

MPPT SMART CHARGE CONTROLLER



Smart Energy Home Management



3 independent MPPT PV inputs



Max module power:

- 1350W for 12V battery voltage
- 2700W for 24V battery voltage
- 5400W for 48V battery voltage



Cloud IOT Technology



Advanced online data monitoring & control



Enhanced display user interface



Smart Battery profiles



12V / 24V / 48V battery auto-detect voltage



Protections:

- Low battery
- Over-temperature
- Battery polarity inversion
- Output overload protection



Pb-lead acid, Pb-AGM,
Pb-gel batteries and Lithium batteries

Il **WRM90** è un regolatore per la carica di batterie da modulo fotovoltaico da impiegare in impianti domestici o grandi impianti ad isola. E' adatto per sistemi a 12V/24V/48V e può gestire una potenza fotovoltaica fino a 5,4kW. Il WRM90 inoltre è connesso ad internet: questo permette agli utenti di controllare da remoto il funzionamento del regolatore, modificare le impostazioni e aggiornare il software.

Una piattaforma dedicata permette, infatti, diverse funzionalità: monitoraggio, controllo e gestione del sistema.

Questo modello di regolatore di carica implementa un circuito di ricerca della massima potenza di modulo PV (**MPPT**), che massimizza l'energia estratta dal modulo e caricata in batteria. Il regolatore permette la gestione di tre stringhe PV indipendenti.

Il WRM90 è disponibile nella versione **Smart**, ovvero compatibile con batterie dotate di BMS (con comunicazione CAN) e in versione con battery monitor integrato (**WBM**) che permette una gestione avanzata delle batterie tradizionali.

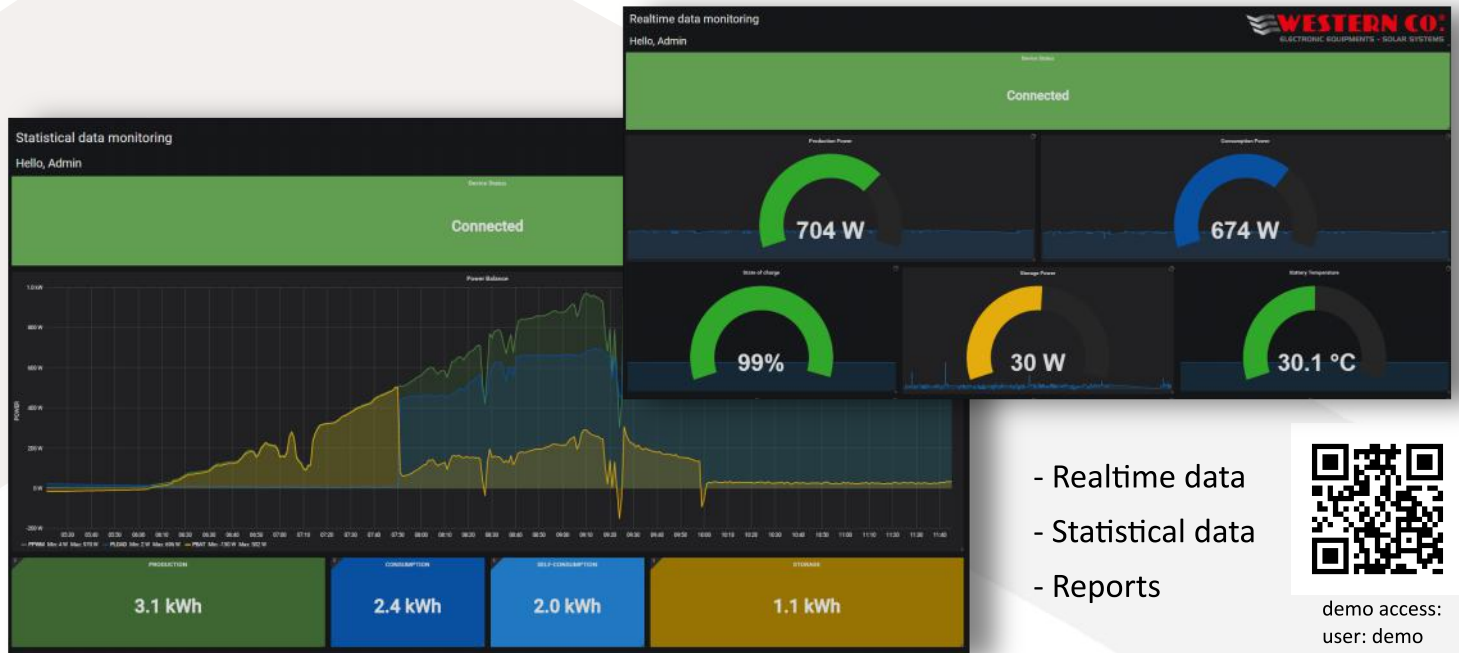
WRM90 is a charge controller designed for residential or big stand-alone systems. It's designed for 12V/24V/48V batteries and handles up to 5,4kW PV module power. WRM90 is connected to the internet: in this way the users can remotely control the functionalities of the system and change the settings, besides update remotely the device firmware.

A dedicated online platform allows monitoring, control and management of the system.

*This type of charge controller implements a Maximum Power Point Tracker (**MPPT**) circuit to exploit the maximum PV power available to charge the battery. The controller manages three separated PV strings.*

*The WRM90 is available in the **Smart** version, capable of communicating (using CAN protocol) with BMS-integrated batteries, and in the battery monitor (**WBM**) version, specifically designed to monitor and manage traditional batteries.*

Online data Monitoring

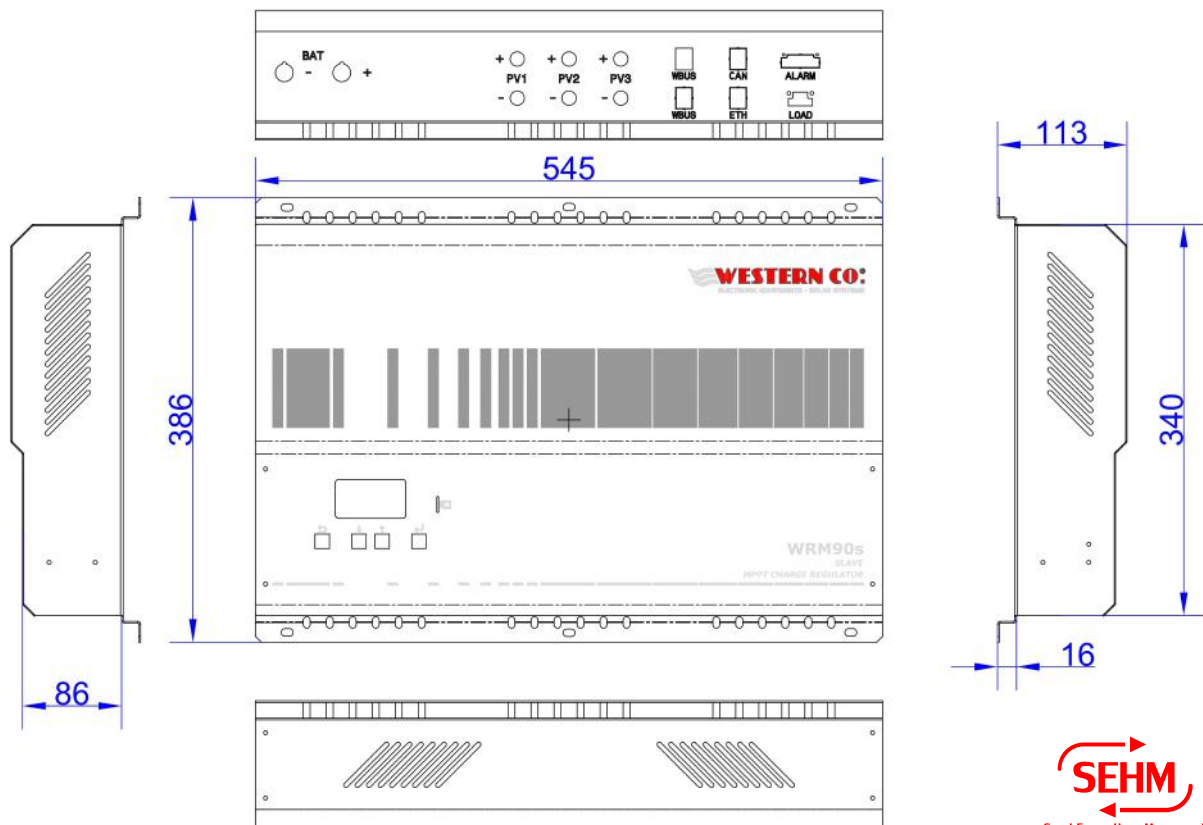


- Realtime data
- Statistical data
- Reports



demo access:
user: demo
pass: demo

Mechanical Dimensions

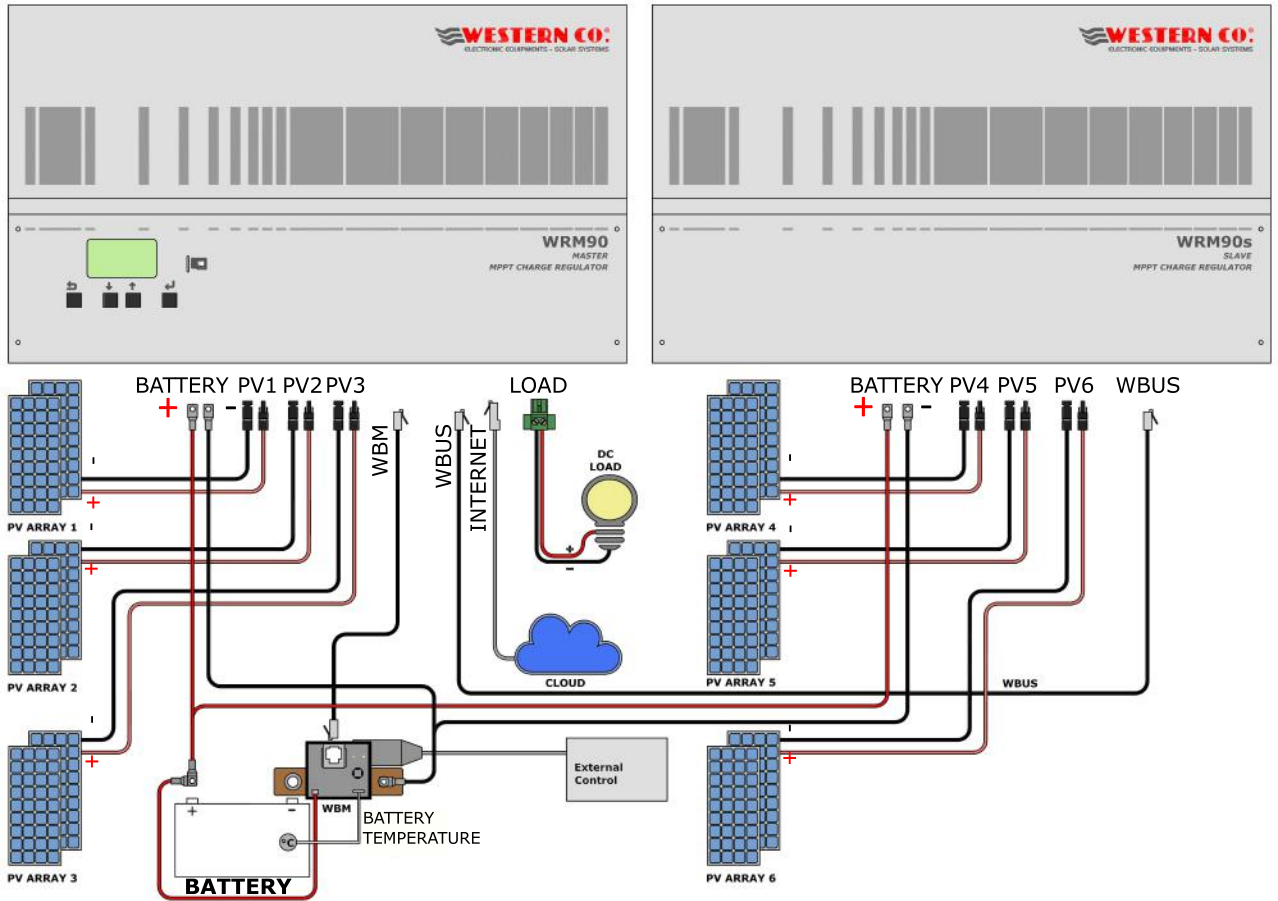


WRM90 M

Master

WRM90 S

Slave

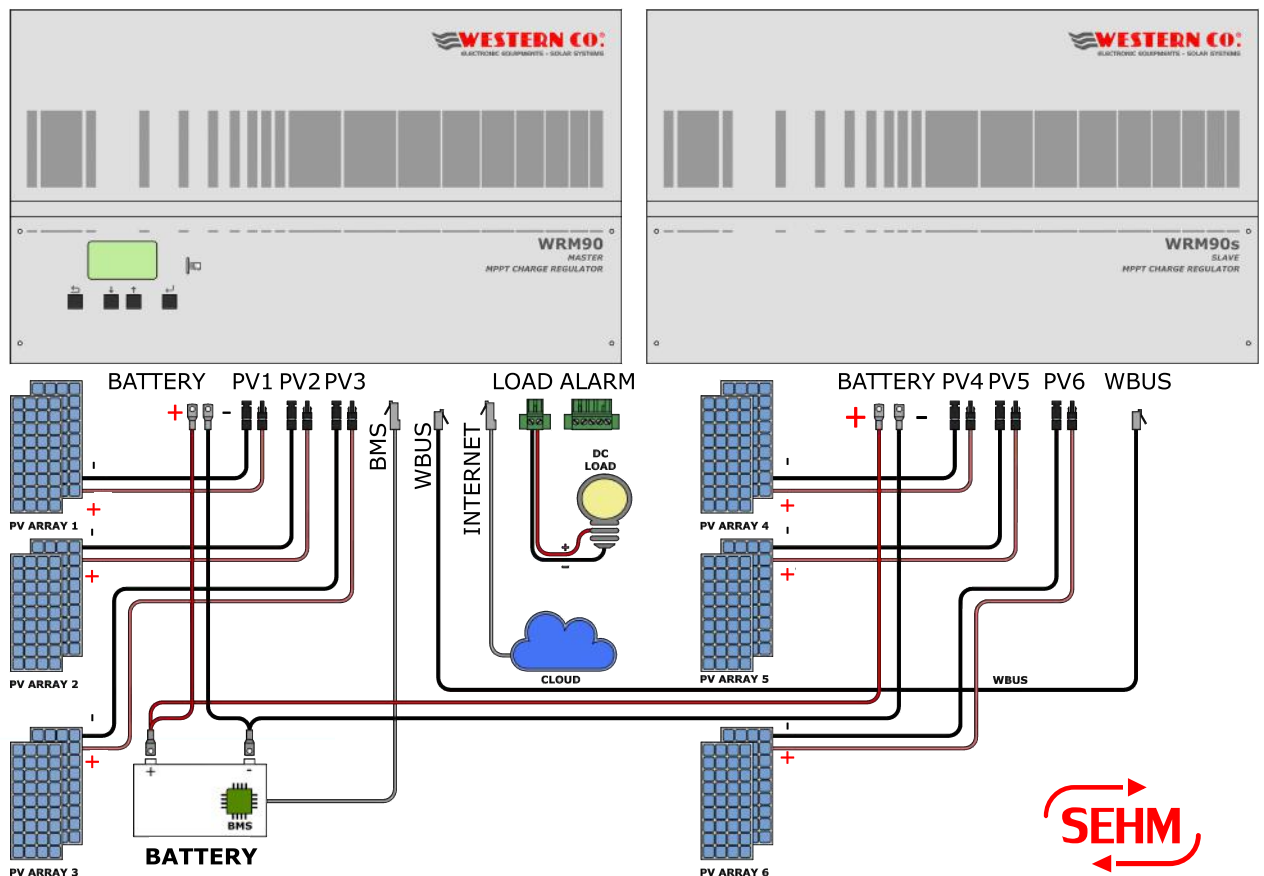


WRM90 M Smart

Master

WRM90 S

Slave



		WRM90 Smart Master	WRM90 Master	WRM90s Slave	U.M.	
Nominal battery voltage		12 / 24 / 48 autodetect			(V)	
Battery voltage range (12/24/48V)	V _{bat}	10 ÷ 16/ 20 ÷ 32 / 40 ÷ 64			(V)	
Max charge current ¹	I _{ch}	90			(A)	
Max charge power (12/24/48V)	P _{ch}	1350 / 2700 / 5400			(W)	
Max open circuit voltage of PV string	V _{oc}	180			(V)	
Max short circuit current of each PV string input	I _{sc_n}	26			(A)	
Independent MPPT PV string input	PV _n	3				
Max power of each PV string input (12/24/48V)	P _{pv_n}	450 / 900 / 1800			(W)	
Self consumption	P _q	1,2			(W)	
Operating temperature	T _{amb}	-10 ÷ +40			(°C)	
Max power dissipated (12/24/48V)	P _{loss}	120 / 168 / 198			(W)	
Efficiency @ 60A (12/24/48V)	η	90 ÷ 92 / 93,5 ÷ 95,2 / 96,0 ÷ 97,2			(%)	
Parallel slave operation		controlled via W-BUS				
Weight		8,75			(kg)	
Dimension LWH		370 x 386 x 113			(mm)	
Degree of protection		IP20				
Smart Battery profiles		- LG Chem RESU 48V - TAWAKI BATTERY - BYD B-BOX PRO 48V	- FIAMM RES	sent from Master via W-BUS		
Working parameters		sent from BMS via CAN-BUS	sent from WBM via W-BUS			
Charge algorithm ²		multistage: Bulk / Absorption / Float				
Generic profiles			Flood	Seal-Gel	Lithium	parameters sent from Master via W-BUS
End of charge voltage @ 25°C (12V/24/48V)	V _{EoC_12}		14,8	14,4	14,0 ÷ 14,7	
	V _{EoC_24}		29,6	28,8	28,0 ÷ 29,4	
	V _{EoC_48}		59,2	57,6	56,0 ÷ 58,8	
V _{EoC} temperature compensation ³ (12/24/48V)	V _{tadj}		-24 / -48 / -96		(mV/°C)	
Float voltage (12/24/48V)	V _{flt}		V _{EoC} - (0,6 / -1,2 / -2,4)		(V)	
Absorption time to float state	T _{abs}		4		(h)	
Output LOAD topology ⁴		open drain				
Output LOAD voltage	V _{LOAD}	V _{batt}			(V)	
Output LOAD current	I _{LOAD}	15			(A)	
Output ALARM topology		relè				
Output ALARM current	I _{ALA}	60Vdc 5A	60Vdc 0,1A			
Battery connection		terminal M8				
Battery cable		pair of R/N 25mm ² 1,5m with ring terminal Ø8 (supplied)				
PV string input connection		3 pairs of M/F MC4 (supplied)				
Solar cable section for MC4 connectors		4/6mm ²				
Cable section for output LOAD connector		2,5mm ²				
Cable section for output ALARM connector		1,5mm ²	2 pairs of 0,5mm ² 1,8m (supplied)			
Internet cable connector		RJ45				
Control bus interface connector		RJ12				
Control bus interface topology		W-BUS				
Battery bus interface connector ⁵		RJ12	RJ12			
Battery bus interface topology		CAN	W-BUS			
External shunt device		WBM-Shunt				
Battery connector on WBM-Shunt (negative)		hole Ø7 (18x20mm)				
Supply cable on WBM-Shunt		1mm ² 1,8m with ring terminal Ø8 (supplied)				
Electrical protection		Battery reverse polarity, temperature derating, overload.				

¹ The maximum charging current is limited to 30A for each PV input.

⁴ Positive in common.

² With the Li program, the Float stage does not exist.

⁵ Refer to the manual for pinout

³ With the Li program, the VEoC is not compensated in temperature.



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