TRIRON SERIES

Modular MPPT charge controller

The TRIRON series controllers are modular-designed products based on nine MPPT solar controller models. The main unit (Power Module) is a solar controller which can be integrated with different display and interface modules to meet a variety of functional requirements. Among them, the master and slave interface module can synchronize and view the controller and inverter operating data on the LCD.

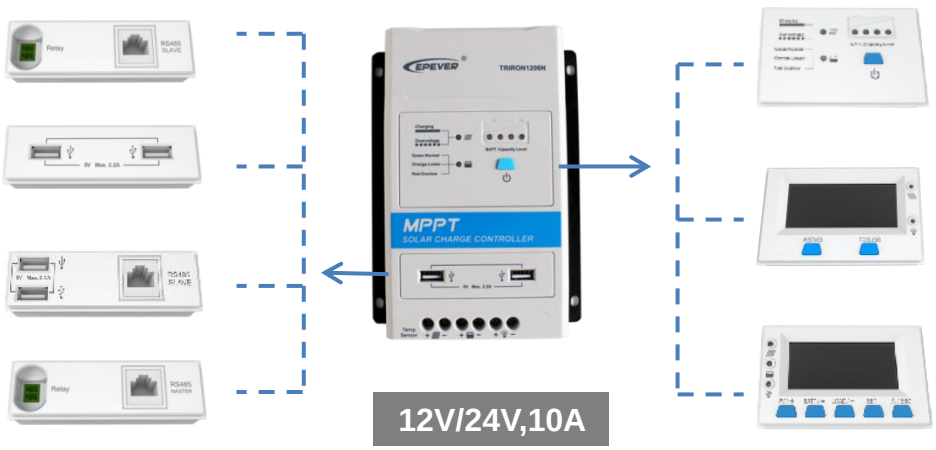
Optimizing the MPPT control algorithm further to ensure minimum power point loss rate and loss time, and quickly track the maximum power point to obtain the maximum solar energy of PV array in any environment. Meanwhile, TRIRON controller adds automatic limit function of charging power and current, so that the controller would not be damaged even connecting oversized PV modules (the actual working value would not be higher than rated value).

The controller adopts the three-stage charging mode, and has perfect electronic protection function, which can effectively extend the battery life, improve the system performance, and ensure the system safety, stability and long-term operation. TRIRION controller can be widely used in RV, telecommunication base station, household system, field monitoring, etc.

Product models

TRIRON1206N	TRIRON2206N
TRIRON1210N	TRIRON2210N
TRIRON3210N	TRIRON4210N
TRIRON2215N	TRIRON3215N
TRIRON4215N	

Product portfolio



Product naming rule

12V/24V,10A

TRIRON 1 2 10 N DS2 / RCM

- DS2 / RCM → Interface module
- DS2 → Display module
- N → Common Negative
- 10 → PV Voc：6-60V 10-100V 15-150V
- 2 → System voltage：12/24VDC
- 1 → Charge/discharge current：1-10A 2-20A 3-30A 4-40A
- TRIRON → Product series name

Product Features

- Self-identifying, load the driver for each module
- Modular design, varied combination to meet different requirements
- Support the hot swapping function(only for same model)
- Advanced MPPT control algorithm to minimize the MPP loss rate and loss time
- Ultra-fast tracking speed, and high tracking efficiency ≥99.5%
- Accurately tracking and recognizing of multiple MPP
- Peak conversion efficiency of 98%
- Auto limit function of charging power and charging current.
- Compatible with lead-acid batteries and lithium batteries

- Wide MPP operating voltage range
- Full load operation during the working temperature range
- Auto reduce power function when charging in high temperature
- Multiple load work modes
- Battery temperature compensation
- Real-time power statistics recording function
- Multiple LCD and LED display modules optional
- Master-slave interface module design, simultaneously view the controller and inverter operating data
- Dry contact design, remotely switch on/off external equipment
- Dual USB design, supply DC power for electronic equipment
- Perfect electronic protection function

Protection function

- PV over current protection
- PV short circuit protection
- Lithium battery low temperature protection
- Night reverse charging protection
- Battery reverse polarity protection
- PV reverse polarity protection
- Battery over discharge protection
- Battery over heat protection
- Battery over voltage protection
- Load short circuit protection
- Load overload protection
- Controller overheating protection

Module introduction

Display module includes base (DB1), standard 1(DS1) and standard 2(DS2);

Interface module includes UCOMS(UCS), RCOMS (RCS), RCOMM(RCM) and dual USB(USB1).

Display module

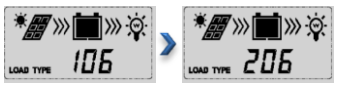
Base module

DB1

LED indicator display the controller operating status and the battery capacity

Pressing the button to manual switch on/off load and clear error.

Standard module 1



DS1

LCD display the basic operating data of the controller including : voltage, current, power etc. , and set part parameters.

DS1

Co-use with the RCM interface module, can synchronously display the operating data of the inverter.

Standard module 2

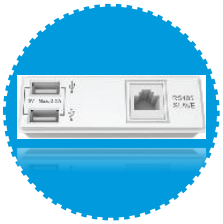
DS2

LCD display the detailed operating data of the controller including: voltage, current, power, capacity etc., and set part parameters.

DS2

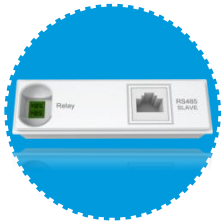
Co-use with the RCM interface module, can synchronously display the operating data of the inverter.

Interface module

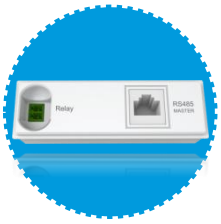


UCS module

USB1 interface module



RCS module



RCM module

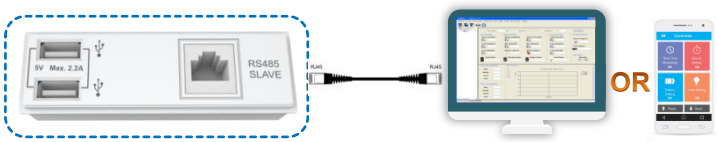
CCV module

Interface module naming rules

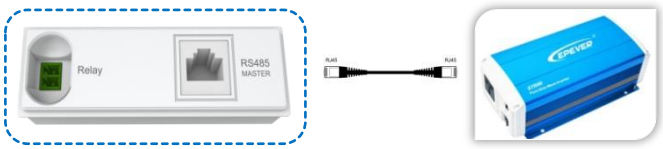
U C S

COM port:

S (short for SLAVE**) :** Controller as slave, PC software & mobile APP can remotely monitor the controller status through this port



M (short for MASTER**):** Controller as master, which can read our company inverter's operating information

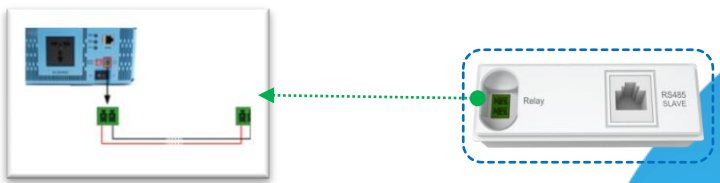


C (short for COM): with COM port

Output type

U (short for USB): USB output，provide power to DC devices

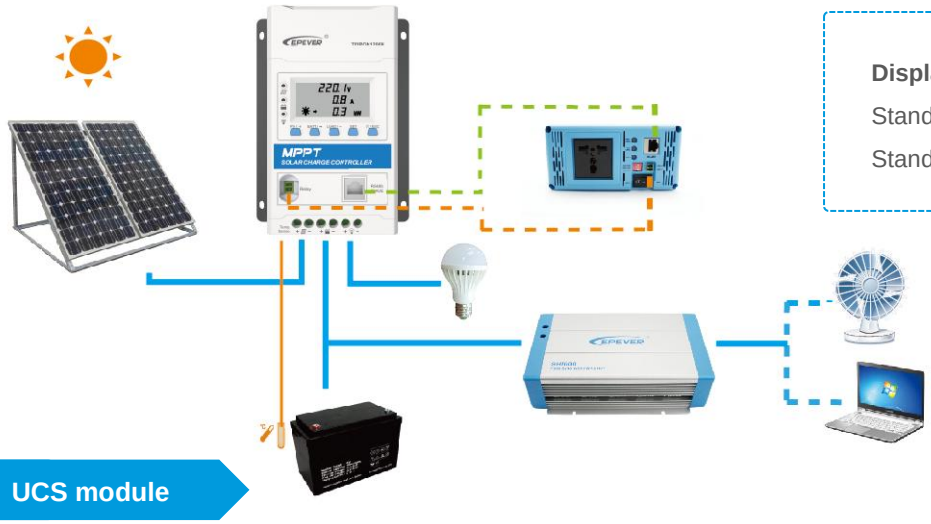
R (short for RELAY**):** Dry contact output, switch ON/OFF the remote device



NOTE: CCV module is an empty board module, does not contain any communication interface. RCM module can only connect to our company inverter, it can not connect to other accessories.

Interface module application scheme

RCM module

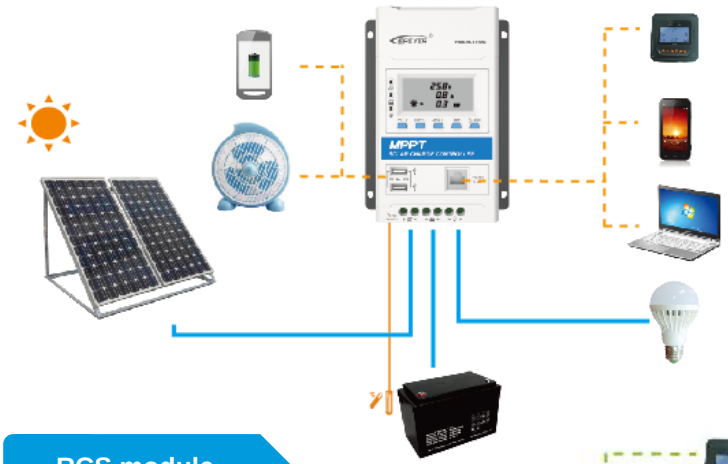


Display module:

Standard module 1 (DS1)

Standard module 2 (DS2)

UCS module



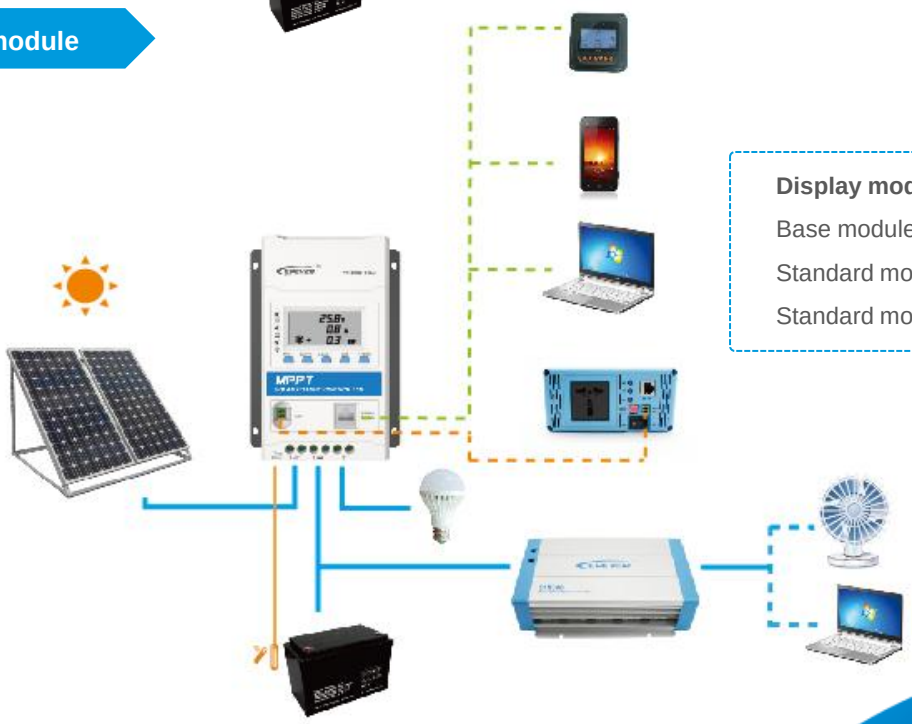
Display module:

Base module (DB1)

Standard module 1 (DS1)

Standard module 2 (DS2)

RCS module



Display module:

Base module (DB1)

Standard module 1 (DS1)

Standard module 2 (DS2)

Accessories

Remote Meter(MT50)
Set the controller parameter via the LCD display

Data logger (eLOG01)
Real-time parameter recording of the product through the RS485 communication mode

Bluetooth adapter (Box-BLE-01)
with 2m communication cable (for the controller with RS485 port)

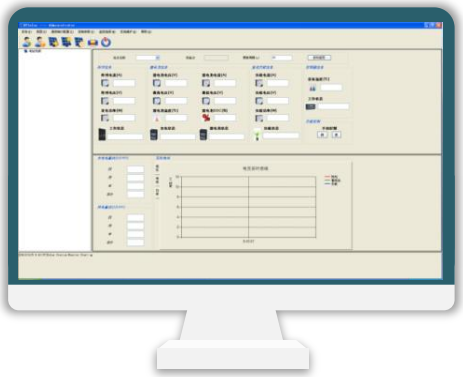
WIFI adapter (eBox-WIFI-01)
with 2m communication cable (for the controller with RS485 port)

Remote temperature sensor RTS300R47K3.81A
(3m)

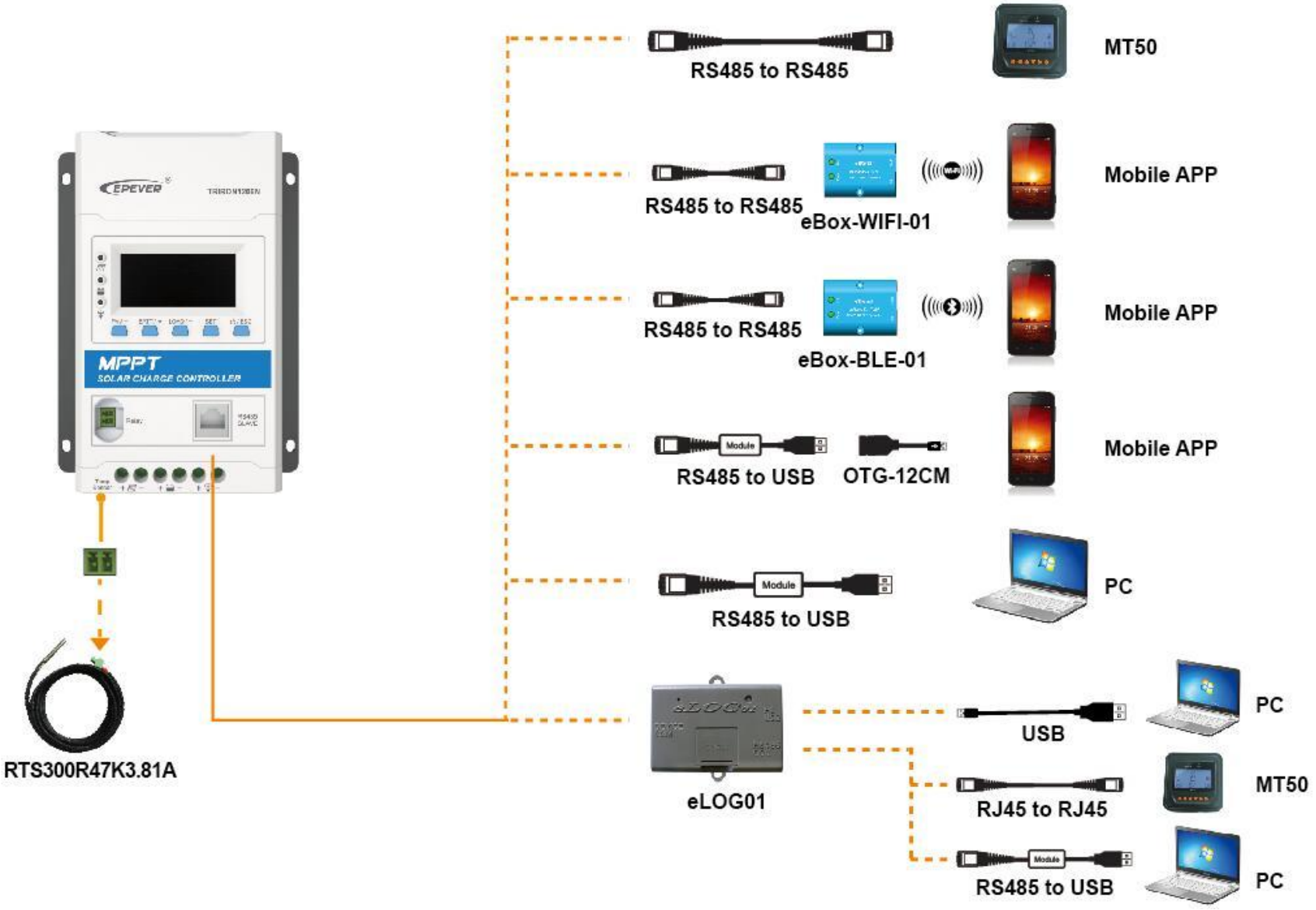
Communication cable CC-USB-RS485-150U-22AWG
USB to RS485 PC communication cable (1.5m)

OTG cable（OTG-12CM）
Connect the controller to mobile APP

PC software：

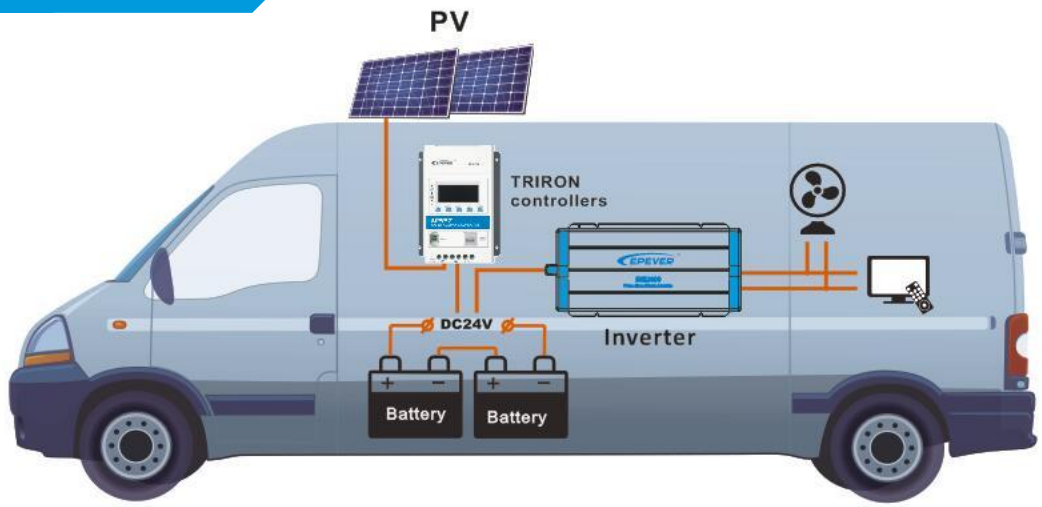


Mobile APP (For Andriod System)：



NOTE: When the interface module is RCS or UCS, the above accessories can be used with the controller.

Electrical parameters



Electrical parameters		TRIRON 1206N	TRIRON 2206N	TRIRON 1210N	TRIRON 2210/15N	TRIRON 3210/15N	TRIRON 4210/15N
Nominal system voltage		12/24VDC auto work					
Rated charge current		10A	20A	10A	20A	30A	40A
Rated discharge current		10A	20A	10A	20A	30A	40A
Battery input voltage range		8～32V					
Max. PV open circuit voltage		TRIRON**06N : 60Vat Min operating environment temp; 46Vat 25℃environment temp TRIRON**10N :100Vat Min operating environment temp; 92Vat 25℃environment temp TRIRON**15N :150Vat Min operating environment temp;138Vat 25℃environment temp					
MPP voltage range		(Vbat+2V)～36V		TRIRON**10N : (Vbat+2V)～72V TRIRON**15N : (Vbat+2V)～92V			
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
Battery type		Sealed / Gel / Flooded;LiFePO4 / Li-NiCoMn / User					
		Lithium battery(LiFePO4 /Li-NiCoMn/User)					
◆ Lead-acid batteries	Equalize charging voltage	Sealed: 14.6V, Flooded: 14.8V, User-defined: 9~17V					
	Boost charging voltage	Gel: 14.2V, Sealed: 14.4V, Flooded: 14.6V, User-defined: 9~17V					
	Float charging voltage	Gel /Sealed /Flooded: 13.8V, User-defined: 9~17V					
	Low voltage reconnect voltage	Gel /Sealed /Flooded: 12.6V, User-defined: 9~17V					
	Low voltage disconnect voltage	Gel /Sealed /Flooded: 11.1V, User-defined: 9~17V					
◆ Li-battery	Boost charging voltage	LiFePO4:14.4V；Li-NiCoMn：12.4V；User:9-17V					
	Float charging voltage	LiFePO4: 13.6V；Li-NiCoMn：11.8V；User:9-17V					
	Low voltage reconnect voltage	LiFePO4:12.4V；Li-NiCoMn：10.40V；User:9-17V					
	Low voltage disconnect voltage	LiFePO4:11.0V；Li-NiCoMn：9.20V；User:9-17V					

Lithium battery	LiFePO4（4S；8S）/Li-NiCoMn（3S；6S）
Self-consumption	≤14mA(12V)；≤15mA(24V)

★ Controller can not auto recognize system voltage when battery type is "lithium battery“, please confirm the system voltage before use.
※ Without equalize charging when the battery type is "lithium battery".
◆ Technical data for 12V system at 25 ℃, twice in 24V system.

Discharge circuit pressure drop	≤0.18V
Temp. compensation	-3mV/℃/2V (Lithium battery has no Temp. compensation)
Grounding	Common negative
RS485 communication interface	5VDC/100mA
USB interface	5VDC/2.2A(total)
Relay interface	30VDC/1A
LCD backlight time	60s(default)

※The Temp. compensation coefficient is 0 When the battery type is "lithium battery“ and can not be changed

Environment parameters

Working environment temperature	-25℃～+55℃（with LCD） -30℃～+55℃（without LCD）
Storage temperature range	-30℃～+70℃
Humidity range	≤95%,(N.C)
Enclosure	IP30

※ In the working environment temperature range ,Controller can be full load operation .

Mechanical parameters

Model	TRIRON1206N TRIRON1210N	TRIRON2206N TRIRON2210/15N	TRIRON3210N TRIRON3215N	TRIRON4210N TRIRON4215N
Dimension	135×180.8×47.3mm	150×216×56.7mm	158×238.3×62.7mm	183×256.8×66.7mm
Terminals	12AWG(4mm^2)	6AWG(16mm^2)	6AWG(16mm^2)	6AWG(16mm^2)
Net weight	0.56kg	0.92kg	1.35kg	2.06kg

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