REGULATEUR SOLAIRE MPPT 15A
VECHLINE - 15939075

Principales caractéristiques

- Régulateur de charge solaire à technologie MPPT.
- Optimise le rendement des panneaux solaires monocristallins, polycristallins et amorphes montés en série
- Courant de sortie de charge jusqu' à 15A
- Utilisation d' un algorithme de charge avancé capable de charger les batteries Lithium en 12 et 24V.
- Boitier métallique avec indice de protection IP68.
- Protection intelligente contre les surchauffes : le régulateur limite la charge dans un premier temps puis se met en sécurité passé un certain seuil.
- Protection contre les inversions de polarité, contre les courts-circuits, les surtensions, etc.

Description

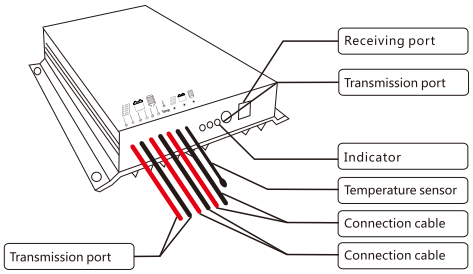
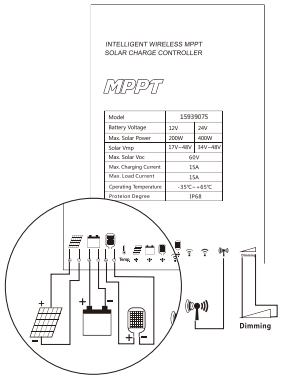


Schéma de raccordement

Veillez à bien respecter les polarités lors du raccordement du régulateur.



Installation

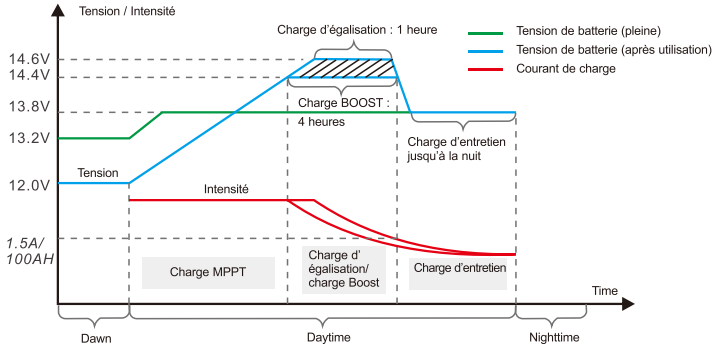
Connecter en premier la charge auxiliaire, puis la batterie et finalement le panneau solaire.

Installation

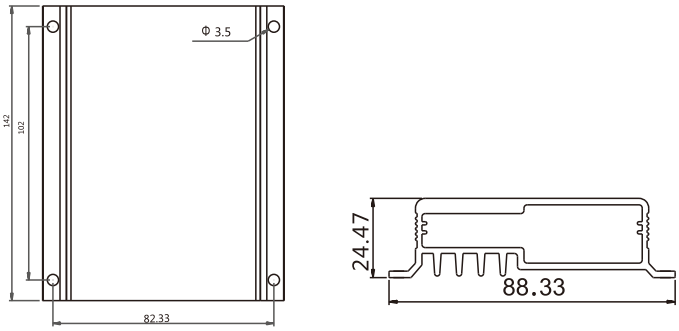
LED	Icône	Voyant	Signification
	Panneau solaire	Allumé fixe	Tension du panneau solaire trop importante
		Eteint	Tension du panneau solaire trop basse
		Clignotement lent	Charge en cours
		Clignotement rapide	Sur-tension
	Batterie de stockage	Allumé fixe	Fonctionnement normal de la batterie
		Eteint	Batterie non connectée
		Clignotement rapide	Tension de batterie trop basse
	Charge auxiliaire (ex: lampe LED)	Allumé fixe	Charge auxiliaire allumée
		Clignotement lent	Charge auxiliaire en surcharge
		Clignotement rapide	Charge auxiliaire en court-circuit
		Eteint	Charge auxiliaire éteinte

Mode de charge MPPT

Ce convertisseur de dernière génération utilise la technologie MPPT (Maximum Power Point Tracking)- Recherche du point de puissance maximal.
Cette technologie de charge avancée permet au régulateur de détecter en temps réel la tension du panneau solaire et du point de puissance maximal de la courbe Intensité / Tension qui permet le chargement optimal de la batterie. Le régulateur MPPT permet de générer un courant de charge optimal de l' ordre de 15 à 20% supérieur à un régulateur classique PWM.
Le point de puissance maximal change en fonction de la température ambiante et des conditions d' ensoleillement. Le régulateur va donc rechercher en permanence la tension la plus optimale.
Pour pouvoir charger une batterie de manière optimal, le régulateur doit effectuer des cycles de charge de différentes natures:charge MPPT, charge boost, charge d' entretien, charge d' égalisation, etc.
Le cycle de charge boost dure 4 heures, et la charge d' entretien 1 heure (Intervalle entre 2 cycles de charge d' égalisation: 30 jours).



Dimensions



15939075 dimensions:
Dimensions hors-tout: 142 x 88.3 x 24.5 (mm)
Entraxe trous de fixation: 102×82.3 (mm)
Diamètre des trous de fixation: 3.5 (mm)

Paramètres de fonctionnement

Paramètres	Valeur	Réglable	Par défaut
Tension	12V/ 24V	-	-
Intensité de charge maximale	15A	-	-
Puissance panneau solaire maximale	270W/ 12V; 430W/ 24V	-	-
Tension d' entrée du panneau solaire	< 60V	-	-
Efficacité MPPT	> 90%	-	-
Intensité en sortie maxi.	15A	-	-
Protectection contre les surtensions	Batteries au lithium	17.0V; ×2/24V	16.6V
protection contre les surcharges	7.5V to 15.5V; × 2/24V (25°C)	-	14.6V
Tension de charge après de charge excessive	7.5V to 15.5V; × 2/24V (25°C)	-	13.6V
Seuil de décharge excessive	7.5V to 15.5V; × 2/24V (25°C)	√	11V
Tension de charge après décharge excessive	7.5V to 15.5V; × 2/24V (25°C)	√	12.6V
Température de fonctionnement	-35°C to +65°C	-	-
Indice de protection	IP68	-	-
Poids (g)	490	-	-
Dimensions (mm)	142x88.3x24.5	-	-

Résolution de problèmes

Problème constaté	Solution
Le témoin lumineux de la charge auxiliaire clignote lentement et aucune charge en sortie n' est détectée.	La charge auxiliaire est en surcharge. Après une période de 10 secondes la charge reprendra.
Le témoin lumineux de la charge auxiliaire clignote rapidement et aucune charge en sortie n' est détectée.	La charge auxiliaire est en court-circuit. Elle reprendra après une période d' 1 minute.
Le témoin lumineux de la batterie clignote rapidement et aucune charge en sortie n' est détectée.	La batterie est en décharge excessive.
Le témoin du panneau solaire ne s' allume pas alors qu' il y a du soleil.	Vérifier la connection du panneau solaire.

MPPT Solar Charge Controller
User Manual-15939075

Main features

●With MPPT functions, applicable to mono-crystalline, polycrystalline and amorphous silicon solar panels serially connected in various numbers significantly improving the solar panels' energy utilization ratio.
●Adopts the MPPT solar charging technology, with a max. solar panel open-circuit voltage Voc ≤ 60V and a max. solar panel power Pm ≤ 400W.
●Supports a load output current of 15A
●Adopts an improved charging algorithm that supports 12V and 24V lithium batteries.
●Normally-on mode, suitable for those load, which requires to work 24h a day.
●A metal case and an IP68 waterproof level enable the device to operate in various kinds of tough conditions.
●An overheat protection function enables the device to scale down the load or shut off the load completely when its temperature exceeds a certain point.
●A range of protection measures such as battery reverse-connection protection, load short-circuit and overload protection, etc., put the system under comprehensive and constant guard.

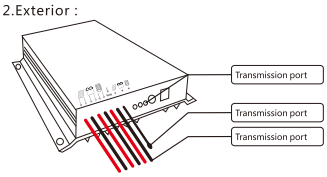
Exterior and Wiring

1.Model name composition

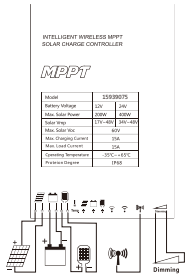
15939075

- System voltage: 12/24V, current: 15A
- MPPT charging

2.Exterior :



3.Wiring diagram



4. Wiring sequence: connect first the load, second the battery, and finally the solar panel.

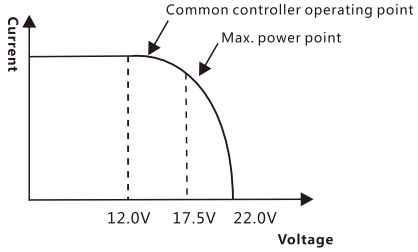
State Indicators

LED lights	Indicated item	State	Meaning
	Charging	Steady on	Solar panel voltage higher than light control voltage
		Off	Solar panel voltage lower than light control voltage
		Slow flashing	Charging in process
		Quick flashing	System over-voltage
	Battery	Steady on	Normal battery function
		Off	Battery not connected
		Quick flashing	Battery over discharged
	Load	Steady on	Load turned on
		Slow flashing	LED load overloaded
		Quick flashing	Short-circuit LED load
		Off	Load switched off

Load Working Modes

Normally-on mode: default mode, the energized load keeps outputting, and this mode is suitable for loads which need 24-hour power supply.

MPPT Charging Introduction



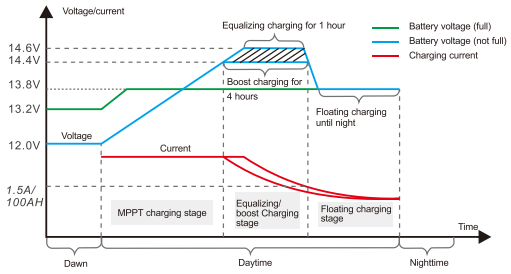
(A 12V battery system is taken as example)

Standing for "Maximum Power Point Tracking", MPPT is an advanced charging method. The MPPT controller can keep monitoring the solar panel's generating power and tracking the highest voltage and current values (VI), enabling the system to charge the battery in optimum efficiency. Compared with conventional PWM controllers, the MPPT controller can make the most of the solar panel's max. power and therefore provide larger charging current. Generally speaking, the latter can raise the energy utilization ratio by 15% to 20% in contrast with the former.

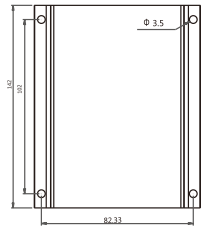
As the solar panel's peak voltage (Vpp) is approximately 17V while the battery's voltage is around 12V, when charging with a conventional charge controller, the solar panel's voltage will stay at around 12V, failing to deliver the maximum power. However, the MPPT controller can overcome the problem by adjusting the solar panel's input voltage and current in real time, realizing a maximum input power.

Meanwhile, due to changing ambient temperature and illumination conditions, the max. power point varies frequently, and the MPPT controller adjusts parameter settings according to the environmental conditions in real time, so as to always keep the system close to the max. operating point.

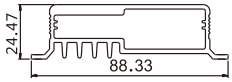
As one of the charging stages, MPPT can not be used alone, but has to be used together with boost charging, floating charging, equalizing charging, etc. to complete charging the battery. In the process, boost charging takes 4 hours, and floating charging 1 hour (with the equalizing charging interval being 30 days).



Installation dimensions

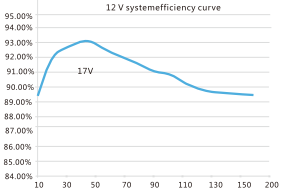


15939075 dimensions are as follows:
External dimensions: 142 x 88.3 x 24.5 (mm)
Installation dimensions: 102×82.3 (mm)
Installation hole diameter: 3.5 (mm)

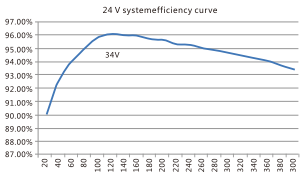


Charging Conversion Efficiency Curve

1.12V system



2.24V system



Parameter Settings

Parameter	Value		Adjustable or not	Par défaut
Model	15939075			
No-load loss	26mA/ 12V; 15mA/ 24V			
System voltage	12V/ 24V			
Charging current	15A			
Max. solar panel power	200W/ 12V; 400W/ 24V			
Solar panel input voltage	< 60V			
MPPT tracking efficiency	> 99%			
Charging conversion efficiency	90% to 96%			
Max. output current	15A			
Over-voltage protection	Lithium batteries	(overcharge voltage + 2V); ×2/24V (25°C)		16.6V
Whether charging is prohibited below 0 °C		Yes, No		No
Overcharge voltage		7.5V to 15.5V; × 2/24V (25°C)		14.6V
Overcharge recovery voltage		7.5V to 15.5V; × 2/24V (25°C)		13.6V
Over-discharge voltage	7.5V to 15.5V; × 2/24V (25°C)			11.0V
Over-discharge recovery voltage	7.5V to 15.5V; × 2/24V (25°C)			12.6V
Operating temperature	-35°C to +65°C			
Protection degree	IP68			
Weight (g)	490			
Dimensions (mm)	142x88.3x24.5			

Note: parameter settings shall comply with the following rule, i.e. boost charging voltage > floating charging voltage > over-discharge recovery voltage > over-discharge voltage.

Frequently Met Abnormalities and Solutions

Symptoms	Causes and solutions
The load indicator is flashing slowly, and no output is detected	The load is overloaded, and will restart after a time delay of 10s.
The load indicator is flashing quickly, and no output is detected	The load is short-circuited, and will restart after a time delay of 1 minute.
The battery indicator is flashing quickly, and no output.	The battery is over-discharged, and will recover automatically when getting recharged to the over-discharge recovery point.
While sunlight is present, the solar panel indicator doesn't light up.	Check whether the solar panel is correctly connected and whether it's blocked.