# Magic series

## MPPT Solar charge controller

**MT1050EU/RS485**
**MT1550-EU**
**MT2075**
**MT2010**
**MT3075**
**MT4015**
**MT4010**
**MT3010**
**MT6020**

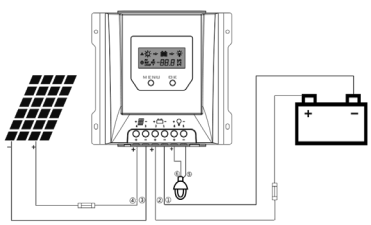
IoT RS485 Bluetooth

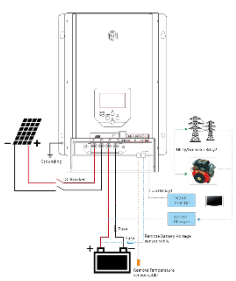
- 12/24/36/48V automatic recognition
- Optional APP version for Bluetooth communication
- Real-time energy statistics function
- Perfect EMC & thermal design

## Overview

**Magic series solar controller is based on an advanced maximum power point tracking (MPPT) technology developed, dedicated to the solar system, the controller conversion efficiency up to 98%.**
**It comes with a number of outstanding features, such as:**

- A combination of multiple tracking algorithms enables tracking the maximum power point quickly and accurately
- Innovative Max Power Point Tracking(MPPT) technology, tracking efficiency >99.9%
- Full digital technology, high charge conversion efficiency up to 98%
- LCD display design, read operating data and working condition easily
- Flexible System battery selection: Liquid, Gel, AGM and Lithium
- Extends battery life through accurate remote temperature sensor
- The Controller is protected against over-temperature due to built-in power reduction function
- Four stages battery charging process: MPPT, boost, equalization, float
- Dual automatic protection to avoid exceeding the rated charging power and current
- Multiple load control modes: Always on, Street lamp, User-defind Mode
- Two USB interfaces(only -EU model)
- IOT Wireless communication or Bluetooth communication functions optional
- With the wireless communication function of the IOT , the controller can be connected remotely through IoT/GPRS
- Monthly charging data can be calculated and displayed by grouping and graphs
- Based RS-485 standard Modbus protocol with RJ11 interface to maximize the communication needs of different occasions.
- Full automatic electronic protect function for increased charge controller availability

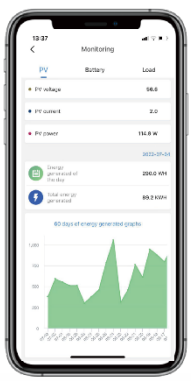




**Cyber-USB**

**Cyber-BT**

**Cyber-BT is a kind of serial adpter which can make our company's solar controller be with bluetooth communication function, and carry out wireless monitoring, parameter setting, and etc. for the system only by cooperating with mobile phone APP.**



## Technical Data

| | | | | | |
|---|---|---|---|---|---|
| Battery Parameters | Item | | MT1050-EU | MT1050-RS485 | MT1550-EU |
| | System Voltage | | 12V | | |
| | Max Charging Current | | 10A | | 15A |
| | MPPT Charging Voltage | | before boost or equalization charging stage | | |
| | Gel, AGM, Liquid | Boost Voltage | 14.5V@25℃ | | |
| | | Equalization Voltage | 14.8V@25℃(Liquid ,AGM) | | |
| | | Float Voltage | 13.7V@25℃ | | |
| | | Low voltage disconnect | 10.8~11.8V, SOC1~5 (default: 11.2V) | | |
| | | Overcharge Protect | 15.5V | | |
| | | Temp. Compensation | -4.17mV/K per cell (Boost, Equalization), -3.33mV/K per cell (Float) | | |
| | Lithium | Charging target voltage | 10.0~17.0V(Programmable, default: 14.4V) | | |
| | | Low voltage disconnect | 9.0~15.0V(Programmable, default: 10.6V) | | |
| | Battery Type | | Gel, AGM, Liquid, Lithium (default: Gel) | | |
| | Max volt on Bat. Terminal | | 20V | | |
| Panel Parameters | Max volt on PV *1 | | 45V | | 35V |
| | Max input power | | 130W | | 200W |
| | Day/Night threshold | | 8.0V | | |
| | MPPT tracking range *2 | | (Battery Voltage + 1.0V)~Voc*0.9*2 | | |
| Load Parameters | Output Current | | 10A | | |
| | USB interface | | 5V, 2A | / | 5V, 2A |
| | Load mode | | Always on, Street lamp, User-defind Mode | | |
| System Parameters | Max tracking efficiency | | >99.9% | | |
| | Max charge conversion | | 97.5% | | |
| | Dimensions | | 189*96*53mm | | |
| | Weight | | 420g | | |
| | Self consumption | | 0.2W | | |
| | Communication | | / | RS485 | / |
| | Grounding | | Common Negative | | |
| | Power terminals | | 8AWG (10mm2) | | |
| | Ambient temperature | | -20~+55℃ | | |
| | Storage temperature | | -25~+80℃ | | |
| | Ambient humidity | | 0~100%RH | | |
| | Protection degree | | IP32 | | |
| | Max Altitude | | 4000m | | |

*1. Maximum solar panel voltage at minimum ambient operating temperature

*2. Voc: PV-Module open circuit voltage

## Technical Data

| | Item | | MT2010 | MT3010 | MT2075 | MT3075 |
|---|---|---|---|---|---|---|
| Battery Parameters | Max Charging Current | | 20A | 30A | 20A | 30A |
| | System Voltage | | 12V/24V automatical recognization | | | |
| | Battery Type | | Gel, AGM, Liquid, Lithium (default: Gel) | | | |
| | Max volt on Bat. Terminal | | 35V | | | |
| | Gel, AGM, Liquid | MPPT Charging Voltage | before boost or equalization charging stage | | | |
| | | Boost Voltage | 14.0~14.8V/28.0~29.6V @25℃ (default:14.5/29V) | | | |
| | | Equalization Voltage | 14.0~15.0V/28.0~30.0V @25℃ (default:14.8/29.6V) | | | |
| | | Float Voltage | 13.0~14.5V/26.0~29.0V @25℃ (default:13.7/27.4V) | | | |
| | | Low voltage disconnect | 10.8~11.8V/21.6~23.6V, SOC1~5 (default: 11.2/22.4V) | | | |
| | | Low voltage reconnect | 11.4~12.8V/22.8~25.6V (default: 12.0/24.0V) | | | |
| | | Overcharge Protect | 15.8/31.3V | | | |
| | | Temp. Compensation | -4.17mV/K per cell (Boost, Equalization), -3.33mV/K per cell (Float) | | | |
| | Lithium | Charging target voltage | 10.0~32.0V (Lithium, default: 14.4V) | | | |
| | | Charging recovery voltage | 9.2~31.8V (Lithium, default: 14.0V) | | | |
| | | Low voltage disconnect | 9.0~30.0V (Lithium, default: 10.6V) | | | |
| | | Low voltage reconnect | 9.6~31.0V (Lithium, default: 12.0V) | | | |
| Panel Parameters | Max volt on PV terminal *1 | | 100V@-40℃,90V@25℃ | | 75V@-40℃,70V@25℃ | |
| | Max input power | | 260/520W | 390/780W | 260/520W | 390/780W |
| | Day/Night threshold | | 3.0~20.0V (default: 8.0/16.0V) | | | |
| | Day/Night delay time | | 0~30min (default: 0min) | | | |
| | MPPT tracking range*2 | | (Battery Voltage + 1.0V)~Voc*0.9 | | | |
| Load Parameters | Output Current | | 20A | 30A | 20A | 30A |
| | Load mode | | Always on, Street lamp, User-defind Mode | | | |
| System Parameters | Max tracking efficiency | | >99.9% | | | |
| | Max charge conversion | | 98.0% | | | |
| | Dimensions(mm) | | 189*182*64mm | 189*255*63mm | 189*182*58mm | 189*182*64mm |
| | Weight | | 1.3Kg | 1.5Kg | 1Kg | 1.3Kg |
| | Self consumption | | ≤8mA(12V),≤12mA(24V) | | | |
| | Communication | | RS485(RJ11 interface) | | | |
| | Optional | | IoT, Cyber-BT (Internal / External) | | | |
| | Grounding | | Common Negative | | | |
| | Power terminals | | 6AWG (16mm2) | | | |
| | Ambient temperature | | -20~+55℃ | | | |
| | Storage temperature | | -25~+80℃ | | | |
| | Ambient humidity | | 0~100%RH | | | |
| | Protection degree | | IP32 | | | |
| | Max Altitude | | 4000m | | | |

*1. Maximum solar panel voltage at minimum ambient operating temperature

*2. Voc: PV-Module open circuit voltage

*3. Slash separate values for 12V and 24V nominal system voltage

## Technical Data

| | Item | | MT4010 | MT4010-E |
|---|---|---|---|---|
| Battery Parameters | Max Charging Current | | 40A | |
| | System Voltage | | 12V/24V automatical recognization | |
| | Battery Type | | Gel, AGM, Liquid, Lithium (default: Gel) | |
| | Max volt on Bat. Terminal | | 35V | |
| | Gel, AGM, Liquid | MPPT Charging Voltage | before boost or equalization charging stage | |
| | | Boost Voltage | 14.0~14.8V/28.0~29.6V @25℃ (default:14.5/29V) | |
| | | Equalization Voltage | 14.0~15.0V/28.0~30.0V @25℃ (default:14.8/29.6V) | |
| | | Float Voltage | 13.0~14.5V/26.0~29.0V @25℃ (default:13.7/27.4V) | |
| | | Low voltage disconnect | 10.8~11.8V/21.6~23.6V, SOC1~5 (default: 11.2/22.4V) | |
| | | Low voltage reconnect | 11.4~12.8V/22.8~25.6V (default: 12.0/24.0V) | |
| | | Overcharge Protect | 15.8/31.3V | |
| | | Temp. Compensation | -4.17mV/K per cell (Boost, Equalization), -3.33mV/K per cell (Float) | |
| | Lithium | Charging target voltage | 10.0~32.0V (Lithium, default: 14.4V) | |
| | | Charging recovery voltage | 9.2~31.8V (Lithium, default: 14.0V) | |
| | | Low voltage disconnect | 9.0~30.0V (Lithium, default: 10.6V) | |
| | | Low voltage reconnect | 9.6~31.0V (Lithium, default: 12.0V) | |
| Panel Parameters | Max volt on PV terminal *1 | | 100V@-40℃,95V@25℃ | |
| | Max input power | | 520/1040W | |
| | Day/Night threshold | | 3.0~20.0V (default: 8.0/16.0V) | |
| | Day/Night delay time | | 0~30min (default: 0min) | |
| | MPPT tracking range*2 | | (Battery Voltage + 1.0V)~Voc*0.9 | |
| Load Parameters | Output Current | | 30A | |
| | Load mode | | Always on, Street lamp, User-defind Mode | |
| System Parameters | Max tracking efficiency | | >99.9% | |
| | Max charge conversion | | 98.0% | |
| | Dimensions(mm) | | 189*255*69mm | 189*255*63mm |
| | Weight | | 2Kg | 1.5Kg |
| | Self consumption | | ≤8mA(12V),≤12mA(24V) | |
| | Communication | | RS485(RJ11 interface) | |
| | Optional | | IoT, Cyber-BT (Internal / External) | |
| | Grounding | | Common Negative | |
| | Power terminals | | 6AWG (16mm2) | |
| | Ambient temperature | | -20~+55℃ | |
| | Storage temperature | | -25~+80℃ | |
| | Ambient humidity | | 0~100%RH | |
| | Protection degree | | IP32 | |
| | Max Altitude | | 4000m | |

*1. Maximum solar panel voltage at minimum ambient operating temperature

*2. Voc: PV-Module open circuit voltage

*3. Slash separate values for 12V and 24V nominal system voltage

## Technical Data

| | Item | | MT4015 |
|---|---|---|---|
| Battery Parameters | Max Charging Current | | 40A |
| | System Voltage | | 24V/48V automatical recognization |
| | Battery Type | | Gel, AGM, Liquid, Lithium（default: Gel) |
| | Max volt on Bat. Terminal | | 65V |
| | Gel, AGM, Liquid | MPPT Charging Voltage | before boost or equalization charging stage |
| | | Boost Voltage | 28.0~29.6V/56.0~59.2V @25℃（default:29.0/58.0V) |
| | | Equalization Voltage | 28.0~30.0V/56.0~60.0V @25℃（default:29.6/59.2V) |
| | | Float Voltage | 26.0~29.0V /52.0~58.0V@25℃（default:27.4/54.8V) |
| | | Low voltage disconnect | 21.6~23.6V/43.2~47.2V,SOC1~5(default: 22.4/44.8V) |
| | | Low voltage reconnect | 22.8~25.6V/45.6~51.2V（default: 24.0/48.0V) |
| | | Overcharge Protect | 31.3/62.3V |
| | | Temp. Compensation | -4.17mV/K per cell (Boost, Equalization)， -3.33mV/K per cell (Float) |
| | Lithium | Charging target voltage | 20.0~64.0V (Lithium, default: 29.4V) |
| | | Charging recovery voltage | 18.2~63.8V (Lithium, default: 28.7V) |
| | | Low voltage disconnect | 18.0~60.0V (Lithium, default: 21.0V) |
| | | Low voltage reconnect | 18.6~62.0V (Lithium, default: 22.4V) |
| Panel Parameters | Max volt on PV terminal *1 | | 150V |
| | Max input power | | 1000/2000W |
| | Day/Night threshold | | 6.0~40.0V（default: 16.0/32.0V) |
| | Day/Night delay time | | 0~30min(default: 0min) |
| | MPPT tracking range *2 | | （Battery Voltage + 1.0V）~Voc*0.9 |
| Load Parameters | Output Current | | 30A |
| | Load mode | | Always on, Street lamp, User-defind Mode |
| System Parameters | Max tracking efficiency | | >99.9% |
| | Max charge conversion | | 98.7% |
| | Dimensions | | 189*255*89mm |
| | Weight | | 2.5Kg |
| | Self consumption | | ≤8mA |
| | Communication | | RS485(RJ11 interface) |
| | Optional | | IoT, Cyber-BT(Internal / External) |
| | Grounding | | Common Negative |
| | Power terminals | | 6AWG(16mm2) |
| | Ambient temperature | | -20~+55℃ |
| | Storage temperature | | -25~+80℃ |
| | Ambient humidity | | 0~100%RH |
| | Protection degree | | IP32 |
| | Max Altitude | | 4000m |

*1. Maximum solar panel voltage at minimum ambient operating temperature

*2. Voc: PV-Module open circuit voltage

*3. Slash separate values for 24V and 48V nominal system voltage

## Technical Data

| | Item | | MT6020-Pro |
|---|---|---|---|
| Battery Parameters | Max charging current | | 60A |
| | System voltage | | 12/24/48V |
| | System voltage setting | | Automatic/12V/24V/48V |
| | Gel, AGM, Liquid | MPPT charging voltage | before boost or equalization charging stage |
| | | Boost Voltage | 14.0~14.8V/28.0~29.6V/56.0~59.2V (default: 14.5/29.0/58.0V) |
| | | Equal Voltage | 14.0~15.0V/28.0~30.0V/56.0~60.0V (default: 14.8/29.6/59.2V) |
| | | Float Voltage | 13.0~14.5V/26.0~29.0V /52.0~58.0V (default: 13.7/27.4/54.8V) |
| | | Overcharge Protect | 10.8~11.8V/21.6~23.6V/43.2~47.2V (default: 11.2/22.4/44.8V) |
| | | Low voltage disconnect | 11.4~12.8V/22.8~25.6V/45.6~51.2V (default: 12.0/24.0/48.0V) |
| | | Low voltage reconnect | 15.8/31.3/62.3V |
| | | Temp compensation | -4.17mV/K per cell (Boost, Equalization)， -3.33mV/K per cell (Float) |
| | Lithium | Charging voltage target | 10.0~64.0V(Lithium, default: 29.4V) |
| | | Charging voltage recovery | 9.2~63.8V(Lithium, default: 28.7V) |
| | | Low voltage disconnect | 9.0~60.0V(Lithium, default: 21.0V) |
| | | Low voltage reconnect | 9.6~62.0V(Lithium, default: 22.4V) |
| | Battery type | | Gel, AGM, Liquid, Lithium（default: Gel) |
| Panel Parameters | Max volt on Bat. Terminal | | 65V |
| | Max volt on PV terminal | | 190V(@-20℃), 170V(@25℃) *1 |
| | Max input power | | 750/1500/3000W |
| | MPPT tracking range | | （Battery Voltage + 2.0V）~Voc*0.9 *2 |
| System Parameters | Max tracking efficiency | | >99.9% |
| | Max charge conversion | | 97% |
| | Efficiency at full load | | 96.5% |
| | Self consumption | | ＜5W |
| | Grounding | | Common Positive |
| | Data memory | | 5 years |
| | Relay | | 3A/30VDC |
| | Communication | | BLE, IoT, RS485（Default, RJ11 interface) |
| | Dimensions | | 339*230*109mm |
| | Mounting Dimensions | | 220*215mm |
| | Mounting hole size | | φ6mm |
| | Weight | | 5Kg |
| | Terminal size | | 2AWG(35mm2) |
| | Recommended cable | | 6AWG(16mm2) |
| | Operating temperature | | -20~+60℃ |
| | Derating | | From＞65℃ internal |
| | Fan | | Internal, temperature controlled |
| | LCD temperature range | | -20~+70℃ |
| | Storage temperature | | -25~+80℃ |
| | Ambient humidity | | 5~95%RH(No condensation) |
| | Protection degree | | IP20 |
| | Max Altitude | | 4000m |

*1.The maximum PV open circuit voltage must never exceed 170V at 25℃ environment temperature

*2.Voc means the open circuit voltage of the solar panel

*3.Around oblique line value separately on behalf of 12/24/48V system's value