65W, AC-DC converter

CE EN62368-1 RoHS 3 years Warranty

FEATURES

- Universal 85-264VAC or 100-370VDC input voltage
- High power density, compact size:
  3" x 2" x 1.03" (LO65-20BxxMU)
  3.6" x 2.4" x 1.3" (LO65-20BxxMU-C)
- Operating ambient temperature range: -40℃ to +70℃
- High I/O isolation test voltage up to 4000VAC
- Meets 5000m altitude requirements
- Extremely low leakage current＜75uA
- Stand-by power consumption＜0.3W
- Output short circuit, over-current, over-voltage protection
- Efficiency up to 91%
- Meets 2 x MOPP safety certification
- Suitable for BF application
- Over-voltage class Ⅲ (designed to meet EN61558-1)

LO65-20BxxMU(-C) series is one of Mornsun's AC-DC miniaturize open frame power supply and suitable for all kinds of BF type (be accessible to patients) medical system equipment. It features universal AC input and at the same time accepts DC input voltage, cost-effective, high efficiency, high reliability and double or reinforced insulation. These converters offer excellent EMC and safety performance, which meet UL/IEC/EN/ES60601, UL/EN/IEC62368, IEC/EN60335, IEC/EN61558, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home, medical, etc.

Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current (Vo/Io)	Output Voltage Adjustable Range ADJ (V)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
EN	LO65-20B03MU(-C)	33W	3.3V/10.00A	2.97-3.63	84	20000
	LO65-20B05MU(-C)	50W	5V/10.00A	4.5-5.5	85	20000
	LO65-20B12MU(-C)	65W	12V/5.42A	10.2-13.8	89	8000
	LO65-20B15MU(-C)		15V/4.34A	13.5-18	90	7000
	LO65-20B24MU(-C)		24V/2.71A	21.6-28.5	90	1500
	LO65-20B36MU(-C)		36V/1.81A	32.4-39.6	91	1000
	LO65-20B48MU(-C)		48V/1.36A	43.2-52.8	91	470

Note: *Use suffix "-C" for enclosed version.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	264	VAC
	DC input	100	--	370	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1650	mA
	230VAC	--	--	950	
Inrush Current	115VAC	--	--	40	A
	230VAC	--	--	60	
Leakage Current	240VAC	75uA Max.			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0% - 100% load	3.3V/5V output	--	±2	--	%
		Other output	--	±1	--	
Line Regulation	Rated load	3.3V/5V output	--	±0.8	--	
		Other output	--	±0.5	--	
Load Regulation	230VAC		--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	3.3V/5V/12V/ 15V output	--	75	100	mV
		24V output	--	80	120	
		36V/ 48V output	--	100	150	
Stand-by Power Consumption			--	0.2	0.3	W
Temperature Coefficient			--	±0.02	--	%/°C
Short Circuit Protection			Hiccup, continuous, self-recover			
Over-current Protection			⩾120%Io, self-recover			
Over-voltage Protection	3.3VDC output		⩽5.25V	Output voltage hiccup		
	5VDC output		⩽7V			
	12VDC output		⩽16V			
	15VDC output		⩽22V			
	24VDC output		⩽32.4V			
	36VDC output		⩽42.4V			
	48VDC output		⩽57V			
Minimum Load			0	--	--	%
Hold-up Time	115VAC input		10	20	--	ms
	230VAC input		45	60	--	

Note: *The "Tip and barrel method" is used for ripple and noise test, 3.3V, 5V, 12V, 15V with a 10uf ceramic capacitor, 24V with a 1uf ceramic capacitor, 36V and 48V with a 0.1uf ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item			Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output		Electric Strength Test for 1min., leakage current <5mA	4000	--	--	VAC
	Input - shell	LO65-20BxxMU-C		2500	--	--	
	Output - shell	LO65-20BxxMU-C		2500	--	--	
Insulation Resistance		Input-output	500VDC	⩾100x10⁶			Ω
Operating Temperature				-40	--	+70	℃
Storage Temperature				-40	--	+70	
Storage Humidity				--	--	90	%RH
Altitude				--	--	5000	m
Power Derating			-40℃ to -25℃	1.34	--	--	%/℃
			+50℃ to +70℃	2.50	--	--	
			85VAC - 100VAC	2.00	--	--	%/VAC
			2000m-5000m	5.00	--	--	%/Km
Safety Distance			Clearance	7.6	--	--	mm
			Creepage	8	--	--	
Safety Standard				EN62368-1 (Report) Design refer to IEC/EN60601-1 ES60601-1 (3.1 version) CAN/CSA-C22.2 No.60601-1:14-Edition 3 EN60601-1-2 Edition 4 UL/IEC62368-1 EN60335-1 EN61558-1 GB4943.1			
Safety Class				CLASS II			
MTBF				MIL-HDBK-217F@25℃ >300,000 h			

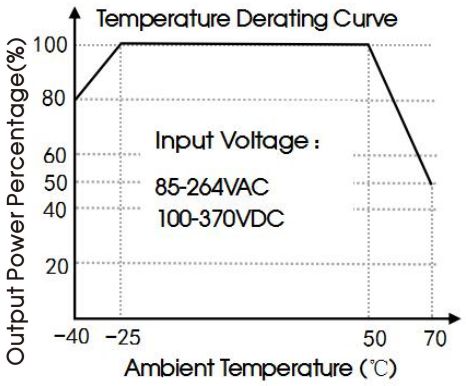
Mechanical Specifications

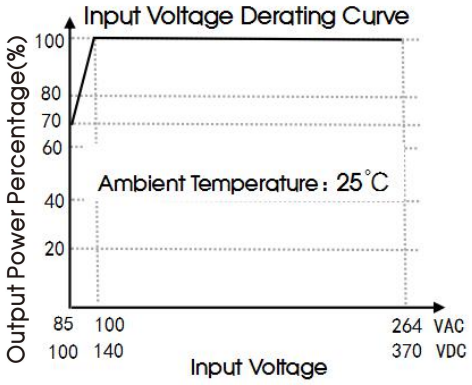
Dimension	LO65-20BxxMU	76.20 x 50.80 x 26.50 mm
	LO65-20BxxMU-C	91.40 x 60.50 x 33.30 mm
Weight	LO65-20BxxMU	95g (Typ.)
	LO65-20BxxMU-C	150g (Typ.)
Cooling method		Free air convection

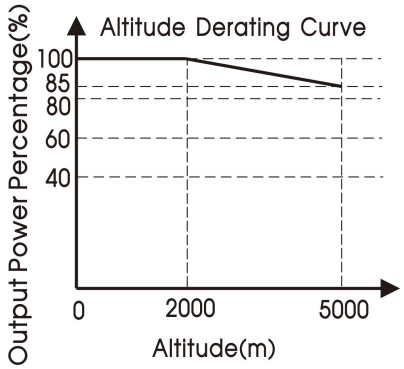
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032/EN55011 CLASS B	
	RE	CISPR32/EN55032/EN55011 CLASS B	
Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV/ Air ±15KV	Perf. Criteria A
	RS	IEC/EN61000-4-3 20V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria A
	Surge	IEC/EN61000-4-5 Line to line ±2KV	perf. Criteria A
	CS	IEC/EN61000-4-6 20Vr.m.s	perf. Criteria A
	Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11 100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	perf. Criteria B

Product Characteristic Curve

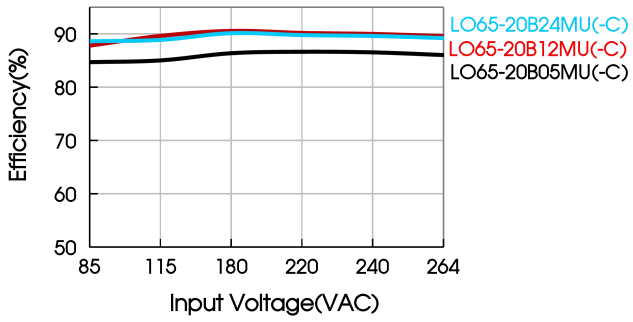




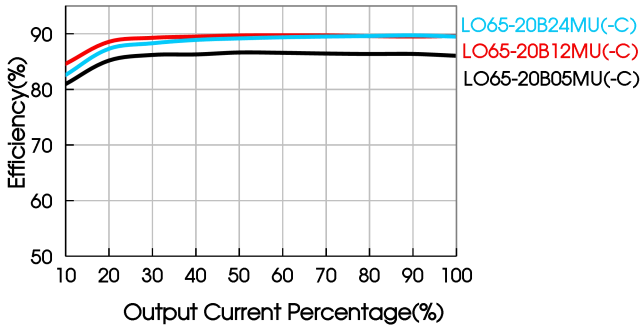


Note: ① With an AC input between 85-100VAC and a DC input between 100-140VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Efficiency Vs Input Voltage (Full Load)

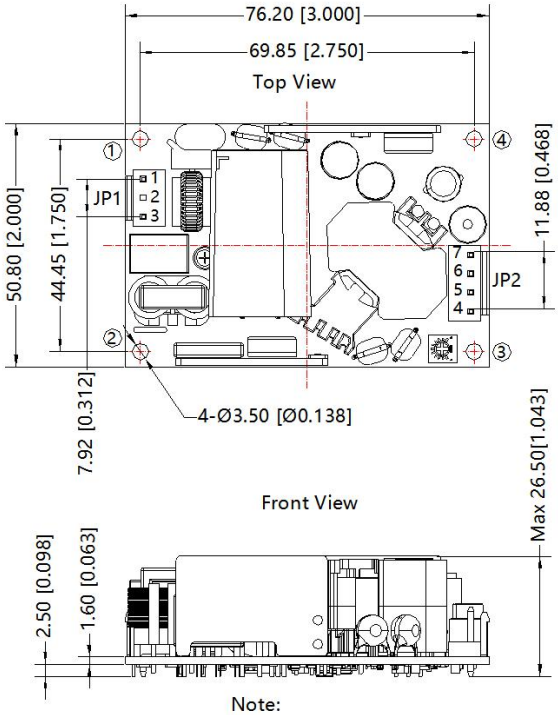


Efficiency Vs Output Load(Vin=230VAC)



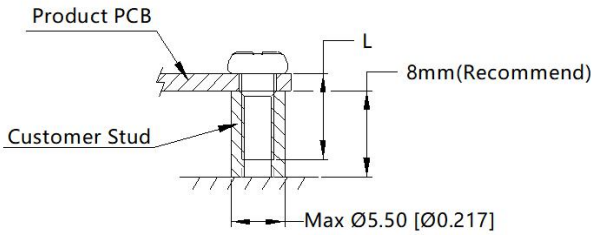
Dimensions and Recommended Layout (LO65-20BxxMU)

THIRD ANGLE PROJECTION



Pin-Out			
Connectors	Pin	Mark	Client Connectors
JP1	1	AC(L)	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	2	NoPin	
	3	AC(N)	
JP2	4	-Vo	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	5	-Vo	
	6	+Vo	
	7	+Vo	

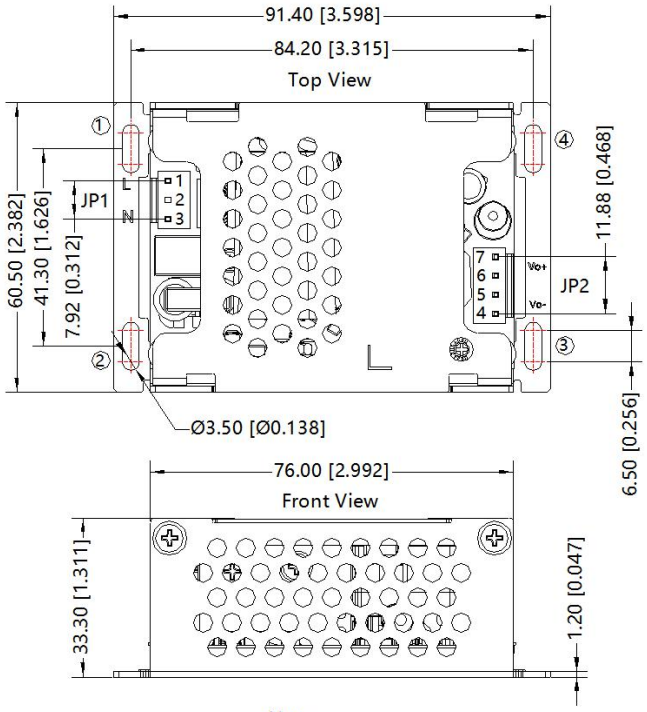
Position	Screw Spec.	L(Recommend)	Torque(max)
① - ④	M3	6mm	0.4N·m



Note:
Unit: mm[inch]
General tolerances: ±0.50[±0.020]
The layout of the device is for reference only, please refer to the actual product

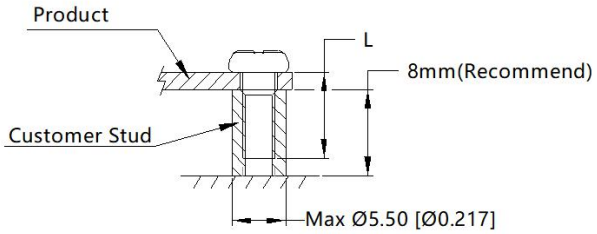
Dimensions and Recommended Layout (LO65-20BxxMU-C)

THIRD ANGLE PROJECTION



Pin-Out			
Connectors	Pin	Mark	Client Connectors
JP1	1	AC(L)	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	2	NoPin	
	3	AC(N)	
JP2	4	-Vo	Housing: JST VHR Contact: JSTSVH-21T-P1.1 or equivalent
	5	-Vo	
	6	+Vo	
	7	+Vo	

Position	Screw Spec.	L(Recommend)	Torque(max)
① - ④	M3	6mm	0.4N·m



Note:
Unit: mm[inch]
General tolerances: ±0.50[±0.020]
The layout of the device is for reference only, please refer to the actual product

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220060 (LO65-20BxxMU), 58220222 (LO65-20BxxMU-C);
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Mornsun Guangzhou Science & Technology Co., Ltd.
Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com