

# FLUID SOLAR

## 4" high efficiency submersible solar pumps

-  Clean water  
(Maximum sand content 150 g/m<sup>3</sup>)
-  Domestic use
-  Agricultural use



### PERFORMANCE RANGE

- Flow rate up to **102 l/min** (6.1 m<sup>3</sup>/h)
- Head up to **132 m**

### APPLICATION LIMITS

- Maximum liquid temperature **+35 °C**
- Maximum sand content **150 g/m<sup>3</sup>**
- Maximum immersion depth of **40 m** with a sufficiently long power cable

### CONSTRUCTION AND SAFETY STANDARDS

EN 60335-1  
IEC 60335-1  
CEI 61-150

EN 60034-1  
IEC 60034-1  
CEI 2-3



EU REGULATION N. 547/2012

### CERTIFICATIONS

Company with management system certified DNV  
ISO 9001: QUALITY  
ISO 14001: ENVIRONMENT


### TECHNICAL CHARACTERISTICS

- 4" multi-stage submersible solar pumps
- High performance motor with permanent magnets
- High efficiency photovoltaic panels  
**PANASONIC** mod. VBHN240SJ25
- Electronic control incorporated in the motor

### INSTALLATION AND USE

The **FLUID SOLAR** pumps have been developed to pump clean water from a well utilising energy obtained from photovoltaic panels. The electronic control incorporated into the high performance motor converts the exit voltage from the panels and regulates the velocity of rotation of the motor in order to utilise the available energy most efficiently at any one time: **on a sunny day there will be a high velocity of rotation with a raised performance of the pump, and on a cloudy day the velocity and the performance will be reduced.**

### PATENTS - TRADE MARKS

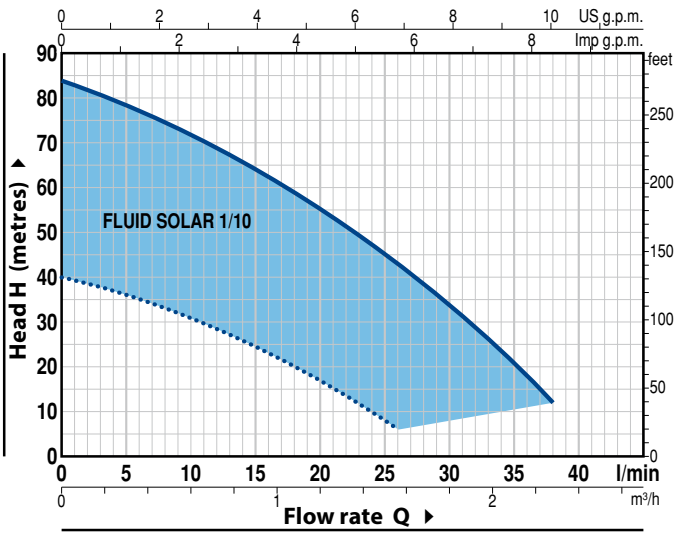
- Registered Trade Mark n. 0001516301 
- Patent n. 0001413386
- Patent Pending:  
n. PCT/IB2009/051491, PCT/IB2010/054499, PCT/EP2009/059855

### GUARANTEE

2 years subject to terms and conditions

## CHARACTERISTIC CURVES AND PERFORMANCE DATA

Tolerance of characteristic curves in compliance with EN ISO 9906 Grade 3B

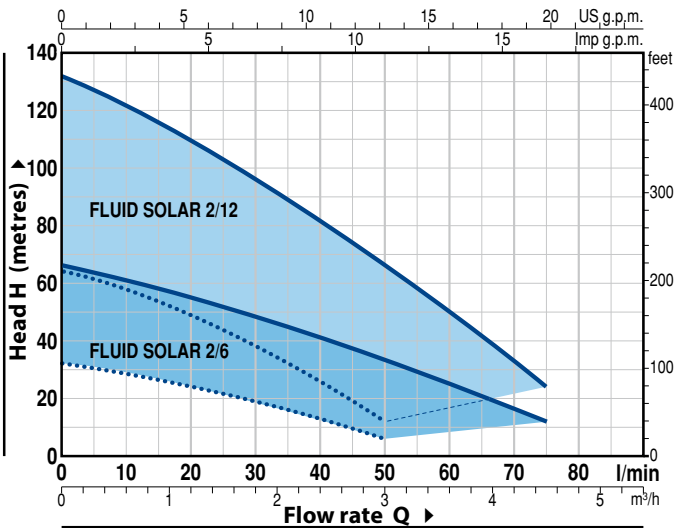


### FLUID SOLAR 1/10

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a nominal total of 980 Wp

Q	m <sup>3</sup> /h						
	0	0.3	0.6	1.2	1.6	1.8	2.3
H metres	l/min						
	0	5	10	20	26	30	38
—	84	79	72	56	42	33	12
....	40	36	31	17	6		



### FLUID SOLAR 2/6

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a nominal total of 980 Wp

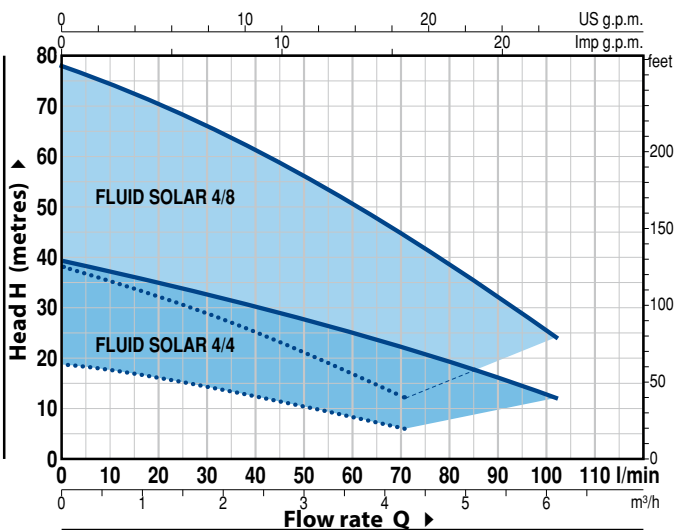
Q	m <sup>3</sup> /h									
	0	0.3	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.5
H metres	l/min									
	0	5	10	20	30	40	50	60	70	75
—	66	64	61	55	48	41	33	25	16	12
....	32	31	28	24	19	13	6			

### FLUID SOLAR 2/12

ABSORBED POWER P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a nominal total of 1960 Wp

Q	m <sup>3</sup> /h									
	0	0.3	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.5
H metres	l/min									
	0	5	10	20	30	40	50	60	70	75
—	132	128	122	110	96	82	66	50	33	24
....	64	62	58	48	38	26	12			



### FLUID SOLAR 4/4

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a nominal total of 980 Wp

Q	m <sup>3</sup> /h											
	0	0.3	0.6	1.2	1.8	3.0	3.6	4.3	4.5	4.8	5.7	6.1
H metres	l/min											
	0	5	10	20	30	50	60	71	75	80	95	102
—	39	38.5	37	35	32.5	27	25	22	21	18	14	12
....	19	18.5	17.5	16	14	10	8	6				

### FLUID SOLAR 4/8

POWER ASSORBITA P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a nominal total of 1960 Wp

Q	m <sup>3</sup> /h											
	0	0.3	0.6	1.2	1.8	3.0	3.6	4.3	4.5	4.8	5.7	6.1
H metres	l/min											
	0	5	10	20	30	50	60	71	75	80	95	102
—	78	77	74	70	65	54	50	44	42	38	28	24
....	38	37	35	32	28	20	16	12				

— Performance with a solar radiation of 1000 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 100 Vdc

.... Performance with a solar radiation of 300 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 70 Vdc

The performance curves illustrated above are obtained with the photovoltaic panels facing SOUTH (facing NORTH for installations in the southern hemisphere) and optimising the angle of inclination in relation to the horizon in compliance with the latitude of the installation site.

# FLUID SOLAR

## POS. COMPONENT CONSTRUCTION CHARACTERISTICS

1	<b>DELIVERY BODY AND EXTERNAL SLEEVE</b>	Stainless steel AISI 304 complete with threaded delivery port in compliance with ISO 228/1.
2	<b>IMPELLERS</b>	Lexan 141-R for FLUID SOLAR 1/10, 4/4, 4/8 Delrin 100P for FLUID SOLAR 2/6, 2/12
3	<b>DIFFUSERS</b>	Noryl FE1520PW
4	<b>STAGE BOXES / STAGE LIDS</b>	Stainless steel AISI 304
5	<b>CABLE COVER</b>	Stainless steel AISI 304
6	<b>PUMP SHAFT</b>	Stainless steel AISI 304 for FLUID SOLAR 1/10, 2/12, 4/4, 4/8
7	<b>DRIVE COUPLING</b>	Stainless steel AISI 316L for FLUID SOLAR 1/10, 2/12, 4/4, 4/8
8	<b>MOTOR SHAFT</b>	Stainless steel EN 10088-3 – 1.4104
9	<b>MOTOR SLEEVE</b>	Stainless steel AISI 304

<b>10 TWO MECHANICAL SEALS SEPARATED BY AN OIL CHAMBER</b>					
Seal Model	Shaft Diameter	Position	Materials		
			Stationary ring	Rotational ring	Elastomer
STA-17	Ø 17 mm	Motor side	Silicon carbide	Graphite	NBR
ST1-16 SIC	Ø 16 mm	Pump side	Silicon carbide	Silicon carbide	NBR

11	<b>BEARINGS</b>	<b>6203 2RS - C3E / 6203 ZZ - C3E</b>
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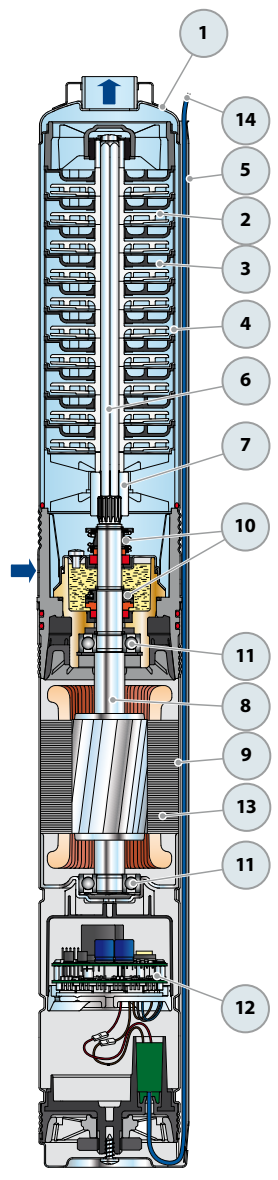
12	<b>INVERTER</b>	
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13	<b>ELECTRIC MOTOR</b>	Submersible PEDROLLO motor, suitable for continuous duty (with dry, rewindable stator). <b>FLUID SOLAR:</b> high performance motor with permanent magnets – Insulation: class F – Protection: IP X8
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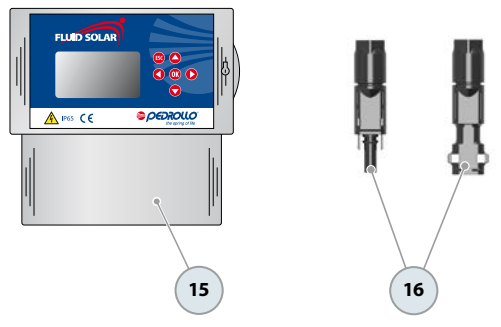
14	<b>POWER CABLE</b>	<p>⇒ <b>PBS-P type</b>  <b>approved for use in drinking water by "ACS"</b>  <b>in compliance with BS 6920, approval n. 04 ACCLI 201</b>  <b>Standard length 2 metres</b></p> <p>Equipment supplied: connection kit for RPS2 cables</p>
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15	<b>CONTROL BOX</b>	
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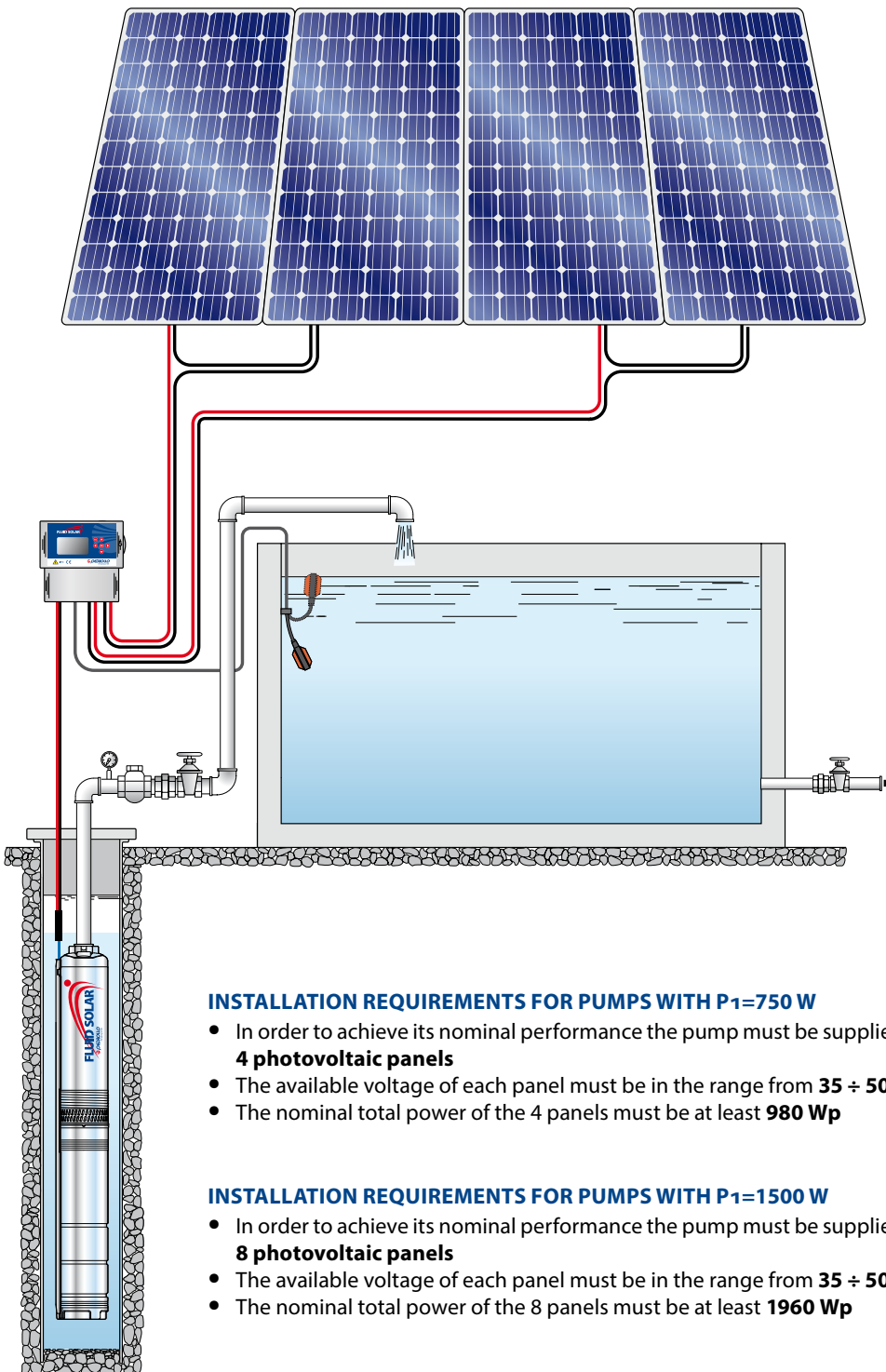
16	<b>CONNECTORS</b>	2 SMK male connectors 2 SMK female connectors
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### Equipment supplied



## STANDARD INSTALLATION FOR PUMPS WITH P<sub>1</sub>=750 W



### INSTALLATION REQUIREMENTS FOR PUMPS WITH P<sub>1</sub>=750 W

- In order to achieve its nominal performance the pump must be supplied by **4 photovoltaic panels**
- The available voltage of each panel must be in the range from **35 ÷ 50 V<sub>DC</sub>**
- The nominal total power of the 4 panels must be at least **980 W<sub>p</sub>**

### INSTALLATION REQUIREMENTS FOR PUMPS WITH P<sub>1</sub>=1500 W

- In order to achieve its nominal performance the pump must be supplied by **8 photovoltaic panels**
- The available voltage of each panel must be in the range from **35 ÷ 50 V<sub>DC</sub>**
- The nominal total power of the 8 panels must be at least **1960 W<sub>p</sub>**

## DIMENSIONS AND WEIGHT

MODEL	PORT DN	N. STAGES	DIMENSIONS mm		kg *
			Ø	h	
FLUID SOLAR 1/10	1"	10	100	711	12.5
FLUID SOLAR 2/6		6		587	11.4
FLUID SOLAR 2/12		12		895	18.0
FLUID SOLAR 4/4		4		614	11.5
FLUID SOLAR 4/8		8		782	17.0

(\* weight of the pump with control box)

