

Grundfos SQF Pump and Solar Module Array Sizing

To choose a pump and array size appropriate to your project, consult the table below. The left column shows total head in feet and meters, the top row shows array wattage/number and suggested type of modules, and the boxes show seasonal pump performance and maximum flow. Select the row with the head (total lift) that most closely matches your application then move across the row to the column that contains the desired daily volume or peak flow rate. Note the pump model in that block and wattage of the PV array in that column.

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NOTE: Daily volume and flow calculations in the table are based on Fresno, CA data at a 36° fixed tilt. Daily summer volume assumes 7.8 kWh/m²/day of insolation and winter volume assumes 4.7 kWh/m²/day. These figures will need to be adjusted to the local insolation conditions at the actual installation site.

Most solar pumping systems will provide significantly more output in the summer than in the winter. The typical flow rate is calculated at 800 W/m² and can be up to 25% greater under bright conditions. Also, up to 40% more water can be pumped in the summer if the array is on a tracking mount. The output can vary by location and weather patterns, and is not guaranteed.

Table Key

60 SQF-3	Pump Model
24885 gpd	Estimated daily summer volume (gpd)
19944 gpd	Estimated daily winter volume (gpd)
42 gpm	Peak flow rate (gpm)

Grundfos SQFlex Submersible Pump Selection Chart

Head	Module Watts		250 watt (60 cell modules)				
	Number of Modules	2	3	4	5	6	7
	Total Watts in Array	500 w	750 w	1000 w	1250 w	1500 w	1750 w
	Model	60 SQF-3	60 SQF-3	60 SQF-3	60 SQF-3	60 SQF-3	60 SQF-3
6 ft (2 m)	7.8 kWh/m ²	24885 gpd	31609 gpd	37627 gpd	42809 gpd	46335 gpd	49272 gpd
	4.7 kWh/m ²	19944 gpd	26177 gpd	31410 gpd	35264 gpd	38204 gpd	40675 gpd
	Max flow	42 gpm	52 gpm	61 gpm	68 gpm	73 gpm	77 gpm
25 ft (8 m)	Model	40 SQF-3	40 SQF-3	60 SQF-3	60 SQF-3	60 SQF-3	60 SQF-3
	7.8 kWh/m ²	13027 gpd	20089 gpd	26345 gpd	31950 gpd	35680 gpd	38605 gpd
	4.7 kWh/m ²	9539 gpd	15049 gpd	19889 gpd	24146 gpd	27295 gpd	30149 gpd
	Max flow	24 gpm	35 gpm	47 gpm	56 gpm	62 gpm	66 gpm
50 ft (15 m)	Model	11 SQF-2	40-SQF-5	40 SQF-5	40 SQF-5	40 SQF-5	40 SQF-5
	7.8 kWh/m ²	5582 gpd	10139 gpd	14817 gpd	19166 gpd	22462 gpd	25183 gpd
	4.7 kWh/m ²	4287 gpd	7001 gpd	10684 gpd	13909 gpd	16552 gpd	18838 gpd
	Max flow	9.6 gpm	19 gpm	27 gpm	35 gpm	40 gpm	44 gpm

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Head	Module Watts	250 watt (60 cell modules)					
		2	3	4	5	6	7
	Number of Modules	500 w	750 w	1000 w	1250 w	1500 w	1750 w
	Total Watts in Array	11 SQF-2	11 SQF-2	25 SQF-7	25 SQF-7	40 SQF-5	40 SQF-5
75 ft (23 m)	7.8 kWh/m ²	4580 gpd	6300 gpd	9221 gpd	11832 gpd	14602 gpd	17381 gpd
	4.7 kWh/m ²	3410 gpd	5067 gpd	6691 gpd	8624 gpd	10184 gpd	12345 gpd
	Max flow	8.0 gpm	11 gpm	17 gpm	21 gpm	27 gpm	31 gpm
100 ft (30 m)	Model	11 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	25 SQF-7	25 SQF-7
	7.8 kWh/m ²	3606 gpd	5617 gpd	6695 gpd	7303 gpd	10833 gpd	12536 gpd
	4.7 kWh/m ²	2639 gpd	4182 gpd	5439 gpd	6021 gpd	7662 gpd	9065 gpd
	Max flow	6.4 gpm	10 gpm	12 gpm	14 gpm	19 gpm	22 gpm
125 ft (38 m)	Model	11 SQF-2	11 SQF-2	11 SQF-2	16 SQF-10	16 SQF-10	25 SQF-7
	7.8 kWh/m ²	2897 gpd	4769 gpd	6145 gpd	7864 gpd	7693 gpd	10006 gpd
	4.7 kWh/m ²	2085 gpd	3435 gpd	4807 gpd	5833 gpd	5664 gpd	7055 gpd
	Max flow	5.3 gpm	8.3 gpm	11 gpm	12 gpm	14 gpm	18 gpm
150 ft (46 m)	Model	6 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	16 SQF-10
	7.8 kWh/m ²	2454 gpd	4041 gpd	5675 gpd	6565 gpd	6952 gpd	7535 gpd
	4.7 kWh/m ²	1851 gpd	2903 gpd	4198 gpd	5114 gpd	5543 gpd	5531 gpd
	Max flow	4.5 gpm	7.2 gpm	10 gpm	12 gpm	12 gpm	13 gpm
175 ft (53 m)	Model	6 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2
	7.8 kWh/m ²	2282 gpd	3450 gpd	5024 gpd	6114 gpd	6633 gpd	6926 gpd
	4.7 kWh/m ²	1672 gpd	2442 gpd	3594 gpd	4682 gpd	5233 gpd	5531 gpd
	Max flow	4.1 gpm	6.3 gpm	8.8 gpm	11 gpm	12 gpm	12 gpm
200 ft (61 m)	Model	6 SQF-2	6 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2
	7.8 kWh/m ²	2050 gpd	2885 gpd	4237 gpd	5593 gpd	6199 gpd	6586 gpd
	4.7 kWh/m ²	1480 gpd	2288 gpd	3015 gpd	4036 gpd	4777 gpd	5207 gpd
	Max flow	3.8 gpm	5.4 gpm	7.6 gpm	10 gpm	12 gpm	12 gpm
250 ft (61 m)	Model	6 SQF-2	6 SQF-2	6 SQF-2	11 SQF-2	11 SQF-2	11 SQF-2
	7.8 kWh/m ²	1584 gpd	2585 gpd	3056 gpd	4202 gpd	5268 gpd	5816 gpd
	4.7 kWh/m ²	1097 gpd	1970 gpd	2466 gpd	2872 gpd	3720 gpd	4425 gpd
	Max flow	3.0 gpm	4.9 gpm	5.5 gpm	7.5 gpm	9.6 gpm	11 gpm

Grundfos SQFlex Submersible Pump Selection Chart

Head	Module Watts Number of Modules Total Watts in Array	250 watt (60 cell modules)					
		2 500 w	3 750 w	4 1000 w	5 1250 w	6 1500 w	7 1750 w
300 ft (91 m)	Model	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3
	7.8 kWh/m ²	1524 gpd	2516 gpd	3058 gpd	3379 gpd	3556 gpd	3628 gpd
	4.7 kWh/m ²	1091 gpd	1835 gpd	2439 gpd	2752 gpd	2957 gpd	3058 gpd
	Max flow	2.8 gpm	4.5 gpm	5.7 gpm	5.9 gpm	5.9 gpm	5.9 gpm
400 ft (122 m)	Model	3 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3
	7.8 kWh/m ²	974 gpd	1859 gpd	2613 gpd	3025 gpd	3216 gpd	3365 gpd
	4.7 kWh/m ²	719 gpd	1315 gpd	1942 gpd	2360 gpd	2564 gpd	2737 gpd
	Max flow	1.8 gpm	3.4 gpm	4.8 gpm	5.7 gpm	5.7 gpm	5.7 gpm
500 ft (152 m)	Model	3 SQF-3	3 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3	6 SQF-3
	7.8 kWh/m ²	814 gpd	1287 gpd	2000 gpd	2593 gpd	2857 gpd	3025 gpd
	4.7 kWh/m ²	585 gpd	987 gpd	1402 gpd	1902 gpd	2212 gpd	2398 gpd
	Max flow	1.5 gpm	2.4 gpm	3.7 gpm	4.9 gpm	5.5 gpm	5.5 gpm
650 ft (198 m)	Model	3 SQF-3	3 SQF-3	3 SQF-3	3 SQF-3	6 SQF-3	6 SQF-3
	7.8 kWh/m ²	498 gpd	990 gpd	1298 gpd	1470 gpd	2149 gpd	2415 gpd
	4.7 kWh/m ²	316 gpd	692 gpd	1015 gpd	1170 gpd	1473 gpd	1819 gpd
	Max flow	0.9 gpm	1.9 gpm	2.5 gpm	2.6 gpm	4.1 gpm	4.9 gpm
800 ft (244 m)	Model				6 SQF-3	6 SQF-3	6 SQF-3
	7.8 kWh/m ²	-	--	--	871 gpd	1325 gpd	1741 gpd
	4.7 kWh/m ²	-	--	--	470 gpd	796 gpd	1111 gpd
	Max flow	-	--	--	1.6 gpm	2.5 gpm	3.4 gpm

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