# 40W AC-DC Reliable Green Medical Adaptor GSM40A series

(Ⅴ for 5~9V) 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<0.1W
- Energy efficiency level VI and meet CoC Version 5 (Except 5~9V for Level V)
- -30~+70℃ wide range working temperature
- Protections: Short circuit / Overload / Over voltage
- LED indicator for power on
- Lifetime > 90 K hours
- 3 years warranty

## Applications

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

## Description

GSM40A is a highly reliable, 40W single-output green medical adaptor series. This product is a class Ⅰ power unit(with FG), equipped with a standard IEC320-C14 AC inlet and adopting the input range from 80VAC to 264VAC. The entire series supplies different models with output voltages between 5VDC and 48VDC that can satisfy the demands for various types of medical electrical devices. The circuitry design meets the international medical standards (2*MOPP), having an ultra low leakage current (<90μA), 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 0.1W, GSM40A 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. GSM40A is certified for the international medical safety regulations.

## Model Encoding

GSM40 A 05 - P1J

- DC plug type: P1J: Standard model,2.1φx5.5φx11mm,C+,tuning fork type; Other options available by customer requested (see Page 4~5)
- Output voltage
- IEC320-C14 AC inlet
- Rated wattage
- Series name

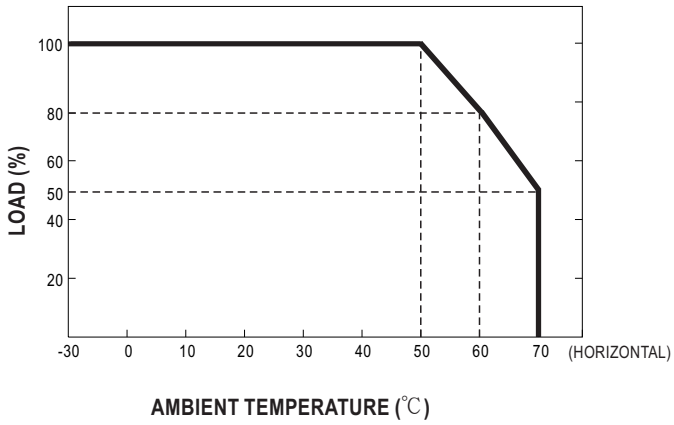
## SPECIFICATION

| ORDER NO. | | GSM40A05-P1J | GSM40A07-P1J | GSM40A09-P1J | GSM40A12-P1J | GSM40A15-P1J | GSM40A18-P1J | GSM40A24-P1J | GSM40A48-P1J |
|---|---|---|---|---|---|---|---|---|---|
| OUTPUT | SAFETY MODEL NO. | GSM40A05 | GSM40A07 | GSM40A09 | GSM40A12 | GSM40A15 | GSM40A18 | GSM40A24 | GSM40A48 |
| | DC VOLTAGE Note.2 | 5V | 7.5V | 9V | 12V | 15V | 18V | 24V | 48V |
| | RATED CURRENT | 5A | 5.34A | 4.45A | 3.34A | 2.67A | 2.22A | 1.67A | 0.84A |
| | CURRENT RANGE | 0.1 ~ 5A | 0.1 ~ 5.34A | 0.1 ~ 4.45A | 0.1 ~ 3.34A | 0.1 ~ 2.67A | 0.1 ~ 2.22A | 0.1 ~ 1.67A | 0.1 ~ 0.84A |
| | RATED POWER (max.) | 25W | 40W | 40W | 40W | 40W | 40W | 40W | 40W |
| | RIPPLE & NOISE (max.) Note.3 | 80mVp-p | 80mVp-p | 100mVp-p | 100mVp-p | 100mVp-p | 120mVp-p | 150mVp-p | 150mVp-p |
| | VOLTAGE TOLERANCE Note.4 | ±5.0% | ±5.0% | ±5.0% | ±3.0% | ±3.0% | ±3.0% | ±2.5% | ±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% | ±2.5% | ±2.5% |
| | SETUP, RISE TIME Note.6 | 1000ms, 30ms / 230VAC 1500ms, 30ms / 115VAC at full load | | | | | | | |
| | HOLD UP TIME (Typ.) | 50ms / 230VAC 24ms / 115VAC at full load | | | | | | | |
| INPUT | VOLTAGE RANGE Note.7 | 80 ~ 264VAC 113 ~ 370VDC | | | | | | | |
| | FREQUENCY RANGE | 47 ~ 63Hz | | | | | | | |
| | EFFICIENCY (Typ.) | 81% | 85.5% | 86% | 88% | 88.5% | 89.5% | 90% | 91% |
| | AC CURRENT (Typ.) | 1A / 115VAC 0.5A / 230VAC | | | | | | | |
| | INRUSH CURRENT (Typ.) | Cold start 30A/115VAC 60A / 230VAC | | | | | | | |
| | LEAKAGE CURRENT(max.) | Earth leakage current < 90μA/264VAC , Touch current < 90μA/264VAC | | | | | | | |
| PROTECTION | OVERLOAD | 105 ~ 160% rated output power | | | | | | | |
| | | Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | | | | | |
| | OVER VOLTAGE | 5.2 ~ 7.0V | 7.8 ~ 10.2V | 9.4 ~ 12.2V | 12.6 ~ 16.2V | 15.7 ~ 20.3V | 18.9 ~ 24.3V | 25.2 ~ 32.4V | 50.4 ~ 64.8V |
| | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | | | |
| ENVIRONMENT | WORKING TEMP. | -30 ~ +70℃ (Refer to "Derating Curve") | | | | | | | |
| | WORKING HUMIDITY | 20% ~ 90% RH non-condensing | | | | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85℃, 10 ~ 95% RH non-condensing | | | | | | | |
| | TEMP. COEFFICIENT | ±0.03% / ℃ (0~50℃) | | | | | | | |
| | VIBRATION | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes | | | | | | | |
| | OPERATING ALTITUDE Note.8 | 3000 meters | | | | | | | |
| SAFETY & EMC (Note 9) | 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 | I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:SHORT | | | | | | | |
| | ISOLATION RESISTANCE | I/P-O/P, I/P-FG:100M Ohms / 500VDC / 25℃ / 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 | 740K hrs min. MIL-HDBK-217F(25℃ ) | | | | | | | |
| | DIMENSION | 125*50*31.5mm (L*W*H) | | | | | | | |
| | PACKING | 0.29Kg; 40pcs/ 12.6 Kg/1.05CUFT | | | | | | | |
| CONNECTOR | PLUG | See page 4~5 ; Other type available by customer requested | | | | | | | |
| | CABLE | See page 4~5 ; Other type available by customer requested | | | | | | | |

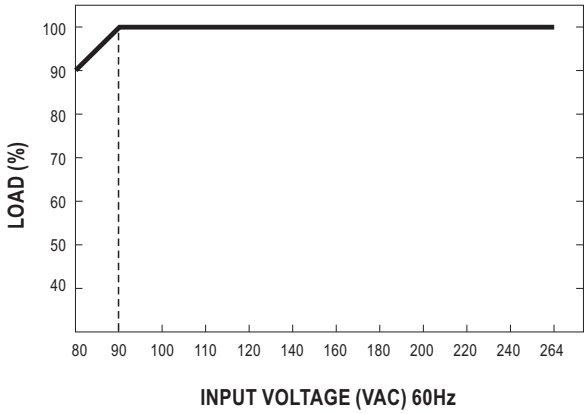
**NOTE**

1. All parameters are specified at 230VAC input, rated load, 25℃ 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. Pleas check the derating curve for more details.
8. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
9. 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 http://www.meanwell.com)

## ■ Derating Curve

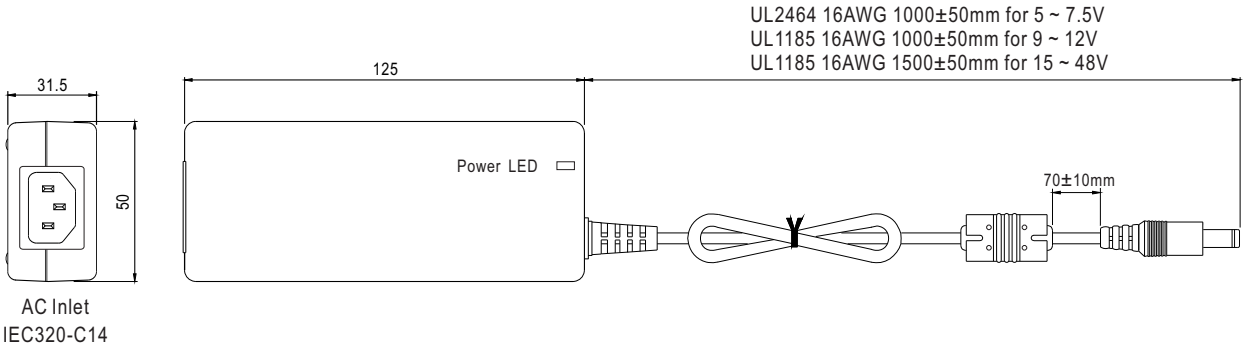



## ■ Static Characteristics



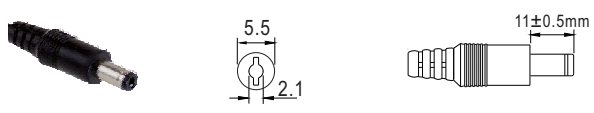
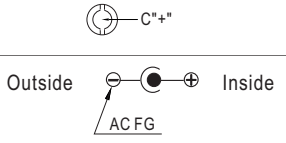

## ■ Mechanical Specification

Case No. GS60A Unit:mm

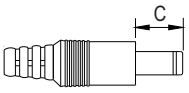
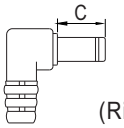
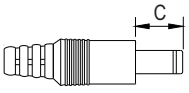
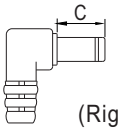
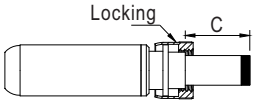
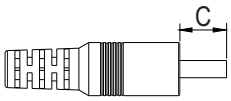
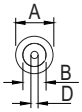
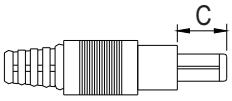
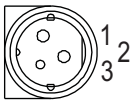
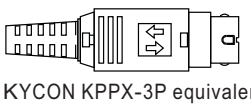


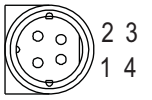
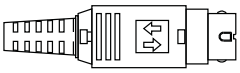

## ■ DC output plug

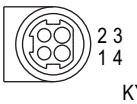
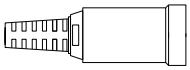
◎ Standard plug: P1J

| P1J | Pin Assignment |
|---|---|
|   |   |

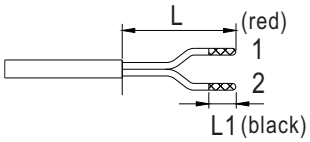
◎ Optional DC plug:

| Tuning Fork Style | Type No. | A | B | C |
|---|---|---|---|---|
| | | OD | ID | L |
|      (Straight)   (Right-angled) | P1I | 5.5 | 2.1 | 9.5 |
| | P1L | 5.5 | 2.5 | 9.5 |
| | P1M | 5.5 | 2.5 | 11.0 |
| | P1IR | 5.5 | 2.1 | 9.5 |
| | P1JR | 5.5 | 2.1 | 11.0 |
| | P1LR | 5.5 | 2.5 | 9.5 |
| | P1MR | 5.5 | 2.5 | 11.0 |
| **Barrel Style** | **Type No.** | **A** | **B** | **C** |
| | | OD | ID | L |
|      (Straight)   (Right-angled) | 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 |
| **Lock Style** | **Type No.** | **A** | **B** | **C** |
| | | OD | ID | L |
|      SWITCHCRAFT original or equivalent | 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** |
| | | OD | ID | L |
|      EIAJ equivalent | 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** |
| | | OD | ID | L | Center Pin |
|      EIAJ equivalent | 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** | | | |
| | | PIN No. | Output | | |
|     KYCON KPPX-3P equivalent | R6B | 1 | +Vo | | |
| | | 2 | -Vo | | |
| | | 3 | +Vo | | |

| Min. DIN 4 Pin with Lock (male) | Type No. | Pin Assignment | |
|---|---|---|---|
| | | PIN No. | Output |
|     KYCON KPPX-4P equivalent | R7B | 1 | +Vo |
| | | 2 | -Vo |
| | | 3 | -Vo |
| | | 4 | +Vo |

| Min. DIN 4 Pin with Lock (female) | Type No. | Pin Assignment | |
|---|---|---|---|
| | | PIN No. | Output |
|     KYCON KPJX-CM-4S equivalent | R7BF | 1 | +Vo |
| | | 2 | -Vo |
| | | 3 | -Vo |
| | | 4 | +Vo |

| DIN 5 Pin (male) | Type No. | Pin Assignment | |
|---|---|---|---|
| | | PIN No. | Output |
|     | R1B | 1 | -Vo |
| | | 2 | -Vo |
| | | 3 | +Vo |
| | | 4 | -Vo |
| | | 5 | +Vo |

| Stripped and tinned leads | Type No. | Pin Assignment | |
|---|---|---|---|
| | | PIN No. | Output |
|    Length of Land L1 by request (MW's standard length, L: 25 mm, L1: 5 mm) | by customer | 1 | +Vo |
| | | 2 | -Vo |

## ■ Installation Manual

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