High Efficiency Marine Solar Panels

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CMPower

High Performance

- Premium high performance with A+ grade SunPower Maxeon solar cells
- Highest output per square inch

Robust

- Potted junction boxes - waterproof
- Tough ETFE laminate construction
- Vibration & shock resistant sealants and frames
- Extensive product testing

Support

- Free installation assistance
- Excellent warranty
- Comprehensive technical support
- Extensive industry expertise
- Free wiring diagrams

Model - Part Number	Nominal Peak Power Watts-Wp	Open Circuit Voltage Voc	Short Circuit Current Isc	Nominal Voltage Vmp	Nominal Current Imp	Cell Efficiency %	Solar Cell Type	Background White Black	Cell Layout	Panel Size Inches	Panel Size mm	Weight lbs.	Weight Kg.	Watts per Sq. Foot	Amp Hrs per Day @ 6 Hrs Sun	Watt Hrs per Day	Price per Panel
Semi-flexible - SunPower Monocrystalline																	
CMP23055F	55	23.4	3.1	19.8	2.9	24.0	SunPower	W or B	4 x 8	21.25x22.8	580x540	3.3	1.5	16.3	25.4	297	$ 274
CMP23070F	70	23.4	3.1	19.8	2.9	24.0	SunPower	W	4 x 5	21.25x27.75	705x540	3.8	1.7	17.1	32.3	378	$ 378
CMP23115F-120	115	23.4	3.9	19.8	3.6	24.0	SunPower	W	4 x 8	21.25x42.1	1070x540	4.0	1.8	18.5	53.1	621	$ 569
CMP23130F-140	130	21.9	6.7	18.6	6.2	24.5	SunPower	W	4 x 9	21.25x47.25	1200x540	5.2	2.4	18.6	60.0	702	$ 639
CMP23145F-155	145	26.3	6.2	22.3	5.8	24.5	SunPower	W	4 x 10	21.25x52.4	1460x540	6.6	3	16.5	66.9	783	$ 789
CMP23175F-185	185	27.8	6.8	23.2	6.3	24.5	SunPower	W	7 x 7	36.4 x 37.6	955x925	9	5	19.5	85.4	999	$ 899
CMP23200FG	200	35.4	6.3	30.0	5.8	24.4	SunPower	W	6 x 11	31.1 x 57.1	1440x790	10.6	4.8	16.2	92.3	1,080	$ 978
Semi-flexible - SunPower Monocrystalline - Shade Tolerant																	
CMP23115F-120-ST	120	23.0	6.5	19.2	6.0	24.2	SunPower	W	4 x 8	21.3x42.71	540x1085	6.2	2.8	19.0	55.4	648	$ 639
CMP23145F-155-ST	155	27.4	6.8	23.2	6.3	24.4	SunPower	W	4 x 10	21.3x52.95	540x1345	7.0	3.2	19.8	71.5	837	$ 829
Semi-rigid - SunPower Monocrystalline																	
CMP24060SR-065	65	24.6	3.1	20.9	2.9	24.0	SunPower	W or B	2x9	11.4x48	1220x290	8.2	3.7	17.1	30.0	351	$ 359
CMP24110SR-120	115	21.9	6.4	18.6	5.9	24.4	SunPower	B	4 x 8	21.65x42.9	1090x550	11.5	5.2	17.8	53.1	621	$ 659
CMP24120SR-130	130	24.0	6.4	20.3	5.9	24.4	SunPower	W or B	5 x 7	26x38	965x660	14.3	6.5	18.9	60.0	702	$ 739
CMP24150SR-170	165	30.1	6.4	25.5	5.9	24.4	SunPower	W or B	5 x 9	26x48	1220x660	15.4	7.0	19.0	76.2	891	$ 999
CMP24175SR-185	175	34.7	6.4	29.4	6.0	24.4	SunPower	W or B	7 x 7	36.4x37.6	955x925	19.4	8.8	18.4	80.8	945	$ 1,049
Semi-rigid - SunPower Monocrystalline - Light																	
CMP24065SRL-065	65	26.0	3.1	22.6	2.9	25.4	SunPower	W	2x18/2	11.4x48	290x1220x4	4.4	2	17.1	30.0	351	$ 379
CMP24110SRL-120	120	21.9	6.4	18.6	5.9	25.4	SunPower	W or B	4 x 8	21.65x42.9	550x1090x4	7.0	3.2	18.6	55.4	648	$ 659
CMP24120SRL-130	130	25.3	6.3	22.0	5.9	25.4	SunPower	B	5 x 7	26x38	660x965x4	7.9	3.6	18.9	60.0	702	$ 739
CMP24150SRL-170	170	32.5	6.4	28.3	6.0	25.4	SunPower	B	5 x 9	26x48	660x1220x4	12.8	5.8	19.6	78.5	918	$ 999
CMP24175SRL-185	185	35.4	6.4	30.8	6.0	25.4	SunPower	B	7 x 7	36.4x37.6	925x955x4	13.4	6.1	19.5	85.4	999	$ 1,049
CMP24210SRL-210	210	39.7	6.5	34.5	6.1	25.4	SunPower	B	5x11	26x57.9	660x1470x4	14.3	6.5	20.1	96.9	1,134	$ 1,189
Rigid - SunPower Monocrystalline																	
CMP22110S-120	120	21.9	6.4	18.6	5.9	24.0	SunPower	W	4 x 8	21.3x41.7	1060x540	18.0	8.2	19.5	55.4	648	$ 549
CMP22140S-145	145	28.3	6.3	24.0	5.8	24.5	SunPower	W	5 x 8	26.8x41.7	1060x675	20.0	9	18.7	66.9	783	$ 649
CMP22150S-165	165	30.1	6.4	25.5	5.9	25.4	SunPower	W	4 x 11	21.3x56.9	1445x540	22.0	10	19.7	76.2	891	$ 739
CMP22175S-185	180	34.7	6.4	29.4	6.0	24.5	SunPower	W	7 x 7	36.2x37	940x920	22.0	10	19.4	83.1	972	$ 849
CMP22200S-210	210	39.7	6.4	34.5	6.0	24.5	SunPower	W	5 x 11	26.8x56.9	680x1445	23.8	10.8	19.8	96.9	1,134	$ 989
CMP22225S-250	250	46.7	6.1	39.6	5.7	24.5	SunPower	W	6 x 11	31.1x56.3	790x1430	32.2	14.6	20.6	115.4	1,350	$ 1,129
CMP22270S-290	270	46.2	6.3	39.4	6.8	24.5	SunPower	W	7x11	36.2x56.9	920x1445	40.6	18.4	18.9	124.6	1,458	$ 1,299

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Semi-flexible - PERC Monocrystalline																	
CMP25060P	60	24.43	3.1	20.88	2.87	22.5	PERC A	W	3x12	20.1x26.8	680x510	1.8	0.8	16.1	27.7	324	$ 259
CMP25060P-LG	60	24.43	3.1	20.88	2.87	22.5	PERC A	W	2x18	13.8x39.2	995x350	1.8	0.8	16.0	27.7	324	$ 259
CMP25095P	95	24.43	4.91	20.88	4.55	22.4	PERC A	W	3x12	20.1x40.4	1025x510	4.8	2.2	16.8	43.8	513	$ 379
CMP25100H	100	26.34	4.84	22.32	4.48	22.7	HJT	W	3x12	20.1x40.7	1035x510	3.7	1.7	17.6	46.2	540	$ 389
CMP25115P	115	24.43	5.95	20.88	5.51	22.4	PERC A	W	3x10	20.1x48.0	1220x510	5.5	2.5	17.2	53.1	621	$ 439
CMP25130P	130	24.43	6.72	20.88	6.23	22.4	PERC A	W	4x9	26.4x40.8	1035x670	7.9	3.6	17.4	60.0	702	$ 519
CMP25150P	150	24.43	7.76	20.88	7.18	22.4	PERC A	W	4x10	26.4x46.9	750x700	8.8	3.6	17.5	69.2	810	$ 569
Semi- Rigid - PERC Monocrystalline																	
CMP26060SRH-LG	60	24.43	3.11	20.88	2.88	22.7	HJT	B	2x18	13.78x39.76	1010x350	8.6	3.9	15.8	27.7	324	$ 299
CMP26110SRP	110	24.43	5.69	20.88	5.27	22.4	PERC A	W or B	4x5	26.37x36.22	920x670	11.7	5.3	16.6	50.8	594	$ 539
CMP26120SRP	120	24.43	6.21	20.88	5.75	22.4	PERC A	W or B	4x6	26.37x38.58	980x670	14.6	6.6	17.0	55.4	648	$ 589
CMP26150SRP	150	24.43	7.76	20.88	7.18	22.4	PERC A	W or B	4x9	26.37x46.85	1190x670	15.7	7.1	17.5	69.2	899	$ 749
CMP26225SRP	225	24.43	10.04	20.88	10.8	22.4	PERC A	W or B	6x7	39.4x47.4	1205x1000	24.3	11	17.3	103.8	1,215	$ 1,109
CMP26330SRP	330	24.43	14.73	20.88	15.8	22.4	PERC A	W	6x10	39.4x66.3	1685x1000	28.7	13	18.2	152.3	1,782	$ 1,629
Semi-Rigid - Monocrystalline - Light																	
CMP26150SRPL-155	155	25.7	7.4	22.30	7.0	23.5	HJT	W	4x9	26.37x47.63	670x1210x4	12.8	5.8	18.1	71.5	899	$ 759
CMP26175SRHL	175	22.81	9.35	19.84	8.83	23.5	HJT	W	4x16	26.37x52,56	670x1335x4	13.4	6.1	18.2	80.8	945	$ 859
CMP26225SRHL	240	30.3	9.6	26.4	9.1	23.5	HJT	W	6x7	39.4x47.4	1000x1205x4	17.4	7.9	18.5	110.8	1,296	$ 1,179
Rigid - PERC Monocrystalline																	
CMP27175P	175	24.6	9.1	20.9	8.4	22.7	PERC A	W	3 x 9	22.83x59.06	1500x580	19.0	8.6	18.7	80.8	945	$ 579
CMP27190P	190	23.85	9.89	20.26	9.38	21.7	PERC A	W	4 x 9	26.29x59.06	1500x668	23.6	10.7	17.6	87.7	1,026	$ 689
CMP27420H	420	54.37	9.7	46.1	9.1	24.0	HJT	W	6 x 24	39x77	1955x992	50.7	23	20.1	193.8	2,268	$ 1,399

A Solar Panel to Meet Any Requirement

Semi-flexible

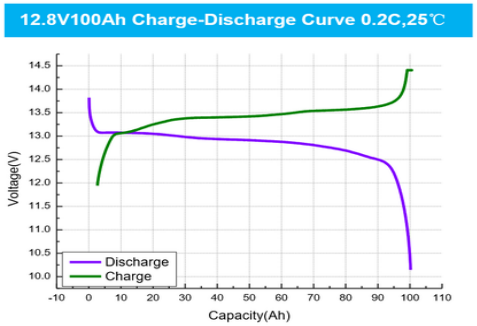
Semi-rigid Walk-on

Rigid Glass

LiFePO4 High Performance Batteries

High Power Density Series

- High performance Lithium Iron Phosphate (LiFePO4) cells
- **150-200 amp** continuous current draw
- **Bluetooth** battery monitor
- **Replaceable BMS** – optional
- Reduced case size
- Up to 4 in series, 10 in parallel
- Up to 4,000 charge cycles



Model - Part Number	Voltage	Capacity Amp Hours	Watt Hours	BMS Continuous Draw Amps	Group Size	Size Inches	Weight lbs.	Price	Boat Show Price
Marine High Power Density Series - Sealed									
12 Volt									
CMP205120-BH150	12.8	120	1,536	150A	24	10.25x6.7x8.2	29.0	$ 1,079	**$ 971**
CMP205135-BH150	12.8	135	1,728	150 A	27	12x6.7x8.3	31.0	$ 1,198	**$ 1,078**
CMP205150-BH150	12.8	150	1,920	150A	31	13x6.8x8.9	33.0	$ 1,299	**$ 1,169**
CMP205240-BH200	12.8	240	3,072	200A	49-4D	19.3x6.7x9.4	45.0	$ 2,095	**$ 1,886**
CMP205350-BH200	12.8	350	4,480	200A	8D	20.75x11.2x10	60.0	$ 2,795	**$ 2,516**
Marine High Power Density Series -Removable BMS									
12 Volt									
CMP205135-BHR150	12.8	135	1,728	150 A	27	12x6.7x8.3	31.0	$ 1,198	**$ 1,078**
CMP205150-BHR150	12.8	150	1,920	150A	31	13x6.8x8.9	33.0	$ 1,299	**$ 1,169**
CMP205225-BHR200	12.8	225	2,880	200A	49-4D	19.3x6.7x9.4	45.0	$ 1,995	**$ 1,796**
CMP205313-BHR200	12.8	315	4,032	200A	8D	20.75x11.2x10	58.4	$ 2,695	**$ 2,426**
24 Volt									
CMP206150-BHR150	25.6	150	3,840	150A	8D	20.75x11.2x10	80.0	$ 2,598	**$ 2,338**

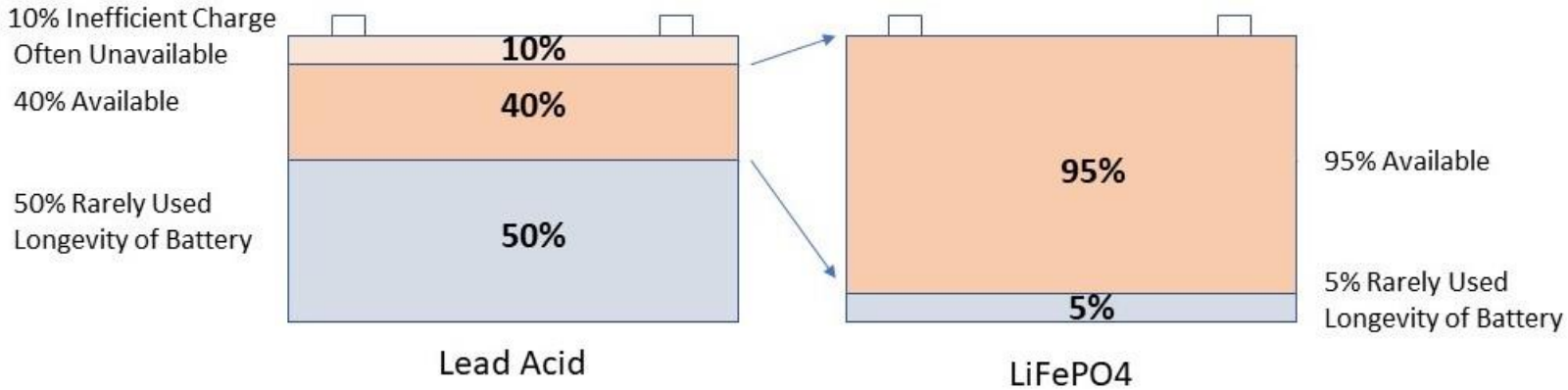
Heavy Duty Utility Series

- High performance LiFePO4 cells
- **150 amp** continuous current draw
- **Bluetooth** battery monitor
- Tough ABS case with vibration dampening
- Up to 4 in series, 10 in parallel
- Up to 4,000 charge cycles

Model - Part Number	Voltage	Capacity Amp Hours	Watt Hours	BMS Continuous Draw Amps	Group Size	Size Inches	Weight lbs.	Price	Boat Show Price
Marine Utility Series - Deep Cycle									
12 Volt									
CMP20501-L	12.8	10	128	10A		6x3.4x5.1	4.0	$ 119	**$ 113**
CMP20502-L	12.8	20	256	20A		7.1x3x6.7	6.2	$ 219	**$ 208**
CMP20505-BL	12.8	50	640	50A	24	7.8x6.5x6.7	15.0	$ 359	**$ 341**
CMP20508-BL5	12.8	80	1,024	150A	27	12x6.7x8.3	28.0	$ 539	**$ 512**
CMP20512-BL5	12.8	120	1,536	150A	31	13.4x6.7x8.3	33.0	$ 759	**$ 721**
CMP20530-BL5	12.8	300	3,840	150A	8D	20.5x10.5x8.7	80.5	$ 1,769	**$ 1,681**

LiFePO4 High Performance Batteries

CMPower LiFePO4 (lithium iron phosphate) batteries offer more features than general purpose LiFePO4 batteries including built-in Bluetooth battery monitor, heavy duty 150-200 amp continuous draw battery management system, high quality cells and robust construction.



Advantages of *CMPower* LiFePO4 Batteries

- **Bluetooth** equipped battery monitor with free App
- Lighter than lead acid (generally half the weight)
- Can be drawn down 95% vs 50% of rated capacity
- Hold a steady voltage through 95% discharge
- Generally plug compatible with lead acid chargers
- Charge much more quickly/efficiently than lead acid batteries
- Up to 10 times more charge cycles than lead acid and AGM batteries – could last a lifetime.
- Nontoxic and safe, very low fire risk
- Low self-discharge – easy winter storage
- Insulated for heavy vibration resistance
- Replaceable BMS – easy maintenance

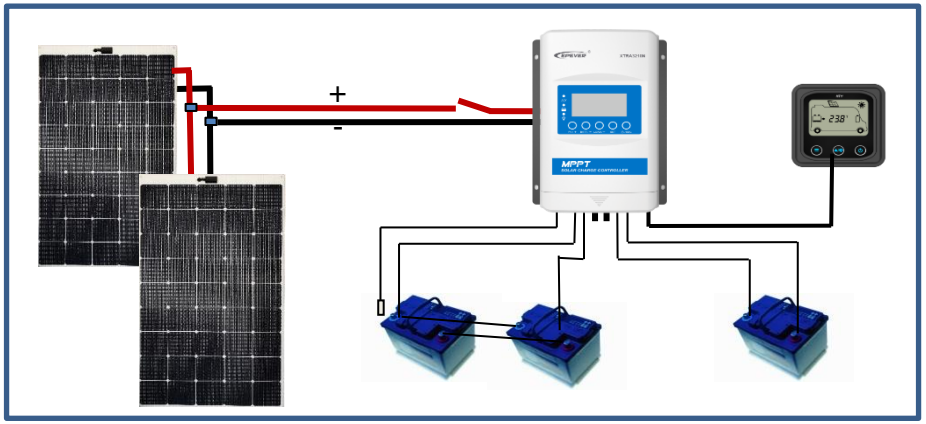
- More expensive than lead acid however their advantages and longevity often outweigh the additional investment.

Inside a **CMPower** LiFePO4 Battery.
Cell Case with Replaceable BMS.

CMPower LiFePO4 Battery

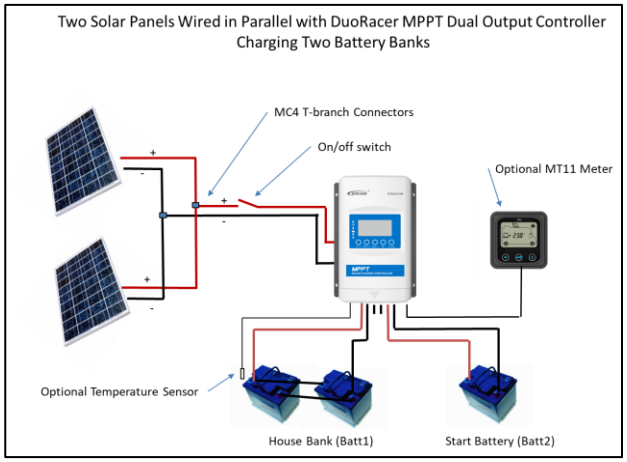
CMPower Bluetooth app

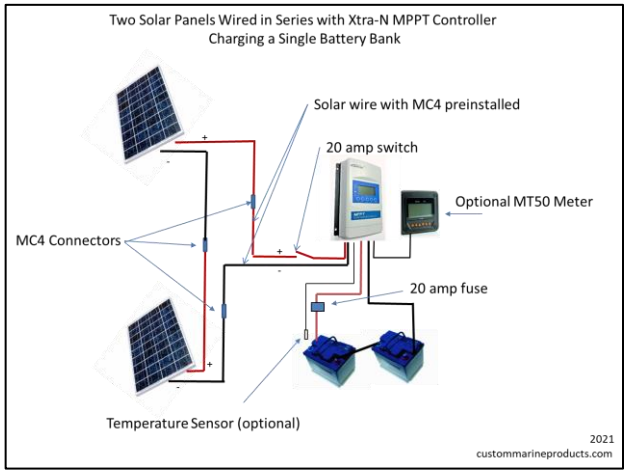
Solar Controllers

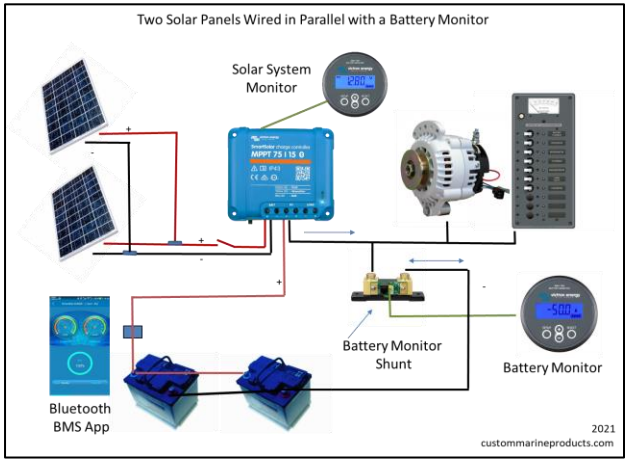


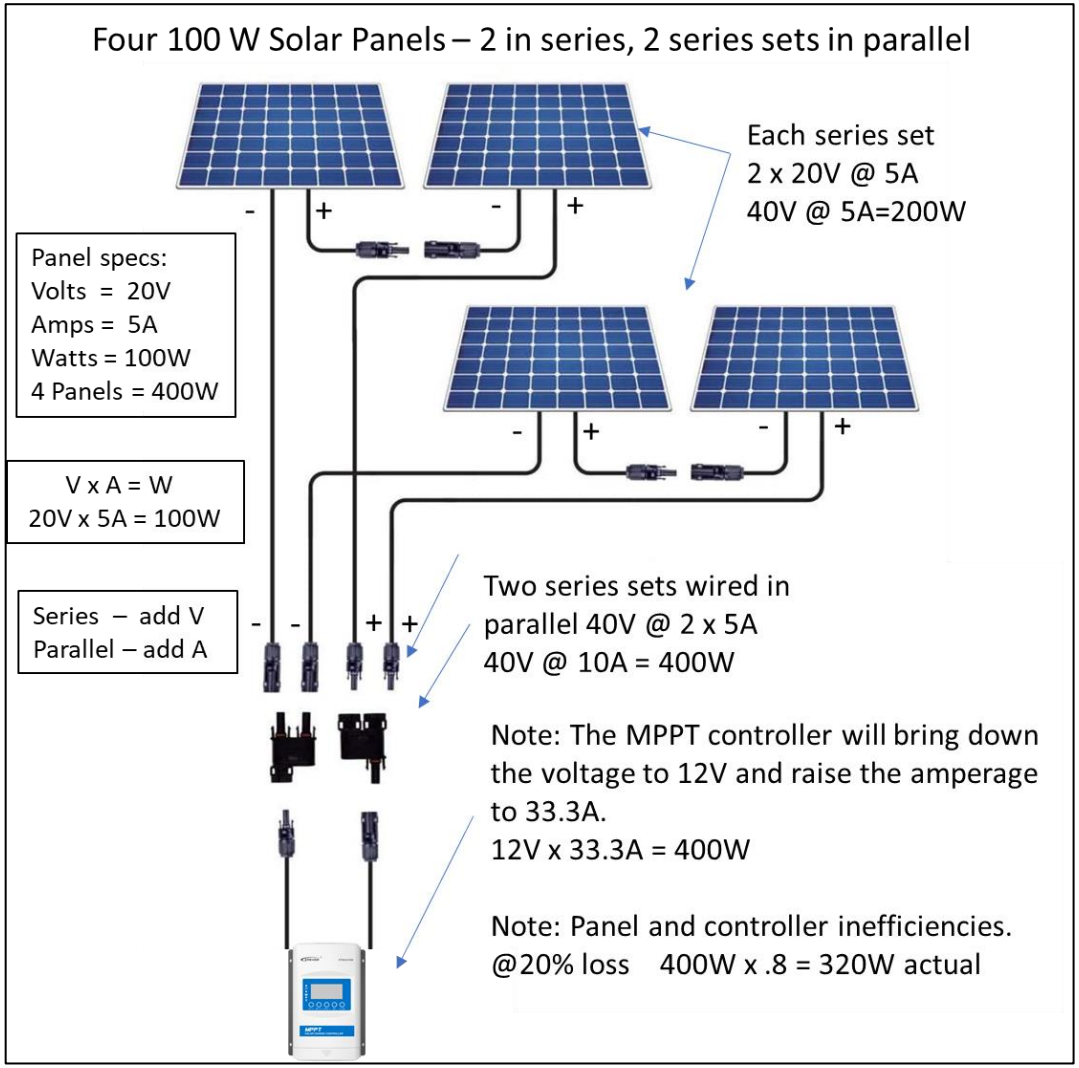
Model - Part Number	Description	Capacity Amp	Solar Power Capacity Watts	Price
	MPPT Controllers - EP Solar			
DuoRacer Dual Output Series				
CMP20317-10	EP DuoRacer DR1206N-DDS 12/24V 10A	10	130	139.00
CMP20317-20	EP DuoRacer DR2210N-DDS 12/24V 20A	20	260	159.00
CMP20317-30	EP DuoRacer DR3210N-DDS 12/24V 30A	30	390	199.00
Xtra-N Series - Built-in Meter				
CMP20321-XDS2-10	EP XTRA1210N-XDS2 10A Solar Controller	10	130	129.00
CMP20322-XDS2-20	EP XTRA2210N-XDS2 20A Solar Controller	20	260	159.00
CMP20323-XDS2-30	EP XTRA3210N-XDS2 30A Solar Controller	30	390	199.00
CMP20324-XDS2-40	EP XTRA4210N-XDS2 40A Solar Controller	40	520	259.00
Tracer Series - with Remote Display Meter				
CMP20312	EP Tracer 1215BN 10 amp Solar Controller	10	130	159.00
CMP20313	EP Tracer 2215BN 20 amp Solar Controller	20	260	239.00
CMP20314	EP Tracer 3215BN 30 amp Solar Controller	30	390	329.00
CMP20315	EP Tracer 4215BN 40 amp Solar Controller	40	520	429.00
Accessories				
CMP20325	MT11 Remote Display for EP DuoRacer			69.00
CMP20326	MT50 Remote Display for EP Tracer, XTRA			69.00
CMP20327	Temperature Sensor			29.00
CMP20328	PC Communication Cable			10.00
CMP20329	Bluetooth Module BLE-01			36.00
CMP20332	WIFI Module			36.00
	MPPT Controllers - Victron Energy			
SmartSolar Series				
CMP20351	SmartSolar MPPT Controller 75-15	15	195	122.95
CMP20352	SmartSolar MPPT Controller 100-20	20	260	189.00
CMP20354	SmartSolar MPPT Controller 100-30	30	390	229.95
CMP20356	SmartSolar MPPT Controller 100-50	50	650	327.95
Accessories				
CMP20361	MPPT Control Meter for Victron			94.95
CMP20362	MPPT Control Meter Wall Mount			36.95
CMP20363	Smart Battery Temp Sensor-Short Range			34.95
CMP20364	Smart Battery Temp Sensor-Long Range			34.95
CMP20365	VE Direct Cable (.3M)			22.00
CMP20366	VE Direct Cable (3M right angle)			21.95
CMP20367	VE Direct Cable (5M right angle)			24.95
CMP20368	VE Direct to USB Interface			33.95
	PWM Dual Output Controllers - EP Solar			
EP Duo Series				
CMP20302	Controller EP Duo 10 Amp			79.00
CMP20303	Controller EP Duo 20 Amp			99.00
Accessories				
CMP20306	MT-1 Remote Display			75.00
CMP20307	Temperature Sensor			27.00

Wiring Diagrams









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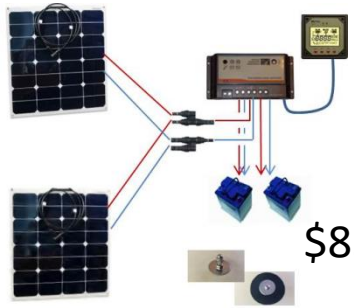
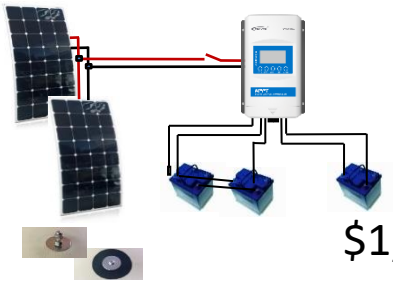
Examples of Solar System Kits



$839.

110 Watt Canvas Mount Solar Kit

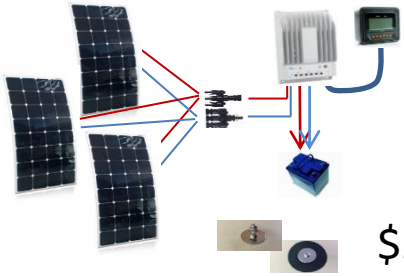
2 55 Watt semi-flexible solar panels
1 10 amp dual output PWM controller
– Charge two battery banks
– Remote display meter included
1 2-1 T-branch MC4 connector
50 Feet solar wire with MC4 connector
2 Hardware sets for mounting
1 Instruction manual



$1,399.

230 Watt Canvas Mount Solar Kit

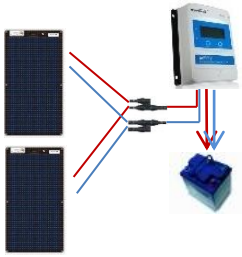
2 115 Watt semi-flexible solar panels
1 20 amp DuoRacer dual output controller
– Charge two battery banks
– Meter Display built in
1 2-1 T-branch MC4 connector
50 Feet solar wire with MC4 connector
2 Hardware sets for mounting
1 Instruction manual



$2,439.

390 Watt Canvas Mount Solar Kit

3 130 Watt semi-flexible solar panels
1 30 amp EP Tracer BN MPPT controller
- Remote meter display included
1 3-1 T-branch MC4 connector
60 Feet solar wire with MC4 connector
3 Hardware sets for mounting
1 Instruction manual



$2,079.

300 Watt Solar Kit - Semi-rigid

2 150 Watt semi-rigid solar panels
1 30 amp EP Xtra-N MPPT controller
- Meter display built in
50 Feet solar wire with MC4 connector
1 Instruction manual

$2,059.

350 Watt Solar Kit - Rigid

2 175 Watt glass rigid solar panels
1 30 amp Victron MPPT controller
– Remote display meter
60 Feet solar wire with MC4 connector
1 Instruction manual

$3,199.

175 Watt Solar Kit - Top-of-pole

1 175 Watt rigid solar panel
1 20 amp EP Tracer MPPT controller
– Remote display meter included
1 Pole mount assembly
60 Feet solar wire with MC4 connector
1 Instruction manual

*** Batteries not included in kits ***

custommarineproducts.com

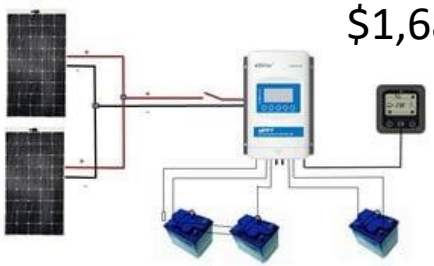
Examples of Solar System Kits

custommarineproducts.com

Excellent system for operating an efficient fridge, lights, radio, instruments and charging phones. Ideal for roof or deck mounting.

240 Watt Semi-rigid Solar Kit

$1,686

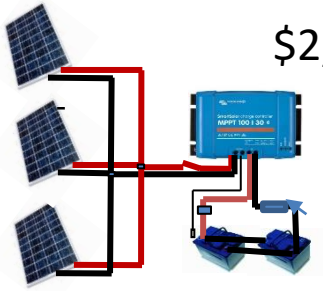


Solar kit includes:
2 120 Watt Semi-rigid solar panels
1 20 amp DuoRacer dual output solar controller w/remote display
50 Feet of single conductor solar wire

Plenty of power both at anchor and underway. Power refrigeration, computer, instruments, lights with extra power for AC appliances.

450 Watt Semi-rigid Solar Kit

$2,990



Solar Kit Includes:
3 150 watt semi-rigid solar panels
1 50 amp Victron solar controller
1 3-2 T-branch connector
60 Feet single conductor solar wire

Power for refrigeration, computer, instruments, lights..

280 Watt Davit Mount Solar Kit

$1,589

Solar Kit Includes:
2 140 watt rigid marine solar panels
1 30 amp EP Xtra-N MPPT solar controller with built in meter
1 2-1 MC4 T-branch connector
60 Feet of solar wire with MC4 connectors preinstalled

Worksheet for Designing a Solar System Based on Power Consumption

Input fields in Grey

1. Daily Power Consumption Analysis

Appliance DC	Amps	Hours At Anchor	Hours On Passage	Daily AH *1* At Anchor	Daily AH On Passage
Refrigeration	5	10	10	50	50
Radar	4		4	0	16
Computer - Laptop	4	1	10	4	40
Autopilot	4		10	0	40
Cabin Lights (LED)	1	4		4	0
Nav/Anchor Lights	0.2	10	10	2	2
Stereo	1	3	3	3	3
VHF Radio	0.5	10	10	5	5
Instruments	1		8	0	8
Pressure Water	6	0.25	0.1	1.5	0.6
Phone Charger	1	2	2	2	2
Other				0	0
Other				0	0
Windlass *2*				0	0
Total Amp Hours				71.5	166.6
AC - Equipment powered by an Inverter (Watts)					
	Watts	Hours	Hours	AH	AH
Microwave (Watts)	1100	0.1	0.1	10.2	10.2
Other				0.0	0.0
Other				0.0	0.0
Other				0.0	0.0
Other				0.0	0.0
Total Amp Hours				10.2	10.2
Total Amp Hours Consumed per Day				81.7	176.8
Battery Charging Voltage			13		
Total Watt Hours Consumed per Day				1,061.5	2,297.8

2. Alternative Power Sources

Alternator	30		2	0	60
Generator				0	0
Other				0	0
Total Amp Hours				0	60
Total Watt Hours Produced per Day				0	780
Net Watt Hours per Day Consumed or Produced				1,061.50	1,517.80

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3. Solar Power Requirement Analysis (Full Sun)

			At Anchor	On Passage
Average Hours of Sun per Day	5	*3*		
Battery Charge Inefficiency Factor	1.2	*4*		
Watts of Solar to Replenish Battery Bank Daily			254.8	364.3

Solar System Design Analysis (MPPT Controller)

Capacity of Each Solar Panel (Watts)	130			
Number of Solar Panels Required			2.2	3.1
Number of Solar Panels Installed	3			
Minimum Capacity of Solar Controller (Amps)	30.0			
Daily Useable Solar Power in Full Sun (Watt Hrs)	1,560.0			
Daily Power Drawn from Battery Bank (Watt Hrs)			1,061.5	1,517.8
Excess or (Deficit) of Power (Watt Hrs)			498.5	42.2

4. Factor for Cloudy Days

Solar Efficiency on Cloudy Days (percentage)	30%	*5*		
Solar Power Generated on a Cloudy Day	468.0			
Power Drawn from Batteries on a Cloudy Day (Wh)			593.5	1,049.8
Number of Continuous Cloudy Days	2			
Sunny Days to Make Up Battery Draw Down			2.4	49.8

5. Battery Capacity Analysis

			Amp Hrs at Anchor	Amp Hrs on Passage
Scenario 1 - Based on Cloudy Days - with Solar				
Ah Drawn from Batteries on Cloudy Days			91.3	161.5
% of Battery Capacity Useable	50%	*6*		
Rated Battery Capacity Required (AH)			182.6	323.0
Rated Battery Capacity (Ah)	120			
Number of Batteries Required (in parallel)			1.5	2.7
Scenario 2 - Based on Days of Reserve Capacity (no solar)				
Number of Days of Reserve Battery Capacity	2			
% of Battery Capacity Useable	50%			
Rated Battery Capacity Required (AH)			326.6	467.0
Rated Battery Capacity (Ah)	120			
Number of Batteries Required (in parallel)			2.7	3.9

1 AH - Amp Hours - Amps of current consumed in one hour

2 Windlass is often not considered because the engine alternator is running when used

3 5 hours avg. is a good estimate for horizontal panels, 7 for panels with tilt & rotate
See http://www.bigfrogmountain.com/SunHoursPerDay.html for hours in your area.

4 Charge efficiency factor - Lead Acid ≈ 1.2, AGM ≈ 1.1 , LiFePO4 ≈ 1.04

5 Solar efficiency - Partly cloudy ≈ 70%, Mostly cloudy ≈ 50%, Very cloudy ≈ 30%

6 Useable battery capacity - Lead Acid ≈ 50%, AGM ≈ 60%, LiFePO4 ≈ 95%

Worksheet for Designing a Solar System Based on Power Consumption

Input fields in Grey

1. Daily Power Consumption Analysis

Appliance DC	Amps	Hours At Anchor	Hours On Passage	Daily AH *1* At Anchor	Daily AH On Passage
Refrigeration				0	0
Radar				0	0
Computer - Laptop				0	0
Autopilot				0	0
Cabin Lights (LED)				0	0
Nav/Anchor Lights				0	0
Stereo				0	0
VHF Radio				0	0
Instruments				0	0
Pressure Water				0	0
Phone Charger				0	0
Other				0	0
Other				0	0
Windlass *2*				0	0
Total Amp Hours				**0**	**0**
AC - Equipment powered by an Inverter (Watts)					
Microwave (Watts)				0.0	0.0
Other				0.0	0.0
Other				0.0	0.0
Other				0.0	0.0
Other				0.0	0.0
Total Amp Hours				**0.0**	**0.0**
Total Amp Hours Consumed per Day				**0.0**	**0.0**
Battery Charging Voltage			13		
Total Watt Hours Consumed per Day				-	-

2. Alternative Power Sources

Alternator				0	0
Generator				0	0
Other				0	0
Total Amp Hours				0	0
Total Watt Hours Produced per Day				**0**	**0**
Net Watt Hours per Day Consumed or Produced				-	-

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3. Solar Power Requirement Analysis (Full Sun)

		At Anchor	On Passage
Average Hours of Sun per Day	5 *3*		
Battery Charge Inefficiency Factor	1.2 *4*		
Watts of Solar to Replenish Battery Bank Daily		-	-

Solar System Design Analysis (MPPT Controller)

Capacity of Each Solar Panel (Watts)	100		
Number of Solar Panels Required		0.0	0.0
Number of Solar Panels Installed			
Minimum Capacity of Solar Controller (Amps)	-		
Daily Useable Solar Power in Full Sun (Watt Hrs)	-		
Daily Power Drawn from Battery Bank (Watt Hrs)		-	-
Excess or (Deficit) of Power (Watt Hrs)		-	-

4. Factor for Cloudy Days

Solar Efficiency on Cloudy Days (percentage)	*5*		
Solar Power Generated on a Cloudy Day	-		
Power Drawn from Batteries on a Cloudy Day (Wh)		-	-
Number of Continuous Cloudy Days			
Sunny Days to Make Up Battery Draw Down		-	-

5. Battery Capacity Analysis

		Amp Hrs at Anchor	Amp Hrs on Passage
Scenario 1 - Based on Cloudy Days - with Solar			
Ah Drawn from Batteries on Cloudy Days		-	-
% of Battery Capacity Useable	50% *6*		
Rated Battery Capacity Required (AH)		-	-
Rated Battery Capacity (Ah)	120		
Number of Batteries Required (in parallel)		-	-
Scenario 2 - Based on Days of Reserve Capacity (no solar)			
Number of Days of Reserve Battery Capacity	2		
% of Battery Capacity Useable	50%		
Rated Battery Capacity Required (AH)		0.0	0.0
Rated Battery Capacity (Ah)	120		
Number of Batteries Required (in parallel)		-	-

1 AH - Amp Hours - Amps of current consumed in one hour
2 Windlass is often not considered because the engine alternator is running when used
3 5 hours avg. is a good estimate for horizontal panels, 7 for panels with tilt & rotate
See http://www.bigfrogmountain.com/SunHoursPerDay.html for hours in your area.
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