ALM65 Series

AC-DC POWER SUPPLIES

65W External desktop

The ALM65 series of medical external power supplies is fully approved to international medical safety standards. It has been designed with very high efficiency and low standby power, enabling it to meet the latest environmental legislation. The unit has a fully sealed enclosure complying with IP32 and a smooth surface finish making it easier to wipe down in a clinical setting.

Features

- Medical and IT safety approvals
- Energy efficiency level VI
- 4th edition medical EMC
- IP32 environmental rating
- Class I and class II versions
- <0.21W standby power
- 0°C to 60°C operation
- Low earth leakage current
- 3 year warranty

Applications

Healthcare
Home Healthcare
Industrial Electronics
Instrumentation
Laboratory
Medical Diagnostic

Dimensions

125.5 x 55.5 x 33.5mm (4.94” x 2.19” x 1.32”)

Models & Ratings

Model Number[3][4]	Output Power	Output Voltage	Output Current	Total Regulation[1]	Efficiency[2]
ALM65US12	65W	12.0V	5.40A	±5%	88%
ALM65US15		15.0V	4.30A		
ALM65US19		19.0V	3.40A		
ALM65US24		24.0V	2.70A		
ALM65US48		48.0V	1.35A		

Notes:

1. Typical average of efficiencies measured at 25%, 50%, 75% and 100% load and 115VAC input.
2. For class II versions, add suffix ‘C2-8’ to the end of the part number e.g. ALM65US24C2-8.
3. For optional input connector retention clip add suffix ‘-A’ to the model number, e.g. ALM65US24-A (not available for C2 versions)
4. 5.5 x 2.1mm output connector add suffix B1 to the part number, e.g. ALM65US24-B1, ALM65US24C2-8B1, ALM65US24-AB1.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	80		264	VAC	
Input Frequency	47		63	Hz	
Input Current		1.2/0.6		A	115/230VAC
Inrush Current			60/120	A	115/230VAC, cold start at 25°C
Power Factor					EN61000-3-2 Class A
Earth Leakage Current			250	µA	264VAC, 60Hz
No Load Input Power			210	mW	
Input Protection	T3.15A/250VAC internal fuse in both line				

Output

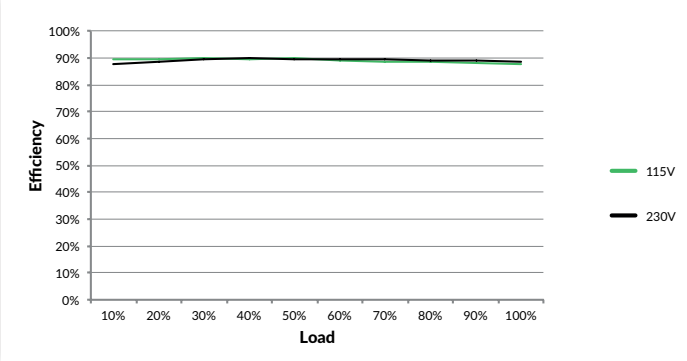
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	12		48	V	See Models and Ratings table
Initial Set Accuracy			±2	%	At 50% load
Minimum Load	0			A	No minimum load required
Start Up Delay			2	s	
Start Up Rise Time			40	ms	
Hold Up Time	20			ms	Full load and 230VAC
Line Regulation			±0.5	%	
Total Regulation			±5	%	
Transient Response			4	%	Maximum deviation, recovering to less than 1% within 500µs for 25% step load
Ripple and Noise			1.5	% pk-pk	20MHz bandwidth, measured with 20MHz bandwidth and 10µF electrolytic in parallel with 0.1µF ceramic capacitor
Overshoot			10	%	At turn on/turn off
Overload Protection	115		175	%	
Overvoltage Protection	145		170	%	Recycle mains to reset
Short Circuit Protection	Trip and restart (hiccup), auto resetting				
Thermal Protection	Measured internally, auto resetting				
Temperature Coefficient		0.05		%/°C	
Patient Leakage Current			100	µA	264VAC, 60Hz

General

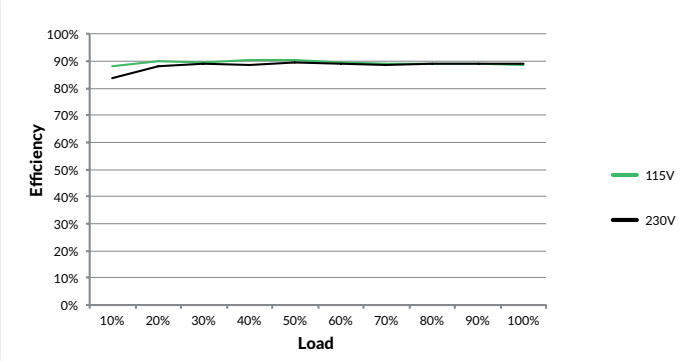
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	88			%	See Models & Ratings and curves
Isolation: Input to Output			4000	VAC	2 x MOPP
Input to Ground			1500		1 x MOPP (Class I versions only)
Output to Ground			500		Class I versions only
Switching Frequency		65		kHz	PWM
Mean Time Between Failure		>300		khrs	MIL-HDBK-217F at 25°C GB
Weight		308 (0.68)		(g) lb	

Efficiency Curves

ALM65US12



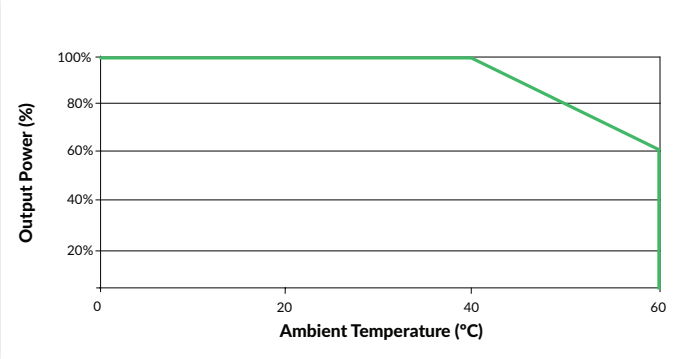
ALM65US24



Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	0		+60	°C	Derate from 100% load at 40°C to 50% load at 60°C
Storage Temperature	-40		+80	°C	
Cooling	Natural convection				
Operating Humidity	5		90	%RH	Non-condensing
Operating Altitude			5000	m	
Shock	IEC68-2-27, 30g, 11ms half sine, 3 times in each of 6 axes				
Vibration	IEC68-2-6, 10-500Hz, 2g 10 mins/sweep, 60 mins for each of 3 axes				

Derating Curve



EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032, EN55011	Level B	
Radiated	EN55032, EN55011	Level B	
Harmonic Current	EN61000-3-2	Class A	
Voltage Flicker	EN61000-3-3		

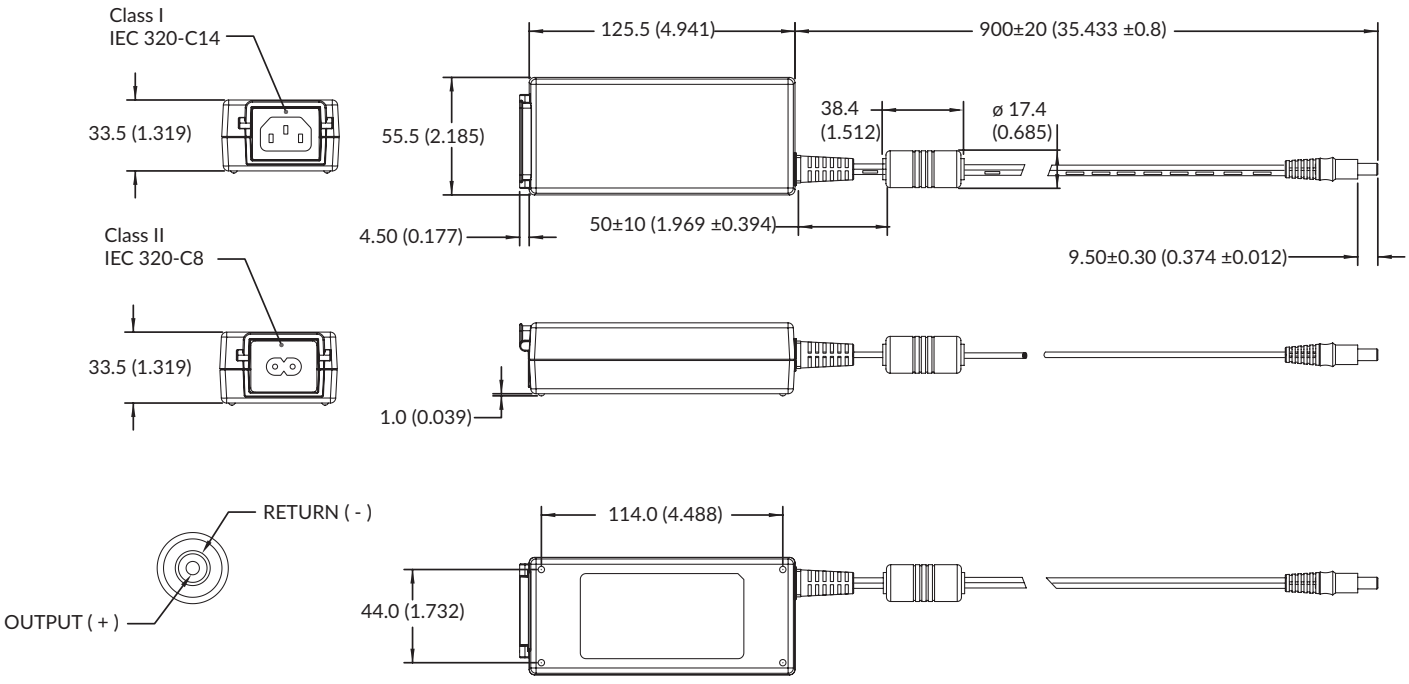
EMC: Immunity

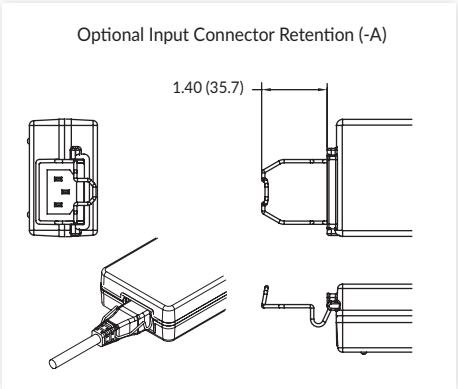
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	4	A	±8kV contact, ±15kV air
Radiated Immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	Level 3	A	
Surge	EN61000-4-5	Installation Class 3	A	
Conducted Immunity	EN61000-4-6	10V	A	
Magnetic Fields	EN61000-4-8	4	A	
Dips and Interruptions	EN61000-4-11	Dip: 30% 500ms	A/B	High Line/Low Line
		Dip: 60% 200ms	A/B	High Line/Low Line
		Dip: 80% 5000ms	B	
		Dip: 100% 5000ms	B	
	EN60601-1-2	Dip: 30% 25 AC cycles	A	230VAC 100% load, 100VAC 75% load
		Dip: 60% 5 AC cycles	A	230VAC 100% load, 100VAC 20% load
		Dip: 100% 0.5 AC cycles	A	At 8 angles
		Int.: >95% 5000ms	B	

Safety Approvals

Certification	Safety Standard	Notes & Conditions
UL	UL62368-1	Information Technology
	ANSI/AAMI ES 60601-1	Medical
TUV	EN62368-1	Information Technology
	EN60601-1	Medical
CB	IEC60950-1, IEC62368-1	Information Technology
	IEC60601-1	Medical
CSA	CSA C22.2 No. 60601	Medical
Others	CCC, KC & RCM	May require additional importer information
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Mechanical Details





Notes:

1. All dimensions shown in mm (inches). Tolerance is 0.5 (0.02) maximum, except output cable length.
2. Output connector: 5.5 outer diameter, 2.5mm inner diameter with centre positive.
3. Weight: 308g (0.68lbs) approx.
4. For European mains lead order part EU-MAINS-IEC for C14 versions, or EU-MAINS-8 for C8 versions.
5. For UK mains lead order part UK-MAINS-IEC for C14 versions, or UK-MAINS-8 for C8 versions.
6. For US mains lead order part US-MAINS-IEC for C14 versions, or US-MAINS-8 for C8 versions.