

# AC/DC 350W Enclosed Switching Power Supply

TGR350-xx, TGR350-xx-C, TGR350-xx-Q Series



## FEATURES

- Selectable AC input range: 90 - 132VAC/180 - 264VAC
- DC input range: 240 - 373VDC
- Ultra low standby power consumption < 0.75W @230VAC
- Operating ambient temperature range: - 30°C to +70°C
- Compact size with 1U low profile
- LED indicator for power on
- Output short circuit, over-current, over-voltage, over-temperature protection
- Safety according to IEC/EN/UL62368, EN60335, GB4943
- Withstand 300VAC surge input for 5s (switch in position of 230)
- Built-in DC fan
- Operating up to 5000m altitude



TGR350-xx series is one of Tiger Power's enclosed AC-DC switching power supply. It features selectable AC input and at the same time accepts DC input voltage, cost-effective, low no load power consumption, high efficiency and high reliability. These power supply offer excellent EMC performance and meet IEC/EN61000-4, CISPR32/EN55032, IEC/UL/EN62368, EN60335, GB4943 standards and they are widely used in areas of industrial, LED, street light control, electricity, security, telecommunications, smart home etc.

## Selection Guide

| Certification | Part No.* | Output Power (W) | Nominal Output Voltage and Current (Vo/Io) | Output Voltage Adjustable Range (V) | Efficiency at 230VAC (%) Typ. | Max. Capacitive Load (μF) |
|---------------|-----------|------------------|--------------------------------------------|-------------------------------------|-------------------------------|---------------------------|
| UL/CE/CQC     | TGR350-5  | 300              | 5V/60A                                     | 4.5-5.5                             | 83.5                          | 10000                     |
|               | TGR350-12 | 348              | 12V/29A                                    | 10.2-13.8                           | 85                            | 4000                      |
|               | TGR350-15 | 348              | 15V/23.2A                                  | 13.5-18                             | 86                            | 3300                      |
|               | TGR350-24 | 350.4            | 24V/14.6A                                  | 21.6-28.8                           | 87                            | 1500                      |
|               | TGR350-36 | 349.2            | 36V/9.7A                                   | 32.4-39.6                           | 88                            | 1500                      |
|               | TGR350-48 | 350.4            | 48V/7.3A                                   | 43.2-52.8                           | 88.5                          | 470                       |

Note: \*Use suffix "C" for terminal with protective cover and suffix "Q" for conformal coating.

## Input Specifications

| Item                    | Operating Conditions |                                          | Min.        | Typ. | Max. | Unit |
|-------------------------|----------------------|------------------------------------------|-------------|------|------|------|
| Input Voltage Range     | AC input             | Low voltage (switch in position of 115)  | 90          | --   | 132  | VAC  |
|                         |                      | High voltage (switch in position of 230) | 180         | --   | 264  |      |
|                         | DC input             | Switch in position of 230                | 240         | --   | 373  | VDC  |
| Input Voltage Frequency |                      |                                          | 47          | --   | 63   | Hz   |
| Input Current           | 115VAC               |                                          | --          | 6.8  | 8    | A    |
|                         | 230VAC               |                                          | --          | 3.4  | 4    |      |
| Inrush Current          | 115VAC               |                                          | --          | 60   | --   |      |
|                         | 230VAC               |                                          | Cold start  |      | --   |      |
| Leakage Current         | 240VAC               |                                          | --          | --   | 0.75 | mA   |
| Hot Plug                |                      |                                          | Unavailable |      |      |      |

## Output Specifications

| Item                    | Operating Conditions |     | Min. | Typ. | Max. | Unit |
|-------------------------|----------------------|-----|------|------|------|------|
| Output Voltage Accuracy | Full load range      | 5V  | --   | ±3   | --   | %    |
|                         |                      | 12V | --   | ±1.5 | --   |      |

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|                                                                                                                                                                                                                           |                                                     |                 |                                     |       |      |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------|-------------------------------------|-------|------|------|
|                                                                                                                                                                                                                           |                                                     | 15V/24V/36V/48V | --                                  | ±1    | --   |      |
| Line Regulation                                                                                                                                                                                                           | Rated load                                          |                 | --                                  | ±0.5  | --   |      |
| Load Regulation                                                                                                                                                                                                           | 0% - 100% load                                      | 5V              | --                                  | ±2    | --   |      |
|                                                                                                                                                                                                                           |                                                     | 12V             | --                                  | ±1    | --   |      |
|                                                                                                                                                                                                                           |                                                     | 15V/24V/36V/48V | --                                  | ±0.5  | --   |      |
| Output Ripple & Noise*                                                                                                                                                                                                    | 20MHz bandwidth<br>(peak-to-peak value)             | 5V/12V/15V/24V  | --                                  | 150   | --   | mV   |
|                                                                                                                                                                                                                           |                                                     | 36V/48V         | --                                  | 200   | --   |      |
| Temperature Coefficient                                                                                                                                                                                                   |                                                     |                 | --                                  | ±0.02 | --   | %/°C |
| Minimum Load                                                                                                                                                                                                              |                                                     |                 | 0                                   | --    | --   | %    |
| Stand-by Power Consumption                                                                                                                                                                                                | 230VAC, 25°C                                        |                 | --                                  | --    | 0.75 | W    |
| Hold-up Time                                                                                                                                                                                                              | 115VAC                                              |                 | --                                  | 12    | --   | ms   |
|                                                                                                                                                                                                                           | 230VAC                                              |                 | --                                  | 16    | --   |      |
| Short Circuit Protection                                                                                                                                                                                                  | Recovery time <8s after the short circuit disappear |                 | Hiccup, continuous, self-recovery   |       |      |      |
| Over-current Protection                                                                                                                                                                                                   |                                                     |                 | 110% - 180% Io, self-recovery       |       |      |      |
| Over-voltage Protection                                                                                                                                                                                                   | 5V                                                  |                 | 5.75V-6.75V (Hiccup, self-recovery) |       |      |      |
|                                                                                                                                                                                                                           | 12V                                                 |                 | 13.8V-16.2V (Hiccup, self-recovery) |       |      |      |
|                                                                                                                                                                                                                           | 15V                                                 |                 | 18V-21V (Hiccup, self-recovery)     |       |      |      |
|                                                                                                                                                                                                                           | 24V                                                 |                 | 28.8V-33.6V (Hiccup, self-recovery) |       |      |      |
|                                                                                                                                                                                                                           | 36V                                                 |                 | 41.4V-46.8V (Hiccup, self-recovery) |       |      |      |
|                                                                                                                                                                                                                           | 48V                                                 |                 | 55.2V-59.5V (Hiccup, self-recovery) |       |      |      |
| Over-temperature Protection                                                                                                                                                                                               |                                                     |                 | Hiccup, self-recovery               |       |      |      |
| Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor, details please refer to Enclosed Switching Power Supply Application Notes. |                                                     |                 |                                     |       |      |      |

## General Specifications

| Item                  | Operating Conditions           | Min.                               | Typ. | Max. | Unit |      |
|-----------------------|--------------------------------|------------------------------------|------|------|------|------|
| Isolation Test        | Input - $\oplus$               | 2000                               | --   | --   | VAC  |      |
|                       | Input - output                 | 3000                               | --   | --   |      |      |
|                       | Output - $\oplus$              | 500                                | --   | --   |      |      |
| Insulation Resistance | Input - $\oplus$               | 100                                | --   | --   | MΩ   |      |
|                       | Input - output                 | 100                                | --   | --   |      |      |
|                       | Output - $\oplus$              | 100                                | --   | --   |      |      |
| Operating Temperature |                                | -30                                | --   | +70  | °C   |      |
| Storage Temperature   |                                | -40                                | --   | +85  |      |      |
| Fan On/Off Control    | Fan On, temperature for Rth3   | 50                                 | --   | --   |      |      |
|                       | Fan Off, temperature for Rth3  | --                                 | --   | 40   |      |      |
| Operating Humidity    | Non-condensing                 | 20                                 | --   | 90   | %RH  |      |
| Storage Humidity      |                                | --                                 | --   | 95   |      |      |
| Switching Frequency   |                                | --                                 | 65   | --   | kHz  |      |
| Power Derating        | Operating temperature derating | +50°C to +70°C                     | 2    | --   | --   | %/°C |
|                       | Input voltage derating         | 90VAC - 100VAC                     | 2    | --   | --   | %VAC |
|                       |                                | 100VAC -132VAC                     | 0    | --   | --   |      |
|                       |                                | 180VAC - 264VAC                    | 0    | --   | --   |      |
|                       |                                | 240VDC - 373VDC                    | 0    | --   | --   |      |
| Safety Standard       |                                | Meet IEC/EN/UL62368/EN60335/GB4943 |      |      |      |      |
| Safety Class          |                                | CLASS I                            |      |      |      |      |
| MTBF                  | MIL-HDBK-217F@25°C             | >300,000 h                         |      |      |      |      |

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|                |                           |
|----------------|---------------------------|
| Case Material  | Metal (AL1100, SGCC)      |
| Dimensions     | 215.00 x 115.00 x 30.00mm |
| Weight         | 700g (Typ.)               |
| Cooling Method | Free air convection       |

## Electromagnetic Compatibility (EMC)

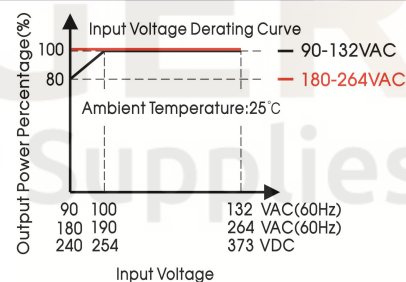
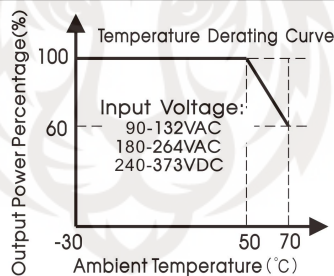
|           |       |                  |                                                  |                  |
|-----------|-------|------------------|--------------------------------------------------|------------------|
| Emissions | CE    | CISPR32/EN55032  | CLASS A                                          |                  |
|           | RE    | CISPR32/EN55032  | CLASS A                                          |                  |
| Immunity  | ESD   | IEC/EN 61000-4-2 | Contact $\pm 6KV$ /Air $\pm 8KV$                 | perf. Criteria A |
|           | RS    | IEC/EN 61000-4-3 | 10V/m                                            | perf. Criteria A |
|           | EFT   | IEC/EN 61000-4-4 | $\pm 2KV$                                        | perf. Criteria A |
|           | Surge | IEC/EN 61000-4-5 | line to line $\pm 2KV$ /line to ground $\pm 4KV$ | perf. Criteria A |
|           | CS    | IEC/EN61000-4-6  | 10 Vr.m.s                                        | perf. Criteria A |
|           | DIP   | IEC/EN61000-4-11 | 0%,70%                                           | perf. Criteria B |

Remark: 1. One magnetic bead should be coupled with the output load line during CE/RE testing;

2. When the power supply is used in the European Union or in applications that mandatory to meet the requirements of EN61000-3-2, users need to handle the harmonic current requirements, details please refer to Mornsun FAE. Applications like:

- (1) The terminal equipment is used in the European Union;
- (2) The terminal equipment is connected to public mains supply with 220VAC or greater rated nominal voltage that mandatory to meet the requirements of EN61000-3-2;
- (3) The power supply is installed in terminal equipment with average or continuous input power greater than 75W;
- (4) The power supply belongs to a part of lighting system.

## Product Characteristic Curve



Note: This product is suitable for applications using natural air cooling; for applications in closed environment please consult Tiger.

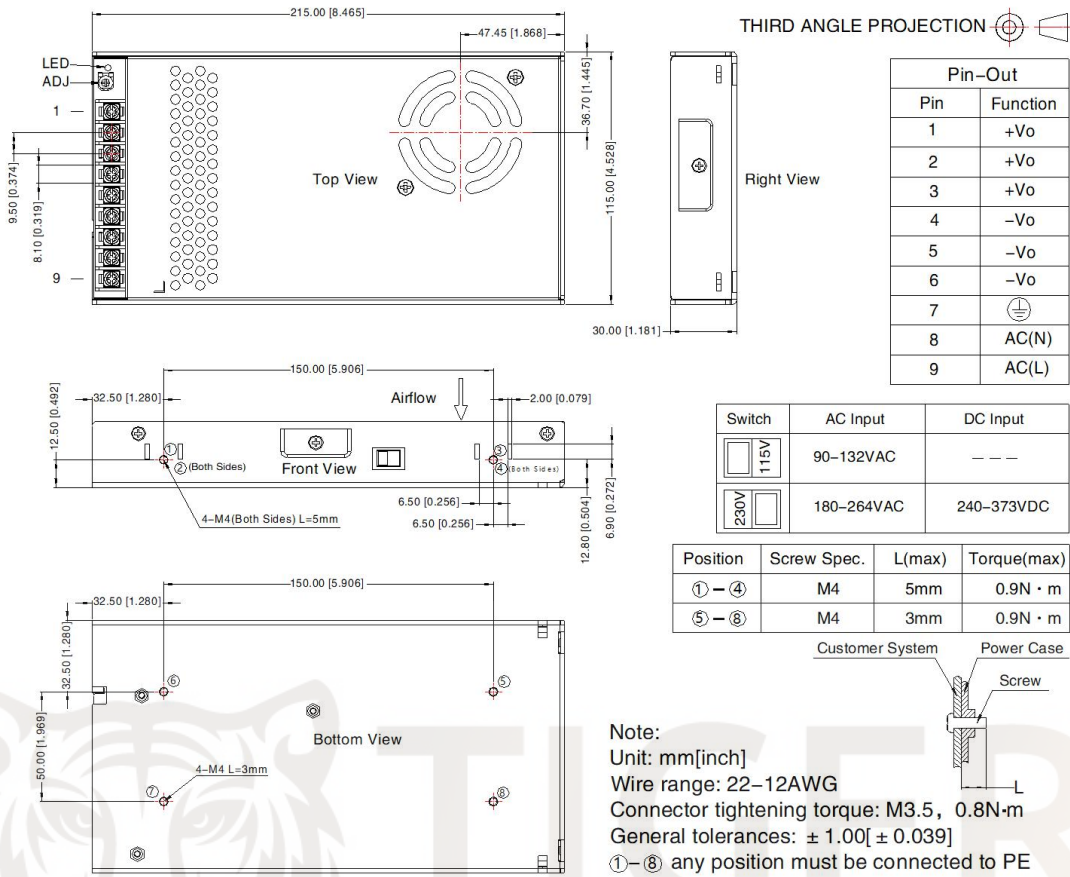
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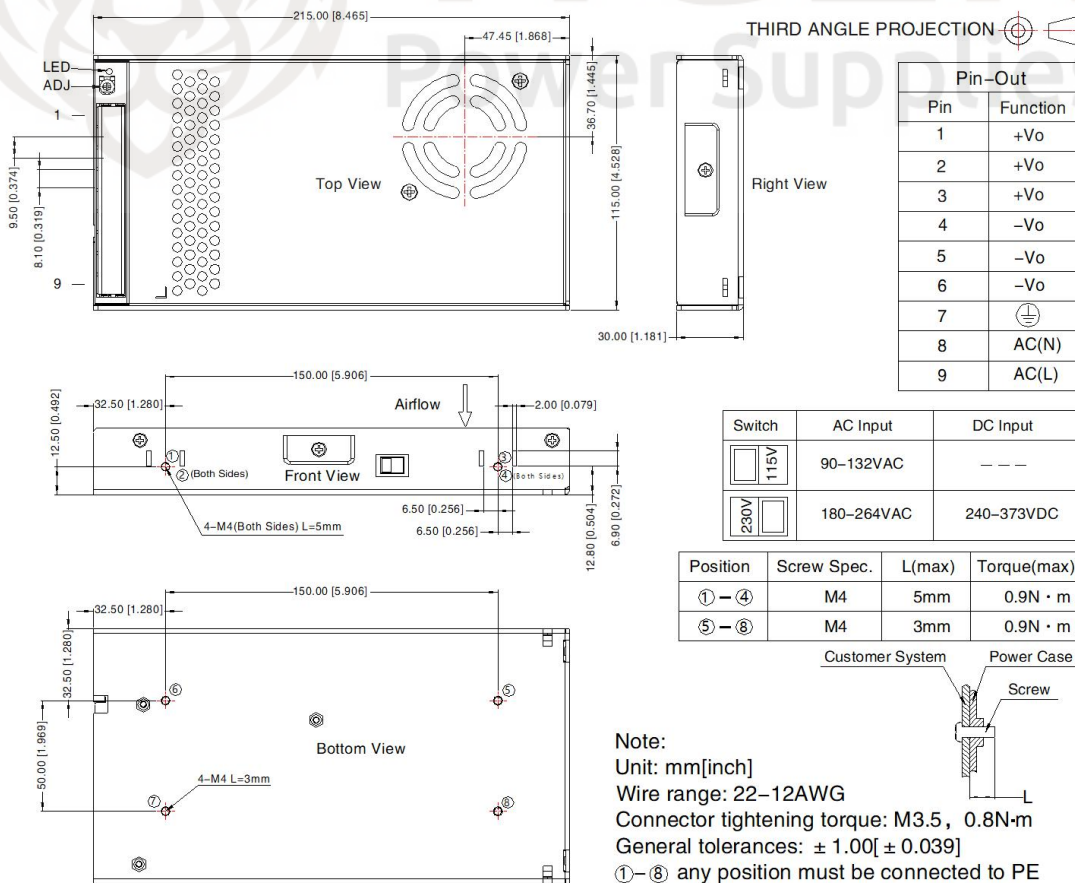


## Dimensions and Recommended Layout

### TGR350-xx, TGR350-xx-Q Series



### TGR350-xx-C Series



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**Note:**

1. For additional information on Product Packaging please refer to [www.TigerPowerSupplies.com](http://www.TigerPowerSupplies.com) Packaging bag number: 58220115;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75% RH with nominal input voltage and rated output load;
3. The ambient temperature derating of  $5^{\circ}\text{C}/1000\text{m}$  is needed for operating altitude greater than 2000m;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. In order to improve the efficiency at high input voltage, there will be audible noise generated, but it does not affect product performance and reliability;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. The out case needs to be connected to the earth ( ) of system when the terminal equipment in operating;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
10. The power supply is considered a component which will be installed into a final equipment. All EMC tests should be confirmed with the final equipment. Please consult our FAE for EMC test operation instructions.