

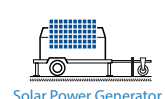
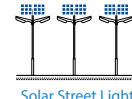
### Overview

The TRIRON series controllers are modular-designed products based on six MPPT solar controller models. The main unit(Power Module)(TRIRON-N) is a solar controller which can be integrated with different display and interface modules to meet a variety of functional requirements. The TRIRON N series controllers can automatically identify and load the drivers of various modules. There are three display modules (Basic 1(DB1), Standard1(DS1) and Standard2(DS2)) and four interface modules (USB COM Slave(UCS), Relay COM Slave(RCS), Relay COM Master(RCM) and Dual USB1(USB1)). Users can choose any combination of these modules according to their needs.

With the advanced MPPT control algorithm, TRIRON N series controllers can minimize the maximum power point loss rate and loss time, quickly track the maximum power point of the PV array and obtain the maximum energy from solar modules under any conditions; and can increase the ratio of energy utilization in the solar system by 20%-30% compared with a PWM charging method. With the adaptive three-stage charging mode based on a digital control circuit, TRIRON N series controllers can effectively prolong the lifecycle of batteries, significantly improve the system performance and support all-around electronic protection functions, including overcharging and over-discharging protection to minimize damages to components of the system caused by incorrect installation or system failure at the utmost, and effectively ensure safer and more reliable operation of the solar power supply system for a longer service time. This modular solar controller can be widely used for different applications, e.g., communication base stations, household systems, street lighting systems and field monitoring etc.

### Features

- Identify and load the drivers of various modules automatically
- Modular design for easy combination and replacement
- Advanced MPPT control algorithm to minimize the MPP loss rate and loss time
- Advanced MPPT technology, with efficiency no less than 99.5%
- Maximum DC/DC conversion efficiency of 98%
- Ultra-fast tracking speed and guaranteed tracking efficiency
- Automatic limitation of the charging power and current
- Wide MPP operating voltage range
- Multiple load work modes
- Support the lead-acid and lithium batteries with the needed tem. compensation
- Real-time energy statistics function
- Overheating power reduction function
- LCD and indicators to display operating data and status of the system
- User-friendly buttons for comfortable and convenient operation
- Master and slave RS485 communication modules design, reading the load or inverter operating data
- Control the inverter switch through the relay interface
- Provide 5VDC power through the dual USB output interface to charge electronic devices



## Technical specifications

Model	TRIRON 1206N	TRIRON 2206N	TRIRON 1210N	TRIRON 2210N	TRIRON 3210N	TRIRON 4210N	TRIRON 4215N
System nominal voltage	12/24VDC Auto <sup>①</sup>						
Rated charge current	10A	20A	10A	20A	30A	40A	40A
Rated discharge current	10A	20A	10A	20A	30A	40A	40A
Battery voltage range	8~32V						
Max. PV open circuit voltage	60V <sup>②</sup> 46V <sup>③</sup>		100V <sup>②</sup> 92V <sup>③</sup>				150V <sup>②</sup> 138V <sup>③</sup>
MPP voltage range	(Battery voltage +2V) ~ 36V		(Battery voltage +2V) ~ 72V				(Battery voltage +2V) ~ 108V
Max. PV input power	130W/12V 260W/24V	260W/12V 520W/24V	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	520W/12V 1040W/24V	520W/12V 1040W/24V
Self-consumption	≤14mA(12V); ≤15mA(24V)						
Discharge circuit voltage drop	≤0.18V						
Temperature compensate coefficient <sup>④</sup>	-3mV/°C/2V (Default)						
Grounding	Common negative						
RS485 interface	5VDC/100mA						
USB interface	5VDC/2.2A(Total)						
Relay interface	30VDC/1A						
Backlight time	Default:60S,Range:0~999S(0S:the backlight is ON all the time)						

①When a lithium battery is used, the system voltage can't be identified automatically

②At minimum operating environment temperature

③At 25°C environment temperature

④When a lithium battery is used, the temperature compensate coefficient will be 0,and can't be changed

### Environmental Parameters

Working environment temperature※	-25°C ~ +55°C(LCD) -30°C ~ +55°C ( No LCD )
Storage temperature range	-20°C ~ +70°C
Relative humidity	≤95%, N.C
Enclosure	IP30

※The controller can full load working in the working environment temperature, When the internal temperature is 81°C, the reducing power charging mode is turned on. Refer to P36

### Module Parameters

Model	DB1	DS1	DS2	UCS	RCM	RCS	USB1
Self-consumption	2mA	3mA	4mA	6.5mA	3.5mA	4mA	6.5mA
Dimension	88.5×56×23.1mm			88.5×28×19.2mm			
Weight	25g	55g	55g	30g	20g	20g	26g

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## Mechanical Parameters

Model	TRIRON1206N TRIRON1210N	TRIRON2206N TRIRON2210N	TRIRON3210N	TRIRON4210N TRIRON4215N
Dimension	135 × 180.8 × 47.3mm	150 × 216 × 56.7mm	158 × 238.3 × 62.7mm	183 × 256.8 × 66.7mm
Mounting dimension	126 × 150mm	141 × 170mm	158 × 200mm	174 × 220mm
Mounting hole size	Φ5mm			
Terminal	12AWG(4mm <sup>2</sup> )	6AWG(16mm <sup>2</sup> )	6AWG(16mm <sup>2</sup> )	6AWG(16mm <sup>2</sup> )
Recommended cable	12AWG(4mm <sup>2</sup> )	10AWG(6mm <sup>2</sup> )	8AWG(10mm <sup>2</sup> )	6AWG(16mm <sup>2</sup> )
Weight	0.56kg	0.92kg	1.35kg	2.06kg