

# Medical

## HPA65B/D series

V1.5

## 65W Medical Power Supply

### GENERAL DESCRIPTION:

The HPA65B/D series is an external unit designed to meet medical safety standards. The series delivers 65 watts of power over a voltage range of 12V to 24V, suitable for various applications and devices.



Dimensions (L x W x H): 115 x 50 x 31mm



IP22 IP54

### ELECTRICAL CHARACTERISTICS:

Characteristic	Condition	Min.	Typ.	Max.	Unit
Nominal Input Voltage	100 / 240VAC, Single Phase	100		240	VAC
Input Voltage Range	Derate Linearly from 100% load at 90VAC to 70% load at 70VAC	70		264	VAC
Input Frequency Range	Sine Wave	47		63	Hz
Output Power	See Rating Chart			65	W
Low Line Input Current	Full Load, Vin=115VAC			1.5	A
High Line Input Current	Full Load, Vin=230VAC			0.75	A
Low Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=115VAC			50	A
High Line Input Inrush Current	Full Load, 25°C, Cool Start, Vin=230VAC			100	A
Earth Leakage Current	0.1mA @264VAC Normal Condition, 0.3mA @264VAC Single Fault Condition			0.1	mA
Average Efficiency	CoC v5 (Tier2), See Rating Chart		89		%
Line Regulation	Full Load, Vin=100~120VAC			0.5	%
Load Regulation	Vin=100~240VAC		3	5	%
Hold-Up Time	Hold up time is measured from the end of the last charging pulse to the time which the main output drops down to low limit of main output at rated load and nominal line.		12		ms
Start-Up Time	Full Load, Vin=100~240VAC			3	s
Rise Time	At 115VAC & 230VAC			50	ms
Isolation	Input to Output		4000		VAC

### PROTECTION:

Characteristic	Condition	Min.	Typ.	Max.	Unit
Short Circuit	Hiccup Mode, (Non-Latching, Auto-Recovery)				
Over Temperature	Hiccup Mode, (Non-Latching, Auto-Recovery)				
Overvoltage	Latch Mode	105		150	%
Overload / Overcurrent	Hiccup Mode, (Non-Latching, Auto-Recovery)	110		154	%

### ENVIRONMENTAL:

Characteristic	Condition	Min.	Typ.	Max.	Unit
Operating Temperature	Derate Linearly From 100% Load at 40°C to 50% Load at 70°C	-40		70	°C
Storage Temperature	Surrounding Air Temperature	-40		85	°C
Temperature Coefficient	All Condition			±0.04	%/°C
Operating Humidity	10-95% RH (Non-Condensing)	10		95	RH
Storage Humidity		0		95	RH
Operating Altitude	Up to 5,000 meters	5000			m
Vibration	Non-Operating, 5-500 Hz, 2.09 Grms, 20 minute for Each Three Axis			2.09	G

### FEATURES:

- Input Voltage Range 70-264VAC
- Operating Temperature: -40~70°C
- Suitable for BF Application
- Protection: OVP, OLP, OTP, SCP
- 2MOPP
- Meet DoE VII
- Extremely Low Leakage Current <0.1mA
- Operating Altitude: 5000M
- Built-In EMI Filter
- High Surge Immunity
- IP22
- Pass LPS
- Designed to Meet ISN, 60335 & 61558
- 3-Year Warranty

### OPTIONAL FEATURES: ( Please Contact Our Sales )

- OVC III
- IP54
- Withstand 297VAC Surge Input for 2 Minute

### APPLICATIONS:

- Medical Devices
- Laboratory Equipment
- Household Devices
- Rehabilitation Equipment

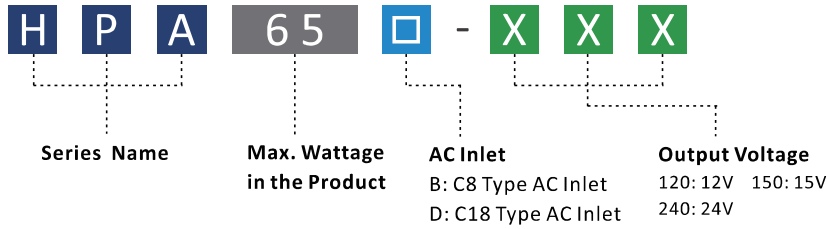
### GENERAL SPECIFICATION:

- Waterproof and Dustproof Degree: IP22
- Protection Classes: Class II
- Safety:  
IEC 60601-1 3.2 Edition, EN 60601-1, CAN/CSA-C22.2 NO. 60601-1, ANSI/AAMI ES60601-1, ANSI/AAMI HA60601-1-11, IEC 60601-1-11, CSA C22.2 NO.60601-1-11

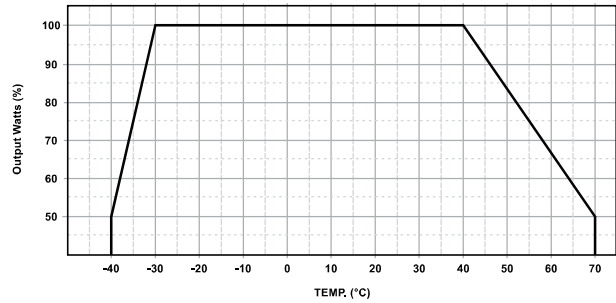
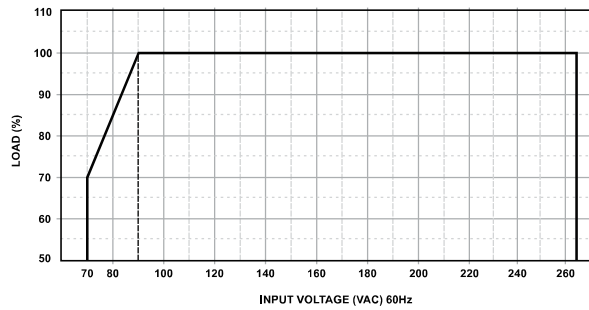
### RATING CHART:

MODEL NO.	Rated Output Voltage	Rated Output Current	Maximum Output Power	Ripple & Noise	Total Regulation	10% Load Efficiency	AVG. Efficiency	Max.No Load Consumption	Hold-Up Time (typ.)	Limited Power Source
	(VDC)	(A)	(W)	(mVp-p)	(%)	(%)	(%)	(W)	(ms)	(LPS)
HPA65□-120	12.0	5.42	65	100	±3	84.0	89.0	0.15	12	×
HPA65□-150	15.0	4.33	65	100	±3	84.0	89.0	0.15	12	×
HPA65□-180	18.0	3.61	65	120	±3	84.0	89.0	0.15	12	×
HPA65□-190	19.0	3.42	65	120	±3	84.0	89.0	0.15	12	×
HPA65□-240	24.0	2.70	65	150	±2.5	84.0	89.0	0.15	12	×

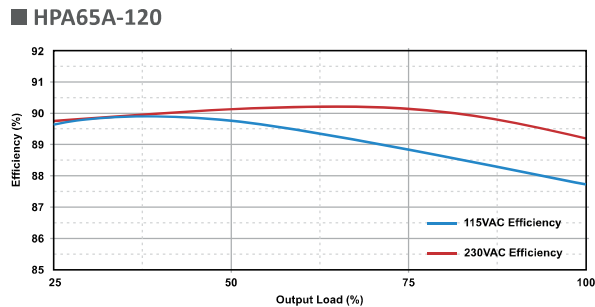
### PRODUCT CODING:



### STATIC CHARACTERISTICS & POWER DE-RATING CURVE:

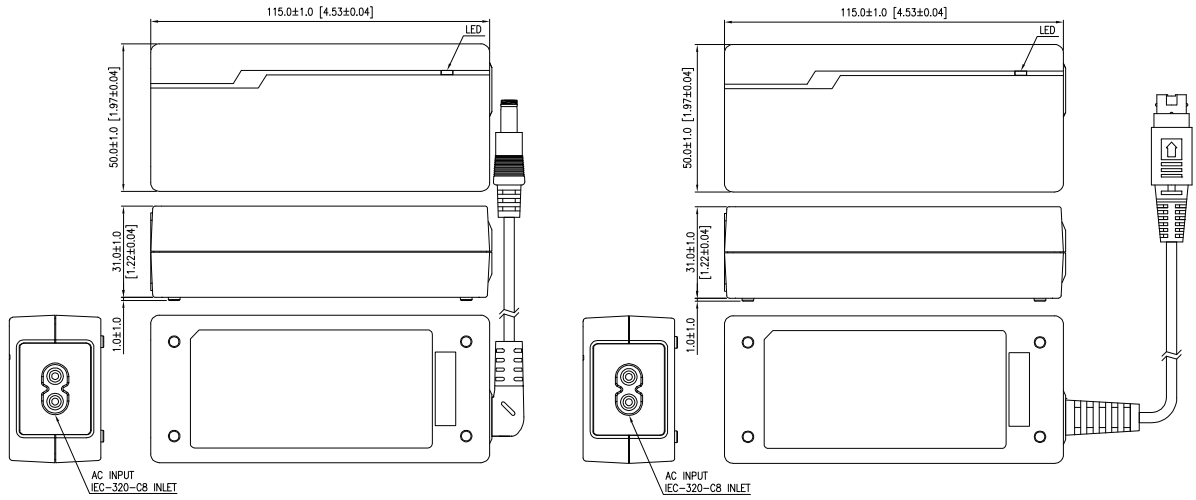


### EFFICIENCY VERSUS OUTPUT LOAD CURVE:

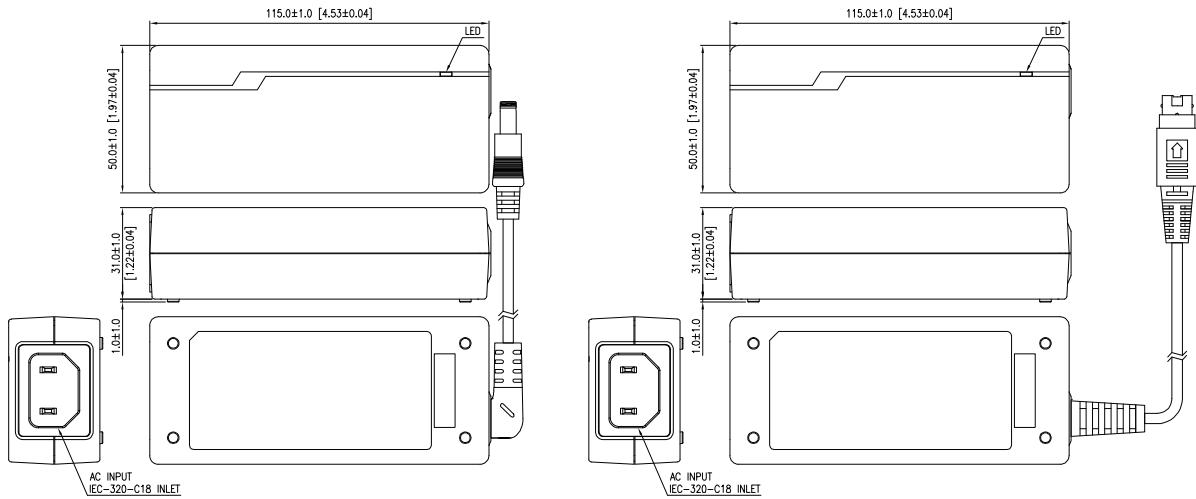


### MECHANICAL DIMENSIONS: ( UNIT: mm )

#### HPA65B



#### HPA65D



### EMC EMISSION:

MEDICAL / ITE	Parameter	Standard	Test Level
MEDICAL	Conducted	EN55011	Class B
	Radiated	EN55011	Class B
	Harmonics	EN61000-3-2	-
	Flicker	EN61000-3-3	-

\* The EMC test requires the integration of the switching power supply with the load of an end system. Consequently, variations in the application or assembly of the end system will influence the test results.

### EMC IMMUNITY:

MEDICAL / ITE	Parameter	Standard	Test Level	Criteria
MEDICAL	ESD	EN61000-4-2	15KV air discharge, 8KV discharge coupling plane	A
	RS	EN61000-4-3	-	A
	EFT	EN61000-4-4	2KV	A
	Surge	EN61000-4-5	line to line $\pm 2kV$ , line to ground $\pm 4kV$	A
	CS	EN61000-4-6	0.15 – 80(MHz)	A
	PFMF	EN61000-4-8	-	A
	Voltage Dips (230V & 100V)	EN61000-4-11	0% Ut, 0.5 cycle (10 ms) @ full load 0°/45°/90°/135°/180°/225°/270°/315°/360°	A
			0% Ut, 1 cycle (20 ms), 0° @ full load	B
			70% Ut, 25 cycle (500 ms), 0° @ full load	A
	Voltage Interruptions (230V & 100V)	EN61000-4-11	0% Ut, 250 cycle (5 s) @ full load 0°/45°/90°/135°/180°/225°/270°/315°/360°	B
Radiated Fields In Close Proximity	EN61000-4-39	-	A	

\* The EMC test requires the integration of the switching power supply with the load of an end system. Consequently, variations in the application or assembly of the end system will influence the test results.

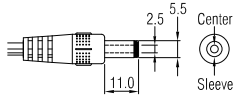
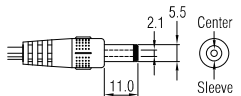
### OTHERS:

MEDICAL / ITE	Condition	Min.	Typ.	Max.	Unit
MTBF(typ.)	1 million hours based on Telcord ia SR-332(at 115 Vac, MAX. load and 25°C ambient)		1000k		h
Net Weight	HPA65A-120 with a 16AWG, 4ft standard cable		225		g

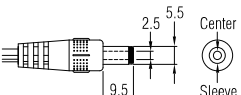
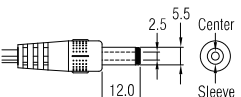
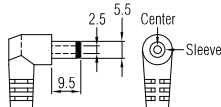
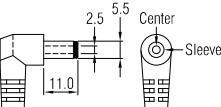
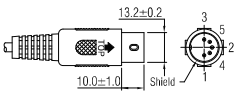
### OUTPUT CABLE RECOMMENDATION :

1. Selected output connectors and wire, please refer to the Appendix.
2. 12V are required to use AWG#16, 4FT, UL1571, 80°C output cable.
3. 15V is required to use AWG#16, 4FT, UL1571, 80°C output cable.
4. 18V~24V are required to use AWG#18, 4FT, UL1571, 80°C output cable.

### STANDARD CONNECTOR:

Barrel Female Plug	Plug PN	OD	ID	L	Standard Connection	Wire Material	Wire Type
	P01N	5.5	2.5	11	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT
	P01K	5.5	2.1	11	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT

### OPTINONAL CONNECTOR:

Barrel Female Plug	Plug PN	OD	ID	L	Standard Connection	Wire Material	Wire Type
	P01M	5.5	2.5	9.5	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT
	P01S	5.5	2.5	12	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT
Barrel Angle Female Plug	Plug PN	OD	ID	L	Standard Connection	Wire Material	Wire Type
	P02M	5.5	2.5	9.5	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT
	P02N	5.5	2.5	11	Center=OUT(+) Sleeve=RTN(-) (Tuning Fork Type)	UL1571	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT
DIN-5 Male Plug	Plug PN	Standard Connection			Wire Material	Wire Type	
	P05B	P1,P2,P4=RTN P3,P5=OUT			UL2464	12V, 15V: 16AWG/4FT 18V, 19V, 24V: 18AWG/4FT	

\* Please contact our sales team for detailed information regarding optional output connectors.