

Monday, 06 January 2014

Ion Popescu Solar pumping project

Parameter

Location:	Romania, Tecuci (44° North; 26° East)	Static head:	33 m
Required daily output:	25 m ³ ; Sizing for July	Motor cable:	40 m
Dirt loss:	5,0 %	Pipeline:	30 m

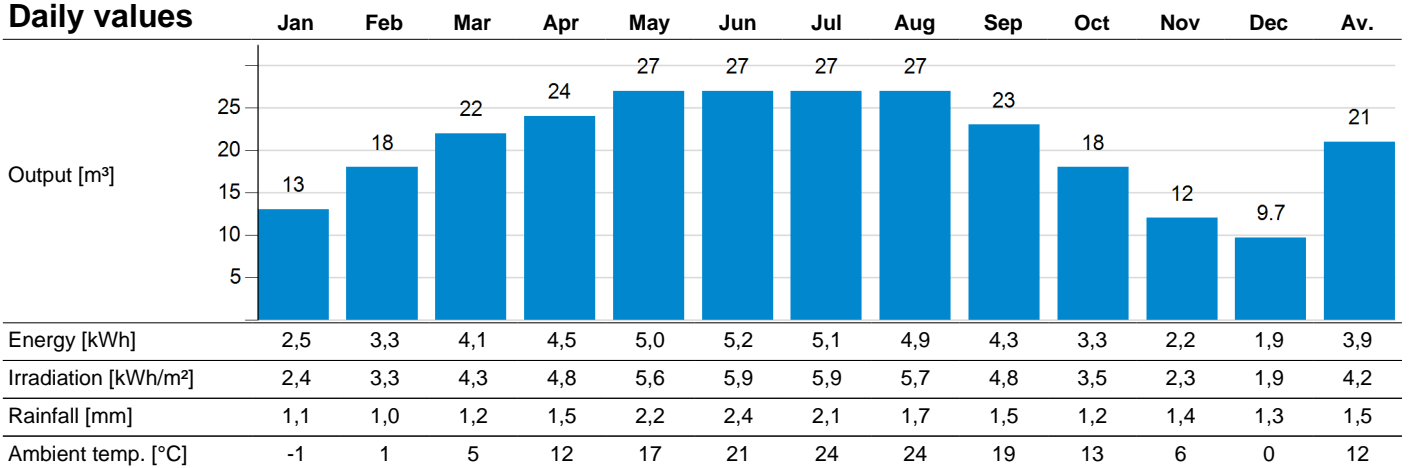
Products

Quantity	Details
PS1800 C-SJ5-12	1 pc. Submersible pump system including controller, motor and pump end
PV 250Wp	4 pc. 1.000 Wp; 4 x 1 modules; 30 ° tilted
Motor cable	40 m 4 mm ² 3-phase cable
Pipeline	30 m 35 mm (inner diameter) Pipeline
Accessories	1 set Well Probe, Float Switch

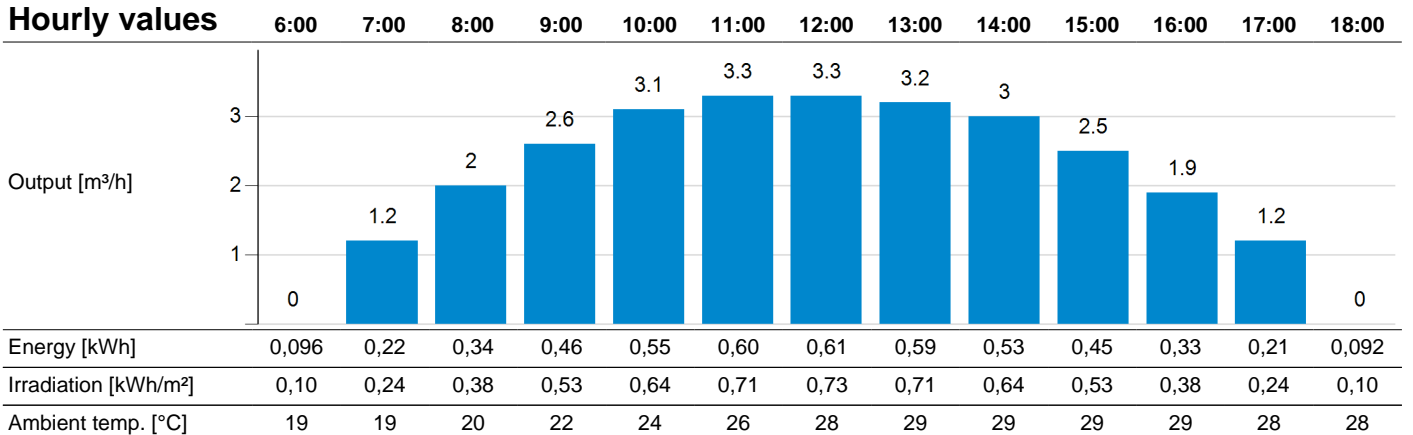
Daily output in July

27 m³

Daily values



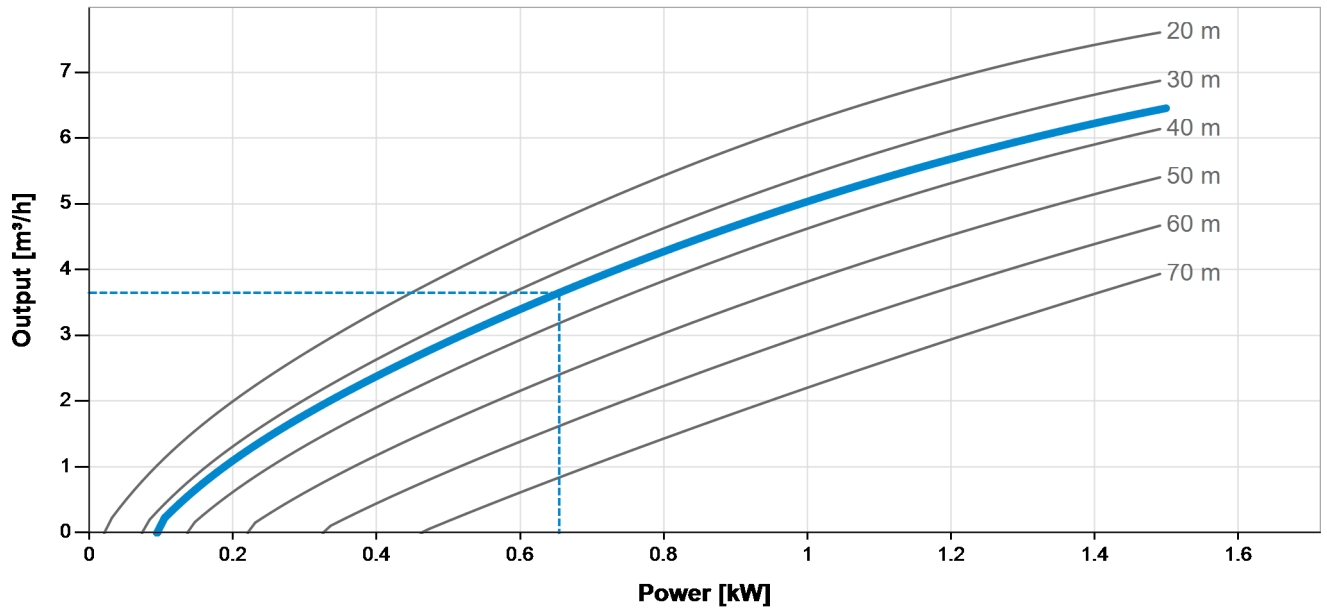
Hourly values



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System characteristic



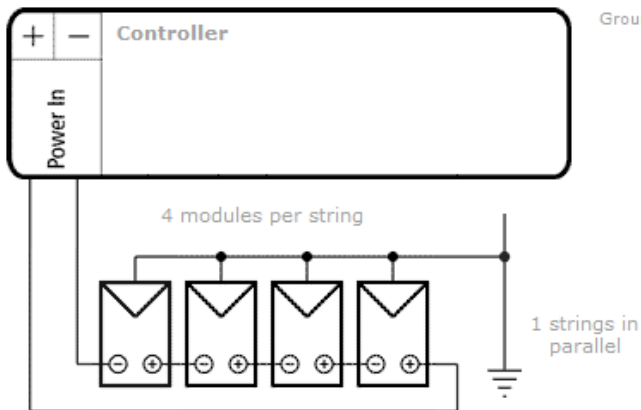
			Min.	800 W/m², 20 °C	Max./STC*
PV generator	Cell temperature	[°C]		46	25
	Temperature loss	[%]		11	-
	Dirt loss	[%]		5,0	-
	Pmax	[Wp]		680	1.000
	Vmp	[V]		111	124
	Imp	[A]		6,1	8
	Voc	[V]		140	152
	Isc	[A]		68	87
	Pout	[W]		680	-
	Vout	[V]		9.180	-
	Iout	[A]		0,15	-
	Motor cable	Power loss	[%]	1,2	3,0
Pump system					
	Motor power	[W]	94	654	1.500
	Motor voltage	[V EC]	54	86	120
	Motor current	[A]	1,8	7,6	13
	Motor speed	[rpm]	1.935	2.340	2.975
	Flow rate	[m³/h]	0	3,6	6,5
	Efficiency	[%]	0	50	53
Pipeline	Flow speed	[m/s]	0	1,1	1,9
	Friction loss	[m]	0,002	1,1	2,9

*STC: Standard test conditions for photovoltaic modules, 1000 W/m² solar irradiance, 25 °C cell temperature

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Wiring diagram

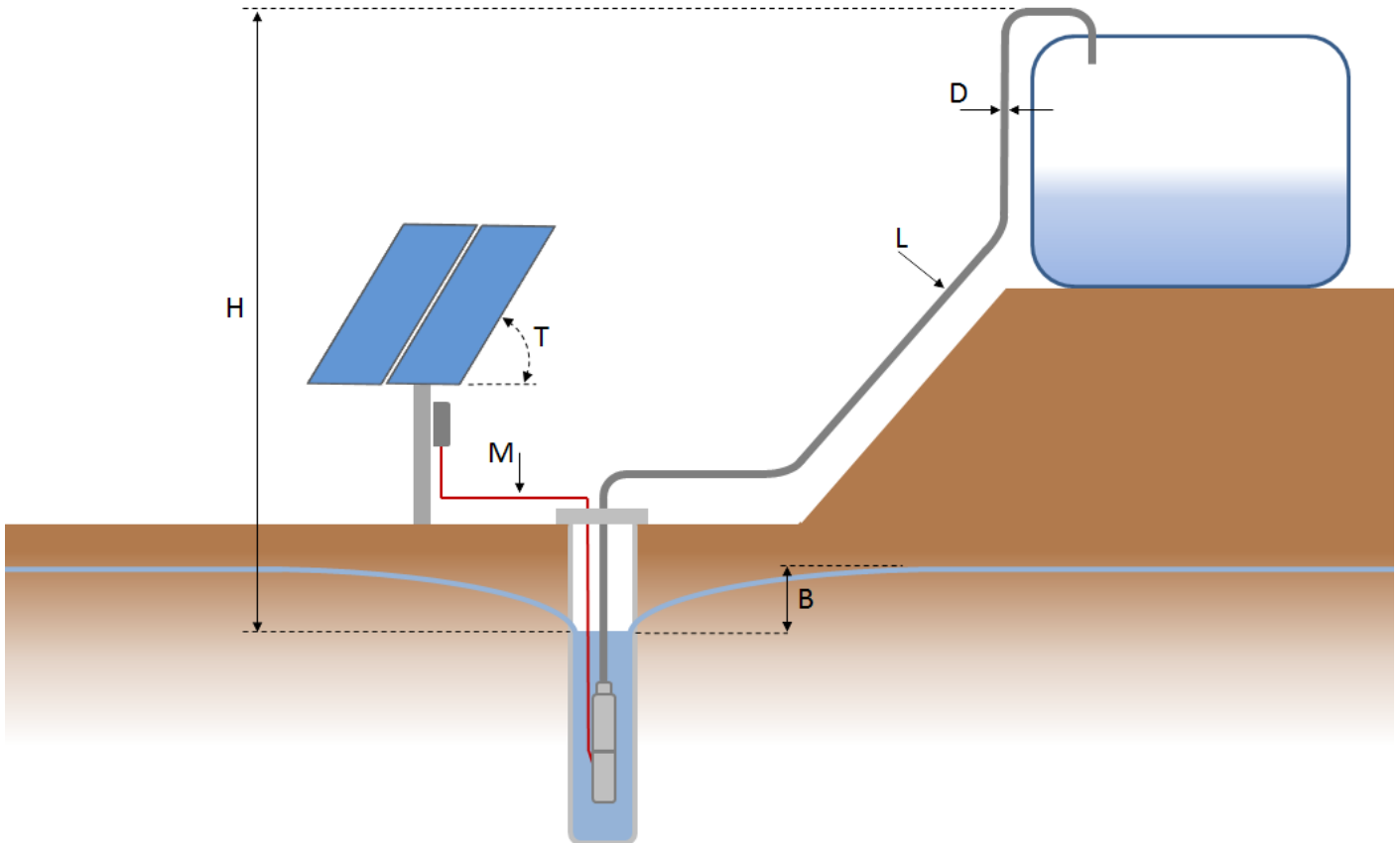


Grounding should be done according to the instructions of the module manufacturer.

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Layout



H (Static head):	Vertical height from the dynamic water level to the highest point of delivery.
T (Tilt angle):	Angle of the PV generator surface from the horizontal plane.
M (Motor cable):	The cable between controller and pump unit.
L (Pipeline):	Entire pipeline from the pump outlet to the point of delivery. Ellbows and armatures must be added as an equivalent length of pipeline.
B (Drawdown):	Lowering of water level depending on flow rate and recovery rate of the well.
D (Pipeline inner diameter)	

PS1800 C-SJ5-12

Solar Submersible Pump System for 4" wells

System Overview

Head	max. 70 m
Flow rate	max. 7,6 m³/h

Technical Data

Controller PS1800

- Control inputs for dry running protection, remote control etc.
- Protected against reverse polarity, overload and overtemperature
- Integrated MPPT (Maximum Power Point Tracking)
- Battery operation: Integrated low voltage disconnect

Power	max. 1,8 kW
Input voltage	max. 200 V
Optimum Vmp*	> 102 V
Nominal voltage (battery operation)	96 V
Motor current	max. 14 A
Efficiency	max. 98 %
Ambient temp.	-30...50 °C
Enclosure class	IP54

Motor ECDRIVE 1200-C

- Maintenance-free brushless DC motor
- Water filled
- Premium materials, stainless steel: AISI 304/316
- No electronics in the motor

Rated power	1,7 kW
Efficiency	max. 92 %
Motor speed	900...3.300 rpm
Insulation class	F
Enclosure class	IP68
Submersion	max. 250 m

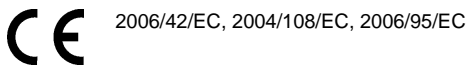
Pump End PE C-SJ5-12

- Non-return valve
- Premium materials, stainless steel: AISI 304

Pump Unit PU C-SJ5-12 (Motor, Pump End)

Borehole diameter	min. 4,0 in
Water temperature	max. 50 °C

Standards



IEC/EN 61702:1995,
IEC/EN 62253 Ed.1

The logos shown reflect the approvals that have been granted for this product family. Products are ordered and supplied with the approvals specific to the market requirements.

*Vmp: MPP-voltage under Standard Test Conditions (STC): 1000 W/m² solar irradiance, 25 °C cell temperature

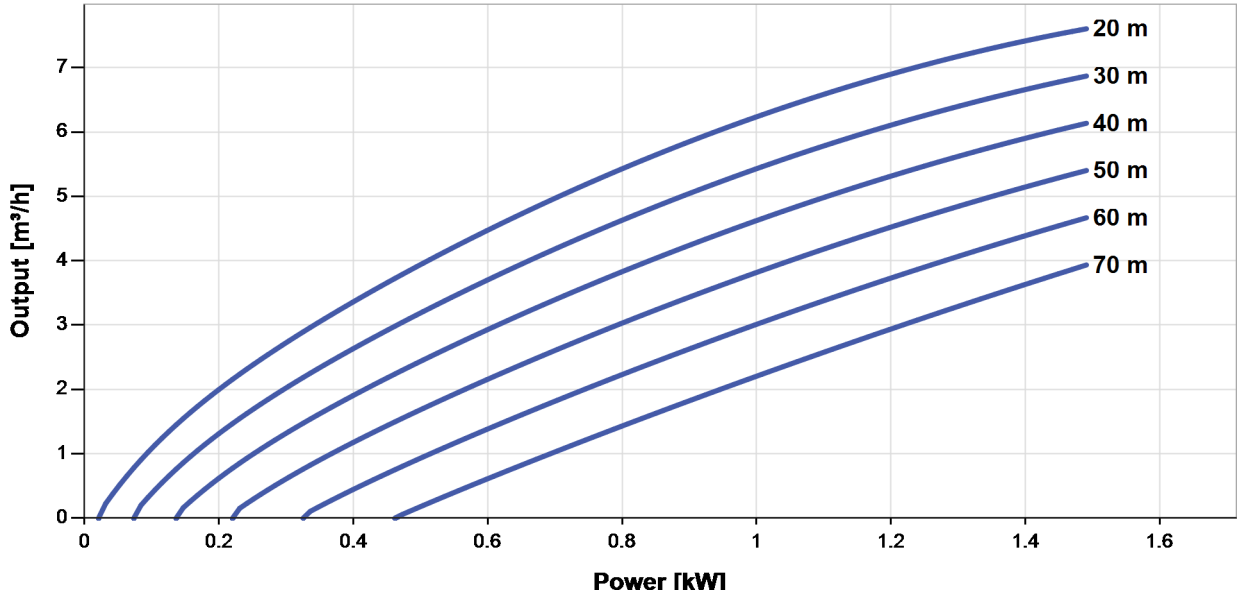


PS1800 C-SJ5-12

Solar Submersible Pump System for 4" wells

Pump Chart

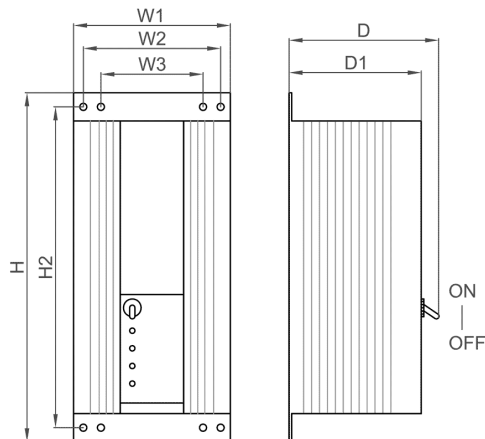
Vmp* > 102 V



Dimensions and Weights

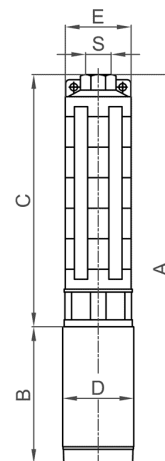
Controller

- H = 396 mm
- H2 = 364 mm
- W1 = 178 mm
- W2 = 156 mm
- W3 = 116 mm
- D = 165 mm
- D1 = 150 mm



Pump Unit

- A = 611 mm
- B = 185 mm
- C = 426 mm
- D = 96 mm
- E = 98 mm
- S = 1,5 in



	Net weight
Controller	4,5 kg
Pump Unit	14 kg
Motor	7,0 kg
Pump End	6,5 kg

*Vmp: MPP-voltage under Standard Test Conditions (STC): 1000 W/m² solar irradiance, 25 °C cell temperature



Well Probe

Mechanically Activated Device for Dry Run Protection in Applications with LORENTZ Solar Pump Systems

The switch can be used to detect the water level within a well. When the water level in the well dropped below the level of the well probe, the LORENTZ Controller will stop the pump and indicates Source Low LED.

FEATURES

- Reliable dry run protection
- Simple to install
- Trouble free operation
- Corrosion-free
- Splicing kit included

TECHNICAL DATA

- Max. operating temperature 55 °C
- Enclosure class: IP68
Submersion depth: max 50 m
- Cable length: 1.5m
- Wire size: 2x 0.75mm² or AWG 19, waterproofed
- Mounted in vertical position

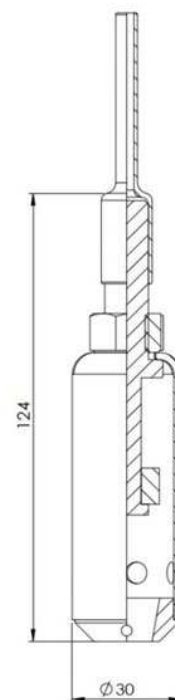
STANDARDS

- Meets the requirements for CE



DIMENSION/WEIGHT

- Packaging dimensions: 260 x 170 x 40 mm
10.3in x 6.7in x 1.6in
- Total weight: 0.1kg / 0.2lbs



Float Switch

Mechanically Activated Device for Water Level Detection in Applications with LORENTZ Solar Pump Systems

The switch can be used to detect the water level within a tank. When the water level in the tank reaches the maximum, the LORENTZ Controller will stop the pump and indicates Tank Full LED.

FEATURES

- Reliable water level detection
- Simple to install
- Trouble free operation
- Not sensitive to rotation
- Corrosion-free
- Three wires for normally open and normally closed application



TECHNICAL DATA

- Operating temperature: -10°C to 55°C
- Storage temperature: : -10°C to 55°C
- Enclosure class: IP68
- Cable length: 3m, waterproof
- Wire size: 3x 1.0mm² or AWG 18

STANDARDS

- Meets the requirements for CE



DIMENSION/WEIGHT

- Packaging dimensions: 230 x 160 x 55 mm
9.1in x 6.3in x 2.2in
- Total weight: 0.8kg / 1.8lbs

