

PV CHARGE REGULATORS

APP
WRM Monitor 



Il WRM20 è una soluzione completa per la realizzazione di impianti fotovoltaici ad isola, per alimentare sistemi di segnaletica stradale, sistemi di illuminazione, piccole utenze a bassa tensione e per la ricarica di batterie all'interno dei camper o delle imbarcazioni. Questo regolatore di carica implementa un circuito di ricerca della massima potenza di pannello (MPPT) che, indipendentemente dalla tensione di batteria e dal suo stato di carica, fa sempre lavorare il modulo PV nel suo punto di massima potenza.

Con il regolatore WRM20, si possono installare anche i più economici moduli normalmente impiegati per sistemi connessi a rete, con un numero di celle diverso da 36 o 72. Si possono, inoltre, impiegare i moduli in silicio amorfo normalmente non adatti ai regolatori PWM. Il WRM20 rileva lo stato giorno/notte in base alla tensione del modulo PV, quindi non è necessario collegare ulteriori sensori al regolatore. Un ampio display visualizza lo stato di funzionamento del regolatore, sia attraverso icone semplici ed intuitive, sia visualizzando il valore della corrente di ricarica, la tensione di batteria, l'energia prodotta dal modulo PV, la corrente del carico e l'energia consumata dal carico.



Step down MPPT charge



Maximum PV module power:

- 310 W for 12 V battery
- 620 W for 24 V battery



Integrated blocking diode



For sealed / GEL, flooded lead acid batteries and lithium-ion batteries



Temperature-compensated charge voltage



12 V / 24 V battery auto-detect voltage



18 programs for load management



LCD display user interface



Protections:

- Load-disconnect in case of low battery
- Over-temperature
- Battery polarity inversion
- Output overload protection



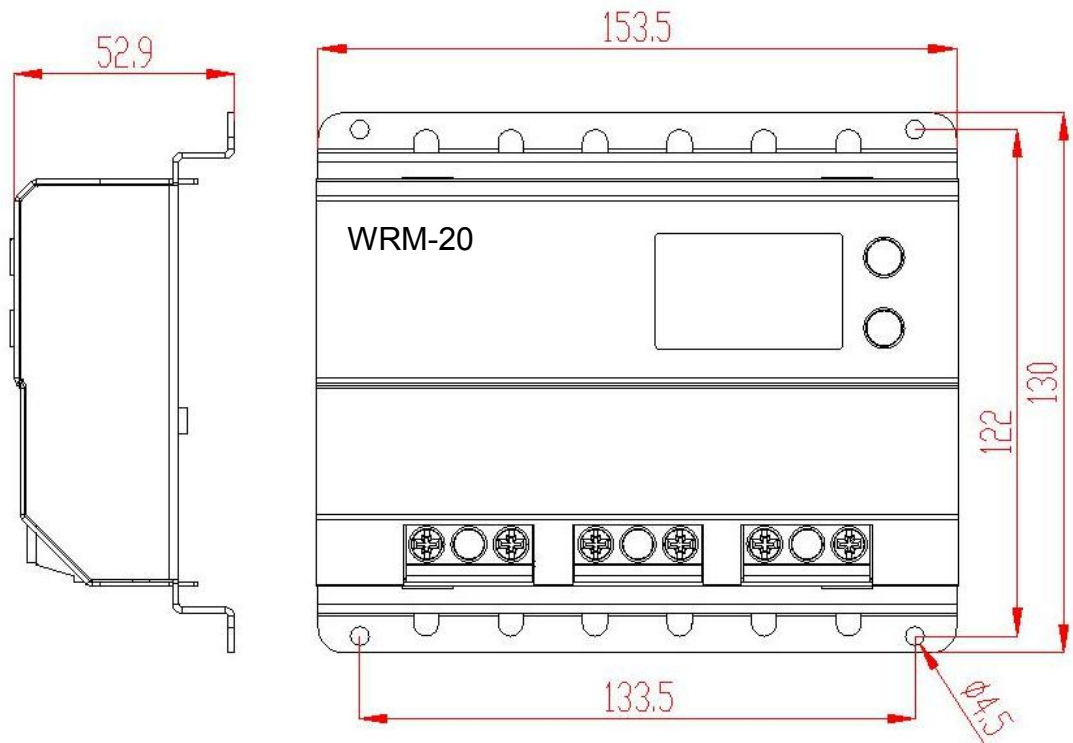
IP20 metal box

WRM20 is a complete solution for off-grid PV systems to supply power to road signs systems, lighting systems, small low voltage systems and batteries inside caravans. This model of charge regulator has a circuit for the research of the maximum PV module power (MPPT): regardless of the battery voltage and its charge status, WRM20 works with the PV module in its maximum power point, maximizing the energy that comes from the module and then is loaded into the battery.

Thanks to the WRM20 controller you can install the cheapest PV modules used in grid connected systems, with a number of cells different from 36 or 72. WRM20 detects the day/night status according to the PV module voltage; therefore it's not necessary to connect further sensors to the regulator. A wide display shows the working status of the regulator not only through simple and intuitive icons but also displaying the values of recharge current, battery voltage, energy production by the PV module, load current and energy consumption by the load.

		12V battery nominal voltage			24V battery nominal voltage		
		Min	Tip	Max	Min	Tip	Max
Battery voltage	Vbatt	10V		17V	20V		34V
Open circuit panel voltage	Vpan	20V	-	100V	40V	-	100V
Panel current	Ipan	-	-	19A	-	-	19A
Maximum panel power	Pmax	-	-	310W	-	-	620W
Load output voltage	Vload	-	Battery voltage	-	-	Battery voltage	-
Load current	Iload	-	-	20A	-	-	20A
Charge voltage at 25°C – SEAL program (default)	Vch		14.4V			28.8V	
Charge voltage at 25°C – FLOOD program	Vch		14.8V			29.6V	
Charge voltage at 25°C – LEO program	Vch		14.4V			28.8V	
Charge voltage for Li program	Vch	14.0V	-	14.7V	28.0V	-	29.4V
Compensation of Vch function of battery temperature (Tbatt)	Vtadj	-	-24mV/°C	-	-	-48mV/°C	-
Low battery voltage (settable)	Vlb	10.8V	11.4V (default)	12.2V	21.6V	22.8V (default)	24.4V
Exit Low battery voltage	Vout_lb	12.4V	13.8V	13.8V	24.8V	27.6V	27.6V
Detection voltage of the day (settable)	Vday	2.4V	4.8V (default)	9.6V	4.8V	9.6V (default)	19.2V
Detection voltage of the night: Vnight = Vday - 0.8V	Vnight	1.6V	-	8.8V	4.0V	-	18.4V
Float voltage (settable)	Vflt at 25°C	13.2V	13.4V (default)	14.4V	26.4V	26.8V (default)	28.8V
Absorption time (settable)	TAbsorption	1.0 h	3.0 h (default)	4.0 h	1.0 h	3.0 h (default)	4.0 h
Auto consumption	Isleep		12.7mA (Vbat 14,0V)			17,7mA (Vbat 28,0V)	
Working temperature	Tamb	-10°C		50°C	-10°C		50°C
Dissipated power	Pdiss			20 W			29 W
Wire gauge		1mm ²		10mm ²	1mm ²		10mm ²
Protection degree			IP20			IP20	
Weight		-	515 g	-	-	515 g	-

Dimensions



WESTERN CO.

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HIPRO III

TP660M - 295 / 300 / 305 / 310W

High Efficiency MBB PERC Monocrystalline Solar Module

60-Cell Series

Full Black



KEY FEATURES



12 bus-bar cell technology

Excellent anti-microcracking performance with more balanced interior stress; grid pattern current path, lower Rs



Maximize limited space

PERC cell technology, maximum power output 310W



Significantly lower the risk of hot spot

Special circuit design with much lower hot spot temperature



Excellent low light performance

Advanced surface texturing·Back surface field



Excellent Anti-PID performance

2 times of industry standard Anti-PID test by TUV Rheinland



Highly reliable due to stringent quality control

In-house testing goes well beyond certification requirements



Certified to withstand the most challenging environmental conditions

2400 Pa wind load·5400 Pa snow load·25 mm hail stones at 82 km/h



IP68 junction box

The highest waterproof level

ABOUT TALESUN SOLAR

TALESUN Solar is one of the world's largest integrated clean energy providers with 4 GW cell and 5 GW module production capacity globally. Its standard and high-efficiency product offerings are among the most powerful and cost-effective in the industry. Talesun Solar is committed to provide customers with customized; systematized and trustworthy turnkey solutions. Till now, Talesun Solar has accumulatively shipped more than 10 GW modules globally.

SYSTEM & PRODUCT CERTIFICATES

- IEC 61215 / IEC 61730 / UL 1703
- ISO 9001 : 2008 Quality Management System
- ISO 14001 : 2004 Environment Mangement System
- OHSAS 18001 : 2007 Occupational Health and Safety Management System



QUALITY WARRANTY

TALESUN guarantees that defects will not appear in materials and workmanship defined by IEC61215, IEC61730 or UL1703 under normal installation, use and maintenance as specified in Talesun's installation manual for 10 years from the warranty starting date.

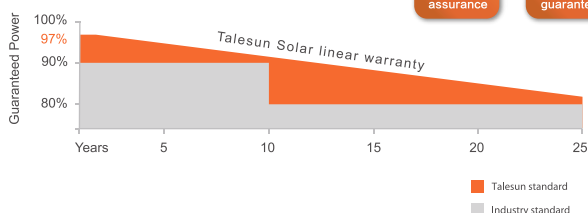


PERFORMANCE WARRANTY

Monocrystalline Solar Module

10 years
Quality assurance

25 years
Power output guarantee



TALESUN



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BATTERIA SIGILLATA AGM DEEP-CYCLE (USO CICLICO)
DEEP-CYCLE AGM MAINTENANCE FREE BATTERY

ZL1201120



CHARACTERISTIC / CARATTERISTICHE

Volt	12V	
Capacity / Capacità	20h	200Ah
	5h	160Ah
Internal Resistance	Full Charged Battery 25°C ≤3.0mΩ	
Capacity affected by Temperature / Effetti delle temperature sulla capacità	40°C	102%
	25°C	100%
	0°C	85%
Self-Discharge 25°C Capacity / Autoscarica a 25°C	after 3 month storage	90%
	after 6 month storage	80%
	after 12 month storage	62%
Charge cycle / Ciclo di carica	IU + h	"In" max. 40Amp; "V1" 2.43V/cell
	IUIa	"In" max. 40Amp; "V1" 14.4Volt; "If" 2Amp.

CHARACTERISTIC / CARATTERISTICHE

Battery dimensions / Dimensioni batteria			
L/L	W/P	H/A	Tot - H/A
532	206	216	221
Box Dimensions / Dimensioni scatola			
L/L	W/P	H/A	
537	221	296	
USA Type			4D
Weight / Peso			69,6 Kg
Terminal / Terminali			M8
Case / Contenitore			ABS

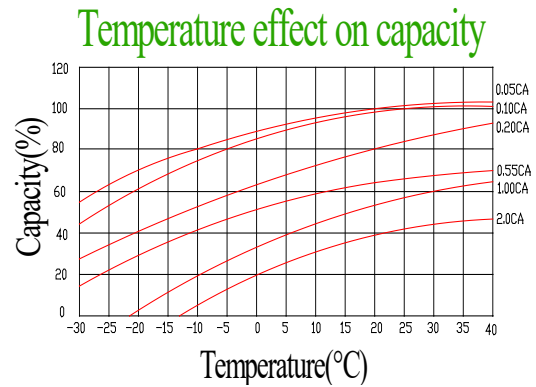
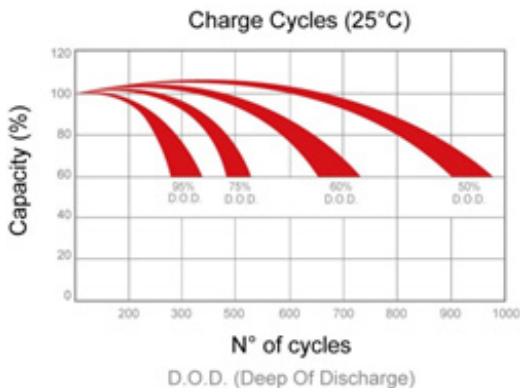
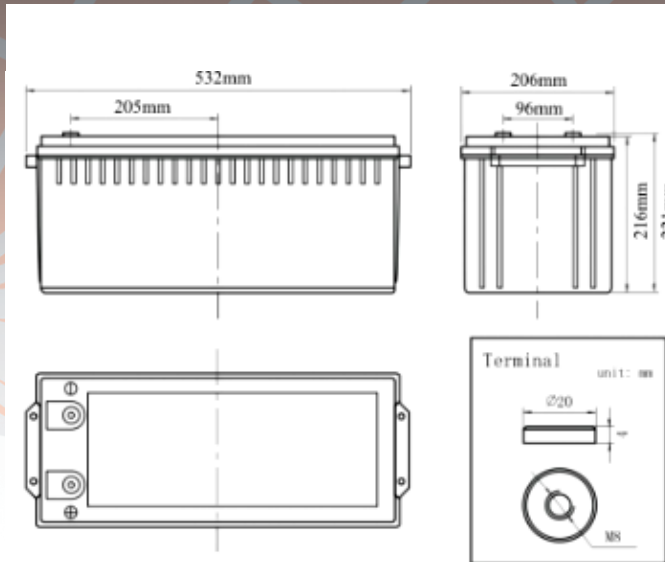
Amp. (25°C)

F.V/Time	5min	10min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h
1.60V	475.2	302.9	257.4	164.3	120.8	110.9	70.5	49.5	33.7	22.2	19.8	11
1.65V	466.6	297.4	252.7	161.4	118.6	108.9	69.2	48.6	33.0	21.8	19.4	10.8
1.70V	457.9	291.9	248.0	158.4	116.4	106.8	67.9	47.7	32.4	21.4	19.1	10.6
1.75V	449.3	286.4	243.4	155.4	114.2	104.8	66.6	46.8	31.8	21.0	18.7	10.4
1.80V	432.0	275.4	234.0	149.4	109.8	100.8	64.1	45.0	30.6	20.2	18.0	10.00

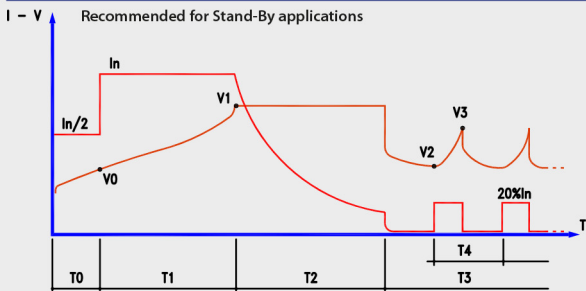
Watts (25°C)

F.V/Time	5min	10min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h
1.60V	914.8	583.2	495.5	316.4	232.5	213.4	135.7	95.3	64.8	42.7	38.1	21.2
1.65V	898.1	572.6	486.5	310.6	228.3	209.6	133.2	93.6	63.6	41.9	37.4	20.8
1.70V	881.5	562.0	477.5	304.9	224.0	205.7	130.8	91.8	62.4	41.1	36.7	20.4
1.75V	864.9	551.4	468.5	299.1	219.8	201.8	128.3	90.1	61.3	40.4	36.0	20.0
1.80V	831.6	530.1	450.5	287.6	211.4	194.0	123.4	86.6	58.9	38.8	34.7	19.2

ZL1201120



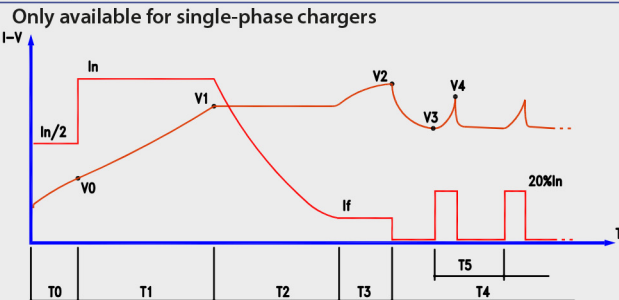
Charge cycle for sealed batteries (GEL/AGM): IU + holding



- In = PROGRAMMED CAPACITY/10
- V0 = 1,90 V/CELL
- V1 = PROGRAMMED VALUE
- V2 = 2.10 V/CELL
- V3 = 2.30 V/CELL
- T0 = MAX. 1 HR
- T1 = MAX. 12 HRS
- T2 = T1 (MIN. 2-MAX. 5 HRS)
- T3 = UNLIMITED

“IUIa” charge cycle is always recommended in case of more than 2 batteries in series
Ciclo di carica “IUIa” è sempre necessario qualora ci siano più di 2 batterie collegate in serie.

IUIa charge cycle



- In = PROGRAMMED VALUE (CHARGE I)
- If = PROGRAMMED VALUE (FINAL I)
- V0 = 1,90 V/CELL
- V1 = PROGRAMMED VALUE (THRESHOLD V)
- V2 = PROGRAMMED VALUE (LOCK V)
- V3 = 2.10 V/CELL
- V4 = 2.30 V/CELL
- T0 = MAX. 1 HR
- T1 = MAX. 12 HRS
- T2 = MAX. T1+6 HRS OR I = IF
- T3 = MAX. 4 HRS
- T4 = UNLIMITED
- T5 = MAX. 6 HRS