

MultiFlow

Specs and Installation Manual



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Product Introduction

The MultiFlow range of AC/DC hybrid pumps are fitted with a permanent magnet and brushless motor which enables the efficient use of energy from a wide range of supply options. The pump system offers the perfect water supply solution in remote areas where water is scarce and utility power supply is non-existent or unreliable. The motor is water filled and poses no pollution risk to drinking water. The controller is inside the motor to make the system easier to install and more reliable. The controller has MPPT (Maximum Power Point Tracking) functionality for optimal solar power generation.

Features

- Water-cooled motor. This poses no pollution risk to drinking water
- Brushless DC motor
- Integrated built-in controller with MPPT & DSP technology
- Flexibility in terms of power supply and solar panel configurations
- Can be powered from mains and/or power generators (additional to solar)
- Flexible power options enable day and night time pumping
- Two year warranty

Pump Structure

Pump

- Made of 100% stainless steel SISA 304
- Single shaft and impeller design removing any imbalance
- Minimal pump vibration and noise
- Long service lifetime of the motor

Motor

- Made of 100% stainless steel SISA 304
- Double outer and inner shielding structure
- Internal coil made from high-temperature tolerant, copper wire
- Efficiently protecting the motor under a high-temperature environment
- Extended motor's service lifetime
- Water - filling lubricated rotor with top and bottom graphite-made bearing and thrust bearing made with high precision
- Co-axial rotation efficiently reduces motor vibration and noise and extend its service lifetime
- Built-in, integrated Variable Frequency Converter with intelligent speed control algorithm and maximum speed of 6000RPM

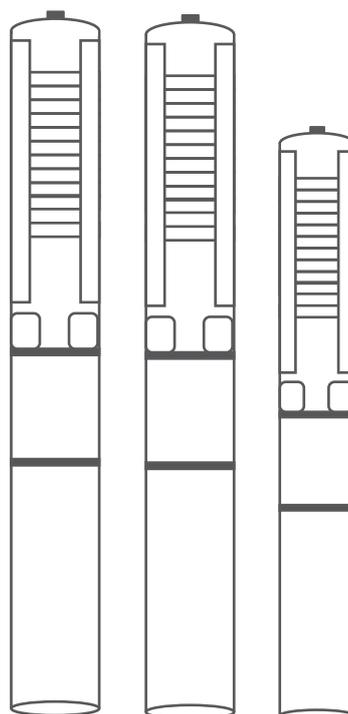
Built-In Intelligent Controller

The intelligent controller designed for the MultiFlow range offers high flexibility in terms of power supply source and range.

- Can be powered by AC or DC voltage
- MPPT & DSP technology
- Intelligent parameter detection
- Soft start running
- Long system lifetime

Main Protection Functions

- Dry running protection
- Over current protection
- Over voltage protection
- Overload protection
- Phase loss protection



Features and Benefits

Dry-running protection

In order to prevent the pump running dry (without water), the MultiFlow's built-in controller intelligently detects the water level. When the water level drops below the water inlet, the pump controller will automatically cut off power supply. The controller will then try to test-start again after about 30 seconds. This function protects the motor from damage caused by over heating due to running dry. If the pump runs dry more than 3 times the controller will shift into a long-time protection state for 30 minutes before re-starting again. To disable the long-term protection function cut off power supply manually, wait 2 minutes and then manually re-start the pump.

High efficiency

The MultiFlow range is equipped with permanent magnet, DC brushless motors as oppose to asynchronous motors. This offers more efficient and stable output power. Internal motor windings enable a more stable magnetic field. Intelligent frequency conversion controls the motor's speed according to the power input and load.

Motor parameters: Speed Range: 500 to 6000 RPM. Power Range: 370 to 3000 Watts. Maximum Current: 9 Amps. AC/DC Hybrid power input.

Over-voltage and under-voltage protection

Under unstable power supply conditions the intelligent controller cuts off the power due to its interference protection components. It is recommended to install a lightning arrester if operating in areas prone to electrical storms.

Overload and over-current protection

When voltage surges overload protection contractor in the controller opens, cutting off the power. The controller then tries self-start several times every 20 seconds until voltage is stabilized.

High temperature protection

To avoid extreme motor heating the control system cuts off power when motor temperature reaches 120° C (248°F). The controller then restarts when the temperature drops to below 120° C (248°F).

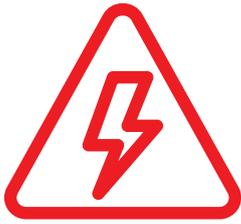
MPPT Function

The Maximum Power Point Tracking function optimises power generation from the PV array.

Motor Soft Start

The motor used is equipped with an intelligent variable frequency converter / soft starter program. On startup the power required is less than 100W and current is below 0.15A. This means any external contractors, power disconnecters and sensors/switches must be rated 100W or less. As the operation continues, operating power is gradually increased until motor reaches its maximum speed.

Pump Installation

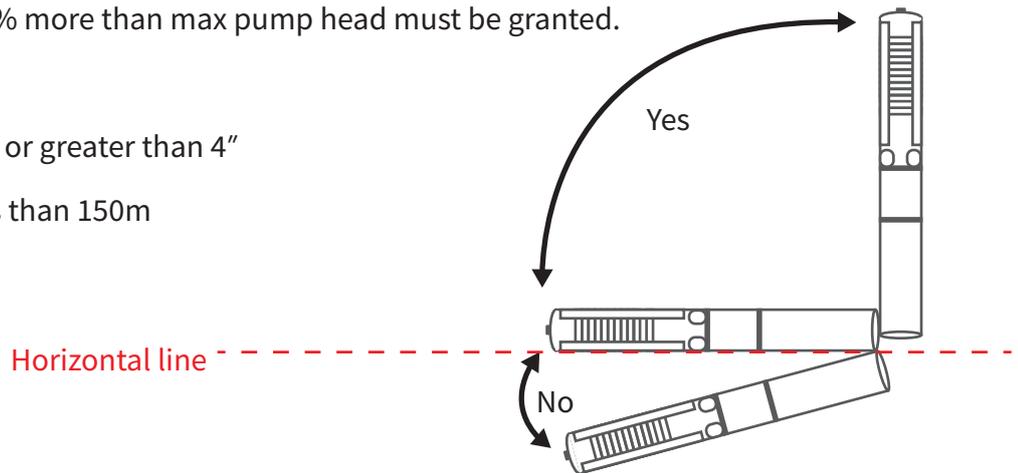


Make sure the power supply is disconnected during installation

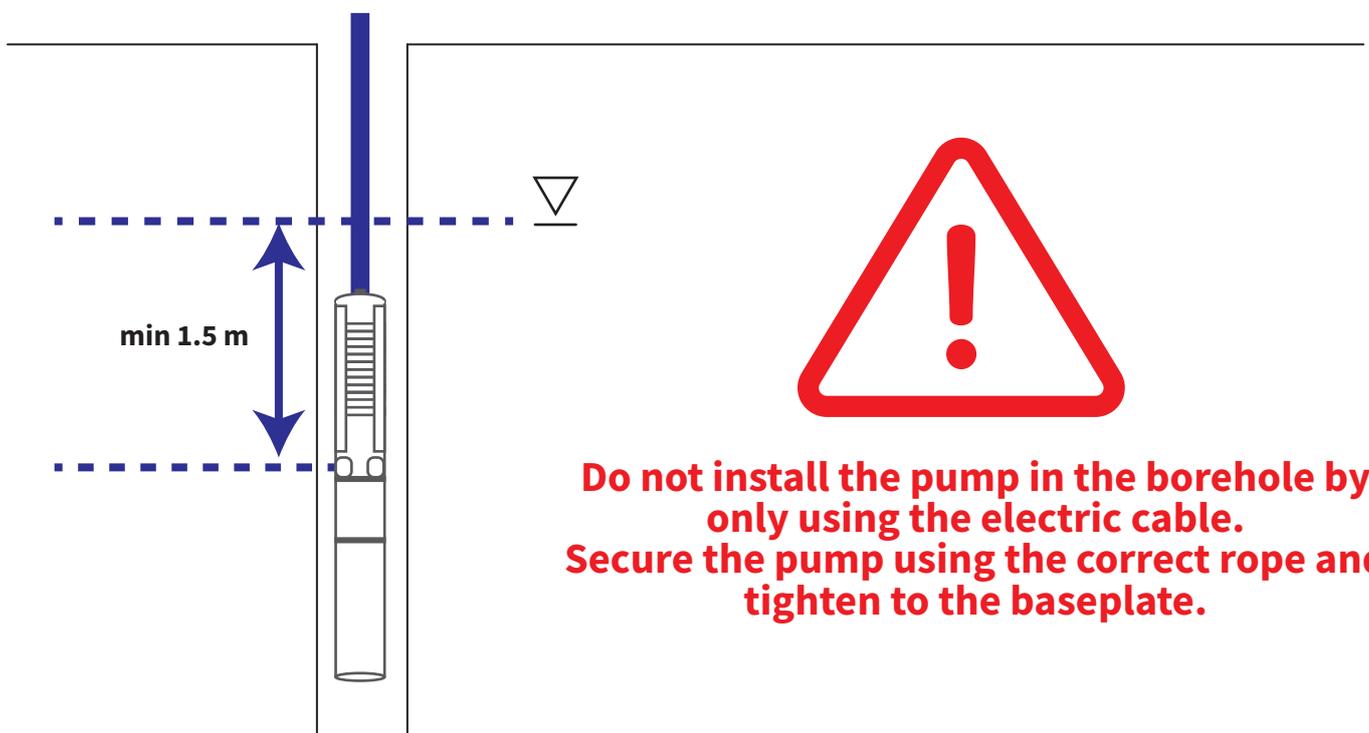
Pump can be installed both vertically and horizontally, but the outlet should never be below the horizontal line. Minimum head of 10% more than max pump head must be granted.

Parameters:

- Well diameter must be equal to or greater than 4"
- Submersion depth must be less than 150m



To reduce noise transmission it is advised to use plastic pipes. The pump must always be secured in the well with a special rope attached to the loop on the pump head. Do not to install the pump in the well by only using the electric cable, its integrity must be preserved in all steps. During operation the pump suction must always remain at least 1.5 meter below the dynamic water level.



Do not install the pump in the borehole by only using the electric cable. Secure the pump using the correct rope and tighten to the baseplate.

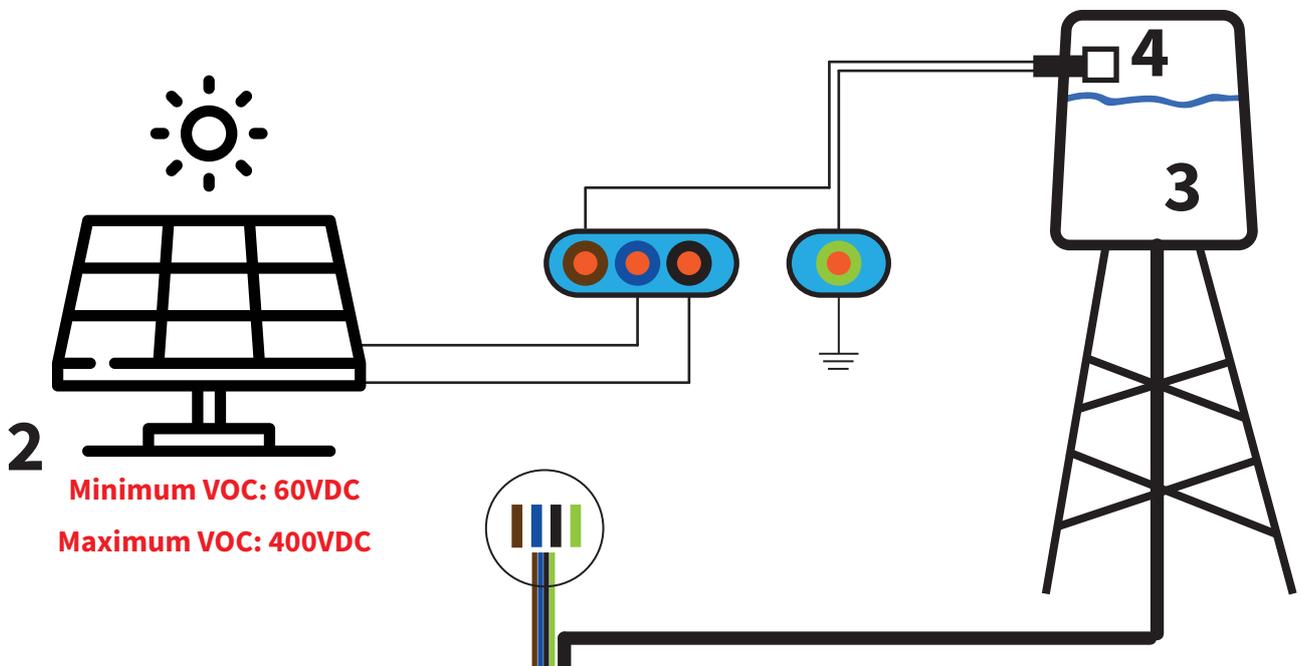
Pump Installation for DC Power Supply (Solar)

The MultiFlow pumps can be installed with or without an external controller (optional plug-in). All overload, over-voltage and dry running protection functions are integrated into the built-in controller.

Benefits of a DC installation

- Simple Installation. All solar modules in **SERIES** up to wattage limit. See specs page 8.
- Low maintenance. (Remember to keep PV modules clean).
- Solar power gives the best return on investment.

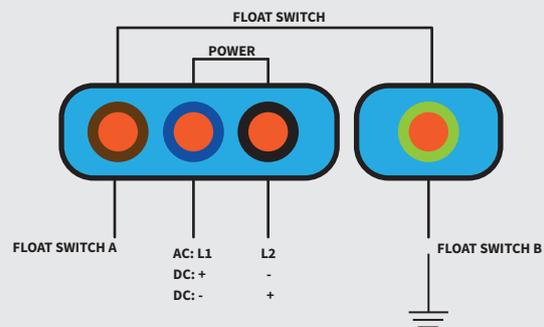
The protective circuit incorporated in the motor's electronic unit cuts the power when the pump is running dry or other similar situations. Pump power can also be manually switched off in case of pump maintenance or if no water is needed.



1. MultiFlow Pump
2. PV Modules
3. Tank
4. Float Switch

1

Wiring Method



WARNING: The wire of float switch A cannot connect power chord (L1, L2). This will damage the pump. The pump will not be under warranty if not installed correctly!

Use 4mm submersible cable for 0 - 60m head
Use 6 mm submersible cable for 61 to 150m head

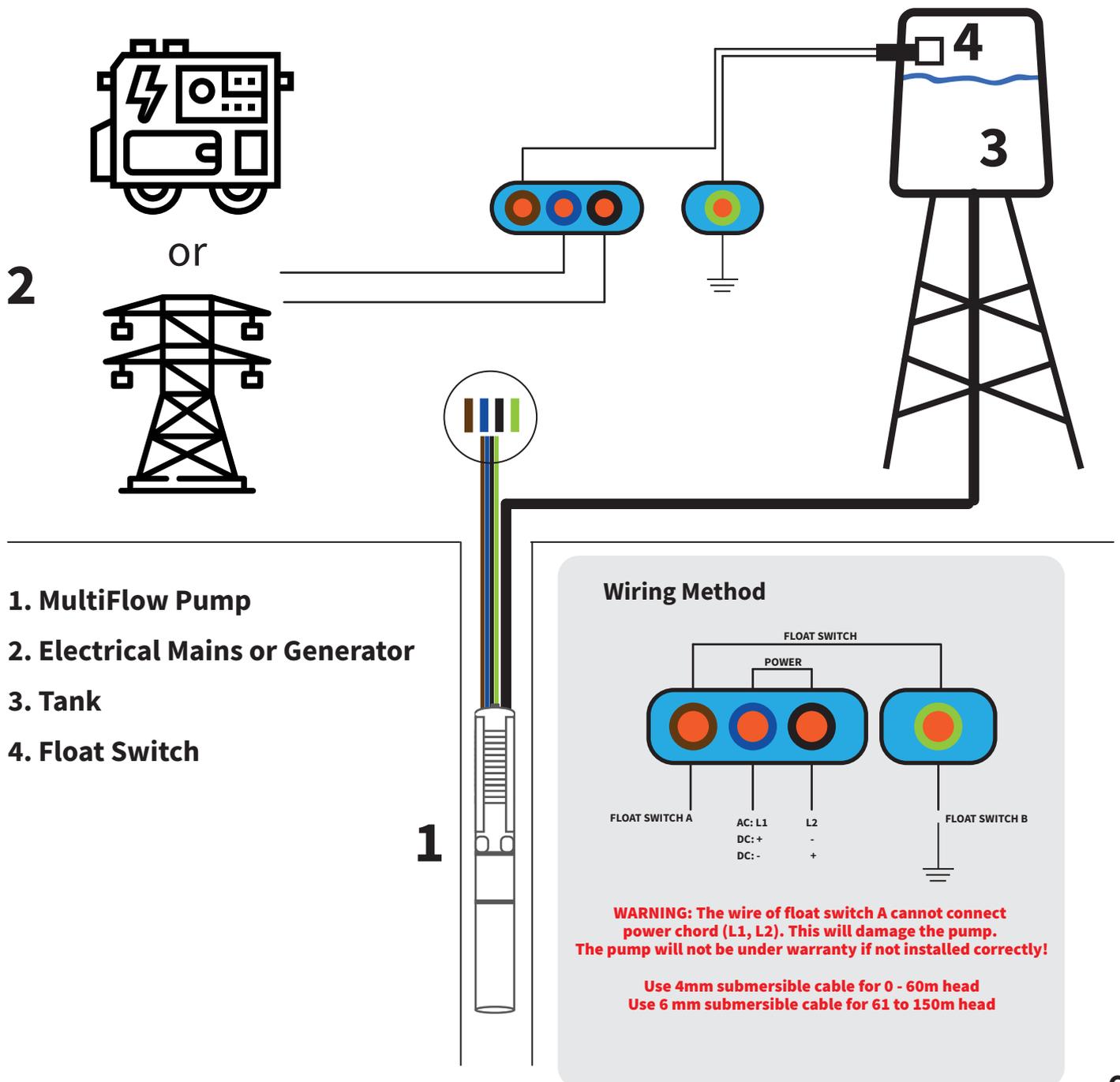
Pump Installation for AC Power Supply

The MultiFlow pumps can be installed with or without an external sensor (optional plug-in). All overload, over-voltage and dry running protection functions are integrated into the built-in controller.

Benefits of AC powered installation

- Run on mains or a generator
- Can pump during the day and at night

The protective circuit incorporated in the motor’s electronic unit cuts the power when the pump is running dry or other similar situations. Pump power can also be manually switched off in case of pump maintenance or if no water is needed.

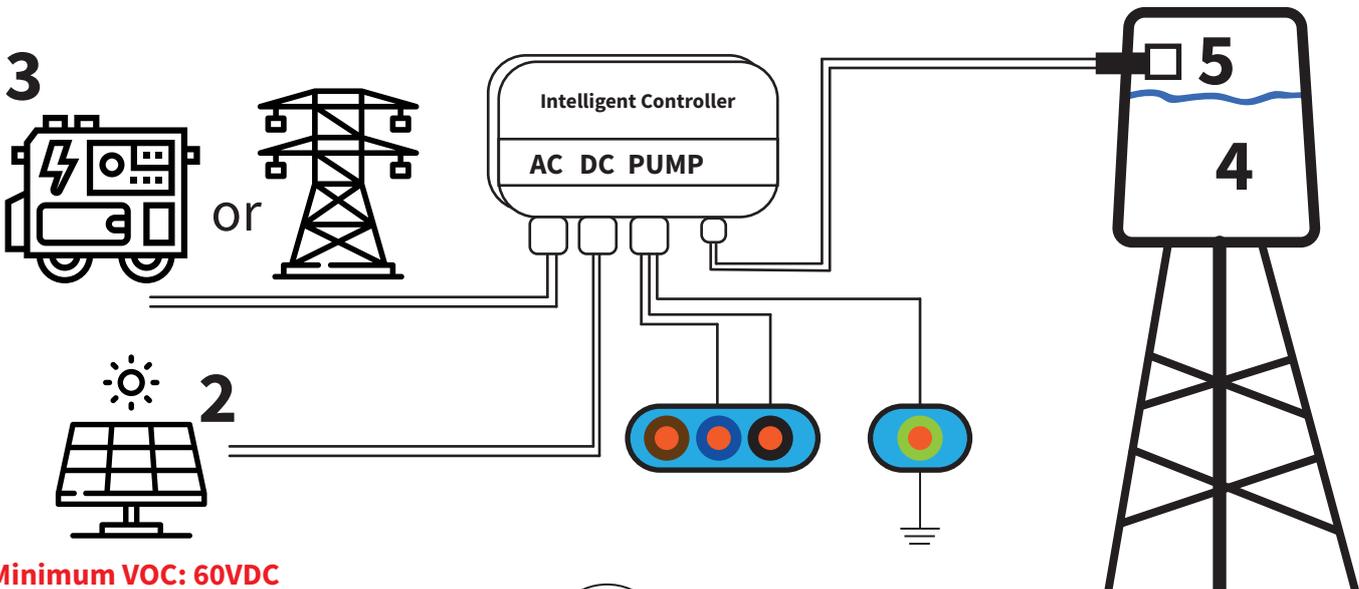


Pump Installation for Hybrid AC/DC Supply

The MultiFlow pumps can be installed with or without an external sensor (optional plug-in). All overload, over-voltage and dry running protection functions are integrated into the built-in controller.

Benefits of Hybrid AC/DC Installation

- Run on solar, mains or a generator (The intelligent controller enables this)
- Low maintenance. Keep PV modules clean
- All solar modules in **SERIES** up to wattage limit
- Solar power gives the best return on investment
- Intelligent controller enables pumping when there is no sun

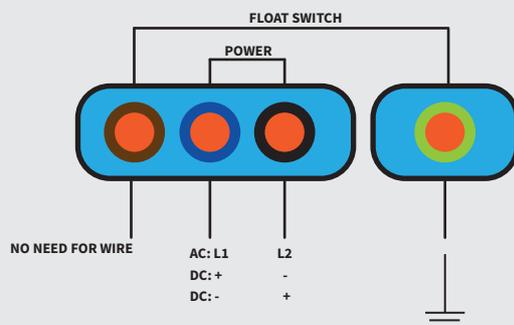


Minimum VOC: 60VDC
Maximum VOC: 400VDC

1. MultiFlow Pump
2. PV Modules
3. Electrical mains or Generator
4. Tank
5. Float Switch

1

Wiring Method



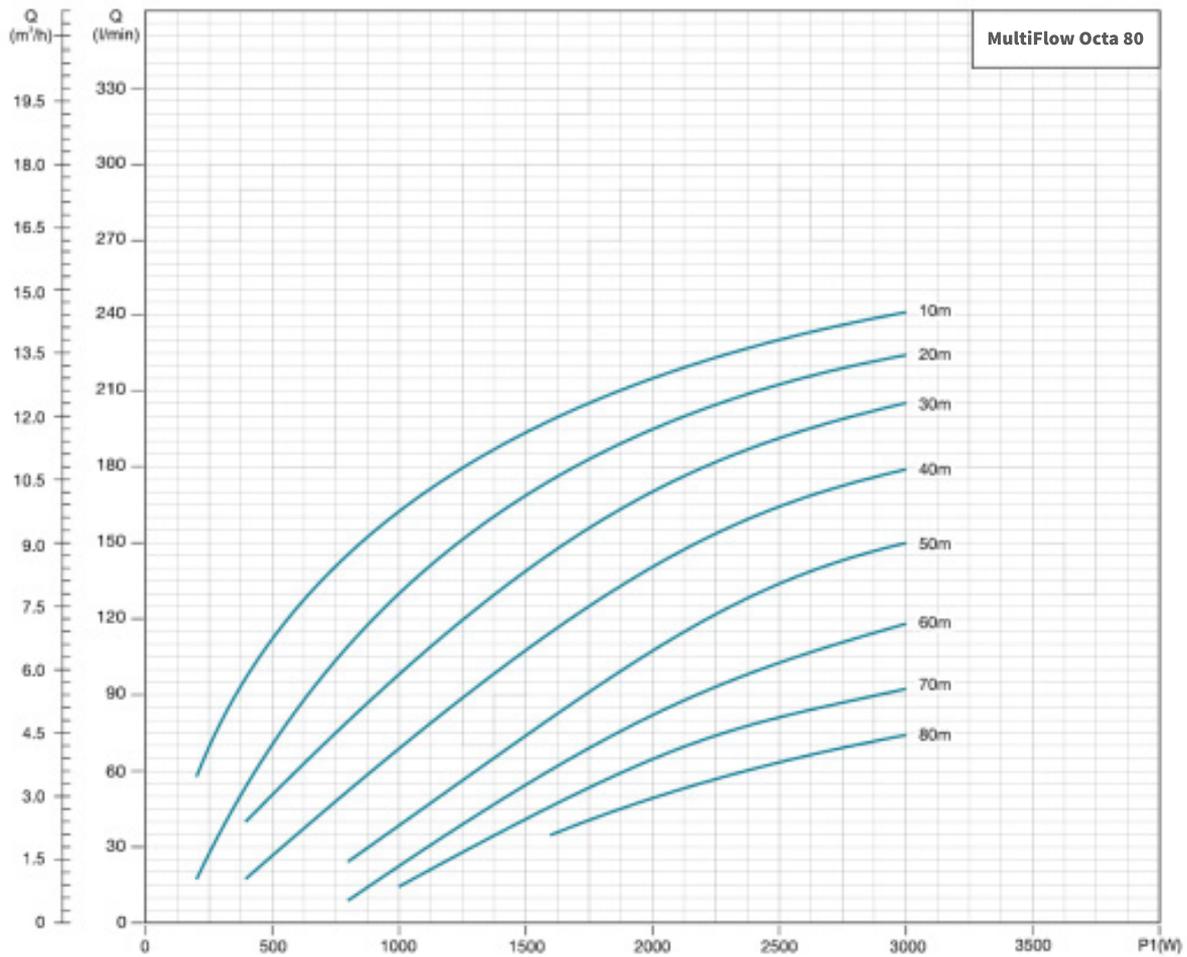
WARNING: The wire of float switch A cannot connect power chord (L1, L2). This will damage the pump. The pump will not be under warranty if not installed correctly!

Use 4mm submersible cable for 0 - 60m head
Use 6 mm submersible cable for 61 to 150m head

Pump Specs, Flows and PV Module Configurations

MultiFlow Octa 80

Rated Flow: 8m³/h



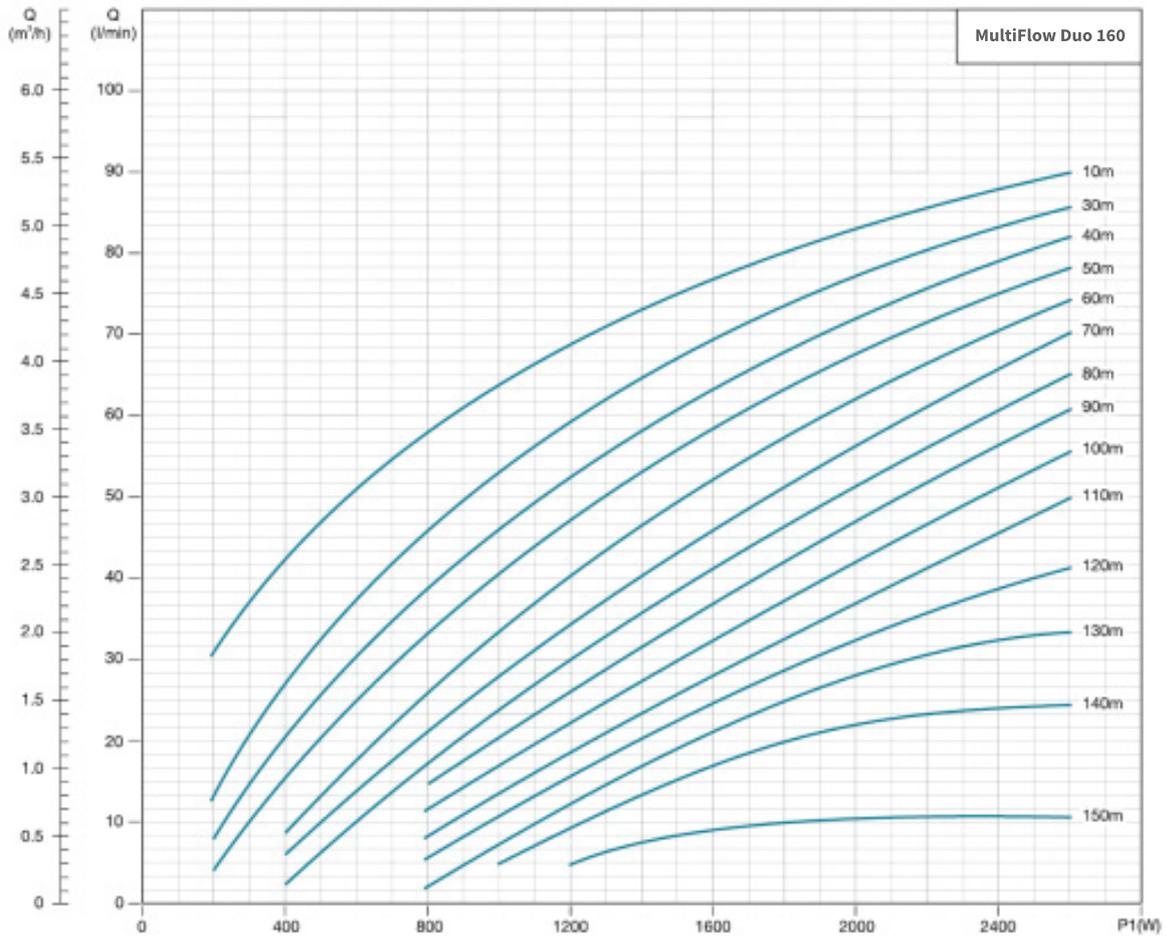
Technical Data

Model		Input Power (W)										
		200	400	800	1000	1600	2000	2200	2400	2600	2800	3000
MultiFlow Octa 80		Q(m ³ /h)										
H(m)	10	3.42	5.94	8.82	9.72	11.88	12.6	13.14	13.44	13.8	14.1	14.46
	20	1.02	3.06	6.6	7.8	10.62	11.34	11.88	12.24	12.78	13.02	13.44
	30	/	2.46	3.72	5.22	8.76	9.72	10.38	11.1	11.52	11.82	12.3
	40	/	1.02	2.4	3.36	6.78	7.74	8.4	8.94	9.66	10.2	10.74
	50	/	/	1.5	2.28	4.68	5.82	6.6	7.32	8.04	8.58	9
	60	/	/	0.54	1.5	3.6	4.62	5.22	5.7	6.18	6.54	7.02
	70	/	/	/	0.84	2.7	3.72	4.26	4.62	4.92	5.22	5.52
	80	/	/	/	/	2.04	2.82	3.24	3.6	3.9	4.14	4.38

Rated Power	3.0 HP	Outlet	2"	MOTOR 1~60Hz Automatic adjustment
Max Input Power	3.0 KW	Pump size	4"	
DC Voltage range	60-400 V	Max head	90 m	
AC Voltage range	1×60-300V , 50/60Hz	Max flow	15.3 m ³ /h	

MultiFlow Duo 160

Rated Flow: 2m³/h



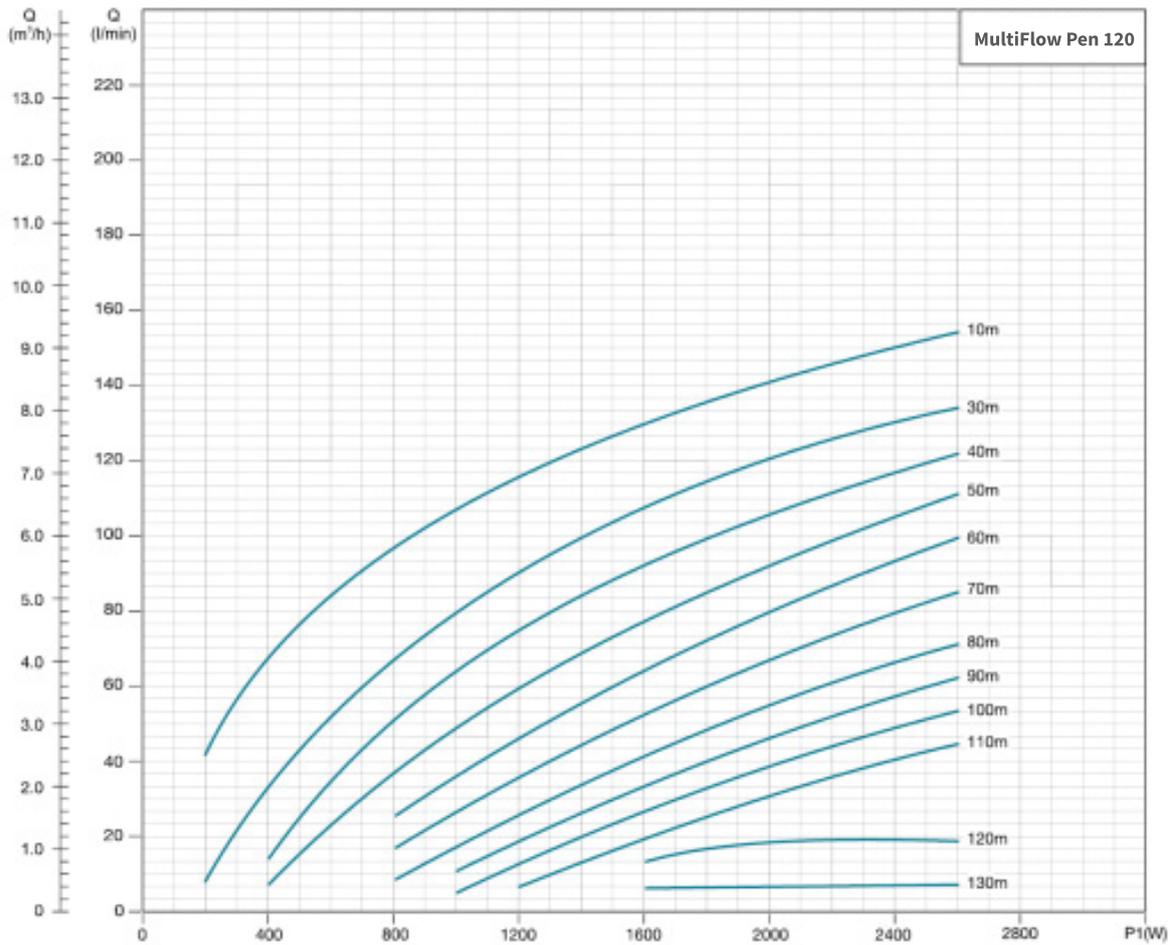
Technical Data

Model		Input Power (W)										
		200	400	800	1000	1200	1600	1800	2000	2400	2600	2800
MultiFlow Duo 160		Q(m ³ /h)										
H(m)	10	1.8	2.58	3.54	3.84	4.14	4.62	4.8	4.98	5.16	5.34	5.4
	30	0.78	1.5	2.82	3.18	3.54	4.08	4.32	4.5	4.8	4.98	5.1
	40	0.48	1.14	2.4	2.82	3.24	3.84	4.02	4.32	4.5	4.68	4.92
	50	0.24	0.84	1.98	2.4	2.88	3.48	3.72	4.02	4.26	4.44	4.68
	60	/	0.54	1.62	1.98	2.4	3.12	3.42	3.72	3.96	4.2	4.44
	70	/	0.36	1.38	1.74	2.1	2.76	3.06	3.42	3.66	3.9	4.2
	80	/	0.12	1.08	1.38	1.8	2.4	2.7	3	3.3	3.54	3.9
	90	/	/	0.9	1.2	1.5	2.16	2.4	2.7	2.94	3.18	3.66
	100	/	/	0.66	1.02	1.32	1.86	2.1	2.34	2.64	2.82	3.36
	110	/	/	0.48	0.78	1.08	1.68	1.92	2.16	2.4	2.58	3
	120	/	/	0.3	0.6	0.9	1.44	1.68	1.98	2.16	2.28	2.46
	130	/	/	0.12	0.42	0.72	1.26	1.5	1.68	1.92	2.1	2.04
	140	/	/	/	0.3	0.54	1.08	1.2	1.38	1.38	1.44	1.44
150	/	/	/	/	0.3	0.6	0.66	0.66	0.66	0.66	0.66	

Rated Power	2.5 HP	Outlet	1.25"	MOTOR 1-60Hz Automatic adjustment
Max Input Power	2.8 KW	Pump size	4"	
DC Voltage range	60-400 V	Max head	162 m	
AC Voltage range	1×60-300V , 50/60Hz	Max flow	5.7 m ³ /h	

MultiFlow Pen 120

Rated Flow: 5m³/h



Technical Data

Model		Input Power (W)										
		200	400	800	1000	1200	1600	1800	2000	2200	2400	2600
MultiFlow Pen 120		Q(m ³ /h)										
	10	2.46	3.96	5.88	6.42	6.96	7.8	8.04	8.34	8.64	8.94	9.24
	30	0.48	1.62	4.02	4.62	5.4	6.36	6.72	7.08	7.38	7.74	8.04
	40	/	0.84	2.88	3.6	4.44	5.52	5.94	6.3	6.72	7.02	7.32
	50	/	0.42	2.04	2.82	3.48	4.68	5.1	5.58	6	6.36	6.66
	60	/	/	1.56	2.1	2.7	3.84	4.2	4.74	5.22	5.58	5.94
	70	/	/	1.02	1.56	2.1	3.06	3.36	3.78	4.38	4.74	5.1
	80	/	/	0.54	1.14	1.56	2.52	2.88	3.24	3.6	3.96	4.26
	90	/	/	/	0.66	1.14	2.04	2.28	2.76	3.12	3.42	3.72
	100	/	/	/	0.3	0.72	1.56	1.86	2.28	2.64	2.94	3.18
	110	/	/	/	/	0.42	1.2	1.5	1.8	2.16	2.34	2.64
	120	/	/	/	/	/	0.78	1.02	1.14	1.14	1.14	1.14
130	/	/	/	/	/	0.36	0.42	0.42	0.42	0.42	0.42	

Rated Power	2.5 HP	Outlet	2"	MOTOR 1-60Hz Automatic adjustment
Max Input Power	2.5 KW	Pump size	4"	
DC Voltage range	60-400 V	Max head	136 m	
AC Voltage range	1×60-300V , 50/60Hz	Max flow	10.2 m ³ /h	

Safety Instructions

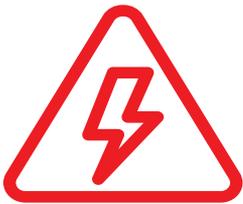
We strongly suggest that the installer reads this operation manual very carefully before using and installing the products. Any operation (installation, maintenance and repair) must be carried out by a trained, skilled and qualified professional. Failure to observe and follow instruction of this manual may result in fatal electric shock.



The unit must be connected to the power supply by a switch. Ensure complete visual disconnection (separation) from the line before any operation.

Disconnect the unit from the power supply before any operation.

Do not remove the cover of the smart controller and the cable guard without having disconnected the unit from the power supply and having waited at least 5 minutes.



Hybrid AC/DC Solar Submersible Pumps and pump system must be grounded properly before operation.

Do not start the pump for any reason if not completely immersed in water.