

HAVELLS SOLAR SUBMERSIBLE PUMP PERFORMANCE:

Power Rating in HP	Wp-Minimum Power required at Peak in Watt (W)	Duty Head in Metre (m)	Litres Per Day Required As per MHRE (L/d)	Shutoff Head in Metre (m)	Pump Set Configuration in cm (Pump X Motor)	Motor Type	Solar Panel Configuration	Solar Panel Connection	Delivery Size (mm)	Havells Model Code	Havells Item Code
3-Phase PMSM Water Filled	1.0	1200 W	30m	45600 L/d	45 m	(10 x 10) cm (V4 x V4)	450 W x 3 N	3 N-in series	50 mm	SH4W05H9D10P-30-C1R	MHPGDX0501C1R
	2.0	1800 W	30m	68400 L/d	45 m	(10 x 10) cm (V4 x V4)	450 W x 4 N	4 N-in series	50 mm	SH4W06H9D20P-30-C2R	MHPGDX0602C2R
	3.0	3000 W	30m	114000 L/d	45 m	(15 x 10) cm (V6 x V4)	500 W x 6 N	6 N-in series	65 mm	SH6W04H17E30P-30-C3R	MHP1EX0403C3R
			50m	69000 L/d	70 m	(10 x 10) cm (V4 x V4)			50 mm	SH4W10H9D30P-50-C3R	MHPGDX1003C3R
	5.0	4800 W	30m	114000 L/d	45 m	(15 x 10) cm (V6 x V4)	535 W x 9 N	9 N-in series	80 mm	SH6W04H30F50P-30-C4R	MHP1FX0405C4R
			50m	110400 L/d	70 m	(15 x 10) cm (V6 x V4)			65 mm	SH6W06H17E50P-50-C4R	MHP1EX0605C4R
	7.5	6750 W	70m	72000 L/d	100 m	(10 x 10) cm (V4 x V4)	520 W x 13 N	13 N-in series	50 mm	SH4W10H9D50P-70-C4R	MHPGDX1005C4R
			100m	50400 L/d	150 m	(10 x 10) cm (V4 x V4)			50 mm	SH4W15H9D50P-100-C4R	MHPGDX1505C4R
	10.0	9000 W	50m	155250 L/d	70 m	(15 x 10) cm (V6 x V4)	500 W x 18 N	Two Strings of 9 N-in series connected in Parallel	65 mm	SH6W06H17E75P-50-C5R	MHP1EX067XC5R
			70m	101250 L/d	100 m	(15 x 10) cm (V6 x V4)			65 mm	SH6W07H17E75P-70-C5R	MHP1EX077XC5R
			100m	70875 L/d	150 m	(10 x 10) cm (V4 x V4)			50 mm	SH4W18H9D75P-100-C5R	MHPGDX187XC5R
			120m	64125 L/d	180 m	(10 x 10) cm (V4 x V4)			50 mm	SH4W20H9D75P-120-C5R	MHPGDX207XC5R
			50m	207000 L/d	70 m	(15 x 10) cm (V6 x V4)			80 mm	SH6W05H30F100P-50-C6R	MHP1FX0510C6R
			70m	135000 L/d	100 m	(15 x 10) cm (V6 x V4)			80 mm	SH6W07H30F100P-70-C6R	MHP1FX0710C6R
			100m	94500 L/d	150 m	(15 x 10) cm (V6 x V4)			65 mm	SH6W10H17E100P-100-C6R	MHP1EX1010C6R
			200m	49500 L/d	300 m	(10 x 10) cm (V4 x V4)			50 mm	SH4W30H9D100P-200-C6R	MHPGDX3010C6R

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	3	3000 W	30m	114000 L/d	45 m	(15 x 10) cm (V6 x V4)	500 W x 6 N	6 N-in series	65 mm	SH6A04H17E30P-30-C3R	MHP5EX0403C3R
			50m	69000 L/d	70 m	(10 x 10) cm (V4 x V4)			50 mm	SH4A10H9D30P-50-C3R	MHPLDX1003C3R
	5	4800 W	30m	114000 L/d	45 m	(15 x 10) cm (V6 x V4)	535 W x 9 N	9 N-in series	80 mm	SH6A04H30F50P-30-C4R	MHP5FX0405C4R
			50m	110400 L/d	70 m	(15 x 10) cm (V6 x V4)			65 mm	SH6A06H17E50P-50-C4R	MHP5EX0605C4R
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			200m	49500 L/d	300 m	(10 x 10) cm (V4 x V4)			50 mm	SH4A30H9D100P-200-C6R	MHPLDX3010C6R

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**HAVELLS SOLAR PUMP CONTROLLER TECHNICAL SPECIFICATIONS**

TYPE	PMSM Motor MONO	PMSM Motor MONO	PMSM Motor MONO	PMSM Motor MONO	PMSM Motor MONO	PMSM Motor MONO
PANEL	MONO	MONO	MONO	MONO	MONO	MONO
RATING (HP)	1200 W (1.0 HP)	2000 W (2.0 HP)	3000 W (3.0 HP)	5000 W (5.0 HP)	7500 W (7.5 HP)	9000 W (10.0 HP)
<b>DC INPUT</b>						
MINIMUM DC VOLTAGE (V)	50 V	50 V	150 V	150 V	150 V	150 V
MAXIMUM DC POWER (W)	1200 W	2000 W	3000 W	5000 W	7500 W	9000 W
MAXIMUM DC VOLTAGE (V)	200 V	250 V	350 V	480 V	750 V	500 V
MPPT VOLTAGE RANGE (V)	50 V TO 160 V	100 V TO 300 V	150 V TO 360 V	150 V TO 550 V	200 V TO 550 V	200 V TO 550 V
NOMINAL DC VOLTAGE (V)	114 V	125 V	220 V	350 V	480 V	360 V
MAXIMUM DC CURRENT (A)	15 A	15 A	15 A	15 A	17 A	22 A
NUMBER OF MPPT	1 N	1 N	1 N	1 N	1 N	1 N
NUMBER OF STRING	1 N	1 N	1 N	1 N	1 N	2 N
<b>OUTPUT</b>						
MAXIMUM VOLT 3 PH (V)	UP TO 60 V	UP TO 90 V	UP TO 150 V	UP TO 250 V	UP TO 340 V	UP TO 260 V
MAXIMUM CURRENT (A)	15 A	15 A	15 A	15 A	17 A	22 A
FREQUENCY (Hz)	0 TO 120 Hz	0 TO 120 Hz	0 TO 120 Hz	0 TO 120 Hz	0 TO 120 Hz	0 TO 120 Hz
POWER (W)	1200 W	1800 W	3000 W	4800 W	6750 W	9000 W
POWER FACTOR	0.95 TO 0.99	0.95 TO 0.99	0.95 TO 0.99	0.95 TO 0.99	0.95 TO 0.99	0.95 TO 0.99
<b>EFFICIENCY</b>						
MPPT EFFICIENCY (%)	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
PRODUCT EFFICIENCY (%)	93%	93%	96%	97%	97%	97%
<b>PROTECTION INPUT</b>						
REVERSE POLARITY						
DC OVER VOLTAGE						
DC UNDER VOLTAGE				YES		
LOW RADIATION						
DC SHORT CIRCUIT						
SURGE PROTECTION				YES -INBUILT MOV MOUNTING ON CIRCUIT BOARD		
<b>PROTECTION OUTPUT</b>						
PHASE OPEN						
PHASE LOOSE						
MOTOR SHORT CIRCUIT				YES		
DRY RUN						
OVER HEATING						
<b>GENERAL DATA</b>						
RMS				YES		
INVERTER TOPOLOGY	3 PHASE 2 LEVEL VOLTAGE SOURCE THROUGH IGBT					
COOLING METHOD	NATURAL OR FORCED FULLY BY FAN					
ENCLOSURE PROTECTION LEVEL	UP TO 10 HP IP 65 / ABOVE TO 10 HP IP 54					
AMBIENT HUMIDITY	0 TO 85% RH					
ALTITUDE (m)	<1000 m					
NOISE (dBA)	<20 dBA					
OVER VOLTAGE CATEGORY	CAT II					
ENVIRONMENT TEMPERATURE (°C)	0 °C TO 50 °C					

**Havells India Ltd.**

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 CIN - L31900DL1983PLC016304



**SOLAR**  
 SUBMERSIBLE AND CENTRIFUGAL MONOBLOCK PUMPSSETS  
 AC / DC



## ABOUT HAVELLS

A company with an unflinching commitment to quality, innovation, and customer satisfaction, Havells India Limited has today emerged as a dominant player in the Fast Moving Electrical Goods industry. The company manufactures a number of products ranging from Cables, Wires and Switchgear in domestic and industrial segments, to Fans, Water Heaters, Small Appliances, Water Pumps, Air coolers, Personal Grooming, Home Automation, Switches, LED lighting & fixtures in the consumer facing segments. With the acquisition of Lloyd, and the entry into the Water Purifier and Personal grooming category, the company has become a fine example of successful transition and transformation from a Fast Moving Electrical Goods manufacturer to a true Consumer Durables company, steadily spreading its operations across India. Havells started its operations in the 1970s and since then, the company has used a judicious mix of organic growth and inorganic opportunities to boost revenues and scale up business. Global recognition came Havells' way in 2007 with the stunning

acquisition profile Sylvania, which also pitch-forked it among the top four lighting companies across the world. The company today owns a range of established and prestigious brands like Havells, Lloyd, Crabtree and Standard that are sold through its extensive network of dealers and retailers spread across the country. Havells has 12 state-of-the-art manufacturing units in the country located at Haridwar, Baddi, Sahibabad, Faridabad, Assam, Alwar and Neemrana. These units manufacture globally acclaimed products, synonymous with excellence and precision. The company has a strong domestic presence with 40 offices employing close to 6,500 professionals across the country supported by over 7,600 dealers and distributors with world-class service network in 400 cities across India. Given the enormous size, scale and reach of the operations, Havells today has 415 exclusive brands shop known as Havells Galaxies to provide better shopping experience to our consumers.

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## SOLAR PUMPSET

- MNRE Approved Pumping system.
- Easy Convenient Installation.
- No/less Maintenance.
- Solar Pumps with Upto 20% more Discharge as compared with MNRE guidelines.
- Low Radiation Low Voltage Working system
- Early start, Extended Working in a Day.
- MPPT (Max Power Point Tracking) Based Power Tracking System for Input Power.
- Environmental, Friendly System with free Energy and No pollution.
- Reliable Proven Motor and Pump Technology with Soft starting Motor and smooth acceleration.
- Favorable for No Electricity regions.
- 100% Stainless steel Construction-Highly Corrosion resistance.

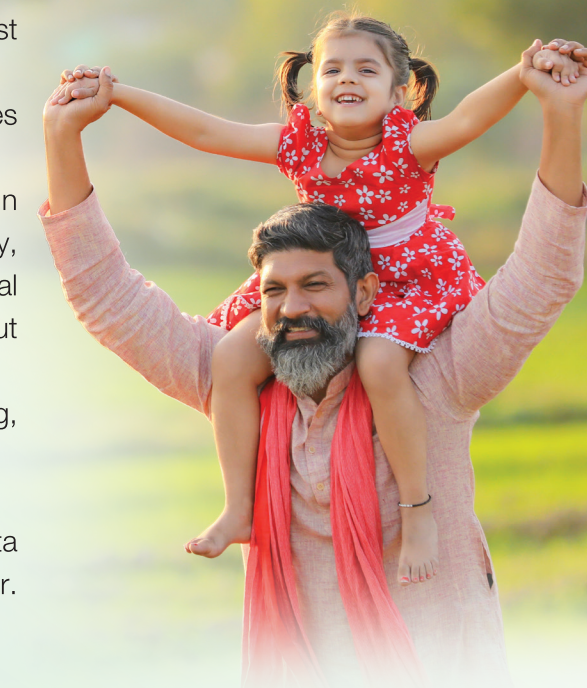
## SOLAR PUMPSET APPLICATION

- Agriculture Irrigation Purposes.
- Water Supply for Rural Region Farms, Houses, Cabins, Water Tank.
- Industrial Systems.
- Ground Water Pumping for Household Application and Agriculture Purposes.
- Drawing Water from Deep Wells, Rivers, Ponds & to Store in Storage tanks or Reservoir.
- Fountain Systems.
- Drip Irrigation and Sprinkler systems.
- Livestock water and pasture irrigation.

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## SOLAR CONTROLLER DRIVE FEATURES

- New Smart Design- Intelligent Controller Drive.
- MPPT Function that is maximum Solar Power point Tracking will adjust work speed automatically.
- Motor can Extract Maximum Power from Panels and provides Maximum Water output According to Solar Radiation.
- Intelligent Control provides Dry Run Protection, if there is No water in sump for 60 Seconds, Solar Pump will stop Working Automatically.
- In addition, It has Intelligent Overload Protection when the abnormal Situation appeared during the work, the pump Automatically shut down.
- It offers Protection from High Voltage, Low Voltage, Single Phasing, Over Current and Overload.
- It also offers Automatic ON /OFF.
- Remote Monitoring system: RMS will keep records of Operational data and provides access to it remotely through Mobile Phone or Computer.



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