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Thursday, 07th Jan 2021

REREC

MEDAIR EAST AFRICA

Mandera

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0711079000

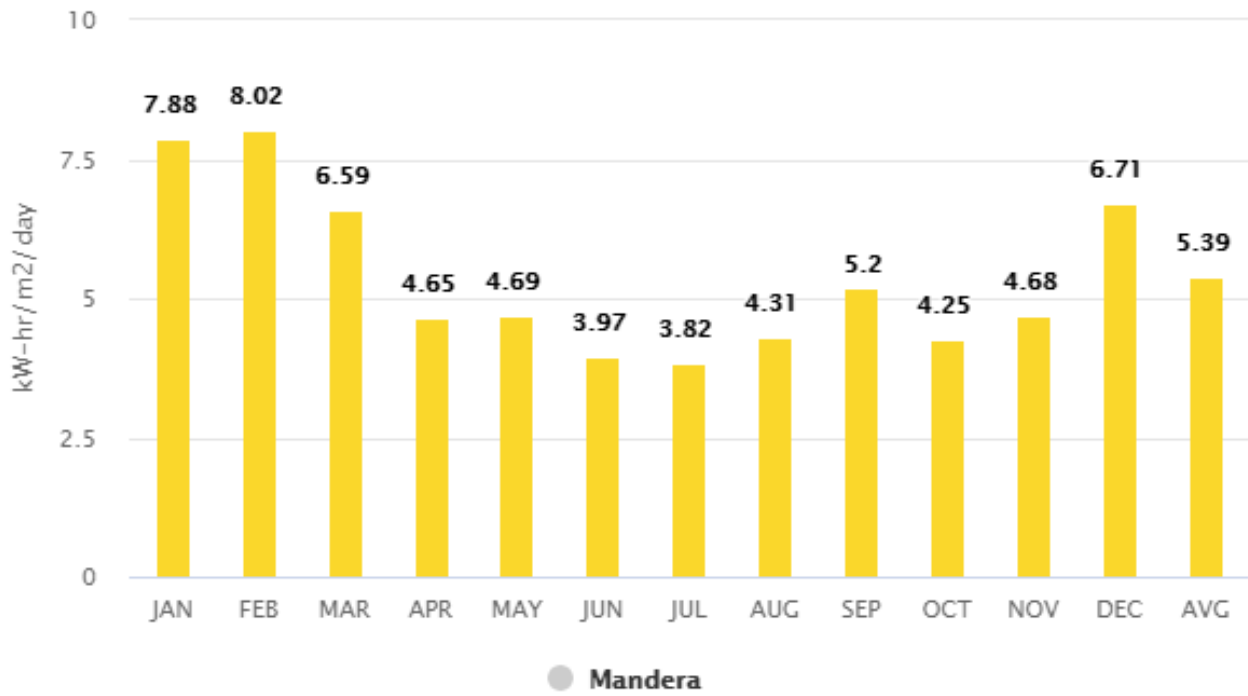
Test

Paramaters									
Location	Mandera(3.935638899999999, 41.8551162)								
Required Daily Output	45.81 m <sup>3</sup>	Pipe Type		Motor Cable	m	Pipe Length & Inner Diameter	m, "	Head (TDH)	150m
Product				Quantity	Details				
Pump - DS 17/24				1	Suitability <b>60.25%</b> , Efficiency <b>68.04%</b>				
Inverter - SV2/15T				1					
Panels - YL330				15 x 4	4 string(s) each with <b>15</b> Solar panels.				
Motor Cable				Length , Cross Sectional Area <b>4mm<sup>2</sup></b>					
Other Accessories									
Water Level Switch / Well Probe				1					
Water Level Sensor Cable				2 Core x 1.0mm2, Length -					
PV Disconnect				2	DAYLIFF 4ST 1000V/32A PV Disconnect Switch				
Earthrod c/w Clamp				1					
6mm <sup>2</sup> DC Cable for Earthrod				(As required)					
Daily output in average month - 58.73									

## Monthly Irradiation Data

## Direct Normal Irradiation

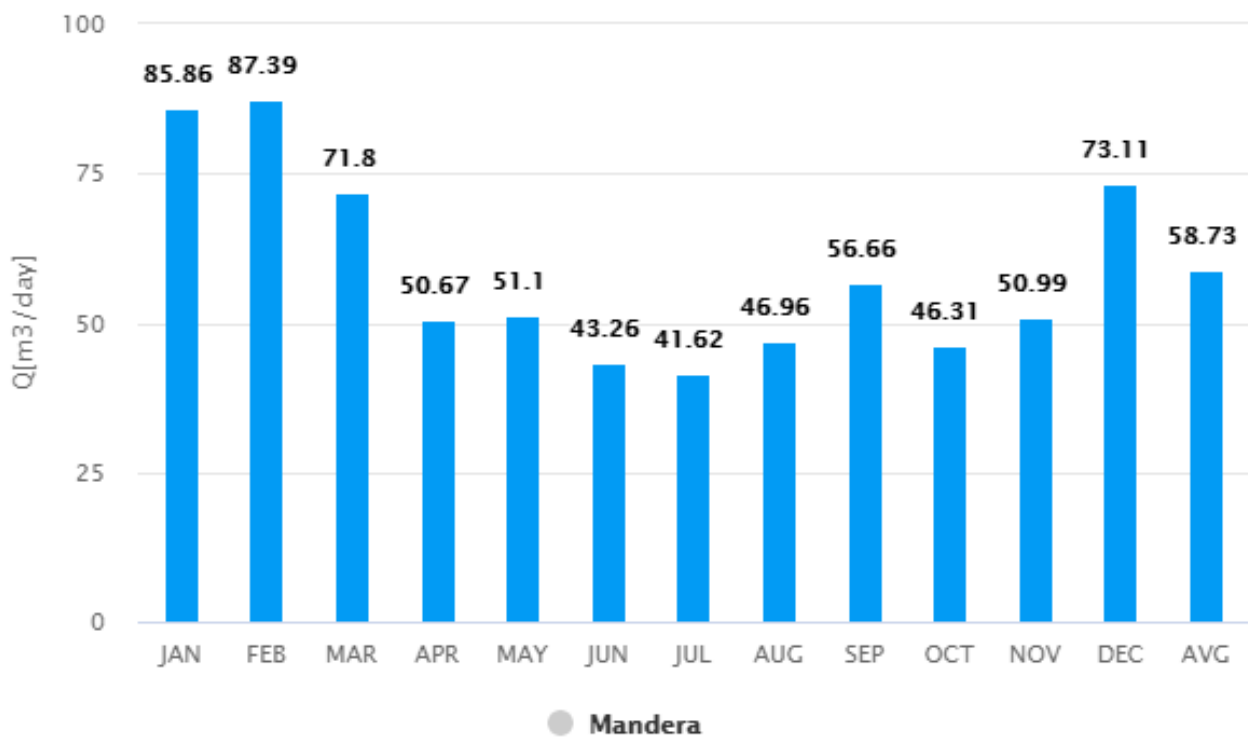
Source: NASA.gov POWER Single Point Data Access



Irradiation [kWh/m²]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
	7.88	8.02	6.59	4.65	4.69	3.97	3.82	4.31	5.2	4.25	4.68	6.71	5.39

### Monthly Output Data

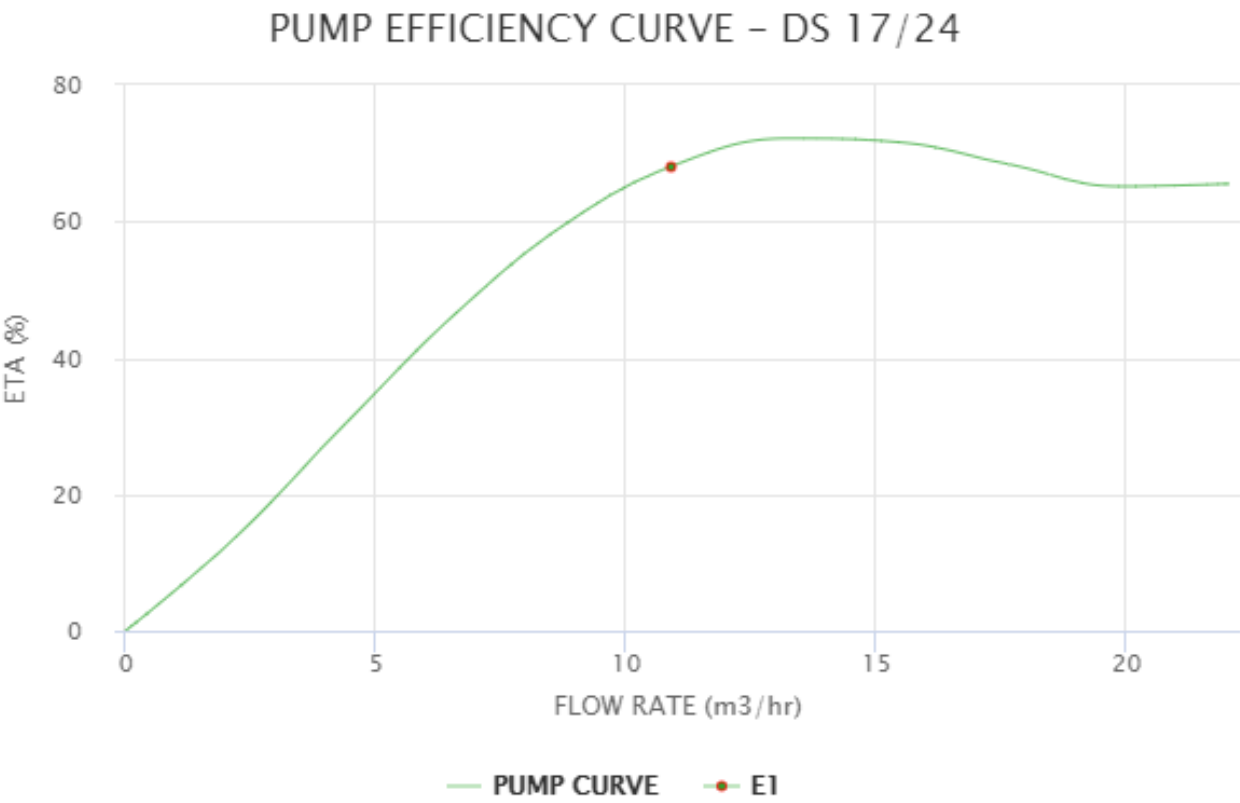
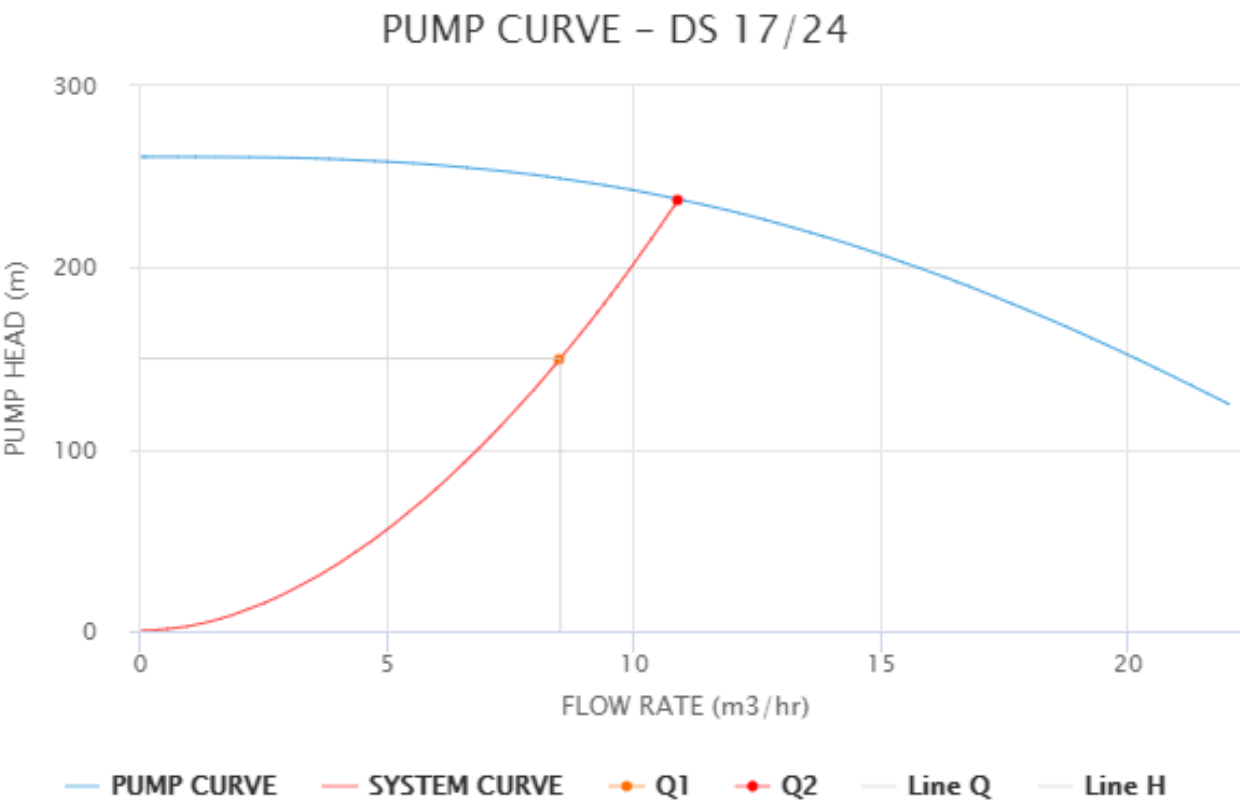
## Output – Mandera



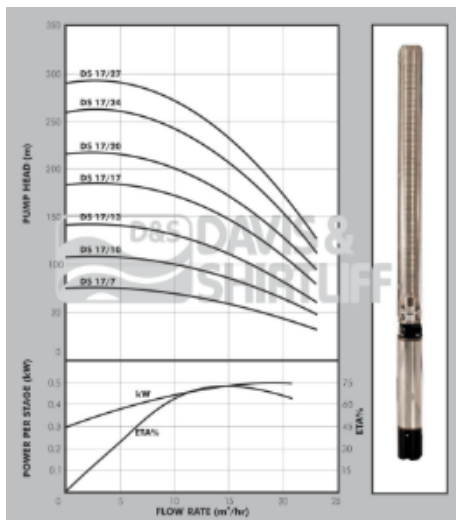
Output [m³/day]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
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85.86	87.39	71.8	50.67	51.1	43.26	41.62	46.96	56.66	46.31	50.99	73.11	58.73
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Pump & System Curves



DS 17/24



## PUMP

DAYLIFF DS submersible pumps are designed specifically for borehole supply applications. They are of multistage centrifugal impeller design and all parts are made from stainless steel with water lubricated rubber bearings. A submersible motor is fitted beneath the pump and suction is effected through a strainer between the pump and motor.

## MOTOR

The pump is coupled to a sealed liquid cooled 2-pole asynchronous squirrel cage motor constructed from stainless steel. The motor requires a remote starter and if unstable supply voltage is likely, an additional quick tripping control relay is recommended. Note that due to low starting torques of submersible motors, it is recommended that DOL starters are used.

**Enclosure Class:** IP68

**Insulation Class:** F

**Voltage:** 3x415V

**Speed:** 2900rpm

## OPERATING CONDITIONS

**Pumped Liquid:** Thin, clean chemically non-aggressive liquids without solid particles or fibres.

**Max. Liquid Temperature:** +40°C

**Max. Water Depth:** 300m - 6", 200m - 4"

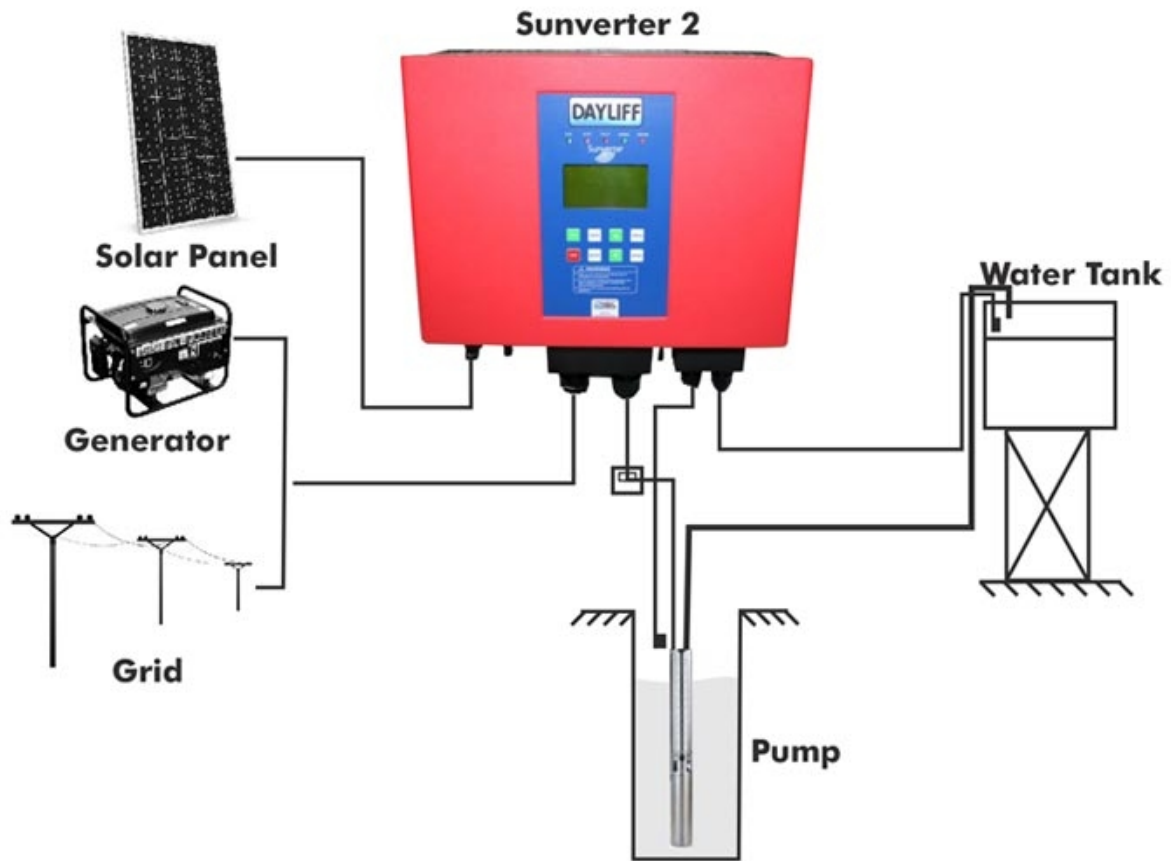
**Min. Borehole Diameter:** 150mm - 6", 110mm - 4"

## PUMP DATA

Model	Motor		Full Load Current (A)	I <sub>start</sub> /I	Dimensions (mm)				Weight (kg)
	kW	HP			A	B	C	E*	
DS 17-7	4	5.5	10.2	5.4	1320	614	706	131	37
DS 17-10	5.5	7.5	13.1	5.3	1571	684	887	131	45
DS 17-13	7.5	10	16.9	5	1833	764	1069	142	53
DS 17-17	9.2	12.5	22.8	4.2	1996	685	1311	142	77
DS 17-20	11	15	26	4.8	2222	730	1492	142	86
DS 17-24	15	20	34.2	5	2519	785	1734	142	97
DS 17-27	15	20	34.2	5	2701	785	1916	142	102

E\* = Maximum diameter of the pump inclusive of cable guard and motor

## SV2/15T



Dayliff Sunverter 2 is an advanced AC/DC inverter specially designed for solar powering AC motors in various water pumping applications. A particular feature is hybrid capability that enables for the connection of direct AC power from mains or generator supply. It is adaptable to all AC motor types and can be retro fitted to the solarisation of existing AC supply installations. Particular features include;

- Patented MPPT (Maximum Power Point Tracking) capability providing fast response, good stability and up to 99% efficiency.
- Fully automatic operation with up to 8 years storage capacity of operating data.
- Supports motor soft start and gives full motor protection
- User friendly LCD display interface with comprehensive display information
- Hybrid capability with the option of DC solar power, generator or mains grid power inputs
- Remote monitoring and control capability using the unique iDayliff GPRS interface
- Strong IP65 rated enclosure for enhanced component protection

#### CONTROLLER FUNCTIONALITY

The controller offers the following control functions:-

- Settable minimum and maximum frequency and open circuit voltage.
- Display of operating parameters including frequency, voltage, amperage, input power and pump speed.
- Display of historical data including energy generation, maximum power and operating times.
- Protection against over and under voltage, over current, system overload and module over temperature.
- Fault detection with error code display.

#### INSTALLATION

Dayliff Sunverter 2 controllers are surface mounted and should be provided with a housing for water and heat protection. They must also be provided with a circuit breaker between the PV modules and controller. Due to the high operating voltages proper earthing is essential, which must be done by a qualified electrician. As a rule all PV powered solar pumping systems should be provided with a solar module array with a nominal output about 30% greater than the motor size. The arrays should be wired in a combination of series and parallel connections to ensure that the correct voltage is available in to the inverter. It is important that the connection arrangement is approved by the pump supplier.

#### OPERATING CONDITIONS

**Enclosure Class:** IP65

**Ambient Temperature:** -20°C to 60°C

**Relative Humidity:** 0-95%

**Frequency:** 0-60Hz

#### CONTROLLER DATA

model	Motor rated power (Kw)	Rated Voltage (V)	Max Solar input power (kWp)	Output Current (A)	Max DC input Voltage VDC	MPP Voltage VDC, Solar	MPP Voltage VDC, Hybrid	Dimensions (mm)			Weight (kg)
								H	W	D	
SV2/1.5M	1.1	1x240V	2.2	8.6	450	150-360	150-160	335	175		11
SV2/2.2M	1.5		3.3	11						12	
SV2/3.7M	2.2		5	17		310-360	324-360			13	
SV2/3.7T	3.7	3x415V		9	850	500-700	500-700	425	415	205	17
SV2/5.5T	5.5		8	13							
SV2/7.5T	7.5		11	18							
SV2/11T	11		16	24							
SV2/15T	15		22	30							18
SV2/18T	18.5		28	39							

## YL330

The heart of all effective photovoltaic systems is an efficient and reliable solar module and there are none better than Dayliff PV Modules. All are sourced directly from leading global PV module manufacturers who comply with the highest standards of quality and durability and offer the following features:-

- High efficiency multi crystalline solar cells with minimum 15% energy conversion rates to provide maximum power even at low irradiation levels
- High transmission rate tempered glass with an anti-reflection coating to increase the power output and provide mechanical strength.
- Multi function water proof junction box for easy connection.
- 25 year power output warranty.
- Global Certification.

Modules are sourced from world leading PV module manufacturers principally Yingli and Topray who are both large scale vertically integrated manufacturers that process from polysilicon production to module assembly to ensure consistently high quality levels. Both module types are recognised as quality products and are internationally certified by TUV Rheinland to ISO, CE and IEC standards as follows.

All Dayliff modules are manufactured to the highest standards and are guaranteed to provide reliable performance over long life spans. They are quality products in terms of both technology and performance and are ideal power sources for all types of solar applications.

### THERMAL CHARACTERISTICS

**Nominal Operating Cell Temperature:** 46+/-2°C

**Temperature Coefficient Pmax:** - 0.45%/°C

**Temperature Coefficient Voc:** - 0.37%/°C

**Temperature Coefficient Isc:** 0.06%/°C

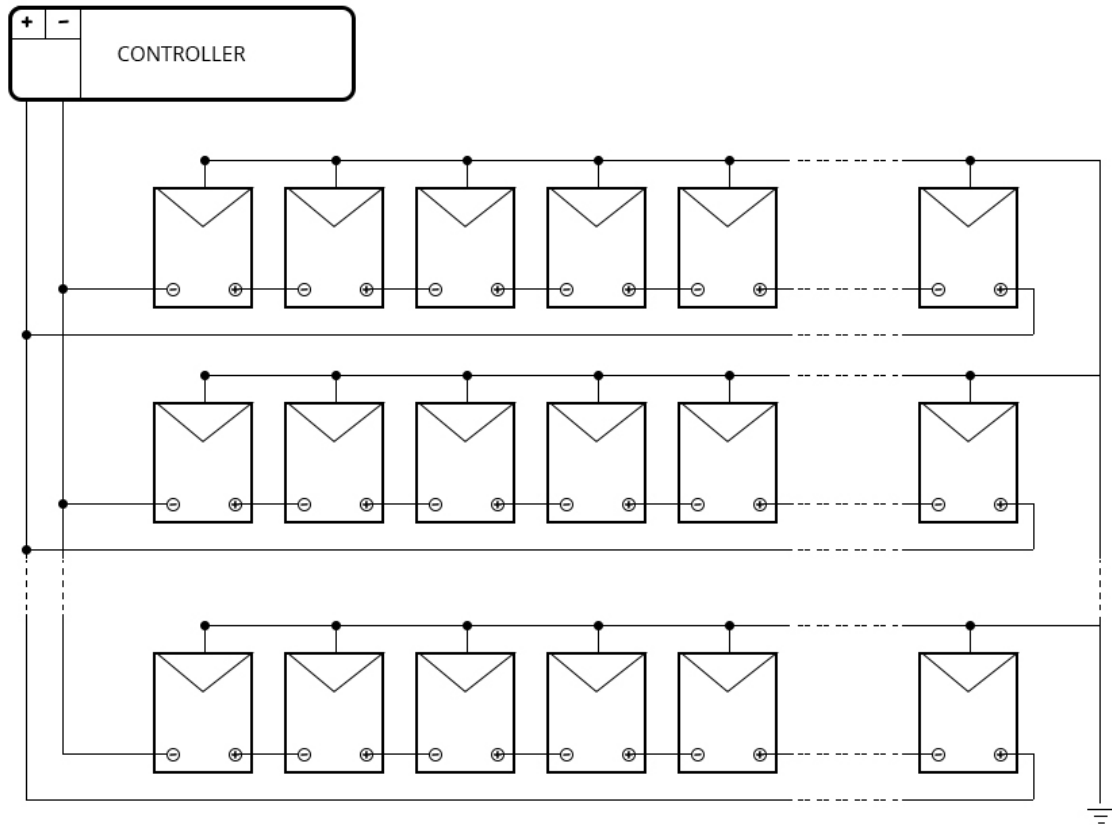
### PV MODULE DATA

Model	Rated power (W)	Nominal Voltage (V)	Peak Voltage (V)	Open Circuit Voltage (V)	Short Circuit Current (A)	Number of Cells	Dimensions (mm)						Weight (kg)
							A	B	C	D	E	F	
SL20	20	12	18	21.6	1.2	36	496	495	296	350	100	23	1.98
SL40	40	12	18	21.6	2.5	36	665	665	316	516	100	25	3.7
SL50	50	12	18	21.6	2.9	36	667	665	467	588	100	25	4.25
SL60	60	12	18	21.6	3.7	36	689	667	467	665	100	25	5.35
TPS85	85	12	17.6	21.6	4.9	36	759	664	599	637	80	25	6
TPS100	100	12	17.8	21.2	6	72	1006	664	646	626	180	35	7.3
TPS125	125	12	17.5	21.5	7.4	36	1179	664	899	626.4	140	35	9
TPS150	150	24	36	43.2	4.45	72	1486	664	1206	626.4	140	35	11.5
TPS200	200	24	36	44.5	5.7	72	1316	992	1036	954.4	140	35	13.7
YL275	275	24	31	37.8	9.36	60	1650	992	990	948	330	35	18.5
YL330	330	24	37.4	46.4	9.29	72	1960	992	1300	948	330	40	22

Data is given at Standard Test Conditions: Irradiance 1000W/m<sup>2</sup>, spectrum AM 1.5 and 25°C cell temperature

\*Polycrystalline else Multicrystalline

## Wiring Diagram



15 panels by 4 string(s)