

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.

Product models

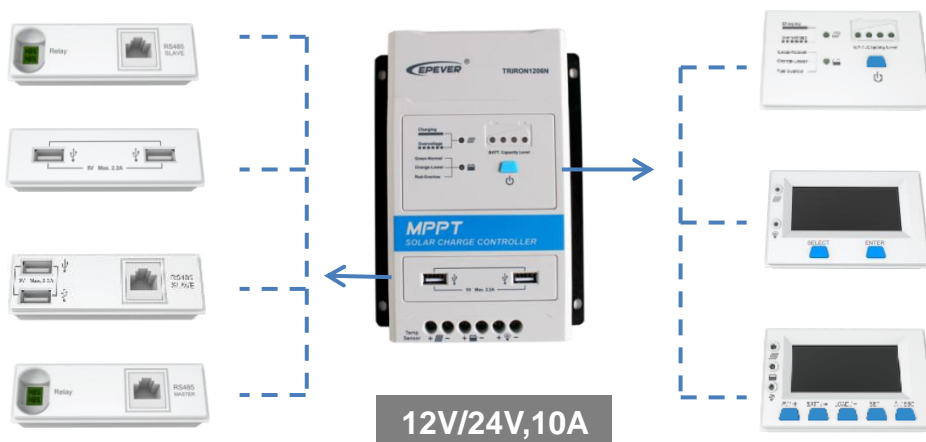
TRIRON1206N TRIRON2206N
 TRIRON1210N TRIRON2210N
 TRIRON3210N TRIRON4210N
 TRIRON4215N

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. TRIRON controller can be widely used in RV, telecommunication base station, household system, field monitoring, etc.



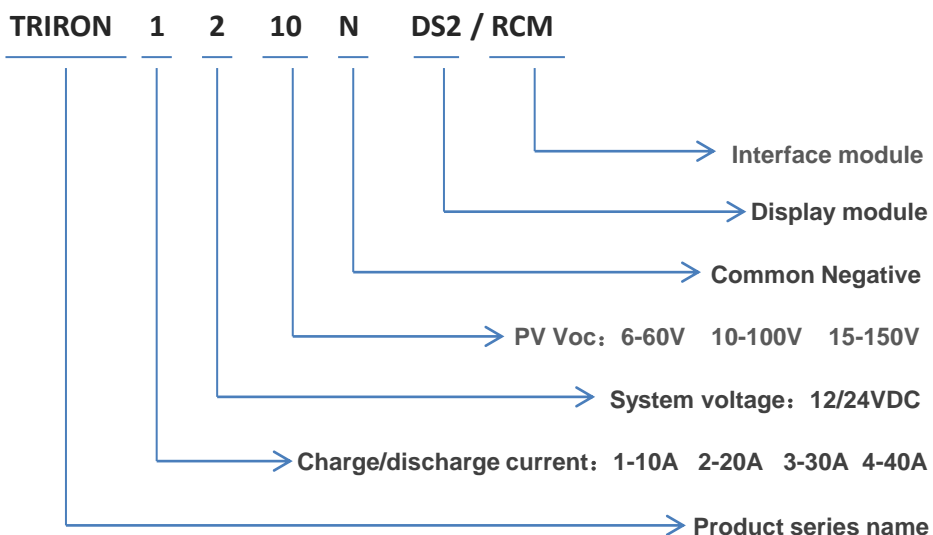
Product portfolio



Product naming rule



12V/24V,10A



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 $\geq 99.5\%$
- 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



Standard module 1



Standard module 2

DB1

LED indicator display the controller operating status and the battery capacity
Pressing the button to manual switch on/off load and clear error.

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.

DS2

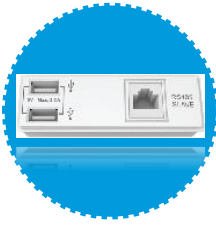
LCD display the detailed operating
data of the controller including:
voltage, current, power, capacity
etc., and set part parameters.

DS2

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



Interface module



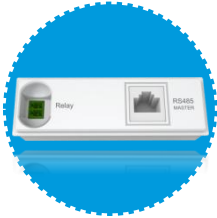
UCS module



USB1 interface module



RCS module



RCM module



CCV module

Interface module naming rules

U

C

S

COM port:

S (short for SLAVE) :

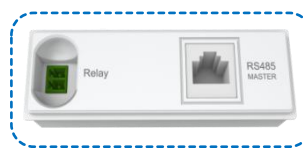
Controller as slave, PC software & mobile APP can remotely monitor the controller status through this port



OR

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

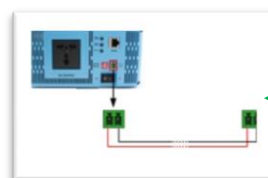
U (short for USB):

USB output, provide power to DC devices



R (short for RELAY):

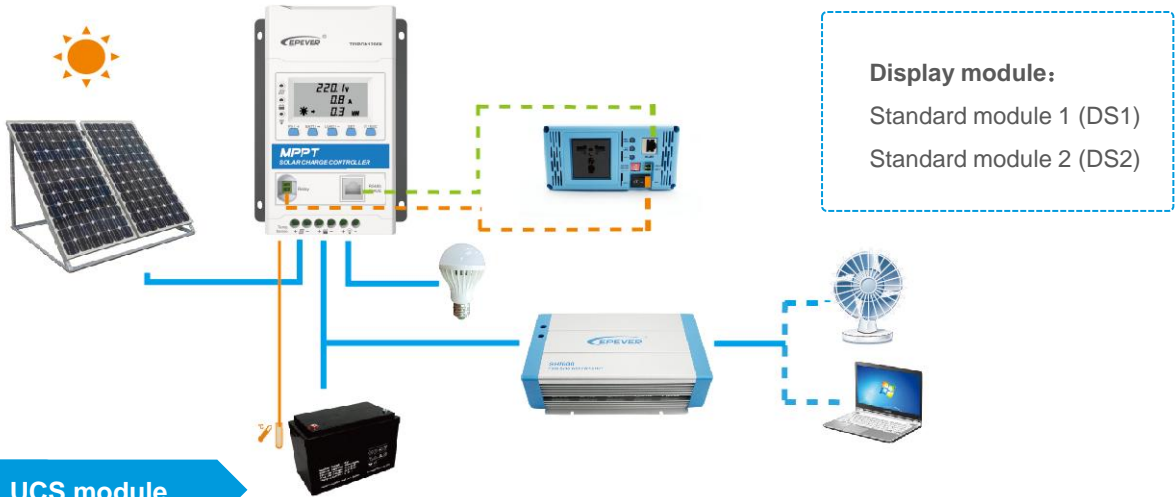
Dry contact output, switch ON/OFF the remote device



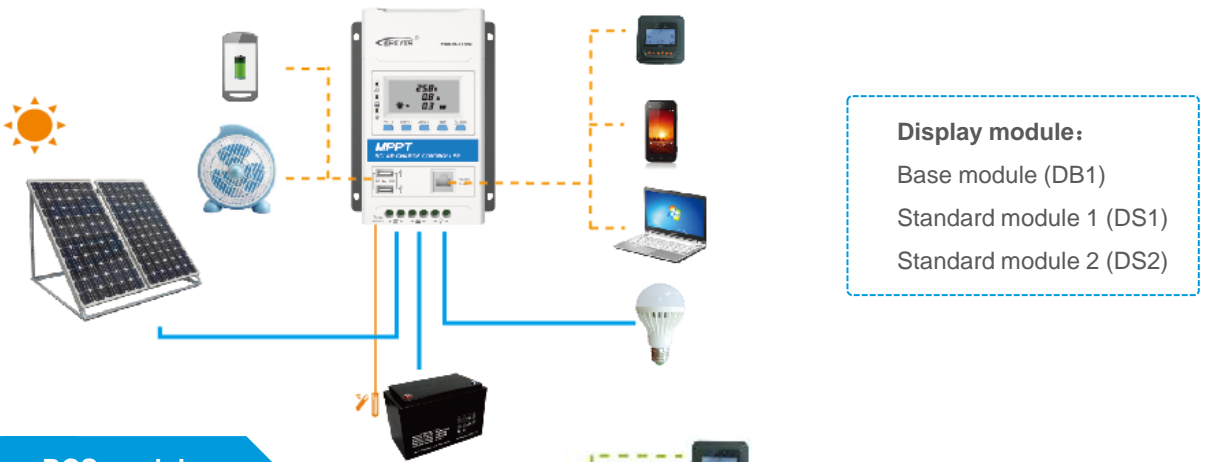
NOTE: CCV module is an empty board module, does not contain any communication interface. RCM module can only connect to our company inverter, it can not connect to other accessories.

Interface module application scheme

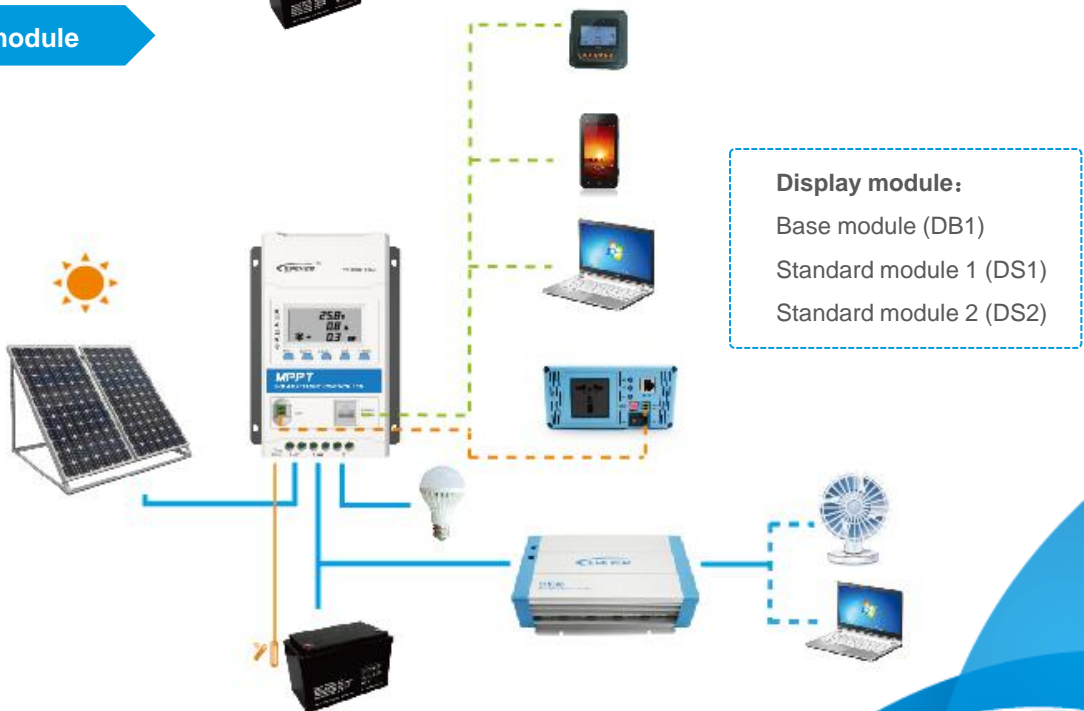
RCM module



UCS module



RCS module



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

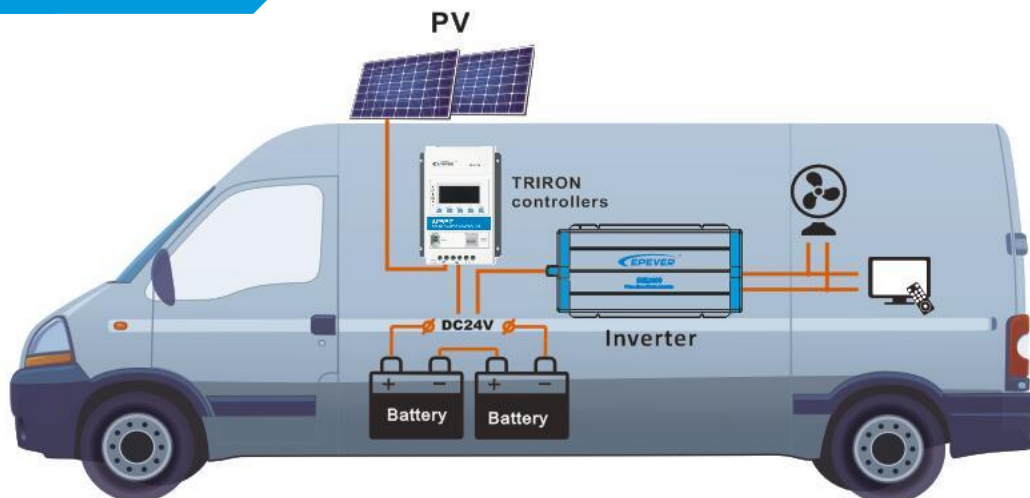
PC software:



Mobile APP (For Andriod System):



Electrical parameters



Electrical parameters	TRIRON 1206N	TRIRON 2206N	TRIRON 1210N	TRIRON 2210N	TRIRON 3210N	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°Cenvironment temp TRIRON**10N :100Vat Min operating environment temp; 92Vat 25°Cenvironment temp TRIRON**15N :150Vat Min operating environment temp;138Vat 25°Cenvironment 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 °C, twice in 24V system.

Discharge circuit pressure drop	≤0.18V
Temp. compensation	-3mV/°C/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°C~+55°C (with LCD) -30°C~+55°C (without LCD)
Storage temperature range	-30°C~+70°C
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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