WRM60 DATASHEET

MPPT SMART CHARGE CONTROLLER

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- **2 indipendent MPPT string inputs**
- **Max module power:**
  - 900W for 12V battery voltage
  - 1800W for 24V battery voltage
  - 3600W 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 **WRM60** 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 3,6kW. Il WRM60 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 due stringhe PV indipendenti.
Il WRM60 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.

WRM60 *is a charge controller designed for residential or big stand-alone systems. It's designed for 12V/24V/48V batteries and handles up to 3,6kW PV module power. WRM60 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 two separated PV strings.
*The WRM60 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.*

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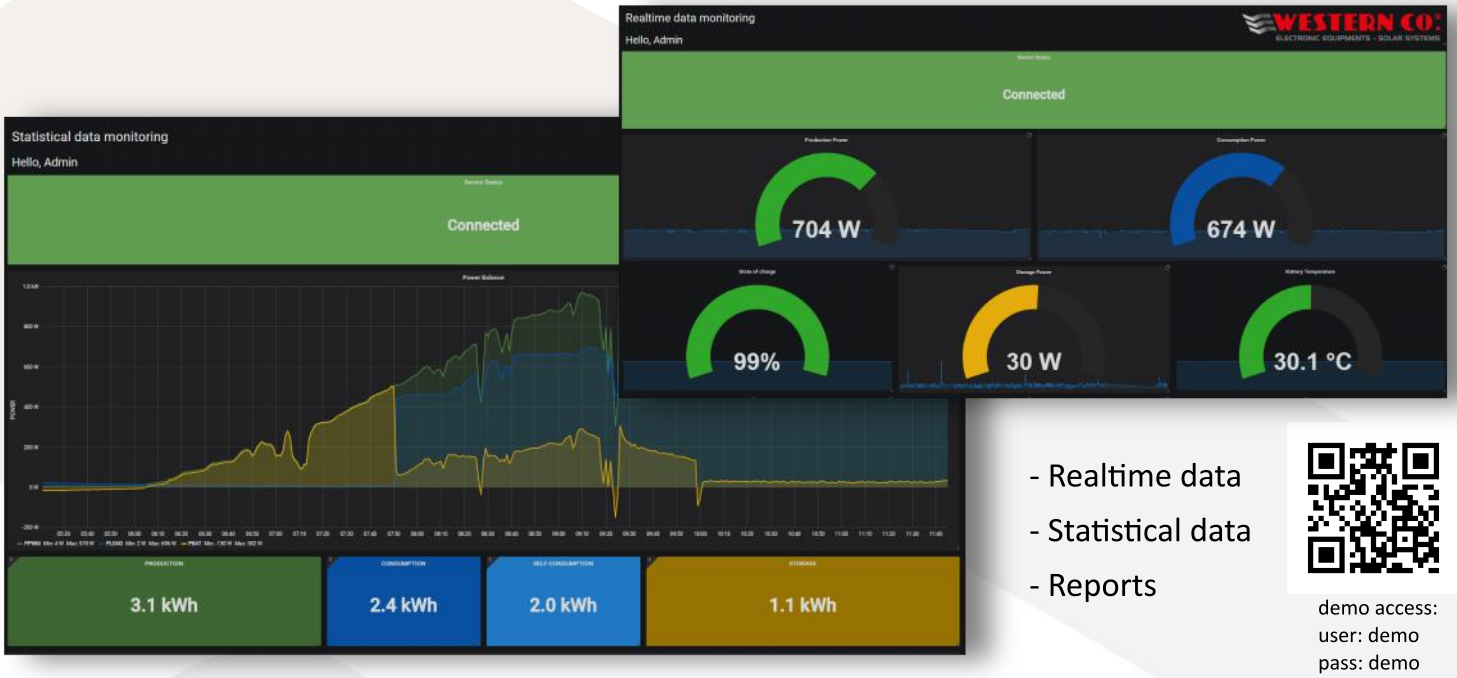
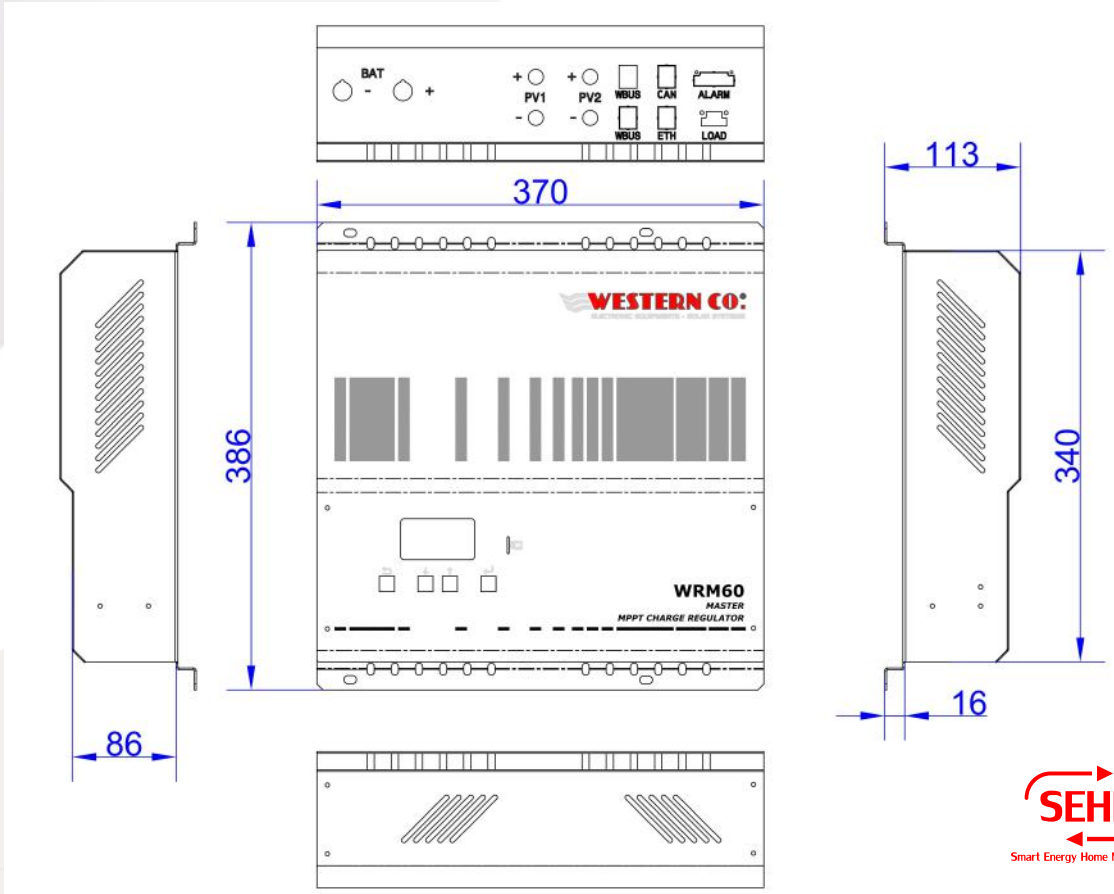
Online data Monitoring



- Realtime data
- Statistical data
- Reports

demo access:
user: demo
pass: demo

Mechanical Dimensions



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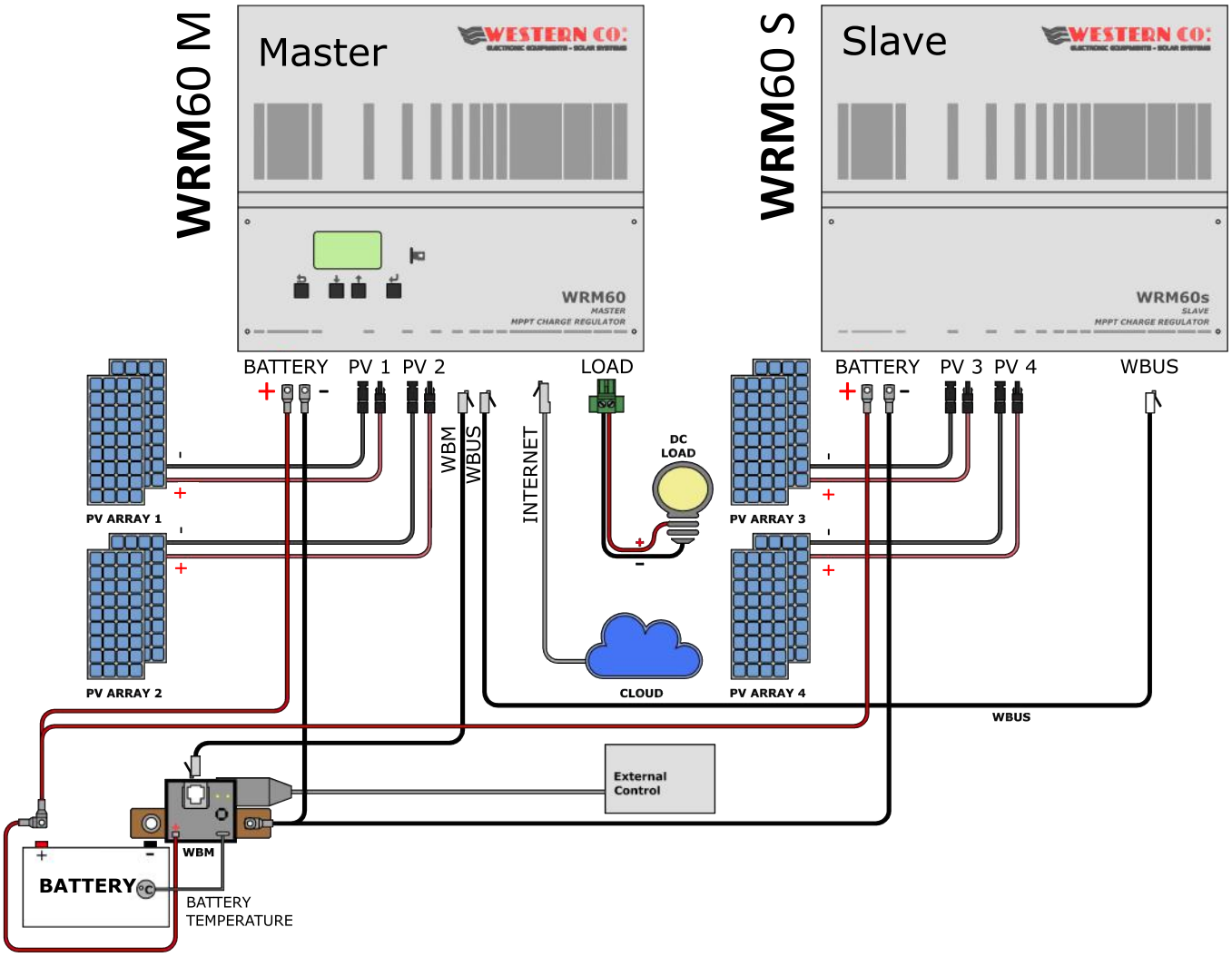
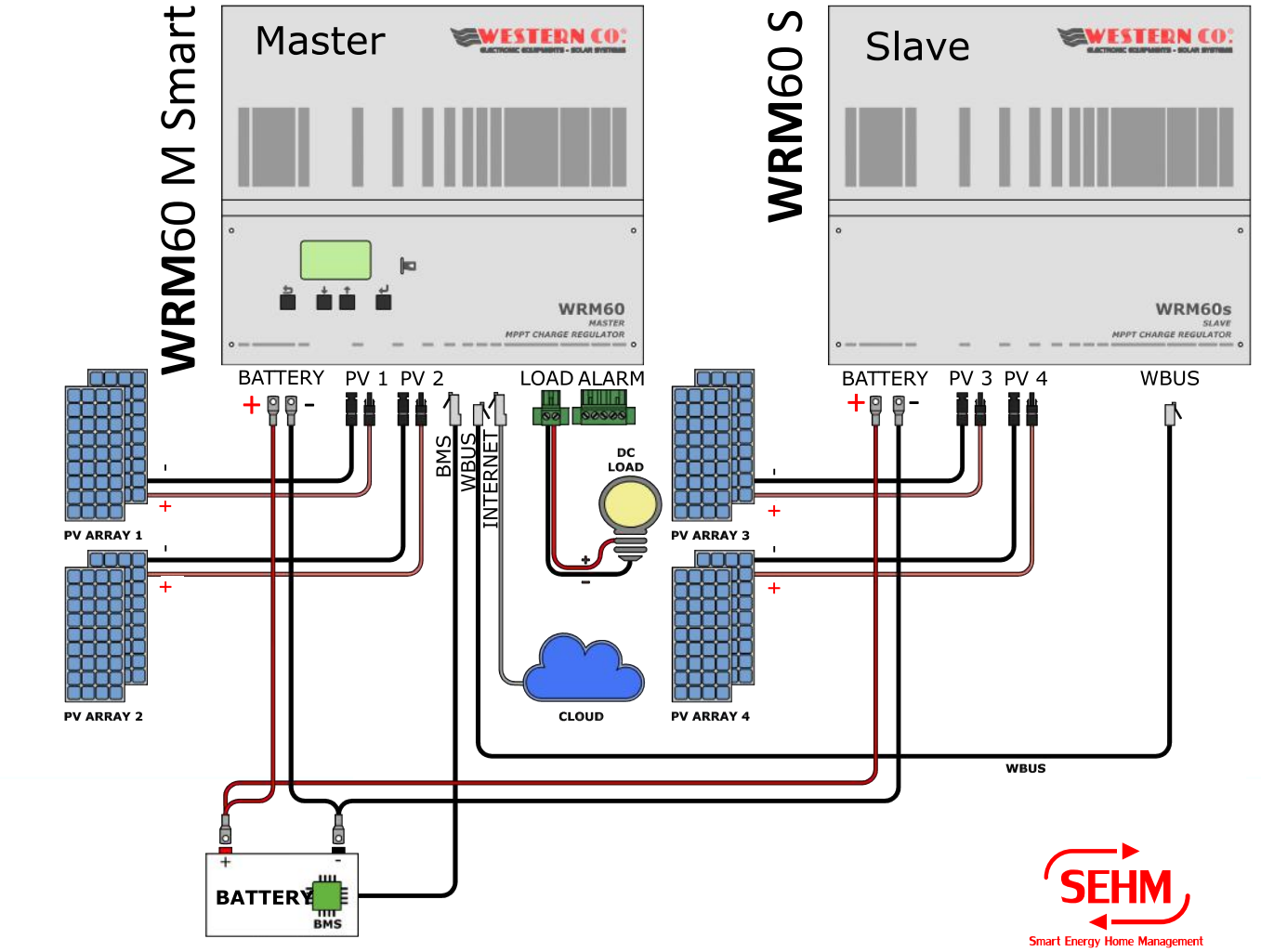
TECHNICAL SPECIFICATIONS

Cabling Diagram

WRM60





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TECHNICAL SPECIFICATIONS

Electrical/Mechanical characteristics

WRM60

		WRM60 Smart Master	*WRM60 Master*		*WRM60s 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}	60				(A)
Max charge power (12/24/48V)	P_{ch}	900 / 1800 / 3600				(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)
Indipendent MPPT PV string input	$PV_{\_n}$	2				
Max power of each PV string input (12/24/48V)	P_{pv_n}	450 / 900 / 1800				(W)
Self consumption	P_q	1,0				(W)
Operating temperature	T_{amb}	-10 ÷ +40				(°C)
Max power dissipated (12/24/48V)	P_{loss}	80 / 112 / 132				(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		6,25				(kg)
Dimension LWH		545 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	
End of charge voltage @ 25°C (12V/24/48V)	V_{EoC_12} V_{EoC_24} V_{EoC_48}		14,8 29,6 59,2	14,4 28,8 57,6	14,0 ÷ 14,7 28,0 ÷ 29,4 56,0 ÷ 58,8	(V)
V_{EoC} temperature compensation[3] (12/24/48V)	V_{tadj}		-24 / -48 / -96		parameters sent from Master via W-BUS	(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	relè			
Output ALARM current	I_{ALA}	60Vdc 5A	60Vdc 0,1A			
Battery connection		terminal M8				
Battery cable		pair of R/N 25mm² 1,5m with ring terminal Ø8 (supplied)				
PV string input connection		2 pairs of M/F MC4 (supplied)				
Solar cable section for MC4 connectors		4/6mm²				
Cable section for output LOAD connector		2,5mm²				
Cable section for output ALARM connector		1,5mm²	2 pairs of 0,5mm² 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			1mm² 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.*
[2] *With the Li program, the Float stage does not exist.*
[3] *With the Li program, the VEoC is not compensated in temperature.*
[4] *Positive in common.*
[5] *Refer to the manual for pinout.*

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