



## ■ Features

- Universal AC input / Full range
- 2 pole AC inlet IEC320-C8
- High efficiency up to 91.5%
- Low leakage current  $<50\mu A$
- Protections: Short circuit / Overload / Over voltage/ Over temperature
- Fully enclosed plastic case
- Medical safety approved ( $2\times$  MOPP between primary to secondary)
- Class II power (without earth pin)
- LED indicator for power on
- No load power consumption  $<0.1W$
- ErP step2 compliant (level V)
- Meet EISA 2007 (Energy Independence and Security Act)
- 100% full load burn-in test
- Optional lock type DC plug
- 3 years warranty

## ■ Applications

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

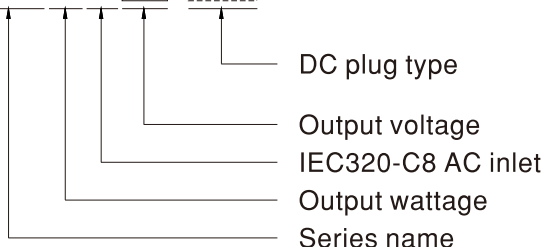
## ■ Description

GSM60B is a highly reliable, 60W 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 5VDC and 48VDC that can satisfy the demands for various kinds of medical electrical devices. The circuitry design meets the international medical standards ( $2\times$  MOPP), having an ultra low leakage current ( $<50\mu A$ ), fitting the medical devices in direct electrical contact with the patients.

With the efficiency up to 91.5% and the extremely low no-load power consumption below 0.1W, the design of GSM60B observes the latest energy regulation (Level V); 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. GSM60B is approved with the international medical safety certificates.

## ■ Model Encoding

**GSM60 B 05 - P1J**

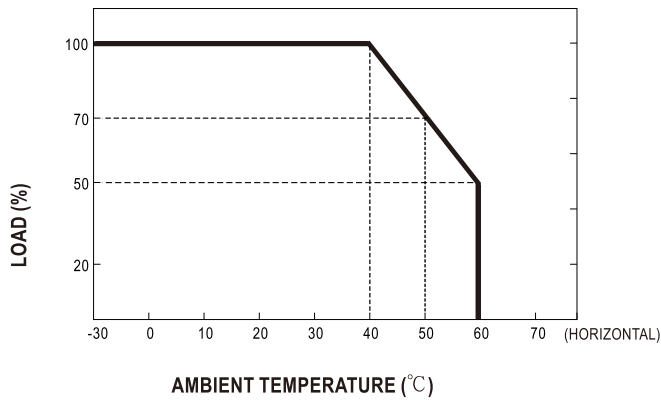




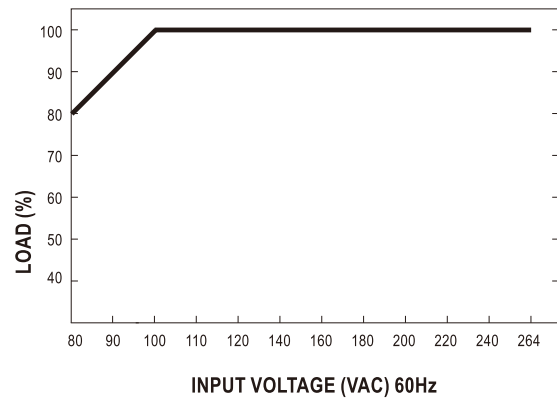
## SPECIFICATION

| ORDER NO.                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | GSM60B05-P1J                                                                                                                                                                                        | GSM60B07-P1J | GSM60B09-P1J | GSM60B12-P1J | GSM60B15-P1J | GSM60B18-P1J | GSM60B24-P1J | GSM60B48-P1J |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OUTPUT                    | SAFETY MODEL NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | GSM60B05                                                                                                                                                                                            | GSM60B07     | GSM60B09     | GSM60B12     | GSM60B15     | GSM60B18     | GSM60B24     | GSM60B48     |
|                           | DC VOLTAGE                      Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5V                                                                                                                                                                                                  | 7.5V         | 9V           | 12V          | 15V          | 18V          | 24V          | 48V          |
|                           | RATED CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6A                                                                                                                                                                                                  | 6A           | 6A           | 5A           | 4A           | 3.33A        | 2.5A         | 1.25A        |
|                           | CURRENT RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0 ~ 6A                                                                                                                                                                                              | 0 ~ 6A       | 0 ~ 6A       | 0 ~ 5A       | 0 ~ 4A       | 0 ~ 3.33A    | 0 ~ 2.5A     | 0 ~ 1.25A    |
|                           | RATED POWER (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30W                                                                                                                                                                                                 | 45W          | 54W          | 60W          | 60W          | 60W          | 60W          | 60W          |
|                           | RIPPLE & NOISE (max.) Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 100mVp-p                                                                                                                                                                                            | 100mVp-p     | 100mVp-p     | 100mVp-p     | 100mVp-p     | 150mVp-p     | 180mVp-p     | 240mVp-p     |
|                           | VOLTAGE TOLERANCE Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ± 5.0%                                                                                                                                                                                              | ± 5.0%       | ± 5.0%       | ± 3.0%       | ± 3.0%       | ± 3.0%       | ± 3.0%       | ± 2.5%       |
|                           | LINE REGULATION              Note.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ± 1.0%                                                                                                                                                                                              | ± 1.0%       | ± 1.0%       | ± 1.0%       | ± 1.0%       | ± 1.0%       | ± 1.0%       | ± 1.0%       |
|                           | LOAD REGULATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ± 5.0%                                                                                                                                                                                              | ± 5.0%       | ± 5.0%       | ± 3.0%       | ± 3.0%       | ± 3.0%       | ± 3.0%       | ± 2.5%       |
|                           | SETUP, RISE TIME              Note.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1000ms, 30ms / 230VAC              1500ms, 30ms / 115VAC    at full load                                                                                                                            |              |              |              |              |              |              |              |
| HOLD UP TIME (Typ.)       | 50ms / 230VAC              15ms / 115VAC    at full load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                     |              |              |              |              |              |              |              |
| INPUT                     | VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 80 ~ 264VAC    120 ~ 370VDC                                                                                                                                                                         |              |              |              |              |              |              |              |
|                           | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 47 ~ 63Hz                                                                                                                                                                                           |              |              |              |              |              |              |              |
|                           | EFFICIENCY (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 81.5%                                                                                                                                                                                               | 86%          | 87.5%        | 88%          | 88.5%        | 89%          | 90%          | 91.5%        |
|                           | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.4A / 115VAC              1A / 230VAC                                                                                                                                                              |              |              |              |              |              |              |              |
|                           | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 30A / 115VAC              65A / 230VAC                                                                                                                                                              |              |              |              |              |              |              |              |
|                           | LEAKAGE CURRENT(max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Touch current < 50 $\mu$ A/264VAC                                                                                                                                                                   |              |              |              |              |              |              |              |
| PROTECTION                | OVERLOAD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 105 ~ 160% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed                                                                             |              |              |              |              |              |              |              |
|                           | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.25 ~ 6.75V    7.88 ~ 10.13V    9.45 ~ 12.15V    12.6 ~ 16.2V    15.75 ~ 20.25V    18.9 ~ 24.3V    25.2 ~ 32.4V    50.4 ~ 64.8V<br>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 ~ +60℃ (Refer to "Derating Curve")                                                                                                                                                              |              |              |              |              |              |              |              |
|                           | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20% ~ 90% RH non-condensing                                                                                                                                                                         |              |              |              |              |              |              |              |
|                           | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -40 ~ +85℃, 10 ~ 95% RH                                                                                                                                                                             |              |              |              |              |              |              |              |
|                           | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ± 0.03% / °C (0 ~ 40℃)                                                                                                                                                                              |              |              |              |              |              |              |              |
|                           | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                                                                                                                             |              |              |              |              |              |              |              |
| SAFETY & EMC<br>(Note. 7) | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ANSI/AAMI ES60601-1 / ES60601-1-11, TUV EN60601-1 / 60601-1-11 approved                                                                                                                             |              |              |              |              |              |              |              |
|                           | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P-O/P:4KVAC                                                                                                                                                                                       |              |              |              |              |              |              |              |
|                           | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH                                                                                                                                                            |              |              |              |              |              |              |              |
|                           | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Compliance to EN55011(CISPR11) class B, EN61000-3-2,3, FCC PART 15 class B                                                                                                                          |              |              |              |              |              |              |              |
|                           | EMC IMMUNITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN60601-1-2, EN61204-3 medical level, criteria A                                                                                                   |              |              |              |              |              |              |              |
| OTHERS                    | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 720K hrs min. MIL-HDBK-217F(25℃)                                                                                                                                                                    |              |              |              |              |              |              |              |
|                           | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 125*50*31.5mm (L*W*H)                                                                                                                                                                               |              |              |              |              |              |              |              |
|                           | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.32Kg; 40pcs/13.8Kg/1.05CUFT                                                                                                                                                                       |              |              |              |              |              |              |              |
| CONNECTOR                 | PLUG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Standard type P1J: 2.1 $\phi$ * 5.5 $\phi$ * 11mm, tuning fork type, center positive for stock ; Other type available by customer requested                                                         |              |              |              |              |              |              |              |
|                           | CABLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | See page 2 ; Other type available by customer requested                                                                                                                                             |              |              |              |              |              |              |              |
| NOTE                      | 1. All parameters are specified at 230VAC input, rated load, 25℃ 70% RH ambient.<br>2. DC voltage: The output voltage set at point measure by plug terminal & 50% load.<br>3. Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1uf & 47uf capacitor.<br>4. Tolerance: includes set up tolerance, line regulation, load regulation.<br>5. Line regulation is measured from low line to high line at rated load.<br>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.<br>7. 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."<br>(as available on <a href="http://www.meanwell.com">http://www.meanwell.com</a> ) |                                                                                                                                                                                                     |              |              |              |              |              |              |              |

### Derating Curve

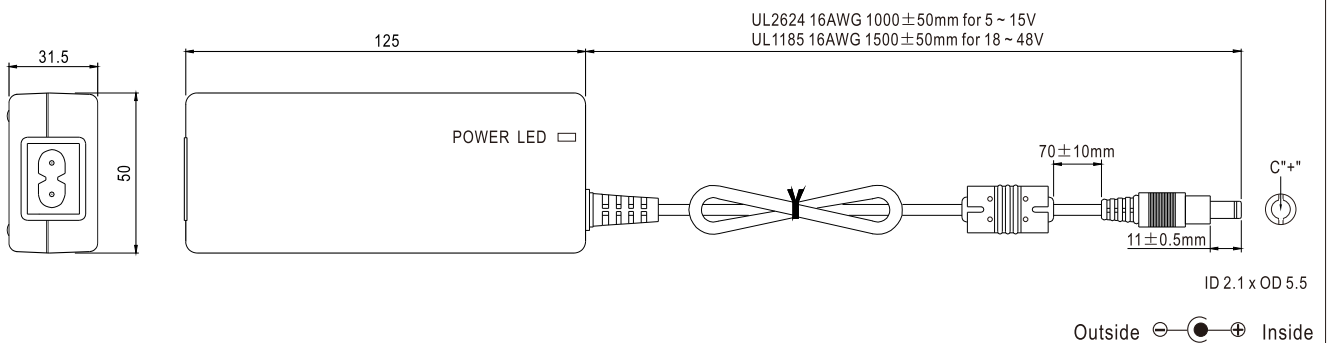


### Static Characteristics



### Mechanical Specification

Case No. GSM60B Unit:mm



### Plug Assignment

Standard plug: P1M

| P1M    |        |
|--------|--------|
| P/N    | OUTPUT |
| CENTER | +      |

Optional lock type plug: P2S

SWITCHCRAFT S761K plug equivalent

### Installation Manual

Please refer to : <http://www.meanwell.com/webnet/search/InstallationSearch.html>