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Friday, 16th Jul 2021
Kismayu Solar Pumping Project
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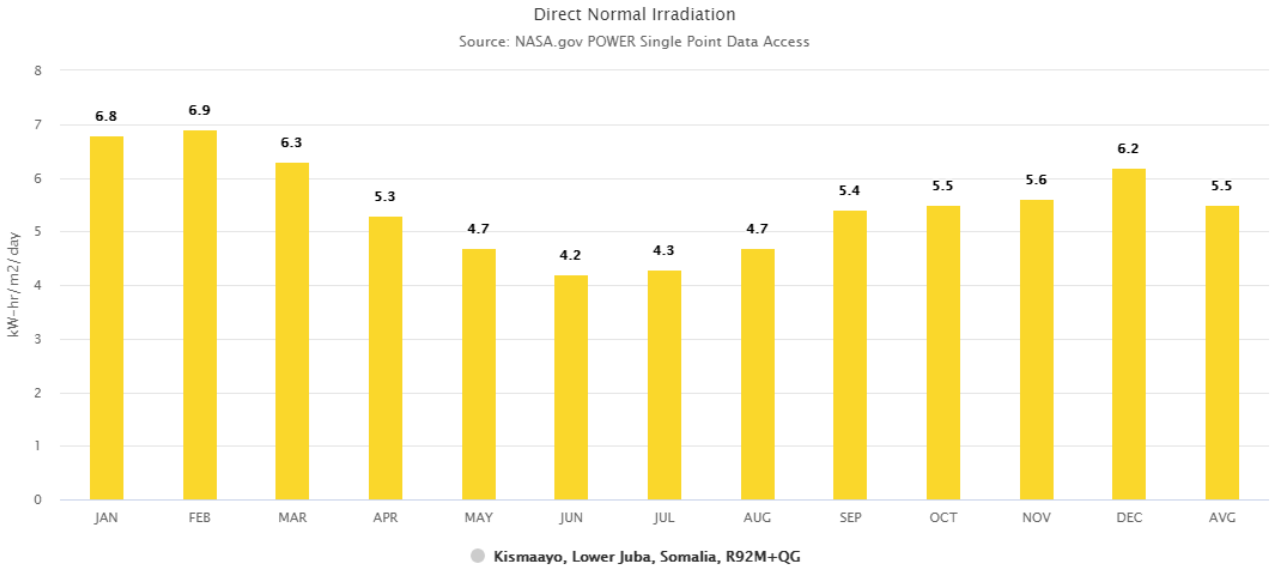
Please make sure that you add the customer to your customer list before saving your project. This will allow you to create another project for that customer easily in the future. Once done, you can proceed to save your project. Please make sure that you add the customer to your customer list before saving your project. This will allow you to create another project for that customer easily in the future. Once done, you can proceed to save your project.

Paramaters									
Location	Kismaayo, Lower Juba, Somalia, R92M+QG(-0.1981044342602363, 42.38381772862545)								
Required Daily Output	632.5 m³	Pipe Type		Motor Cable	m	Pipe Length & Inner Diameter	m, "	Head (TDH)	60m

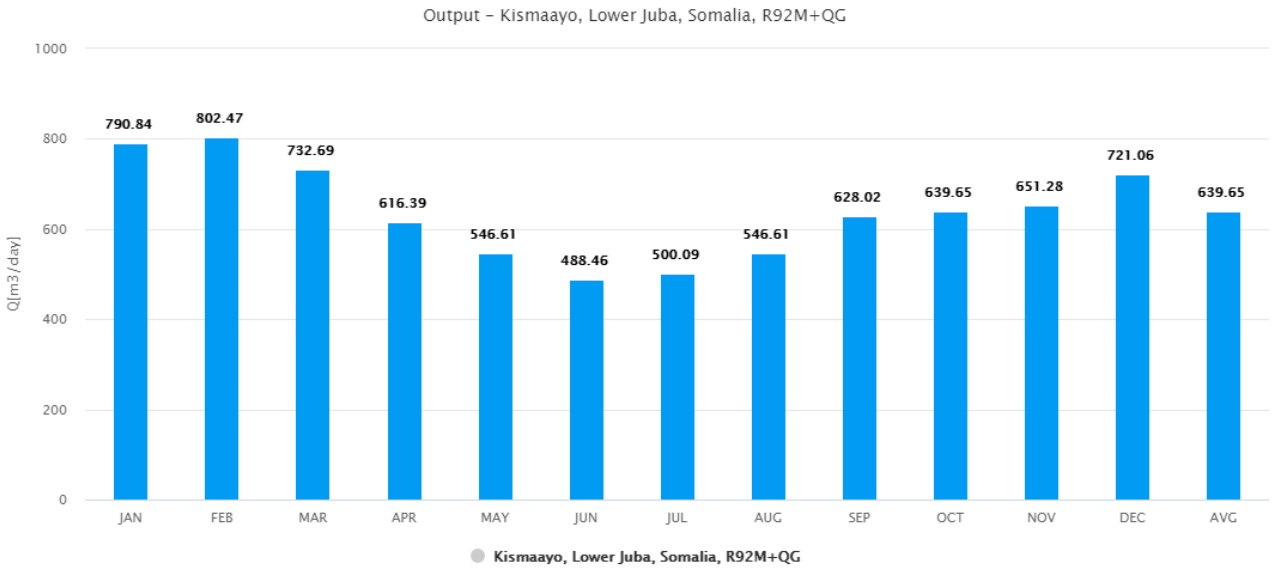
Product	**Quantity**	**Details**
Pump - DI/DIN120-3	1	Suitability **97.02**%, Efficiency **78.78**%
Inverter - RSI300	1	
Panels - YL330	17 x 7	**7** string(s) each with **17** Solar panels.
Motor Cable	Length , Cross Sectional Area **16mm²**	
Other Accessories		
PV Disconnect	3	DAYLIFF 4ST 1000V/32A PV Disconnect Switch
Earthrod c/w Clamp	1	
6mm² DC Cable for Earthrod	(As required)	
Daily output in average month - 639.65		

Monthly Irradiation Data



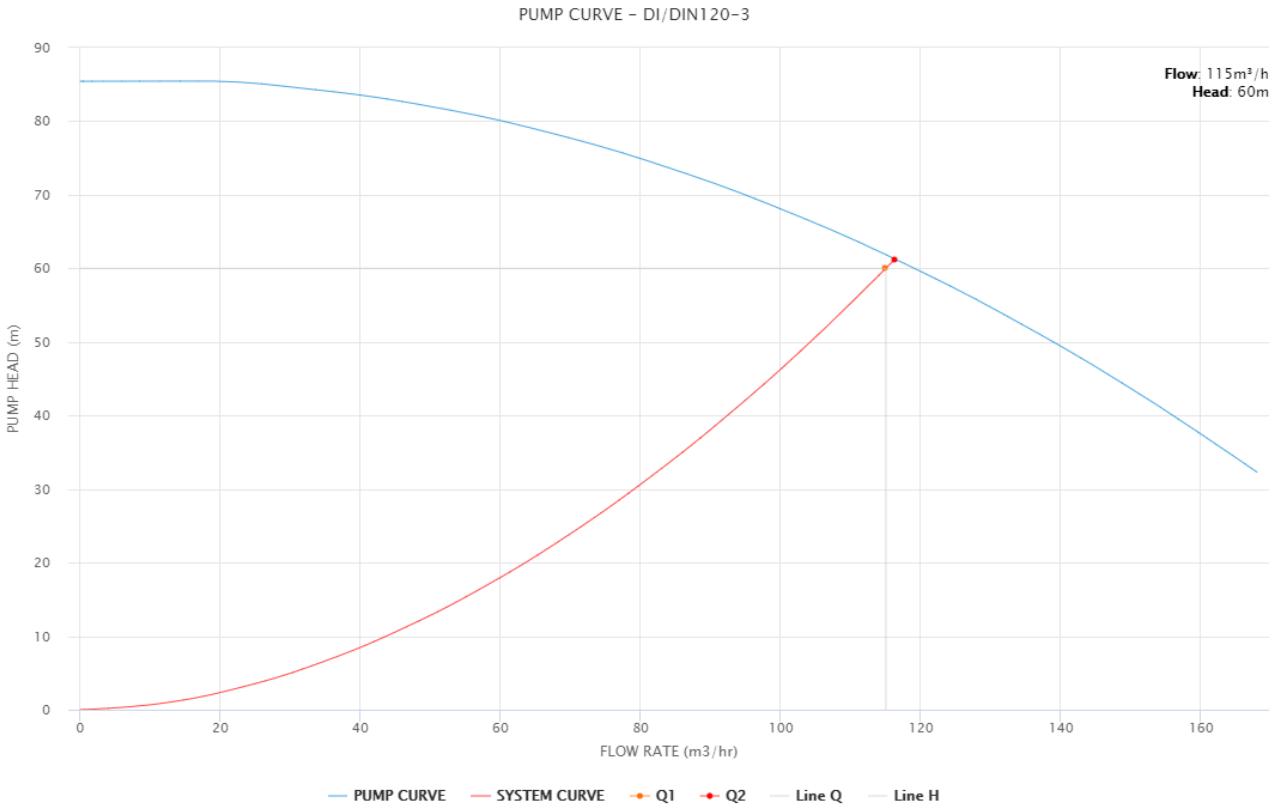
Irradiation [kWh/m²]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
	6.8	6.9	6.3	5.3	4.7	4.2	4.3	4.7	5.4	5.5	5.6	6.2	5.5

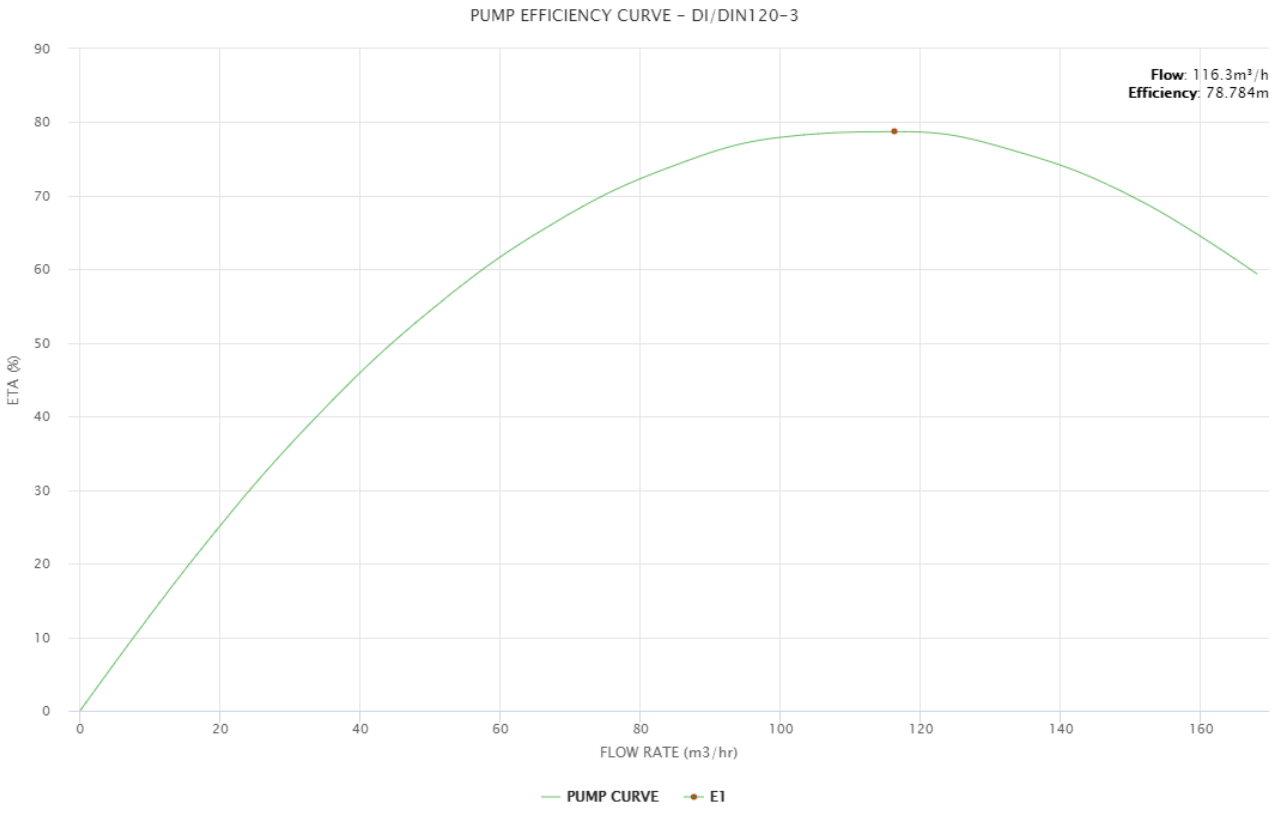
Monthly Output Data



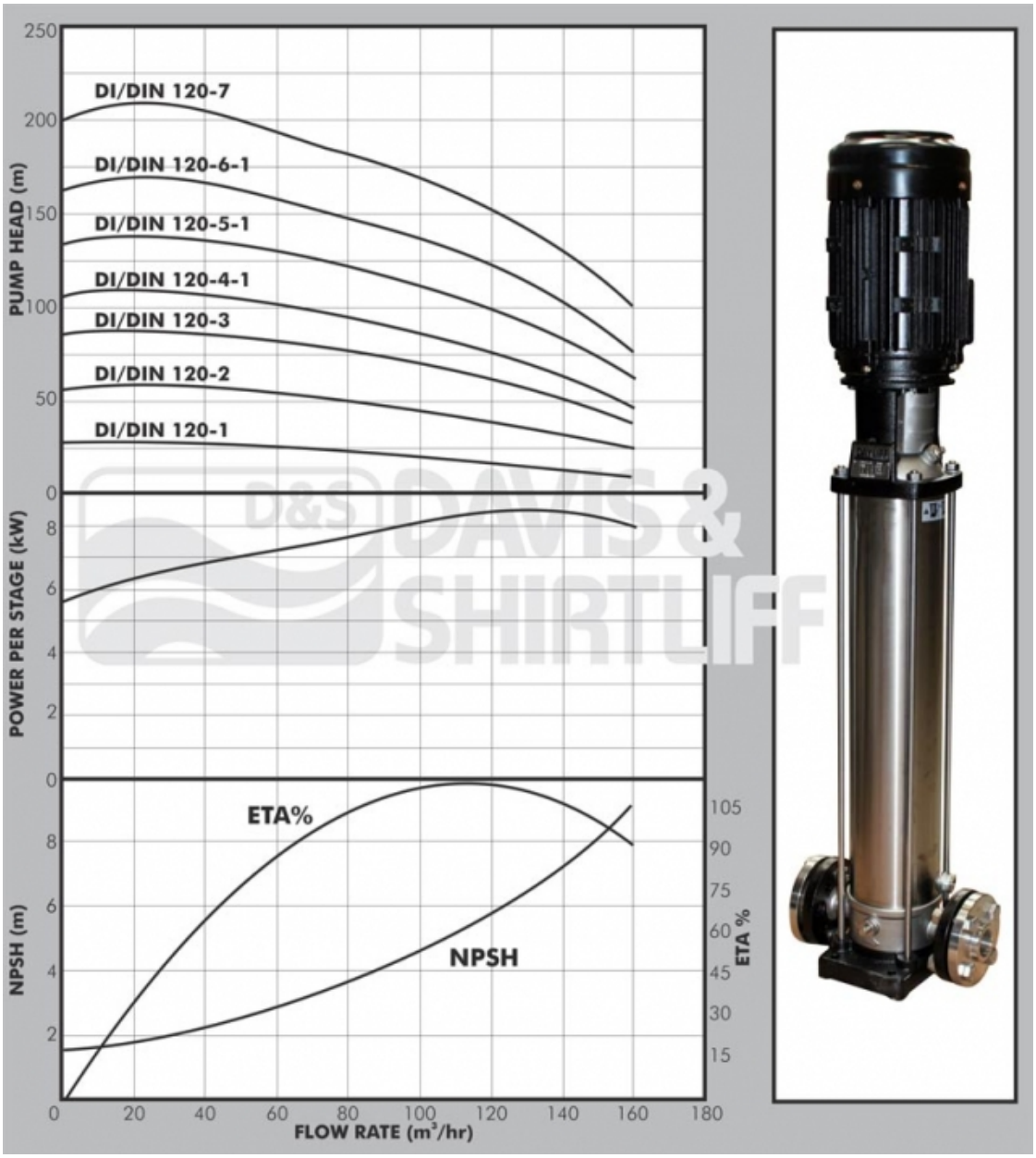
Output [m³/day]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
	790.84	802.47	732.69	616.39	546.61	488.46	500.09	546.61	628.02	639.65	651.28	721.06	639.65

Pump & System Curves


PUMP CURVE – DI/DIN120-3
Flow: 115m³/h
Head: 60m
PUMP HEAD (m)
FLOW RATE (m3/hr)
PUMP CURVE
SYSTEM CURVE
Q1
Q2
Line Q
Line H


PUMP EFFICIENCY CURVE – DI/DIN120-3
Flow: 116.3m³/h
Efficiency: 78.784m
ETA (%)
FLOW RATE (m3/hr)
PUMP CURVE
E1

DI/DIN120-3



PUMP

The DAYLIFF DI/DIN pump range are of non self priming vertical multistage in-line centrifugal design suitable for a wide range of water supply, irrigation, liquid transfer and boosting applications. The pumps are of heavy duty construction and designed for continuous duty in commercial and industrial installations. All DIN pumps feature vital components in contact with water including the impellers, intermediate chambers, shaft and top and bottom housings are made from AISI 316 stainless steel and suitable for pumping highly mineralised corrosive water. DI pumps feature cast iron top and bottom housing and other components are AISI 304 stainless steel. All pumps are water lubricated and are provided with a standard cartridge type mechanical seal. They are supplied complete with BSP internally threaded counter flanges.

MOTOR

The pumps are coupled to high efficiency IE3 totally enclosed fan cooled 2-pole motor complying with IEC standards and must be connected to an effective motor starter in accordance with local regulations.

Enclosure Class: IP55
Insulation Class: F
Voltage: 3x415V
Speed: 2900rpm

OPERATING CONDITIONS

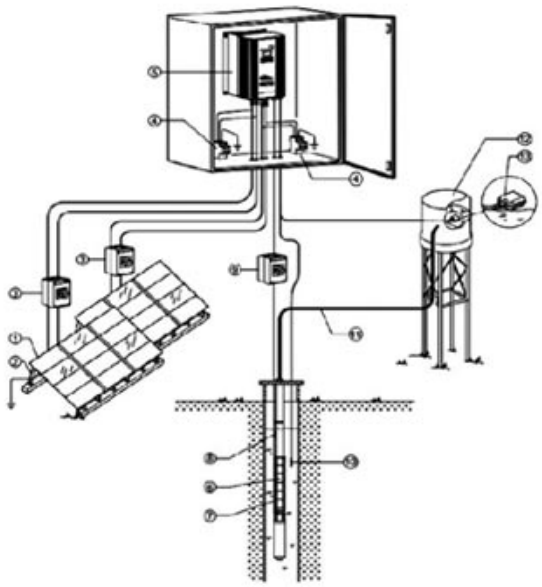
Pumped Liquids: Thin, clean, non-aggressive and non-explosive liquids without solid particles or fibres.
Liquid Temperature Range: -15°C to +120°C
Maximum Ambient Temperature: +50°C
Maximum Suction Lift: According to the NPSH curve plus a safety margin of 1m
Maximum Operating Pressure: 30bar
Maximum Inlet Pressure: DI/DIN120-1-10Bar, DI/DIN120-2 to 5 -15Bar,DI/DIN120-6-1 to 7 - 20Bar

PUMP DATA

Model	Motor	Full load Current (A)	IStart/I	Dimensions(mm)	Weight (kg)

kW	HP	H1	H2	D1	D2	D3				
DI/DIN120-1	11	15	18.9	6.6	837	1282	329	215	350	196
DI/DIN120-2	22	30	37.1	6.4	993	1533	318	241	350	266
DI/DIN120-3	30	40	51.3	6.4	1143	1809	390	295	400	376
DI/DIN120-4-1	37	50	61.7	6.6	1304	1964	390	295	400	404
DI/DIN120-5-1	45	60	74.8	6.2	1463	2153	446	325	450	490
DI/DIN120-6-1	55	75	91.2	6.6	1645	2415	485	355	550	620
DI/DIN120-7	75	100	123.8	6.5	1800	2645	550	410	550	747

RSI300



1. Solar Panel
2. Mounting Structure
3. Circuit Breaker DC
4. Surge Protection DC*
5. Renewable Solar Inverter
6. SP Pump
7. Cable
8. Submersible Drop Cable
9. Circuit Breaker AC
10. Dry running Switch
11. Pipe
12. Water Tower/Tank
13. Level Switch

GRUNDFOS RSI SOLAR CONTROLLERS

Recent innovations in DC/AC inverter technology have led to the development of solar solutions for large system outputs, which use standard AC motors controlled by specially designed inverters. Grundfos RSI inverter systems have been re-engineered and improved and are especially compatible with a wide range of the world renowned Grundfos Submersible and surface pumps to create a modular system that can be customised to the requirements of each installation. Specific features include:-

- Suitable for all AC 3 phase motor sizes up to 37kW.
- Designed for all Grundfos SP pump models and can be retro fitted to existing installations.
- Advanced MPPT capability that optimises system performance by compensating for environmental condition improving water output by 30%.
- Set-up wizard that is pre-progmammed with Grundfos motors making it easy to set up or preprogramme at the workshop before installation.
- Hybrid capability with option of switching between AC or DC power ensuring that the pump can be operated at any time of day . An external switch over box is required to connect the two power sources
- Adjustable operating parameters.
- Multiple sensor input.

Grundfos have been pioneers in solar pumping since the technology's beginnings and with their great experience, quality products and high system effectiveness offer the best solution for all solar pumping requirements.

CONTROLLER FUNCTIONS

he controller offers the following control functions:-

- Detachable control interface.
- 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

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.

Ambient Temperature: -10°C - +60°C
Relative Humidity: 100%
Enclosure Class: IP66

CONTROLLER DATA

Model	Motor Power (kW)	Motor Voltage (VDC)	Solar Input Power (kW)	Max DC Input Voltage (VDC)	Min. MPP Voltage (VDC)	Output Current (A)	Frequency (Hz)	Dimensions (mm)			Weight (kg)
								L	W	H	
RSI003	3	3x380	3.9	800	400	8	5-60	315	191	214	9
RSI055	5.5		7.2			12		368	233	231	15
RSI075	7.5		9.8			14					
RSI110	11		14.5			16					
RSI150	15		19.5			31		500	322	254	32
RSI220	22		28.6			46					
RSI300	30		39.0		500	61					

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.

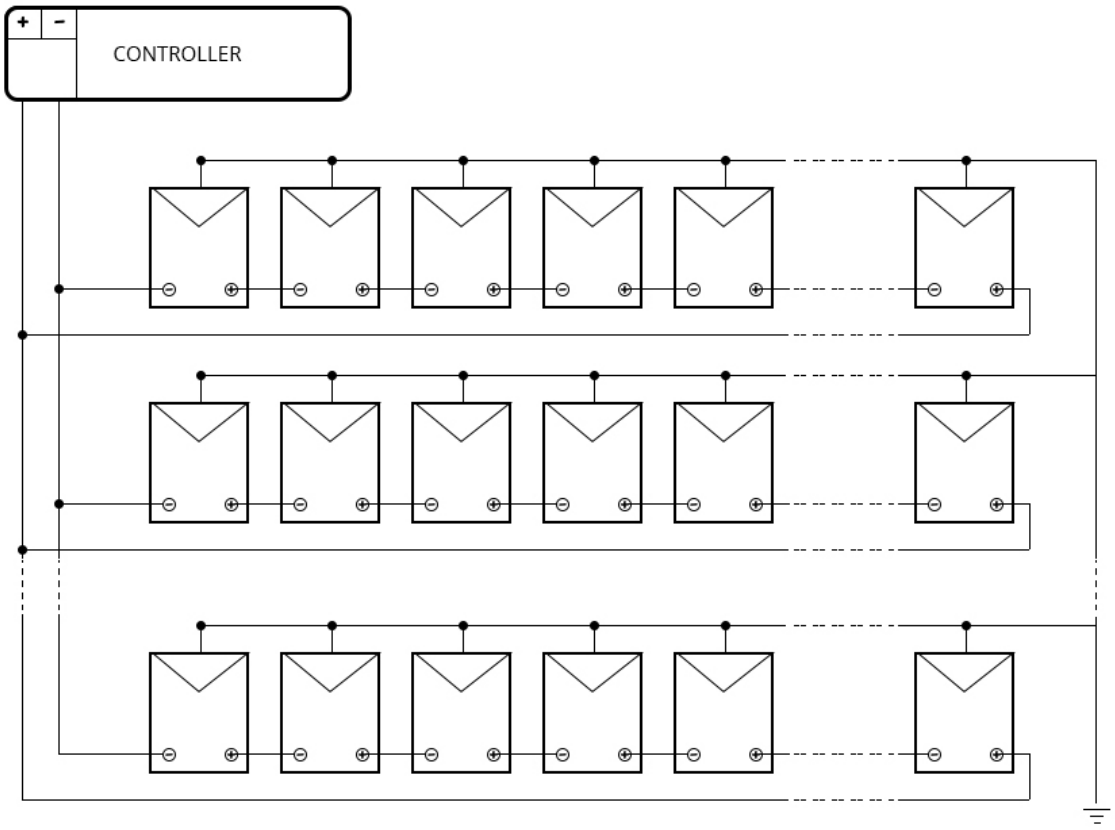
THERMAL CHARACTERISTICS
Nominal Operating Cell Temperature: 46+/-2°C
Temperature Coefficient Pmax: - 0.45%/°C
Temperature Coefficient Voc: - 0.37%/°C
Temperature Coefficient Isc: 0.06%/°C

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/m², spectrum AM 1.5 and 25°C cell temperature
*Polycrystalline else Multicrystalline

Wiring Diagram



17 panels by **7** string(s)