



The VFR05 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 VFR05 series complies with level VI (level VII ready) energy efficiency standards with high active mode efficiency and extremely low no load power consumption. These adaptors are supplied with interchangeable US, UK, EU and AU mains connectors to enable global use.

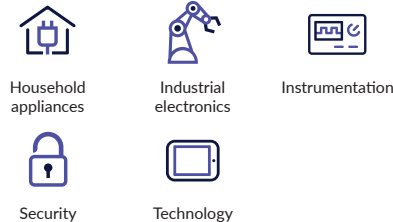
The VFR05 series also offers Class B conducted and radiated emissions, Class II construction, worldwide industrial safety approvals, benefiting system designers with easy integration into a wide range of applications in industrial technology, communications, home automation and consumer electronics.



Features

- ▶ Universal 90 to 264VAC input range
- ▶ Standard barrel jack and USB connectors
- ▶ Level VI (level VII ready) energy efficiency standard
- ▶ Interchangeable 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

Body only:
37.0 x 55.1 x 42.9mm (1.45" x 2.16" x 1.69")

Models & ratings

Model number ⁽⁴⁾	Output voltage ⁽¹⁾	Output current	Total regulation ⁽²⁾	Efficiency ⁽³⁾	Output connector	Output power
VFR05US050-BB	5.0V	1000mA	±5%	77%	USB A in case	5W
VFR05US050-MB ⁽⁵⁾	5.0V	1000mA		74%	Mini USB B	
VFR05US050-UB	5.0V	1000mA		74%	Micro USB B	
VFR05US050-JA	5.0V	1000mA		75%	5.5 x 2.1 x 12mm DC Jack	
VFR05US090-JA	9.0V	550mA		78%	5.5 x 2.1 x 12mm DC Jack	
VFR05US120-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. Part number includes UK, EU, US and AU plugs.
5. 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 T1.0A/250VAC fuse				

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 at 0.2A/µs for other models
Ripple & noise			200	mV pk-pk	20MHz bandwidth with 10µF electrolytic capacitor 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)	Body only

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 and FCC Part 15, Subpart B	Level B	
Radiated	EN55032 and FCC Part 15, Subpart B	Level B	
Harmonic currents	EN61000-3-2	Class A	
Voltage flicker	EN61000-3-3		

EMC: Immunity

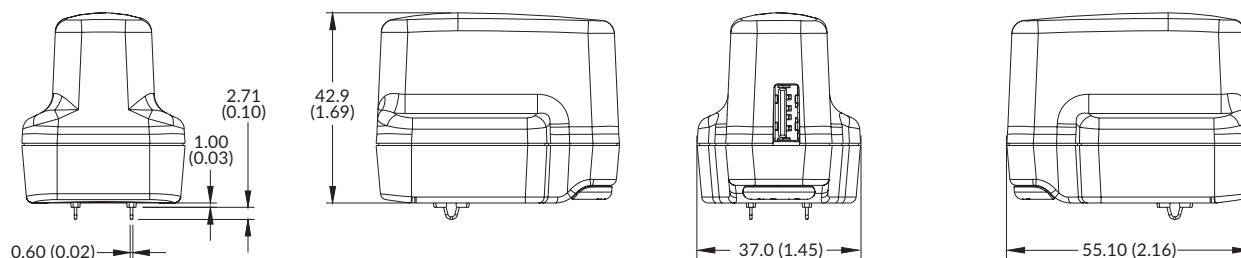
Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	EN61000-4-2	2, 3	B	±4kV contact, ±8kV air
Radiated immunity	EN61000-4-3	3V/m	A	
EFT/burst	EN61000-4-4	Level 2	B	
Surge	EN61000-4-5	Level 2	A	
Conducted	EN61000-4-6	3V	A	
Magnetic field	EN61000-4-8	1A/m	A	
Dips and interruptions	EN55035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

Safety approvals

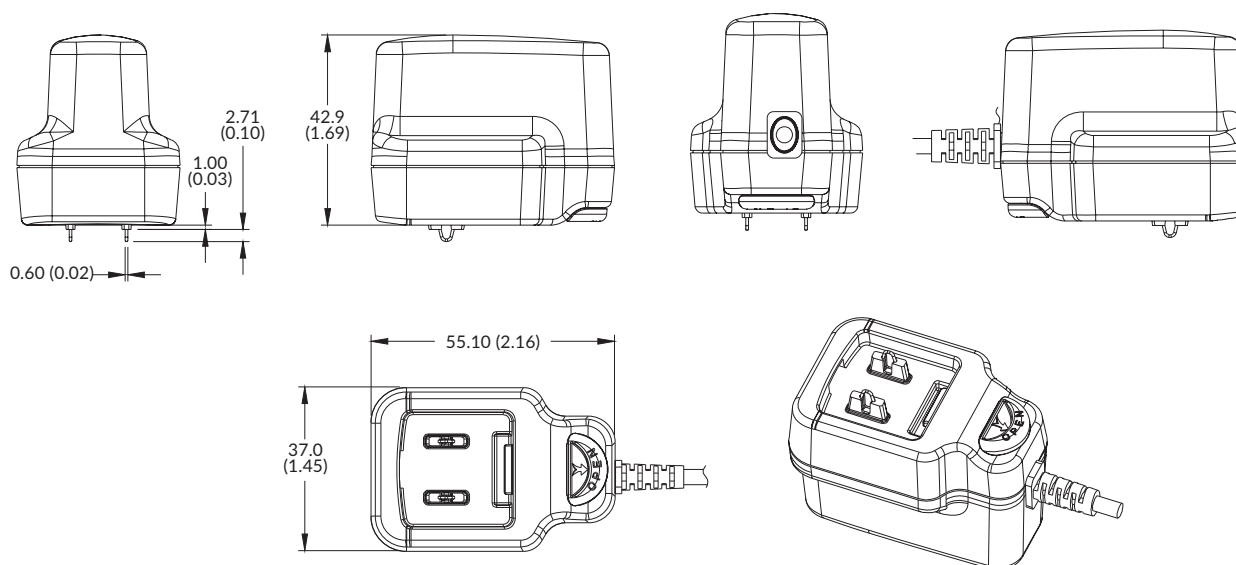
Certification	Standard	Notes & conditions
UL	UL/cUL62368-1	Approved as limited power source (LPS)
EN	EN62368-1	
CB	IEC62368-1	
CCC	China Compulsory Certification, GB4943	
AU/NZ	AU/NZ 62368.1	
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Mechanical details

VFR05US-US-BB



VFR05US other models

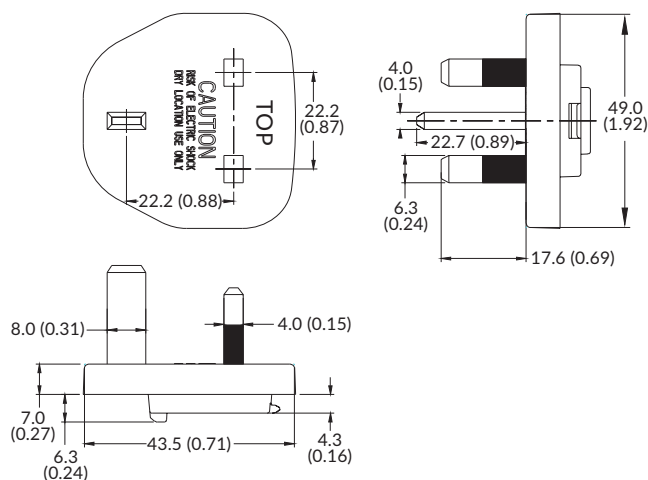


Notes:

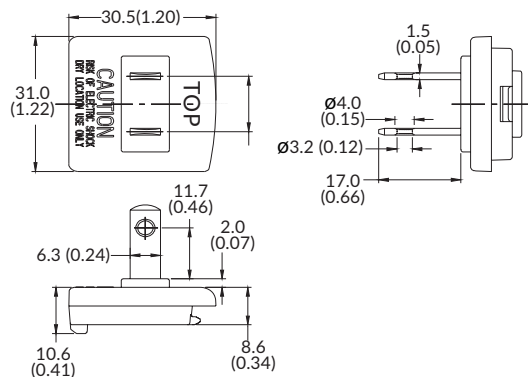
1. Dimensions in mm (inches).

Mechanical details

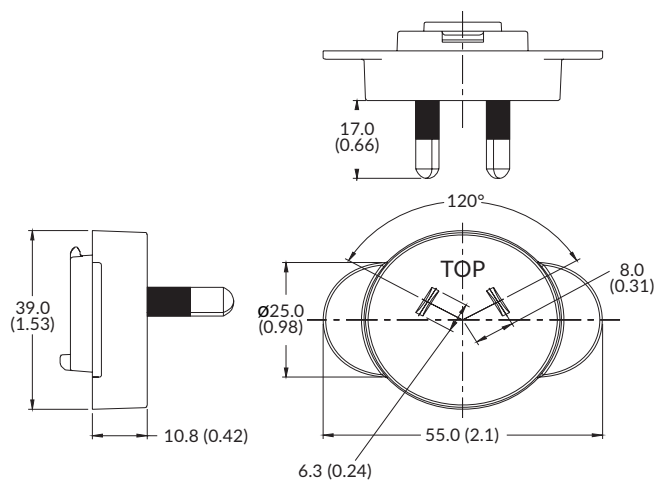
UK AC input plug



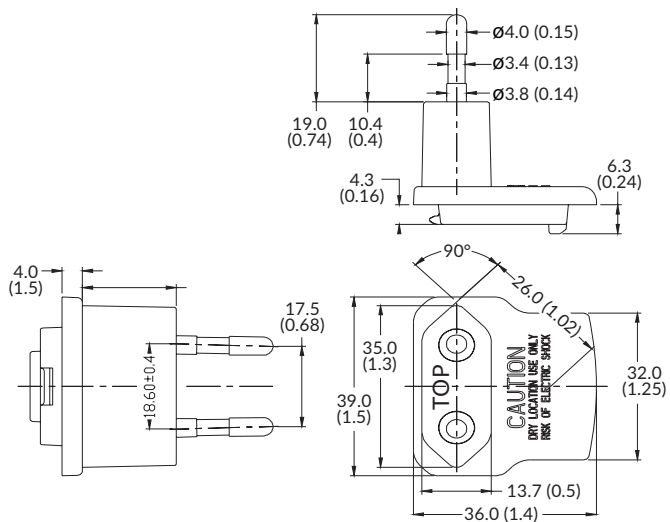
US AC input plug



AU AC input plug



EU AC input plug

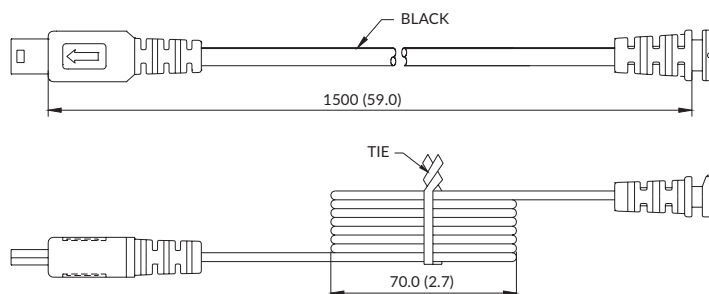
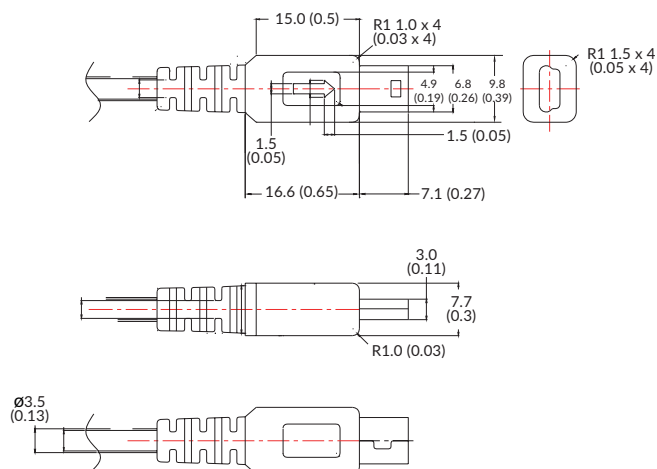


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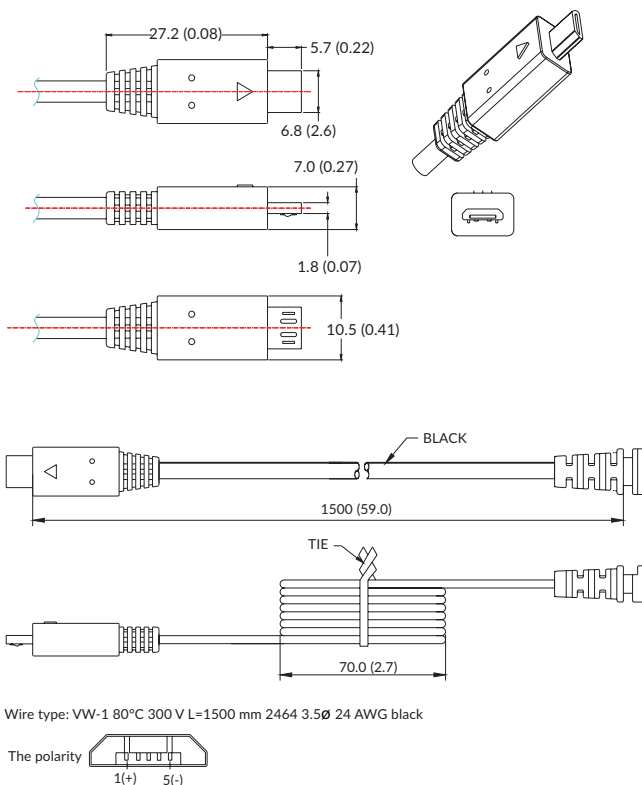
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Mechanical details

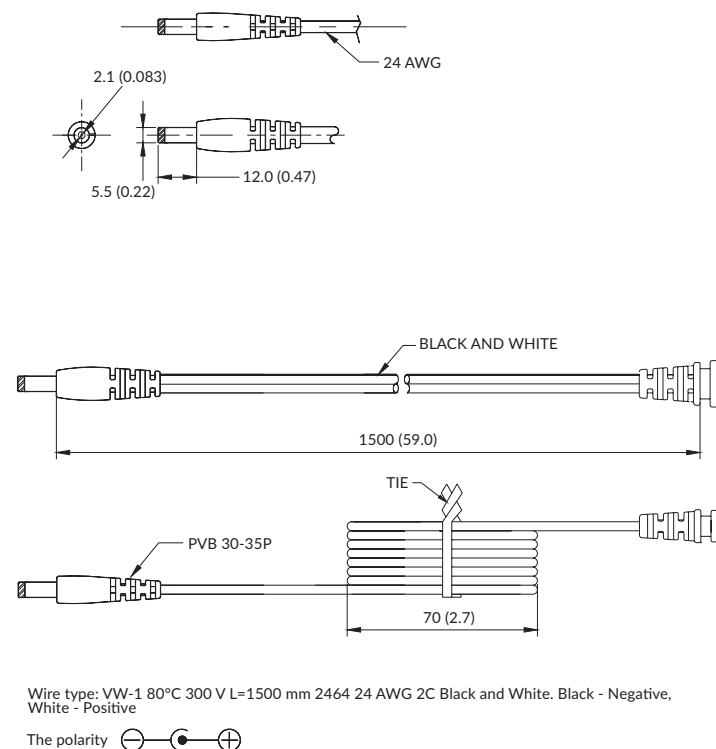
Output lead and connection - mini USB versions (MB)



Output lead and connection - micro USB Versions (UB)



Output lead and connection - DC jack versions (JA)



Notes:

1. Dimensions in mm (inches).

Specifications subject to change without notice.