



E-Star Power Development Co., Ltd. (E-STAR)

1F., No.40, Juren Ln., Sec. 2, Sanmin Rd., Banciao Dist., New Taipei City 22069, Taiwan (R.O.C.)

Phone : 886-2-2957 5580 Fax : 886-2-2957 7473

160W Desktop type Medical power supply > GSM160A



Energy Verified
Rendement
Énergétique Vérifié



EN60601-1 ANSI/AAMI ES60601-1 IEC60601-1 TPTC004



Features

- 3 pole AC inlet IEC320-C14, Class I power unit
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/EN60601-1
- Extremely low leakage current
- No load power consumption<0.15W
- Energy efficiency level VI and meet CoC Version 5
- -30~+70°C wide range working temperature
- Protections: Short circuit / Overload / Over voltage / Over temperature
- LED indicator for power on
- Lifetime > 85 K hours
- Various DC plug quick adapter accessory available
- 3 years warranty

Applications

- Mobile clinical workstation
- Oral irrigator
- Portable hemodialysis machine
- Breath Machine
- Medical computer monitor

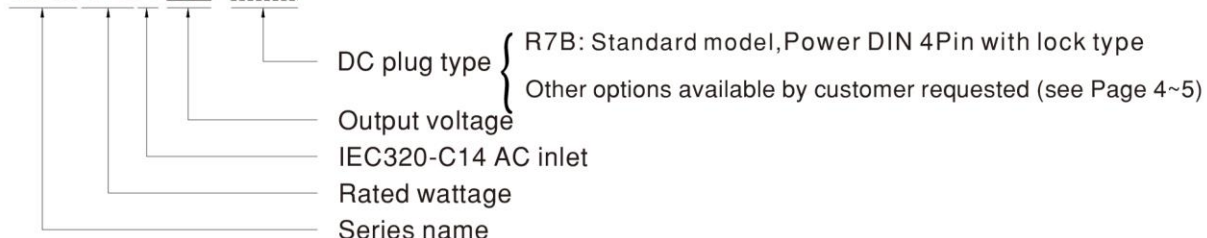
Description

GSM160A is a highly reliable, 160W desktop style single-output green medical adaptor series. This product is equipped with a 3-pin (with FG) standard IEC320-C14 power plug, adopting the input range from 80VAC to 264VAC. The entire series supplies different output voltages between 12VDC and 48VDC that can satisfy the demands for various kinds of medical electrical devices. The circuitry design meets the international medical standards (2*MOPP), having an ultra low leakage current (<100μA), fitting the medical devices in direct electrical contact with the patients.

With the efficiency up to 94% and the extremely low no-load power consumption below 0.15W, GSM160A is compliant with USA EISA 2007/DoE, Canada NRCAN, Australia and New Zealand MEPS, EU ErP, and meet Code of Conduct (CoC) Version 5. The supreme feature allows the adaptor to save the energy when it is either under the operating mode or the standby mode. The entire series utilizes the 94V-0 flame retardant plastic case. GSM160A is approved with the international medical safety certificates.

Model Encoding

GSM160A 12 -R7B





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SPECIFICATION

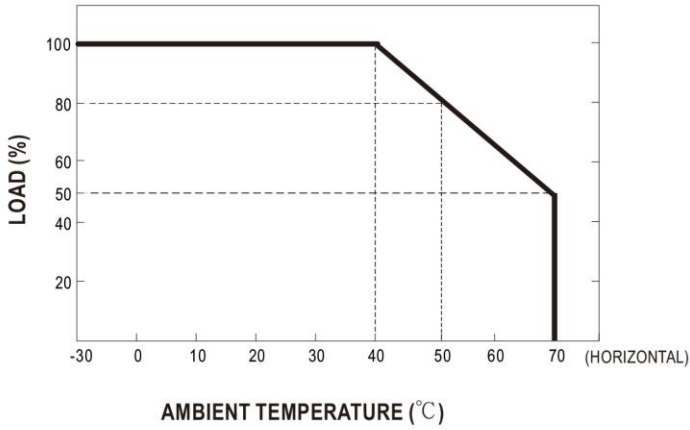
ORDER NO.		GSM160A12-R7B	GSM160A15-R7B	GSM160A20-R7B	GSM160A24-R7B	GSM160A48-R7B	
OUTPUT	SAFETY MODEL NO.	GSM160A12	GSM160A15	GSM160A20	GSM160A24	GSM160A48	
	DC VOLTAGE Note.2	12V	15V	20V	24V	48V	
	RATED CURRENT	11.5A	9.6A	8A	6.67A	3.34A	
	CURRENT RANGE	0 ~ 11.5A	0 ~ 9.6A	0 ~ 8A	0 ~ 6.67A	0 ~ 3.34A	
	RATED POWER (max.)	138W	144W	160W	160W	160W	
	RIPPLE & NOISE (max.) Note.3	80mVp-p	100mVp-p	100mVp-p	120mVp-p	150mVp-p	
	VOLTAGE TOLERANCE Note.4	±5.0%	±5.0%	±4.0%	±3.0%	±3.0%	
	LINE REGULATION Note.5	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LOAD REGULATION	±5.0%	±5.0%	±4.0%	±3.0%	±3.0%	
	SETUP, RISE TIME Note.6	2000ms, 50ms / 230VAC 2500ms, 50ms / 115VAC at full load					
HOLD UP TIME (Typ.)	24ms / 230VAC 24ms / 115VAC at full load						
INPUT	VOLTAGE RANGE Note.7	80 ~ 264VAC					
	FREQUENCY RANGE	47 ~ 63Hz					
	POWER FACTOR (Typ.)	12V,15V:PF>0.93 / 230VAC 20V,24V,48V:PF>0.94 / 230VAC PF>0.98 / 115VAC at full load					
	EFFICIENCY (Typ.)	90%	91%	92.5%	93%	94%	
	AC CURRENT (Typ.)	1.85A / 115VAC 1A / 230VAC					
	INRUSH CURRENT (Typ.)	Cold start 90A / 115VAC 110A / 230VAC					
	LEAKAGE CURRENT(max.)	Earth leakage current < 175 μ A/264VAC , Touch current <90 μ A/264VAC					
PROTECTION	OVERLOAD	105 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	105 ~ 135% rated output voltage Protection type : Shut down o/p voltage, re-power on to recover					
	OVER TEMPERATURE	Shut down o/p voltage, re-power on to recover					
ENVIRONMENT	WORKING TEMP.	-30 ~ +70 $^{\circ}$ C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20% ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85 $^{\circ}$ C, 10 ~ 95% RH non-condensing					
	TEMP. COEFFICIENT	±0.03% / $^{\circ}$ C (0~40 $^{\circ}$ C)					
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes					
	OPERATING ALTITUDE Note.8	3000 meters					
SAFETY & EMC (Note 10)	SAFETY STANDARDS	IEC60601-1, TUV EN60601-1, ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22.2 No. 60601-1:14 - Edition 3, EAC TP TC 004 approved					
	ISOLATION LEVEL	Primary-Secondary: 2xMOOPP, Primary-Earth: 1xMOOPP					
	WITHSTAND VOLTAGE Note.9	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25 $^{\circ}$ C / 70% RH					
	EMC EMISSION	Parameter	Standard			Test Level / Note	
		Conducted emission	EN55011 (CISPR11), FCC PART 15 / CISPR22, CAN ICES-3(B)/NMB-3(B)			Class B	
		Radiated emission	EN55011 (CISPR11), FCC PART 15 / CISPR22, CAN ICES-3(B)/NMB-3(B)			Class B	
		Harmonic current	EN61000-3-2			Class A	
		Voltage flicker	EN61000-3-3			----	
	EMC IMMUNITY	EN60601-1-2, EN61204-3					
		Parameter	Standard			Test Level / Note	
		ESD	EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz)	
		RF field susceptibility	EN61000-4-3			Level 3, 2KV	
		EFT bursts	EN61000-4-4			Level 3, 2KV	
		Surge susceptibility	EN61000-4-5			Level 3, 1KV/Line-Line , 2KV/Line-FG	
Conducted susceptibility		EN61000-4-6			Level 3, 10V		
Magnetic field immunity		EN61000-4-8			Level 4, 30A/m		
Voltage dip, interruption	EN61000-4-11			100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods			
OTHERS	MTBF	239.4K hrs min. MIL-HDBK-217F(25 $^{\circ}$ C)					
	DIMENSION	175*72*35mm (L*W*H)					
	PACKING	0.66Kg; 20pcs/14.2Kg/0.95CUFT					
CONNECTOR	PLUG	See page 4~5 ; Other type available by customer requested					
	CABLE	See page 4~5 ; Other type available by customer requested					
NOTE	<p>1. All parameters are specified at 230VAC input, rated load, 25$^{\circ}$C 70% RH ambient. 2. DC voltage: The output voltage set at point measure by plug terminal & 50% load. 3. Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1μf & 47μf capacitor. 4. Tolerance: includes set up tolerance, line regulation, load regulation. 5. Line regulation is measured from low line to high line at rated load. 6. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time. 7. Derating may be needed under low input voltages. Please check the derating curve for more details. 8. The ambient temperature derating of 3.5$^{\circ}$C/1000m with fanless models and of 5$^{\circ}$C/1000m with fan models for operating altitude higher than 2000m(6500ft). 9. Optional for 1.5KVAC with BF rated. 10. The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."</p>						



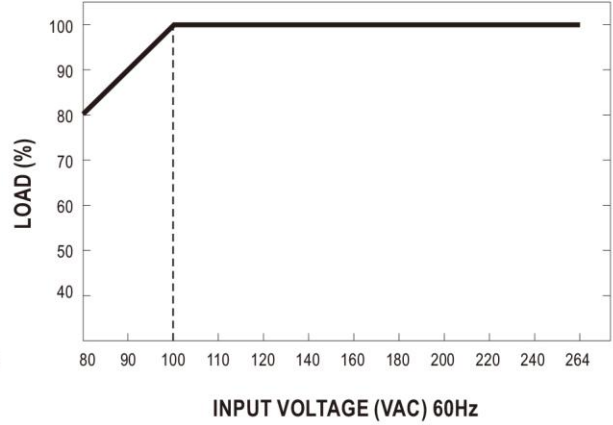
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Derating Curve

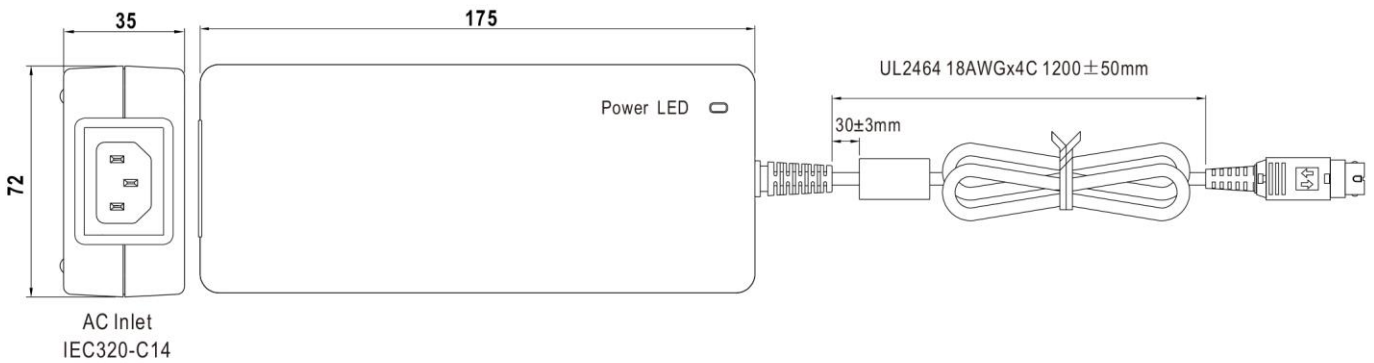


Static Characteristics



Mechanical Specification

Case No. GS160A
Unit:mm



DC output plug

Standard plug: R7B

R7B		Pin Assignment											
			<table border="1"> <thead> <tr> <th>PIN NO.</th> <th>OUTPUT</th> </tr> </thead> <tbody> <tr><td>1</td><td>+Vo</td></tr> <tr><td>2</td><td>-Vo</td></tr> <tr><td>3</td><td>-Vo</td></tr> <tr><td>4</td><td>+Vo</td></tr> </tbody> </table>	PIN NO.	OUTPUT	1	+Vo	2	-Vo	3	-Vo	4	+Vo
PIN NO.	OUTPUT												
1	+Vo												
2	-Vo												
3	-Vo												
4	+Vo												
KYCON KPPX-4P equivalent		Outer shell connected to AC FG -V not connected to AC FG											

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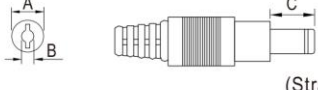

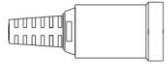




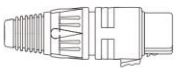


◎ DC plug changeable through:

- (1) Customization of the standard part with an optional DC plug according to the table (MOQ applicable)
- (2) Quick adapter accessory (sold separately without MOQ)

Example quick adapter accessory:




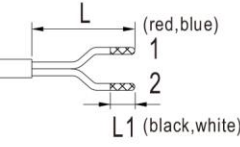
◎ Optional DC plug: (Available in customized cable or quick adapter)

Tuning Fork Style	Type No.	A OD	B ID	C L	Quick Adapter Accessory	
  (Straight)	P1J	5.5	2.1	11.0	Available for 24 ~ 48V (Current rating: 7.5A max.)	
	P1M	5.5	2.5	11.0		
Min. DIN 4 Pin with Lock (female)	Type No.	Pin Assignment				
   KYCON KPJX-CM-4S equivalent	R7BF	PIN No.	Output		None	
		1	+Vo			
		2	-Vo			
		3	-Vo			
<th>DIN 5 Pin (male)</th> <th>Type No.</th> <th colspan="2">Pin Assignment</th> <th></th> <th></th>	DIN 5 Pin (male)	Type No.	Pin Assignment			
	   R1B	PIN No.	Output		None	
		1	-Vo			
		2	-Vo			
		3	+Vo			
4		-Vo				
<th>NEUTRIK XLR NC4FX equivalent</th> <th>Type No.</th> <th colspan="2">Pin Assignment</th> <th></th> <th></th>	NEUTRIK XLR NC4FX equivalent	Type No.	Pin Assignment			
	   MIC4	PIN No.	Output		None	
		1	+Vo			
		2	+Vo			
3		-Vo				
<th>MOLEX 39-01-2060 (4.2mm) equivalent</th> <th>Type No.</th> <th colspan="2">Pin Assignment</th> <th></th> <th></th>	MOLEX 39-01-2060 (4.2mm) equivalent	Type No.	Pin Assignment			
	   FG not connected to output connector	PIN No.	Output		None	
		1	+Vo			
		2	+Vo			
		3	+Vo			
		4	-Vo			
5		-Vo				
6	-Vo					



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AMP 1-480702-0 (6.35mm) equivalent	Type No.	Pin Assignment		Quick Adapter Accessory
		PIN No.	Output	
 <p>FG not connected to output connector</p>	C4P	1	+Vo	None
		2	+Vo	
		3	-Vo	
		4	-Vo	
Stripped and tinned leads	Type No.	Pin Assignment		Quick Adapter Accessory
 <p>Length of Land L1 by request (MW's standard length, L: <u>25</u> mm, L1: <u>5</u> mm)</p>	by customer	1	+Vo	
		2	-Vo	