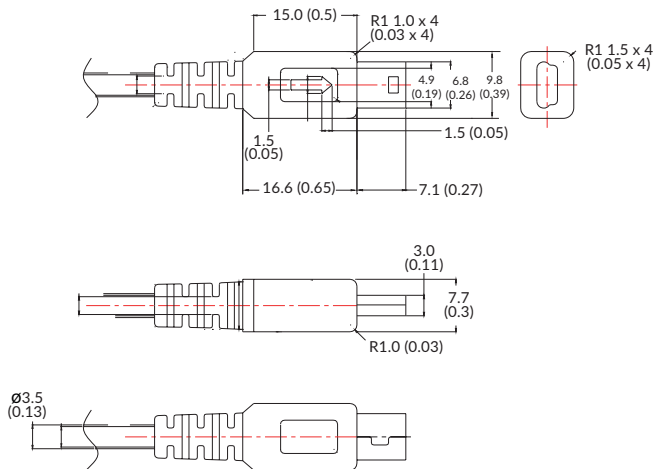


Notes:

1. Dimensions in mm (inches).

Mechanical details

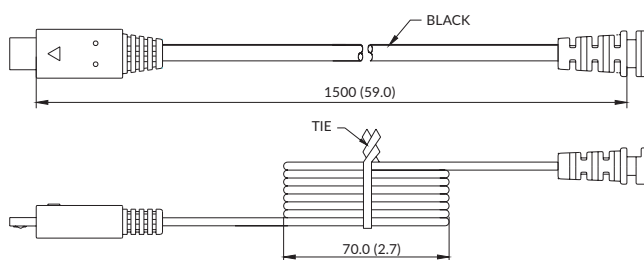
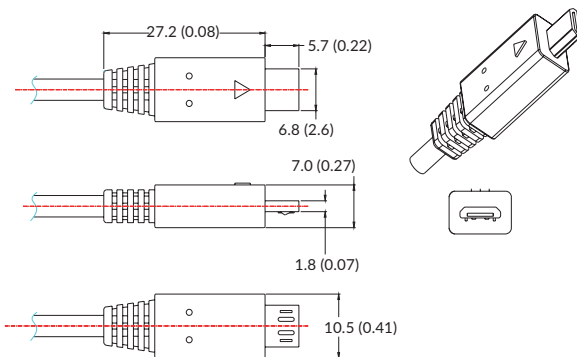
Output lead and connection - mini USB versions (MB)



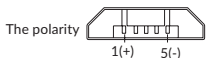
Wire type: VW-1 80°C 300 V L=1500 mm 2464 3.5Ø 24 AWG black



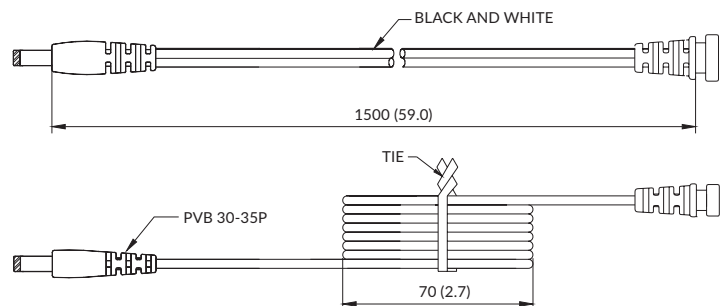
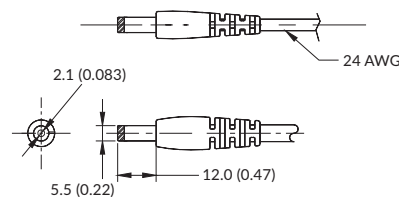
Output lead and connection - micro USB versions (UB)



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



Output lead and connection - DC jack versions (JA)



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.