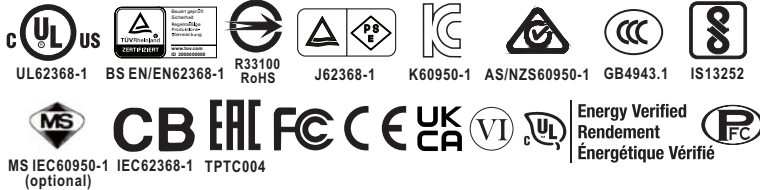




User's Manual



Video



## Features

- **Global certificates**
- Universal AC input / Full range
- 3 pole AC inlet IEC320-C14, Class I power unit
- Built-in active PFC function
- No load power consumption < 0.15W
- **Energy efficiency Level VI**
- Comply with EISA 2007/DoE, NRCAN, Korea K-MEPS, AU/NZ MEPS, EU ErP and CoC Version 5
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Fully enclosed plastic case
- -30~+70°C wide range working temperature
- LED indicator for power on
- Various DC plug quick adapter accessory available (Plug kit sold separately, please refer to : [https://www.meanwell.com/upload/pdf/DC\\_plug.pdf](https://www.meanwell.com/upload/pdf/DC_plug.pdf) )
- 3 years warranty

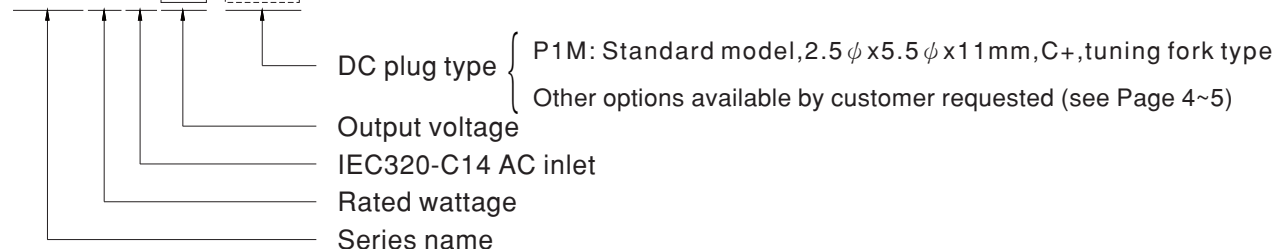
## Description

GST90A is a highly reliable, 90W desktop style single-output green 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 90VAC to 264VAC. The entire series supplies different models with output voltages ranging between 12VDC and 48VDC that can satisfy the demands for various types of consumer electronic devices.

With the efficiency up to 91% and the extremely low no-load power consumption below 0.15W, GST90A is compliant with USA EISA 2007/DoE, Canada NRCAN, Australia and New Zealand MEPS, Korea K-MEPS, EU ErP and 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. GST90A is certified for the international safety regulations.

## Model Encoding

**GST 90 A 12 -P1M**



## Applications

- Consumer electronic devices
- Telecommunication devices
- Office facilities
- Industrial equipments

## GTIN CODE

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

# SPECIFICATION

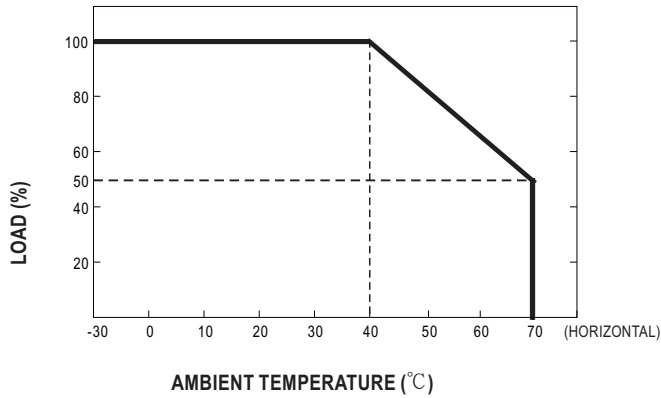
| ORDER NO.                  |                              | GST90A12-P1M                                                                                                                                                                                                | GST90A15-P1M                                                                                                         | GST90A19-P1M | GST90A24-P1M | GST90A48-P1M                                                                 |  |
|----------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------|--------------|------------------------------------------------------------------------------|--|
| OUTPUT                     | SAFETY MODEL NO.             | GST90A12                                                                                                                                                                                                    | GST90A15                                                                                                             | GST90A19     | GST90A24     | GST90A48                                                                     |  |
|                            | DC VOLTAGE      Note.2       | 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.) Note.3 | 120mVp-p                                                                                                                                                                                                    | 150mVp-p                                                                                                             | 180mVp-p     | 200mVp-p     | 200mVp-p                                                                     |  |
|                            | VOLTAGE TOLERANCE Note.4     | ± 5.0%                                                                                                                                                                                                      | ± 5.0%                                                                                                               | ± 4.0%       | ± 3.0%       | ± 2.5%                                                                       |  |
|                            | LINE REGULATION      Note.5  | ± 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      Note.6 | 1000ms, 50ms / 230VAC      1000ms, 50ms / 115VAC at full load                                                                                                                                               |                                                                                                                      |              |              |                                                                              |  |
|                            | HOLD UP TIME (Typ.)          | 20ms / 230VAC      20ms / 115VAC at full load                                                                                                                                                               |                                                                                                                      |              |              |                                                                              |  |
| INPUT                      | VOLTAGE RANGE      Note.7    | 90 ~ 264VAC    127 ~ 370VDC                                                                                                                                                                                 |                                                                                                                      |              |              |                                                                              |  |
|                            | FREQUENCY RANGE              | 47 ~ 63Hz                                                                                                                                                                                                   |                                                                                                                      |              |              |                                                                              |  |
|                            | POWER FACTOR (Typ.)          | PF>0.91 / 230VAC      PF>0.95 / 115VAC at full load                                                                                                                                                         |                                                                                                                      |              |              |                                                                              |  |
|                            | EFFICIENCY (Typ.)            | 89%                                                                                                                                                                                                         | 89.5%                                                                                                                | 90%          | 90%          | 91%                                                                          |  |
|                            | AC CURRENT (Typ.)            | 1.3A / 115VAC      0.6A / 230VAC                                                                                                                                                                            |                                                                                                                      |              |              |                                                                              |  |
|                            | INRUSH CURRENT (max.)        | Cold start   35 / 115AC    70A / 230VAC                                                                                                                                                                     |                                                                                                                      |              |              |                                                                              |  |
|                            | LEAKAGE CURRENT(max.)        | 1mA / 240VAC                                                                                                                                                                                                |                                                                                                                      |              |              |                                                                              |  |
| PROTECTION                 | OVERLOAD                     | 110 ~ 150% rated output power<br>Protection type : Hiccup mode, recovers automatically after fault condition is removed                                                                                     |                                                                                                                      |              |              |                                                                              |  |
|                            | OVER VOLTAGE                 | 105 ~ 135% rated output voltage<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 ~ +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                                                                                                                                     |                                                                                                                      |              |              |                                                                              |  |
| SAFETY & EMC<br>(Note. 10) | SAFETY STANDARDS    Note. 8  | UL62368-1, CSA C22.2 No.62368-1, TUV BS EN/EN62368-1, BSMI CNS14336, CCC GB4943.1, PSE J62368-1, AS/NZS 60950.1 , BIS IS13252, KC K60950-1, EAC TP TC 004 approved; SIRIM MS IEC60950-1 (optional) approved |                                                                                                                      |              |              |                                                                              |  |
|                            | WITHSTAND VOLTAGE            | I/P-O/P: 3KVAC    I/P-FG:2KVAC    O/P-FG:0.5KVAC                                                                                                                                                            |                                                                                                                      |              |              |                                                                              |  |
|                            | ISOLATION RESISTANCE         | I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH                                                                                                                                                  |                                                                                                                      |              |              |                                                                              |  |
|                            | EMC EMISSION                 | Parameter                                                                                                                                                                                                   | Standard                                                                                                             |              |              | Test Level / Note                                                            |  |
|                            |                              | Conducted emission                                                                                                                                                                                          | BS EN/EN55032(CISPR32),FCC PART 15 / CISPR22<br>CAN ICES-3(B)/NMB-3(B),CNS13438,GB17625.1<br>EAC TP TC 020,MSIP KN32 |              |              | Class B                                                                      |  |
|                            |                              | Radiated emission                                                                                                                                                                                           | BS EN/EN55032(CISPR32),FCC PART 15 / CISPR22<br>CAN ICES-3(B)/NMB-3(B),CNS13438,GB17625.1<br>EAC TP TC 020,MSIP KN32 |              |              | Class B                                                                      |  |
|                            |                              | Harmonic current                                                                                                                                                                                            | BS EN/EN61000-3-2,GB9254                                                                                             |              |              | Class A                                                                      |  |
|                            |                              | Voltage flicker                                                                                                                                                                                             | BS EN/EN61000-3-3                                                                                                    |              |              | -----                                                                        |  |
|                            | EMC IMMUNITY                 | BS EN/EN55035                                                                                                                                                                                               |                                                                                                                      |              |              |                                                                              |  |
|                            |                              | 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 2, 3V/m                                                                |  |
|                            |                              | EFT bursts                                                                                                                                                                                                  | BS EN/EN61000-4-4                                                                                                    |              |              | Level 2, 1KV                                                                 |  |
|                            |                              | Surge susceptibility                                                                                                                                                                                        | BS EN/EN61000-4-5                                                                                                    |              |              | Level 3, 1KV/Line-Line , 2KV/Line-FG                                         |  |
|                            |                              | Conducted susceptibility                                                                                                                                                                                    | BS EN/EN61000-4-6                                                                                                    |              |              | Level 2, 3V                                                                  |  |
|                            |                              | Magnetic field immunity                                                                                                                                                                                     | BS EN/EN61000-4-8                                                                                                    |              |              | Level 2, 3A/m                                                                |  |
|                            |                              | Voltage dips , interruption                                                                                                                                                                                 | BS EN/EN61000-4-11                                                                                                   |              |              | >95% dip 0. 5 periods, 30% dip 25 periods,<br>>95% interruptions 250 periods |  |
| OTHERS                     | MTBF                         | 2529.4K hrs min.      Telcordia SR-332 (Bellcore) ; 389.3K hrs min.      MIL-HDBK-217F (25°C)                                                                                                               |                                                                                                                      |              |              |                                                                              |  |
|                            | DIMENSION                    | 145*60*32mm (L*W*H)                                                                                                                                                                                         |                                                                                                                      |              |              |                                                                              |  |
|                            | PACKING                      | 0.45Kg; 30pcs/14.05Kg/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

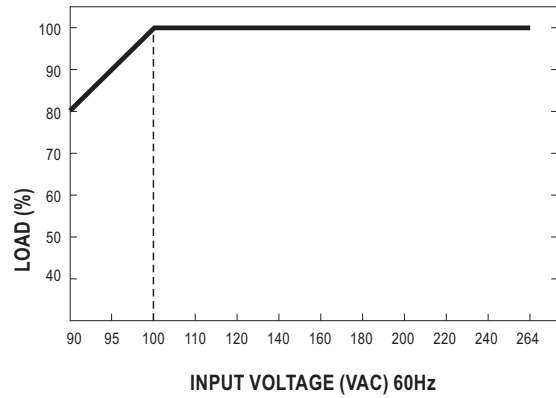
- All parameters are specified at 230VAC input, rated load, 25°C 70% RH ambient.
- DC voltage: The output voltage set at point measure by plug terminal & 50% load.
- Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1 f & 47µ f capacitor.
- Tolerance: includes set up 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 voltages. Please check the derating curve for more details.
- The demand for Malaysia safety is processed with the order no. GST90A □ -SIRIM by request. Please contact MEAN WELL for 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 <http://www.meanwell.com>)

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

## Derating Curve

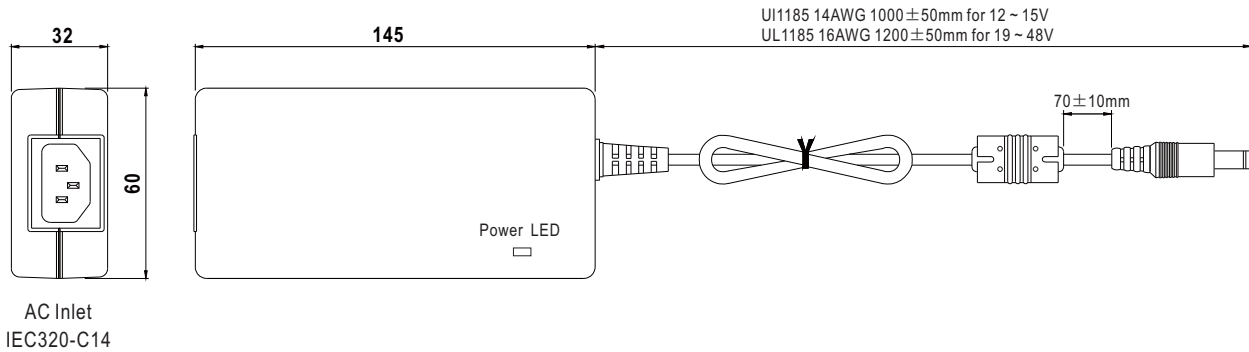


## Static Characteristics



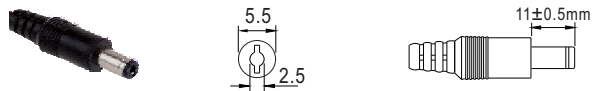
## Mechanical Specification

Case No. GS90A Unit:mm



## DC output plug

Standard plug: P1M

| P1M                                                                                 | Pin Assignment                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |                                                                                                                                               |
|                                                                                     | <p>Outside   Inside</p> <p>-V not connected to AC FG</p> |

◎ DC plug changeable through:

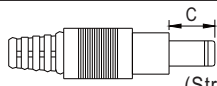
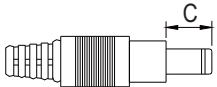
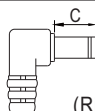
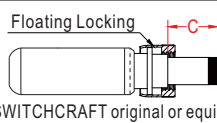
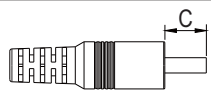
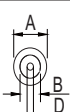
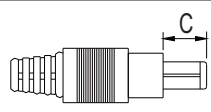
- (1) Customization of the standard part with an optional DC plug according to the table (MOQ applicable)
- (2) Quick adapter accessory (sold separately without MOQ)

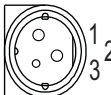
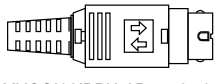
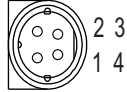
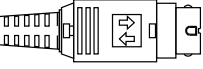
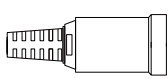
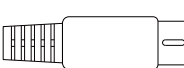
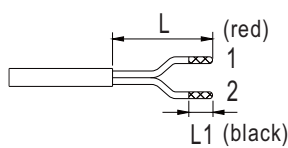
Please refer to below table and online selection guide : [https://www.meanwell.com/upload/pdf/DC\\_plug.pdf](https://www.meanwell.com/upload/pdf/DC_plug.pdf)

Example quick adapter accessory:



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

| Tuning Fork Style                                                                                                                                                                                                                                                                    |                                                                                                       | Type No. | A<br>OD | B<br>ID | C<br>L | Quick Adapter<br>Accessory               |      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------|---------|---------|--------|------------------------------------------|------|
| <br>                                                                                                               | <br>(Straight)       | P1I      | 5.5     | 2.1     | 9.5    | Available<br>(Current rating: 7.5A max.) |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P1L      | 5.5     | 2.5     | 9.5    |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P1J      | 5.5     | 2.1     | 11.0   |                                          |      |
|                                                                                                                                                                                                                                                                                      | <br>(Right-angled)  | P1JR     | 5.5     | 2.1     | 11.0   |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P1IR     | 5.5     | 2.1     | 9.5    |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P1LR     | 5.5     | 2.5     | 9.5    |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P1MR     | 5.5     | 2.5     | 11.0   |                                          |      |
| Barrel Style                                                                                                                                                                                                                                                                         |                                                                                                       | Type No. | A<br>OD | B<br>ID | C<br>L | None                                     |      |
| <br>                                                                                                           | <br>(Straight)     | P2I      | 5.5     | 2.1     | 9.5    |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P2J      | 5.5     | 2.1     | 11.0   |                                          |      |
|                                                                                                                                                                                                                                                                                      |                                                                                                       | P2L      | 5.5     | 2.5     | 9.5    |                                          |      |
|                                                                                                                                                                                                                                                                                      | <br>(Right-angled) | 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<br>OD | B<br>ID | C<br>L | None                                     |      |
| <br><br>                    | 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<br>OD | B<br>ID | C<br>L | None                                     |      |
| <br><br><br>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<br>OD | B<br>ID | C<br>L | D<br>Center Pin                          | None |
| <br><br><br>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 |        | Quick Adapter<br>Accessory               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|--------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                               |             | PIN No.        | Output |                                          |
|   <br>KYCON KPPX-3P equivalent                                                             | R6B         | 1              | +Vo    | None                                     |
|                                                                                                                                                                                                                                                                                                                                               |             | 2              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 3              | +Vo    |                                          |
| Min. DIN 4 Pin with Lock (male)                                                                                                                                                                                                                                                                                                               | Type No.    | Pin Assignment |        | Available<br>(Current rating: 7.5A max.) |
|                                                                                                                                                                                                                                                                                                                                               |             | PIN No.        | Output |                                          |
|   <br>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                                     |
|                                                                                                                                                                                                                                                                                                                                               |             | PIN No.        | Output |                                          |
|   <br>KYCON KPJX-CM-4S equivalent                                                          | R7BF        | 1              | +Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 2              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 3              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 4              | +Vo    |                                          |
| DIN 5 Pin (male)                                                                                                                                                                                                                                                                                                                              | Type No.    | Pin Assignment |        | None                                     |
|                                                                                                                                                                                                                                                                                                                                               |             | PIN No.        | Output |                                          |
|                                                                                      | R1B         | 1              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 2              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 3              | +Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 4              | -Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 5              | +Vo    |                                          |
| Stripped and tinned leads                                                                                                                                                                                                                                                                                                                     | Type No.    | Pin Assignment |        | None                                     |
|                                                                                                                                                                                                                                                                                                                                               |             | PIN No.        | Output |                                          |
|  <br>Length of Land L1 by request<br>(MW's standard length, L: 25 mm, L1: 5 mm)<br>( NOTE: The wire color is for reference only,<br>please refer to the actual product) | by customer | 1              | +Vo    |                                          |
|                                                                                                                                                                                                                                                                                                                                               |             | 2              | -Vo    |                                          |

## ■ Installation Manual

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