



BS EN/EN60601-1/-1-11 ANSI/AAMI ES60601-1/-1-11 IEC60601-1/-1-11



TPTC004



## ■ Features

- 2 pole AC inlet IEC320-C8, Class II power unit
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1/-1-11 and IEC/BS EN/EN60601-1/-1-11
- 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 > 90 K hours
- Various DC plug quick adapter accessory available (Plug kit sold sperately, please refer to : [https://www.meanwell.com/upload/pdf/DC\\_plug.pdf](https://www.meanwell.com/upload/pdf/DC_plug.pdf) )
- 3 years warranty

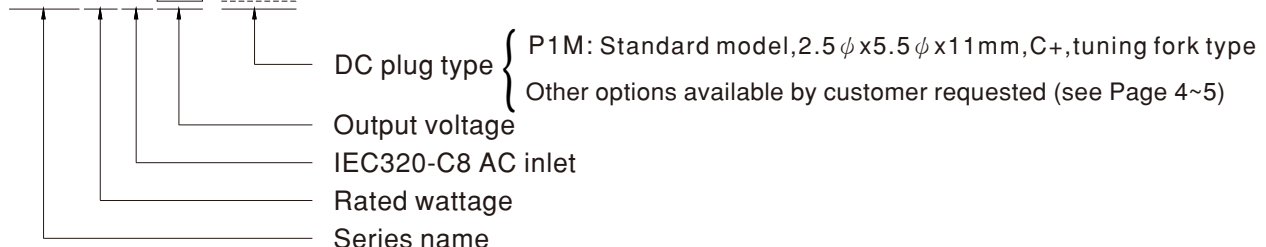
## ■ Description

GSM90B is a highly reliable, 90W desktop style single-output green medical adaptor series. This product is equipped with a 2-pin (no FG) standard IEC320-C8 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 91% and the extremely low no-load power consumption below 0.15W, GSM90B 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, providing the double insulation that effectively prevents electrical shock. GSM90B is approved with the international medical safety certificates.

## ■ Model Encoding

**GSM90B 12 -P1M**



## ■ Applications

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

## ■ GTIN CODE

MW Search: <https://www.meanwell.com/serviceGTIN.aspx>

**SPECIFICATION**

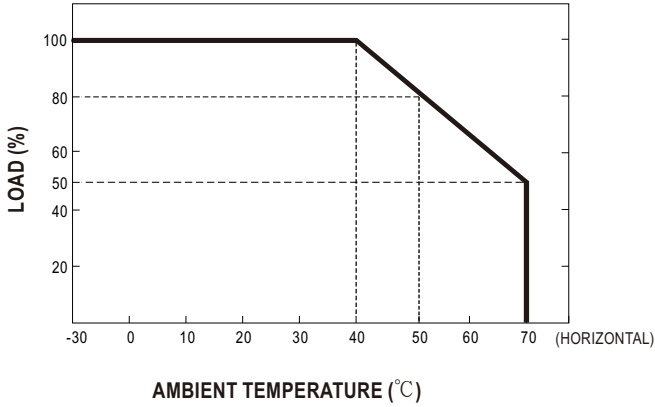
ORDER NO.	GSM90B12-P1M	GSM90B15-P1M	GSM90B19-P1M	GSM90B24-P1M	GSM90B48-P1M	
OUTPUT	SAFETY MODEL NO.	GSM90B12	GSM90B15	GSM90B19	GSM90B24	GSM90B48
	DC VOLTAGE <span style="float:right">Note.2</span>	12V	15V	19V	24V	48V
	RATED CURRENT	6.67A	6A	4.74A	3.75A	1.87A
	CURRENT RANGE	0 ~ 6.67A	0 ~ 6A	0 ~ 4.74A	0 ~ 3.75A	0 ~ 1.87A
	RATED POWER (max.)	80W	90W	90W	90W	90W
	RIPPLE & NOISE (max.) <span style="float:right">Note.3</span>	120mVp-p	120mVp-p	120mVp-p	180mVp-p	200mVp-p
	VOLTAGE TOLERANCE <span style="float:right">Note.4</span>	±5.0%	±5.0%	±4.0%	±3.0%	±2.5%
	LINE REGULATION <span style="float:right">Note.5</span>	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±5.0%	±5.0%	±4.0%	±3.0%	±2.5%
	SETUP, RISE TIME <span style="float:right">Note.6</span>	1000ms, 50ms / 230VAC      1500ms, 50ms / 115VAC at full load				
HOLD UP TIME (Typ.)	30ms / 230VAC      20ms / 115VAC at full load					
INPUT	VOLTAGE RANGE <span style="float:right">Note.7</span>	80 ~ 264VAC    113 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	PF>0.91 / 230VAC    PF>0.95 / 115VAC at full load				
	EFFICIENCY (Typ.)	88%	89%	89%	90%	91%
	AC CURRENT (Typ.)	1.3A / 115VAC    0.6A / 230VAC				
	INRUSH CURRENT (Typ.)	Cold start 30A / 115VAC    60A / 230VAC				
	LEAKAGE CURRENT(max.)	Touch current < 100µA/264VAC				
PROTECTION	OVERLOAD	110 ~ 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°C (Refer to "Derating Curve")				
	WORKING HUMIDITY	20% ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH non-condensing				
	TEMP. COEFFICIENT	±0.03% / °C (0 ~ 40°C)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
OPERATING ALTITUDE <span style="float:right">Note.8</span>	3000 meters					
SAFETY & EMC (Note. 9)	SAFETY STANDARDS	IEC 60601-1:2005+A1+A2; IEC 60601-1-11:2015+A1,TUV BS EN/ EN 60601-1:2006+A1+A12+A2; BS EN/ EN 60601-1-11:2015+A1 ANSI/AAMI ES60601-1:2005+A2; ANSI/AAMI HA60601-1-11+A1,CAN/CSA C22.2 No. 60601-1:2014+A2; CSA C22.2 NO. 60601-1-11:2015+A1 EAC TP TC 004 approved				
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP				
	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC				
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH				
	EMC EMISSION	Parameter	Standard			Test Level / Note
		Conducted emission	BS EN/EN55011 (CISPR11), FCC PART 15 / CISPR22, CAN ICES-3(B)/NMB-3(B)			Class B
		Radiated emission	BS EN/EN55011 (CISPR11), FCC PART 15 / CISPR22, CAN ICES-3(B)/NMB-3(B)			Class B
		Harmonic current	BS EN/EN61000-3-2			Class A
	Voltage flicker	BS EN/EN61000-3-3			-----	
	EMC IMMUNITY	BS EN/EN60601-1-2, BS EN/EN61204-3				
		Parameter	Standard			Test Level / Note
		ESD	BS EN/EN61000-4-2			Level 4, 15KV air ; Level 4, 8KV contact
		RF field susceptibility	BS EN/EN61000-4-3			Level 3, 10V/m( 80MHz~2.7GHz ) Table 9, 9~28V/m( 385MHz~5.78GHz )
EFT bursts		BS EN/EN61000-4-4			Level 3, 2KV	
Surge susceptibility		BS EN/EN61000-4-5			Level 3, 1KV/Line-Line	
Conducted susceptibility		BS EN/EN61000-4-6			Level 3, 10V	
Magnetic field immunity		BS EN/EN61000-4-8			Level 4, 30A/m	
Voltage dip, interruption	BS EN/EN61000-4-11			100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods		
OTHERS	MTBF	2743.3K hrs min.    Telcordia SR-332 (Bellcore) ; 353.3K hrs min.    MIL-HDBK-217F (25°C)				
	DIMENSION	145*60*32mm (L*W*H)				
	PACKING	0.45Kg; 30pcs/14.5Kg/0.9CUFT				
CONNECTOR	PLUG	See page 4-5 ; Other type available by customer requested				
	CABLE	See page 4-5 ; Other type available by customer requested				

**NOTE**

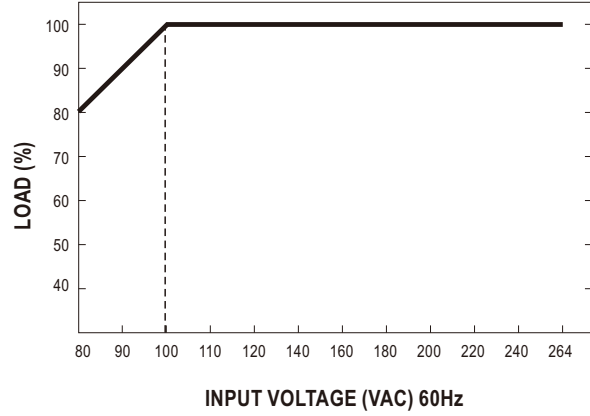
- All parameters are specified at 230VAC input, rated load, 25°C 70% RH ambient.
- DC voltage: The output voltage set at point measure by plug terminal & 50% load.
- Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1 µF & 47 µF capacitor.
- Tolerance: includes set up tolerance, line regulation, load regulation.
- Line regulation is measured from low line to high line at rated load.
- 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.
- Derating may be needed under low input voltage. Please check the derating curve for more details.
- The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).
- 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 [https://www.meanwell.com/Upload/PDF/EMI\\_statement\\_en.pdf](https://www.meanwell.com/Upload/PDF/EMI_statement_en.pdf))

※ Product Liability Disclaimer : For detailed information, please refer to <https://www.meanwell.com/serviceDisclaimer.aspx>

### Derating Curve



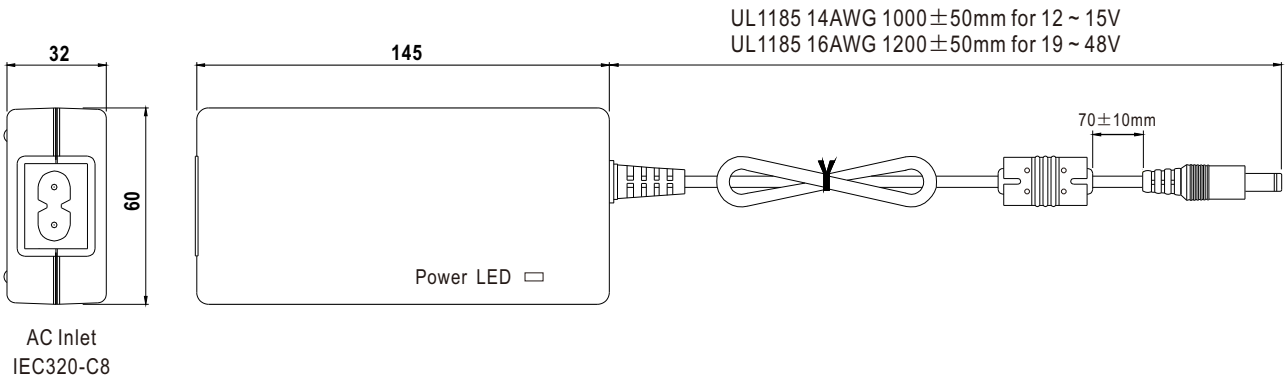
### Static Characteristics



### Mechanical Specification

(Unit: mm, tolerance  $\pm 1$ mm)

Case No. GS90A



### DC output plug

☉ Standard plug: P1M

P1M		Pin Assignment	
		Outside	Inside

◎ DC plug changeable through:



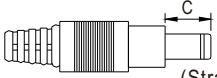
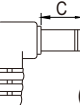
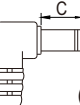


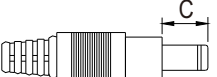
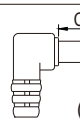
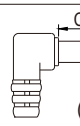


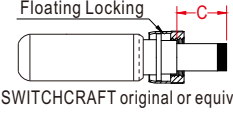


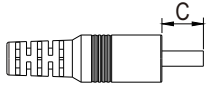

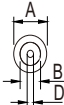
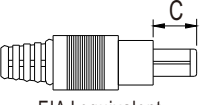
- (1) Customization of the standard part with an optional DC plug according to the table (MOQ applicable)
- (2) Quick adapter accessory (sold separately without MOQ)





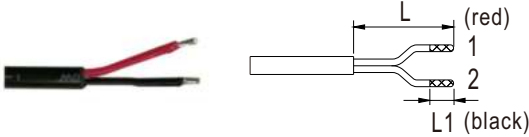
Please refer to below table and online selection guide : [https://www.meanwell.com/upload/pdf/DC\\_plug.pdf](https://www.meanwell.com/upload/pdf/DC_plug.pdf)

Example quick adapter accessory:



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

Tuning Fork Style		Type No.	A	B	C	Quick Adapter Accessory		
			OD	ID	L			
 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>A B</p> </div> <div style="text-align: center;">  <p>C (Straight)</p> </div> </div>	P1I	5.5	2.1	9.5	Available (Current rating: 7.5A max.)			
	P1L	5.5	2.5	9.5				
	P1J	5.5	2.1	11.0				
	P1JR	5.5	2.1	11.0				
	P1IR	5.5	2.1	9.5				
	P1LR	5.5	2.5	9.5				
 <div style="text-align: center;">  <p>C (Right-angled)</p> </div>	P1MR	5.5	2.5	11.0				
	Barrel Style		Type No.	A	B	C	None	
				OD	ID	L		
	 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>A B</p> </div> <div style="text-align: center;">  <p>C (Straight)</p> </div> </div>	P2I	5.5	2.1	9.5			
		P2J	5.5	2.1	11.0			
		P2L	5.5	2.5	9.5			
P2M		5.5	2.5	11.0				
P2IR		5.5	2.1	9.5				
P2JR		5.5	2.1	11.0				
P2LR		5.5	2.5	9.5				
P2MR		5.5	2.5	11.0				
 <div style="text-align: center;">  <p>C (Right-angled)</p> </div>								
	Lock Style		Type No.	A	B	C		None
				OD	ID	L		
	 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>A B</p> </div> <div style="text-align: center;">  <p>Floating Locking SWITCHCRAFT original or equivalent C</p> </div> </div>	P2S(S761K)	5.53	2.03	12.06			
P2K(761K)		5.53	2.54	12.06				
P2C(S760K)		5.53	2.03	9.52				
P2D(760K)		5.53	2.54	9.52				
Min. Pin Style		Type No.	A	B	C	None		
			OD	ID	L			
 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>A B</p> </div> <div style="text-align: center;">  <p>C EIAJ equivalent</p> </div> </div>	P3A	2.35	0.7	11.0				
	P3B	4.0	1.7	11.0				
	P3C	4.75	1.7	11.0				
Center Pin Style		Type No.	A	B	C	D	None	
			OD	ID	L	Center Pin		
 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>A B D</p> </div> <div style="text-align: center;">  <p>C EIAJ equivalent</p> </div> </div>	P4A	5.5	3.4	11.0	1.0			
	P4B	6.5	4.4	11.0	1.4			
	P4C	7.4	5.1	11.0	0.6			

Min. DIN 3 Pin with Lock (male)	Type No.	Pin Assignment		Quick Adapter Accessory
		PIN No.	Output	
 KYCON KPPX-3P equivalent	R6B	1	+Vo	None
		2	-Vo	
		3	+Vo	
Min. DIN 4 Pin with Lock (male)	Type No.	Pin Assignment		Available (Current rating: 7.5A max.)
 KYCON KPPX-4P equivalent	R7B	1	+Vo	
		2	-Vo	
		3	-Vo	
		4	+Vo	
Min. DIN 4 Pin with Lock (female)	Type No.	Pin Assignment		None
 KYCON KPJX-CM-4S equivalent	R7BF	1	+Vo	
		2	-Vo	
		3	-Vo	
		4	+Vo	
DIN 5 Pin (male)	Type No.	Pin Assignment		None
	R1B	1	-Vo	
		2	-Vo	
		3	+Vo	
		4	-Vo	
		5	+Vo	
Stripped and tinned leads	Type No.	Pin Assignment		None
 Length of Land L1 by request (MW's standard length, L: <u>25</u> mm, L1: <u>5</u> mm) ( NOTE: The wire color is for reference only, please refer to the actual product)	by customer	1	+Vo	
		2	-Vo	

■ **Installation Manual**

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