



Energy Verified  
Rendement  
Énergétique Vérifié



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



## ■ 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
- 3 years warranty

## ■ Applications

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

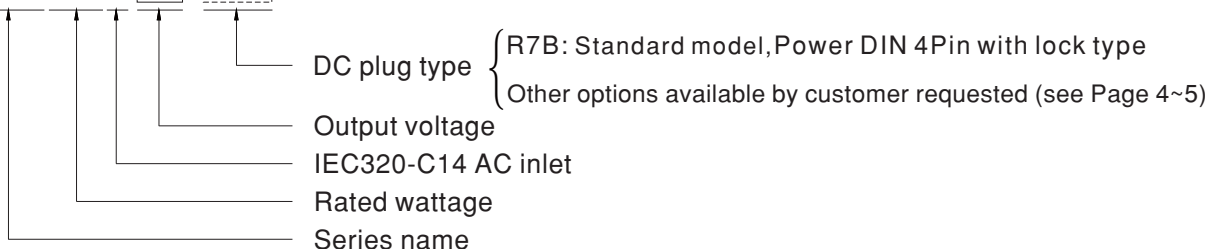
## ■ Description

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

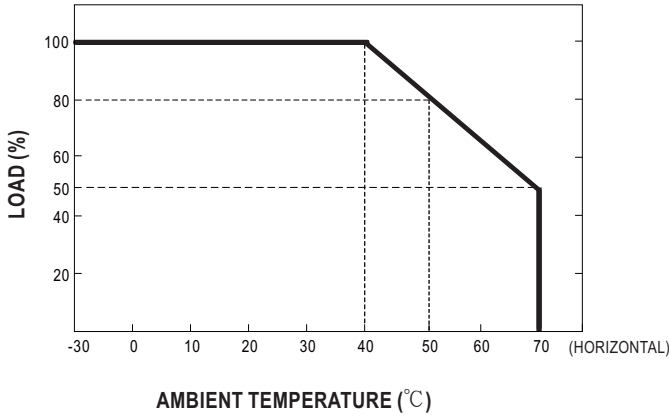
**GSM160A 12 - R7B**



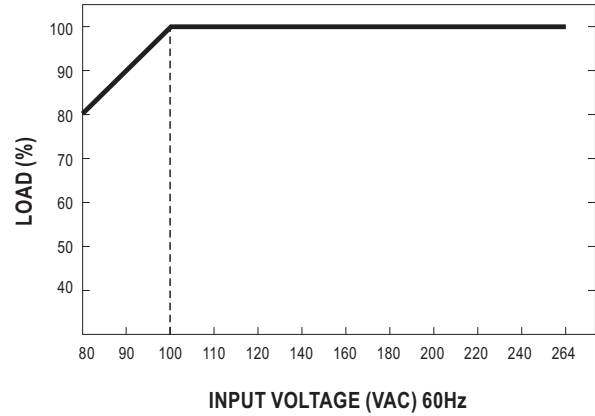
## SPECIFICATION

ORDER NO.	GSM160A12-R7B	GSM160A15-R7B	GSM160A20-R7B	GSM160A24-R7B	GSM160A48-R7B	
OUTPUT	SAFETY MODEL NO.	GSM160A12	GSM160A15	GSM160A20	GSM160A24	GSM160A48
	DC VOLTAGE <small>Note.2</small>	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.) <small>Note.3</small>	80mVp-p	100mVp-p	100mVp-p	120mVp-p	150mVp-p
	VOLTAGE TOLERANCE <small>Note.4</small>	±5.0%	±5.0%	±4.0%	±3.0%	±3.0%
	LINE REGULATION <small>Note.5</small>	±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 <small>Note.6</small>	2000ms, 50ms / 230VAC      2500ms, 50ms / 115VAC at full load				
HOLD UP TIME (Typ.)	24ms / 230VAC      24ms / 115VAC at full load					
INPUT	VOLTAGE RANGE <small>Note.7</small>	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    110A / 230VAC				
LEAKAGE CURRENT(max.)	Earth leakage current < 115 $\mu$ A/264VAC , Touch current <90 $\mu$ 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 <small>Note.8</small>	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: 2xMOPP, Primary-Earth:1xMOPP				
	WITHSTAND VOLTAGE <small>Note.9</small>	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	EN55024 , EN60601-1-2, EN61204-3				
Parameter		Standard			Test Level / Note	
ESD		EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact	
RF field susceptibility		EN61000-4-3			Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )	
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/1.06CUFT				
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<math>^{\circ}</math>C 70% RH ambient.</p> <p>2. DC voltage: The output voltage set at point measure by plug terminal &amp; 50% load.</p> <p>3. Ripple &amp; noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1<math>\mu</math>f &amp; 47<math>\mu</math>f capacitor.</p> <p>4. Tolerance: includes set up tolerance, line regulation, load regulation.</p> <p>5. Line regulation is measured from low line to high line at rated load.</p> <p>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.</p> <p>7. Derating may be needed under low input voltages. Pleas check the derating curve for more details.</p> <p>8. The ambient temperature derating of 3.5<math>^{\circ}</math>C/1000m with fanless models and of 5<math>^{\circ}</math>C/1000m with fan models for operating altitude higher than 2000m(6500ft).</p> <p>9. Optional for 1.5KVAC with BF rated.</p> <p>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." (as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a>)</p>					

### Derating Curve

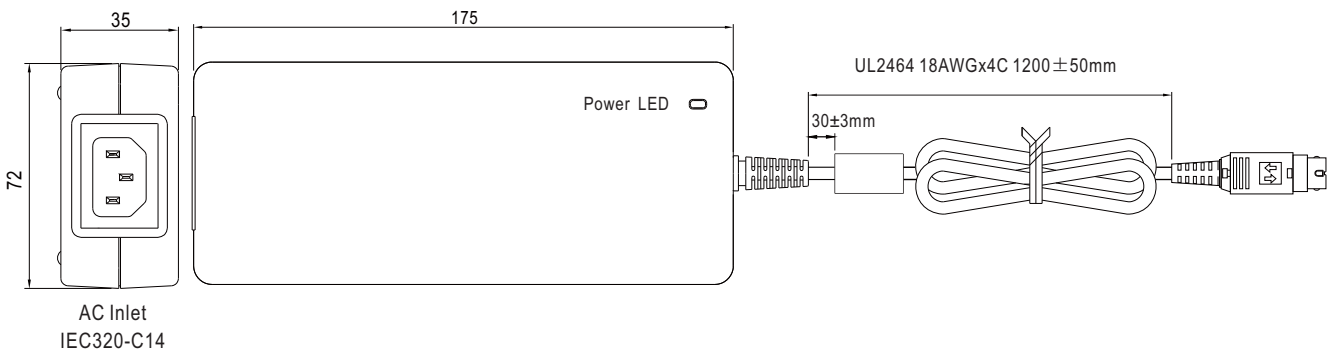


### Static Characteristics



### Mechanical Specification

Case No. GS160A  
Unit:mm

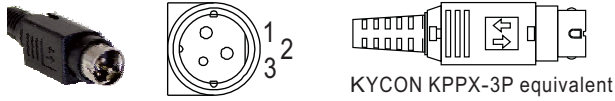
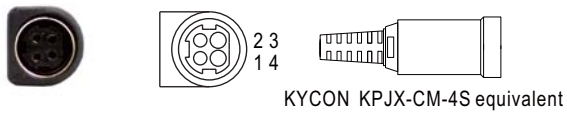
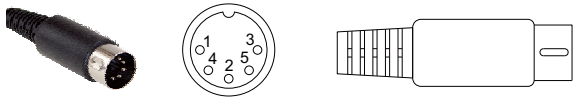
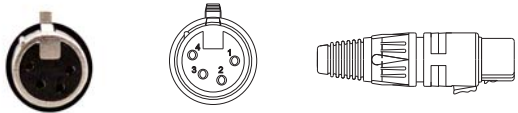
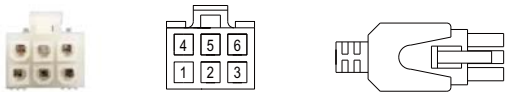
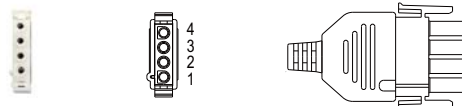



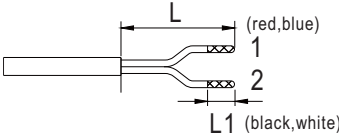
### DC output plug

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											

© Optional DC plug:

Min. DIN 3 Pin with Lock (male)	Type No.	Pin Assignment	
		PIN No.	Output
 <p>KYCON KPPX-3P equivalent</p>	R6B	1	+Vo
		2	-Vo
		3	+Vo
Min. DIN 4 Pin with Lock (female)	Type No.	Pin Assignment	
 <p>KYCON KPJX-CM-4S equivalent</p>	R7BF	1	+Vo
		2	-Vo
		3	-Vo
		4	+Vo
DIN 5 Pin (male)	Type No.	Pin Assignment	
	R1B	1	-Vo
		2	-Vo
		3	+Vo
		4	-Vo
		5	+Vo
NEUTRIK XLR NC4FX equivalent	Type No.	Pin Assignment	
	MIC4	1	+Vo
		2	+Vo
		3	-Vo
		4	-Vo
MOLEX 39-01-2060 (4.2mm) equivalent	Type No.	Pin Assignment	
 <p>FG not connected to output connector</p>	C6P	1	+Vo
		2	+Vo
		3	+Vo
		4	-Vo
		5	-Vo
		6	-Vo
AMP 1-480702-0 (6.35mm) equivalent	Type No.	Pin Assignment	
 <p>FG not connected to output connector</p>	C4P	1	+Vo
		2	+Vo
		3	-Vo
		4	-Vo

Stripped and tinned leads	Type No.	Pin Assignment	
		PIN No.	Output
  <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

■ **Installation Manual**

Please refer to : <http://www.meanwell.com/manual.html>