

## Solar or battery-operated Submersible Pump System 4” Helical Rotor (HR) or Centrifugal (C) Pump Unit

Submersible solar pumps | Technical data

### Lorentz PS1200 HR/C



**GENPRO**  
ENERGY SOLUTIONS

#### | Performance

- | Lift up to 760 feet
- | Flow rate up to 45 GPM
- | Simple installation
- | Maintenance-free
- | High reliability and life expectancy
- | Cost-effective pumping solution

#### | Application

- | Livestock watering
- | Drinking water
- | Pond management
- | Irrigation systems

#### | PS1200 Controller

- | PV direct or battery powered operation
- | Electronics all above ground
- | Two Separate control inputs for dry run protection and tank float switch
- | Automatic reset after low water protection engages
- | Protected against reverse polarity, overload and temperature
- | Speed control, maximum pump speed adjustable to reduce flow rate to approximately 30%
- | Solar operation: integrated MPPT (Maximum Power Point Tracking)
- | Battery operation: low voltage disconnect and restart after battery has recovered
- | Maximum efficiency 92% (motor + controller)
- | Enclosure: IP 54 (sealed and weatherproof)

#### | Pump End (PE)

- | High life expectancy
- | Non-return check valve
- | Dry running protection (optional)
- | Material: stainless steel (AISI 316), rubber

#### | For HR Pumps only

- | Helical rotor pump (positive displacement pump)
- | Field Serviceable
- | More resistant to damage by sand than other pumps
- | Self-cleaning design



**LORENTZ**

SOLAR PUMPING SYSTEM

#### | Motor EC Drive 1200 H/C

- | Brushless DC motor, 3-Phase (PWM)
- | No electronics inside motor
- | Water filled
- | IP 68, pressure balanced, max. submersion unlimited
- | Dynamic slide bearings, material: carbon/ceramic
- | Wetted material: stainless steel (AISI 316), POM, rubber, cable drinking water approved

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# Lorentz PS1200 HR/C

**System Voltage:** 72-96 VDC nominal, VOC 200VDC Max.

**How daily water volume is calculated.**

Daily water volume is calculated by integrating real flow vs. realistic solar (PV) output though the day. (Peak sun hours/day = kWh/sq.m./day)

**Lift Limits:** The systems above are selected for optimum performance. To allow unexpected draw down, each system can handle an additional 15% drawdown.

Calculations include a 10% PV output degradation (heat, dirt etc.) Cable losses are included at maximum allowable length. The solar array is fixed at tilt angle = latitude of location. For central USA, seasonal adjustment of the tilt angle increases daily volume by about 8% summer, 5% winter. Flow rates may vary +/- 10%. Specifications are subject to change.

M O R E W A T E R

VERTICAL LIFT	16 Feet		33 Feet		50 Feet		65 Feet		100 Feet		133 Feet		165 Feet		200 Feet		230 Feet		
	5 m		10 m		15 m		20 m		30 m		40 m		50 m		60 m		70 m		
	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	
US Gallons per day																			
PEAK SUN	7.5 hrs/day	11100	16100	5800	7900	6000	7700	4700	6900	3700	5300	1800	2300	1600	2200	1500	2100	1300	1800
	6 hrs/day	9800	14000	5000	6900	4800	6300	4000	5200	2600	3700	1700	2200	1500	2000	1300	1800	1100	1500
	4.5 hrs/day	8500	11600	4200	5800	3700	5000	2600	3600	1600	2100	1600	2100	1200	1600	1100	1500	900	1300
350 Wp		C-BF-04				HR-14				HR-04				HR-04					
Gallons Per Minute		21.0		12.3		10.6		9.5		7.9		3.5		3.3		2.9		2.6	
Wire size/max. Length		#12 / 200 ft								#12 / 230 ft									
PEAK SUN	7.5 hrs/day	12400	18000	6900	8300	6300	8000	5300	7700	4200	6100	2300	3300	1800	2300	1600	2200	1500	2000
	6 hrs/day	11000	15500	5800	7100	5200	6700	4500	6300	3200	4500	2000	2800	1600	2100	1400	1900	1300	1700
	4.5 hrs/day	9500	13000	4600	6200	4000	5400	3700	5000	2100	2900	1700	2300	1300	1900	1200	1600	1100	1400
420 Wp		C-BF-04				HR-14				HR-07				HR-04					
Gallons Per Minute		23.0		11.4		11.0		10.0		9.0		5.3		3.4		3.0		2.7	
Wire size/max. Length		#12 / 150 ft								#12 / 230 ft									
PEAK SUN	7.5 hrs/day	13700	20000	7900	10000	7100	9200	5800	8000	4800	6900	3700	5300	2900	3800	2300	3300	1600	2300
	6 hrs/day	12200	17200	6500	8500	5800	7700	5000	7100	4000	4900	2600	3700	2300	3200	1900	2600	1500	2000
	4.5 hrs/day	10600	14500	5000	6900	4200	5800	4000	5600	3200	4200	1900	2500	1500	2000	1300	1700	1200	1600
480 Wp		C-BF-04				HR-20				HR-14				HR-07					
Gallons Per Minute		25.0		15.0		14.5		11.1		9.5		7.4		5.3		5.0		4.4	
Wire size/max. Length		#12 / 150 ft								#12 / 200 ft									
PEAK SUN	7.5 hrs/day	17000	24500	11600	17000	8400	10300	7000	8000	5700	7600	4500	6500	3600	5000	2600	3800	2300	3300
	6 hrs/day	14800	21000	9500	13500	7100	9100	6000	7500	4700	6300	3600	5000	2800	3800	2300	3200	1900	2800
	4.5 hrs/day	12700	17400	7400	10000	5800	7900	5000	6600	3700	5000	2600	3600	2100	2600	1900	2500	1600	2300
660 Wp		C-BF-04				HR-20				HR-14				HR-07					
Gallons Per Minute		30.0		28.0		15.0		11.4		11.0		10.5		10.0		5.3		5.2	
Wire size/max. Length		#12 / 150 ft								#10 / 300 ft									
PEAK SUN	7.5 hrs/day	18500	26400	13200	18800	9500	13500	7700	10600	6600	9500	5300	7700	4700	6800	2900	3800	2700	3800
	6 hrs/day	16400	23300	11400	15600	7400	10600	6900	9500	5800	7900	4800	6600	3700	5000	2600	3700	2400	3400
	4.5 hrs/day	14000	20000	9300	12400	5300	7400	6100	8500	4600	6300	4100	5600	2400	3200	2400	3300	2100	2900
720 Wp		C-BF-04				HR-20				HR-14				HR-07					
Gallons Per Minute		31.0		29.0		25.0		14.3		14.0		11.4		10.2		5.4		5.3	
Wire size/max. Length		#10 / 250 ft								#10 / 300 ft									
PEAK SUN	7.5 hrs/day	20300	29300	14500	21100	10800	15800	8400	10600	7100	10000	5900	7900	5000	7100	2800	3800	2700	3800
	6 hrs/day	18500	26400	13000	18500	9500	13500	7900	10600	6600	9300	5600	7400	4200	6100	2700	3800	2600	3700
	4.5 hrs/day	16600	23300	11400	15600	7900	10800	7400	10000	6100	8200	4800	6300	3400	4800	2500	3500	2400	3400
840 Wp		C-DF-03				C-BF-04				HR-20				HR-07					
Gallons Per Minute		43.0		32.0		29.5		14.5		14.2		11.4		10.3		5.4		5.3	
Wire size/max. Length		#10 / 250 ft								#10 / 300 ft									
PEAK SUN	7.5 hrs/day	22500	33000	19000	27700	12700	18500	11100	15800	8100	10600	6600	9500	5500	7700	4400	6600	3000	3800
	6 hrs/day	20600	29100	15900	22500	11100	15900	9500	13500	7400	9800	5800	7900	4800	6600	3700	5600	2700	3800
	4.5 hrs/day	18800	25400	12400	17200	9500	13000	7900	10800	6600	8700	4800	6300	4000	5300	3000	4200	2600	3600
1000 Wp		C-DF-03				C-BF-04				HR-20				HR-14					
Gallons Per Minute		45.0		42.0		30.0		27.0		14.3		13.8		10.4		10.0		5.3	
Wire size/max. Length		#10 / 250 ft								#10 / 300 ft									
PEAK SUN	7.5 hrs/day	25000	35000	21000	33000	14000	20000	12400	17400	8700	10600	7000	10000	5800	7900	4700	6800	3200	3800
	6 hrs/day	23300	32000	18500	27200	13000	18500	11100	15300	8200	10600	6300	8700	5300	7100	4200	6100	3000	3800
	4.5 hrs/day	21100	28300	15600	21100	11900	16400	9500	13000	7400	10000	5600	7400	4800	6300	3700	5000	2900	3800
1200 Wp		C-DF-03				C-BF-04				HR-20				HR-14					
Gallons Per Minute		45.0		42.0		31.0		28.0		14.3		13.8		10.4		10.0		5.3	
Wire size/max. Length		#10 / 250 ft								#10 / 300 ft									

**Solar-Powered Submersible Pump System 4" Helical Rotor (HR) or Centrifugal (C) Pump Unit**

Submersible solar pumps | Technical data

**Pump Outlet Type:**

HR-03H,04H,04,07=1" NPT  
 HR-14,20=1-1/4" NPT  
 C-BF-04=1-1/2" NPT  
 C-BF-03=2" NPT

**Wire Sizes**

Cable layout is calculated to stay within 5% power loss. Select PS1200 system to save \$ on cable!

Pump Cable, Example: #10/250ft. = maximum allowable length (controller to pump) for that wire size.

**Variations**

Greater Length: for each 150% increase, the next larger wire size is required. Shorter Length: for each 33% decrease, the next smaller wire is allowed. Array to controller: if <20ft.—#10 Controller to Low Water Probe: #18 minimum, 2-Wire Controller to

265 Feet 80 m		300 Feet 90 m		330 Feet 100 m		400 Feet 120 m		460 Feet 140 m		530 Feet 160 m		600 Feet 180 m		660 Feet 200 m		760 Feet 230 m		VERTICAL LIFT			
Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked	Fixed	Tracked				
US Gallons per day																		INSTRUCTIONS (1) Find the LIFT you require, and read the column below it.	PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day		
1000	1350	900	1320	850	1240	790	1140	710	1060											350 Wp	
870	1160	790	1060	710	1030	660	870	530	770											Gallons Per Minute Wire size/max. Length	
HR-03																		PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
2.2		2.0		1.9		1.8		1.7											420 Wp		
#10 / 500 ft																			Gallons Per Minute Wire size/max. Length		
1240	1820	1190	1420	1060	1320	980	1320	790	1110	610	850	450	630						PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day		
1020	1440	980	1240	850	1100	790	1080	660	910	530	710	360	500							480 Wp	
790	1060	770	1030	630	870	610	850	530	710	450	580	260	370							Gallons Per Minute Wire size/max. Length	
HR-04H				HR-03								HR-03H						PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
23.0		5.3		11.4		11.0		10.0		9.0		5.3							660 Wp		
#10 / 400 ft				#10 / 500 ft								#8 / 750 ft							Gallons Per Minute Wire size/max. Length		
1510	2170	1450	2110	1320	1850	1190	1720	870	1190	740	1060	610	790	500	710	420	610	PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
1270	1770	1160	1720	1000	1400	900	1270	790	1060	630	870	500	660	420	580	340	480		720 Wp		
1030	1370	870	1190	690	920	580	790	690	920	500	660	400	530	320	420	260	340		Gallons Per Minute Wire size/max. Length		
HR-04H				HR-03				HR-03H										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
3.2		3.0		2.7		2.5		1.9		1.7		1.6		1.6		1.5			840 Wp		
#10 / 450 ft				#10 / 500 ft				#8 / 750 ft											Gallons Per Minute Wire size/max. Length		
2110	3040	1720	2320	1450	2060	1350	1960	1190	1690	870	1220	850	1140	790	1080	550	980	PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
1720	2440	1450	1960	1290	1760	1070	1530	920	1310	790	1100	740	990	660	870	480	750		960 Wp		
1320	1850	1190	1590	1140	1450	790	1110	660	920	710	980	630	850	530	660	400	530		Gallons Per Minute Wire size/max. Length		
HR-07				HR-04H				HR-043H										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
5.0		3.4		3.3		3.2		3.1		1.8		1.8		1.8		1.7			1000 Wp		
#10 / 300 ft				#10 / 450 ft				#8 / 750 ft											Gallons Per Minute Wire size/max. Length		
2500	3600	2300	3300	1590	2300	1510	2170	1400	1850	980	1320	920	1240	870	1110	790	1060	PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
2200	3000	2000	2800	1530	2110	1320	1800	1160	1590	920	1250	870	1150	790	1030	660	900		1200 Wp		
1900	2500	1600	2100	1450	1960	1060	1430	920	1240	870	1190	790	1060	710	950	530	710		Gallons Per Minute Wire size/max. Length		
HR-07				HR-04H				HR-03H										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
5.2		5.0		3.3		3.3		3.2		1.8		1.8		1.8		1.7			1400 Wp		
#10 / 350 ft				#10 / 500 ft				#8 / 750 ft											Gallons Per Minute Wire size/max. Length		
2600	3700	2500	3600	2100	3200	1900	2800	1590	1980	1110	1370	1060	1320	980	1160	870	1110	PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
2400	3200	2200	3100	1900	2800	1700	2400	1370	1850	1020	1310	950	1230	890	1120	810	1050		1600 Wp		
2100	2800	1900	2600	1700	2300	1500	2000	1160	1590	920	1240	850	1140	790	1080	740	1000		Gallons Per Minute Wire size/max. Length		
HR-07				HR-04H				HR-03H										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
5.2		5.0		4.8		4.6		3.2		1.8		1.8		1.8		1.7			1800 Wp		
#10 / 400 ft				#10 / 500 ft				#8 / 750 ft											Gallons Per Minute Wire size/max. Length		
2700	3800	2600	3600	2400	3300	2300	3200	1720	2110	(2) Find the DAILY VOLUME you require, at 7.5 peak sun hrs/day at 6.0 peak sun hrs/day at 4.5 peak sun hrs/day								PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
2500	3500	2400	3300	2100	2900	2000	2800	1530	1960										2000 Wp		
2400	3200	2100	2900	1900	2500	1800	2400	1320	1800										Gallons Per Minute Wire size/max. Length		
HR-07				HR-04H				(3) Use the PEAK FLOW RATE for pipe sizing.										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
5.2		5.0		4.8		4.6		3.2												2400 Wp	
#10 / 300 ft				#10 / 400 ft															Gallons Per Minute Wire size/max. Length		
3000	3800	2900	3600	2600	3300	2500	3200	1850	2300	Daily solar radiation: 7.5 = moderately dry summer weather								PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
2800	3800	2600	3400	2400	3100	2300	2900	1690	2250										2800 Wp		
2700	3800	2400	3300	2100	2900	2000	2600	1510	2030										Gallons Per Minute Wire size/max. Length		
HR-07				HR-04H				(4) Wire size / max. length (see below)										PEAK SUN 7.5 hrs/day 6 hrs/day 4.5 hrs/day			
5.2		5.0		4.8		4.6		3.2												3200 Wp	
#10 / 300 ft				#10 / 400 ft				#10 / 500 ft										Gallons Per Minute Wire size/max. Length			

MORE WATER

## Solar or battery-operated Submersible Pump System 4” Helical Rotor (HR) or Centrifugal (C) Pump Unit

Submersible solar pumps | Technical data

### Lorentz PS1200 HR/C



#### | Sand and Silt Tolerance

- | The pump (HR) has a higher resistance to wear from sand and clay than any other pump type. In properly constructed wells the amount of sand and clay is within the tolerance of the pump.
- | A concentration of solids greater than 2% (by volume) may cause blockage in the pump or the drop pipe, especially at low flow rates.
- | Do not use the pump to clean out a dirty well.

#### | Pump Cable and Splice

- | Standard submersible cable, 3-wire + ground (total)
- | A concentration of solids greater than 2% (by volume) may cause blockage in the pump or the drop pipe, especially at low flow rates.
- | Do not use the pump to clean out a dirty well.

#### | Drop Pipe

- | 1-1/4”, 1-1/2” or 2” NPT pump outlet, If water is dirty, consider

a smaller size drop pipe to increase the flow velocity. This helps exhaust solid particles and prevent accumulation in the pipe. When considering reduced pipe size, consult a pipe sizing (friction loss) chart. Pipe can be of any standard material, rigid or flexible. A torque arrestor is not required.

#### | Temperature Limits

- | Pump: Specify temperature class on order
  - Class 1            46° F to 72° F
  - Class 2            64° F to 90° F
  - Class 3            82° F to 108° F
- Controller:        ambient temperature -22° F to +131° F

#### | Warranty

- | 2 Years manufacturer’s warranty against defects in material and workmanship.

#### Technical data Lorentz PS1200:

	HR-03	HR-03H	HR-04	HR-04H	HR-07	HR-14	HR-20	C-BF-04	C-DF-03
<b>Lift [ft]</b>	265-460	530-760	133-230	265-460	133-400	0-200	0-133	0-65	0-33
<b>Max. Flow Rate [gpm]</b>	2.2	1.8	3.5	3.4	1.2	12.3	15	32	45
<b>Max. Efficiency [%]</b>	60	64	60	65	64	65	64	40	40
<b>Solar Operation</b>	nominal voltage 72-96 V DC								
	open circuit voltage max. 200 V DC								
<b>Solar Generator [Wp]</b>	350-480	420-900	350-420	420-1,200	420-1,200	350-1,200	480-1,200	350-1,200	840-1,200
<b>Battery Operation</b>	nominal voltage 72-96 V DC								
<b>Pump &amp; Motor</b>									
<b>Diameter</b>	3.78” (96 mm)								
<b>Height</b>	20”-32” (500-800 mm) depending on model								
<b>Weight</b>	25 lbs (11.5 kg) or less, depending on model								
<b>Controller</b>									
<b>Dimension</b>	17” x 7” x 6” (425 x 175 x 150 mm)								
<b>3 Conduit Holes</b>	1/2”, 3/4” and 1 1/4” KO								
<b>Weight</b>	11 lbs (4.8 kg)								