

This document is designed to help plan for a **Solar Pump System** and to demonstrate that system's adherence to **CODE 533 – PUMPING PLANT, PHOTOVOLTAIC (SOLAR) POWERED** of the **NATURAL RESOURCES CONSERVATION SERVICE** (NRCS, USDA). "Adherence to CODE 533" doc assembled by Engineers at RPS Solar Pumps. Version dated 2/1/2024

Date: ___/ __/ 2024 Version: V1.184

Customer Name: Mailing Address: Customer Phone: Customer Email:

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1. Well & Water Source Specs

Type of Water Source: Well Total Depth (ft): Static Water Level (ft) 30: Drawdown (ft): Casing Inner Diameter (in): Yield / Recovery Rate (GPM): Other Comments: N/A Water Quality: Very Good- Water contains no abrasive particles, and/or TDS <50ppm



NRCS TABLE - WATER SOURCE INFORMATION

SUBSURFACE				SURFACE			
WELL		SPRING			STREAM	CANAL	POND
Depth (ft)		Yield (gpm)	n/a	Flow Rate (gpm)			
Yield (gpm)		COLLECTIO N BOX DATA	n/a	Seasonal or Perennial			
Casing ID (in)	3"or less	Depth (ft)	n/a	Min Water Elev (ft)			
Well Test(Y or N)	Yes	Volume (gal)	n/a				
Date of Test		Covered (Y or N)	n/a				

NRCS TABLE - WATER QUALITY AT SOURCE

QUALITY: Not Tested							
Very Good	Water contains no abrasive particles, and/or TDS < 50 ppm						
Good	Water may contain small amounts of silt, and/or TDS < 100 ppm						
Fair	Water may contain small amounts of silt, sand, rust, and/or TDS < 200 ppm						
Poor	Water may contain moderate amounts of silt, sand, rust and/or TDS = 200-800 ppm						
Very Poor	Water Contains no abrasive particles, and/or TDS > 50 ppm						

2. Water Usage & Tankage

Usage Type - Livestock, Irrigation, Other: Type of Animals: cattle Number of Animals: Gallons Per Animal Type:

STOCK WATER ESTIMATES						
	Intensive Use	Normal Use				
Cow Calf Pair	25	20				
Beef Cattle	20	15				
Horse	20	15				
Sheep	4	2				
Dairy Cow	25	25				
Hog	2	2				
Mule Deer	2	2				
Antelope	2	2				
Elk	8	8				



NRCS - WATER USE INFORMATION

Turne of Line	Seasonal	Water Rec	quirement	(gal/day)	Commente (# or type of animale irrigation type, ata)
Type of Ose	Summer	Fall	Winter	Spring	Comments (# or type or animals, imgation type etc)
Livestock					
Wildlife					
Irrigation					
Domestic/Potable					
Other					
Total Requirement					

Tank Storage Calculations

Daily Water Requirement: {\$animal_count} x {\$gallons_per_animal} = {\$daily_water_required} Storage Period (3 days per NRCS): {\$storage_days} Total Storage Needed: {\$storage_days} x {\$daily_water_required} = {\$total_water_required}

Existing Tankage: {\$existing_tankage}

Needed Tankage: {\$total_water_required} - {\$existing_tankage} = {\$needed_tankage}

Type of Float Switch:

Electrical with Wire to Controller vs. Mechanical with Pressure Switch at Controller

NRCS - WATER STORAGE DATA

Volume Required = Maximum Daily Requirement (gal/day) x days = gallons.								
Open Tank Pressure Tank In Line Other Total								
Volume Available (gal)								
New or Existing								





COMPACTED FILL: cubic yardage = $\left[\frac{\pi}{4}(0 + 2)^{2}(0.5^{\circ} \text{ gravel})\right]\frac{1}{27} = ____ cu yd$

TANK AND FOUNDATION DETAIL



3. Site Specifics

Elevation at Well head: {\$elevation_wellhead} Elevation at Tank: {\$elevation_tank}

(A below) Horizontal Distance from Wellhead to Solar Array (ft): {\$well_to_array}
(B below) Horizontal Distance from Wellhead to Tank (ft): {\$well_to_tank}
(C below) Vertical Distance from Wellhead to Tank (ft): {\$lift_after_wellhead}
(D below) Height of Tank (ft): {\$tank_height}

Additional diagrams may be attached in Appendix



4. Solar Insolation

http://pvwatts.nrel.gov/index.php

Closest Solar Station: {\$solar_station} Latitude: {\$latitude} Annual Average: {\$hours_solar_avg}



NRCS TABLE - SOLAR INSOLATION

	Solar Station	Latitude	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average kwh/m²/da y or full sun hours														
Pump in use this month (Y or N)														

Design Radiation Average Hours: {\$hours_solar_design}

6. Plumbing

All plumbing to adhere to NSF requirements and manufacturer's recommendations. No larger than 2" and Steel, PVC or Polyethylene piping with adequate pressure ratings. Total pumping head shall not exceed 72% of the pressure rating of the pipe. Check valves, torque arrestors / centering guides, protective 'low water' sensors are required by many states and are included in RPS kits.

Included in RPS Systems:

Check valve(s) Torque arrestor(s) Protective 'low water' sensor Centering guide(s)

Frictional Losses Based on Pipe Lengths

Pressure at discharge point: 0 psi Pressure in Feet of Head (x 2.31): {\$tank_pressure}

	Diameter (in):	Length (in):	Material:	Frictional Loss* (ft):
Pump to Wellhead				
Wellhead to Tank				
Total Frictional Loss (will be used for TDH calculations in next section, in feet)				{\$total_friction}

*Pressure Drop/Frictional Loss Calculated using Tool - RPSsolarpumps.com/friction (link to <u>http://www.freecalc.com/fricfram.htm</u>)



7. Pump Sizing & Curves

TOTAL DYNAMIC HEAD (TDH) = Static Level + Drawdown + Lift to Tank + Tank Height + Tank Pressure + Frictional Losses

{\$static_level}+{\$drawdown}+{\$lift_after_wellhead}+{\$tank_height}+{\$tank_pressure}+{\$total_friction}= {\$tdh}

Using Pump curves and calculated Water Volume & TDH...

{\$daily_water_required} and {\$tdh}

```
Design Flow Rate Needed for Insolation at site
{$daily_water_required} ÷ ( {$hours_solar_design} x 60 min/hr) = {$gpm_design}
```

Based on the curves for {\$gpm_design} or greater...

Pump Curves shown in Appendix

Pump Selected

Pump Brand / Model: {\$selected_pump_model} GPM at {\$tdh} ft head: {\$selected_pump_gpm} Pump Wattage: {\$selected_pump_wattage} HP of pump: {\$selected_pump_hp} Voltage of pump: {\$selected_pump_voltage} Amps of pump: {\$selected_pump_current}

NRCS - ASSORTED SYSTEM STATS

PUMP ¹	Watts	Design GPM
	Amps	Manufacturer
	Volts	
1 Pump Controllor Valvos Sw	itch hav to be specified by n	anufacturar's recommandation

Pump Controller, Valves, Switch box to be specified by manufacturer's recommendation



8. Controller, Wiring & Electrical

By national requirements and the most strict state-specific NRCS guidelines, RPS Pump Systems adhere to the following:

Entire system

System must be capable of protecting the pump from common faults, including low water (dry running), overload, and electrical short circuits. Electronic components shall be UL listed or equivalent and shall be fused as required by the manufacturer. A DC rated switch or circuit breaker shall be provided as a means for disconnecting the array from the system. The disconnecting device shall be located near the system controls and housed in a grounded weatherproof enclosure within visible site of the wellhead. All wire material shall be copper.

Panel-to-controller wire

Solar panel-to-panel wiring shall be in conduit or be rated sunlight and weather resistant (USE, type TC or equivalent). Wire nuts shall not be used. Each wire termination shall be adequately marked to identify the circuit conductor and consistent with the identification included on the wiring diagram.

Controller-to-pump wire

The electrical cable for submersible pumps shall be double insulated and shall be rated for submersible pump service. The drop cable for permanent systems shall employ a weatherproof splice made with crimp style butt connectors. The power cable shall be furnished in one continuous length within the well where possible.

Pump controller

The controller and other electronic components shall be located in a weatherproof enclosure with strain relief entrances. Grounding conductors shall be installed per manufacturer's recommendation and any safety codes.

DC Cut-off Switch (Included as required by code)

NEMA 4X,16A IEC 800VDC / UL 600 VDC, 2 Pole,Grey Body With Lockable Black Rotary in OFF position, UL508. Size: 98mm X 180MM (3.86 in. X 7.09 in.

Fuse Included

MC4 Inline fuse is included as required by the code. Plug and play with Male and Female MC4 connectors.

9. Solar Array & Solar Panels

Required Pump Power: Optimal Pump Voltage:

System Multiple: 1.25x + Minimum Array Power:

Individual Solar Panel Wattage:



Individual Solar Panel Voltage: Individual Solar Panel Current: Solar Panel Brand:

Solar Panel Wiring (Series / Parallel / Series-Parallel):

Total Solar Array Power: Solar Array Voltage: Solar Array Current:

PANEL ARRAY	Minimum Watts Needed (Pump size * 1.25)						
	_ Summer tilt angle amps _ Winter tilt angle volts						
PANEL CONFIG	GURATION ²						
Minimum Watts Needed (Pump size * 1.25)							

² Contractor to Provide Landowner/NRCS as-builts to include panel array configuration and wiring details

All RPS Pump Systems include standard MC4 connectors that allow for the safe, waterproof connection of all UL Listed solar panels. The connection of the panels (series vs. parallel) varies based on the chosen size of the pump and diagrams are included in the systems included installation manual.

National requirements and the most strict state-specific NRCS guidelines, the Solar Panels that accompany RPS Pump Systems adhere to the following:

Solar Panels are UL listed (1703) and meet all NEC Requirements (or tested and certified to withstand the impact of 25-mm (1-inch) diameter hail at a minimum velocity of 23-m/s (51-mph) without major visual defects by another nationally recognized testing lab in accordance with IEC 61215, or IEC 61646, or ASTM E1038. The modules must be certified to withstand winds of 80 mph. Labels with open-circuit voltage, operating and short circuit Voltages, Currents, maximum permissible system voltage, operating current, short-circuit current, and maximum power. Assembled with seals watertight over -20F to 120F. Panels are warranted 10 years against power degradation in excess of 10% of the rated power. Module junction boxes shall be moisture resistant and shall have sufficient space for addition of bypass diodes. Boxes that accept conduit are preferred. Junction boxes should be mounted to the PV module frame and not to the PV module surface.



CERTIFICATIONS



UL 1703, Fire classification Type 2; IEC 61215, IEC 61730, IEC 61701 (Salt Mist - severity level 6), IEC 62804 (PID Free), IEC 62716 (Ammonia Resistance), ISO 11925-2 (Ignitability Class 1), UNI 8457/9174 (Class A), ISO 9001:2015, ISO 14001, OHSAS 18001

WARRANTY

10 year product warranty

25 year linear power output warranty (max. degression in performance of 0.7% p.a. from 97% after the first year)

See warranty conditions for further details.

10. Solar Mounting

Tilt of Panels (angle from horizontal) Calculation based on {\$latitude}

Mounting System Selected: {\$mounting_size}

Fixed vs Two Season (very little gained by 4 panel adjustments) Tracking systems increase efficiency but also complexity. For smaller arrays where numbers are tight, we recommend adding another solar panel and fixed mounting vs. a tracking system.

Fixed Tilt

If your solar panels will have a fixed tilt angle, and you want to get the most energy over the whole year, then this section is for you. A fixed angle is convenient, but note that there are some disadvantages. As mentioned above, you'll get less power than if you adjusted the angle. Also, if you live where there is snow, adjusting the panels to a steeper angle in winter makes it more likely that they will shed snow. A panel covered in snow produces little or no power.

This table from <u>here</u> gives some examples for different latitudes. It also shows the average insolation on the panel over the year (in kWh/m2 per day), and the energy received compared to the best possible tracker.

Latitude	Full year angle	Avg. insolation on panel	% of optimum
25° (Key West)	22.1	6.2	72%
30° (Houston)	25.9	6.1	71%
35° (Albuquerque)	29.7	6.0	71%
40° (Denver)	33.5	5.7	71%
45° (Minneapolis)	37.3	5.4	71%
50° (Winnipeg)	41.1	5.1	70%

Adjusting the tilt twice a year

If you are going to adjust the tilt of your solar panels twice a year, and you want to get the most energy over the whole year, then this section is for you.



Summer angle from March 30 to September 29, Winter angle from September 12 to March 14

Latitude	Summer angle	Winter angle	Avg. insolation	% of optimum
25° (Key West)	2.3	41.1	6.6	76%
30° (Houston)	6.9	45.5	6.4	76%
35° (Albuquerque)	11.6	49.8	6.2	76%
40° (Denver)	16.2	54.2	6.0	75%
45° (Minneapolis)	20.9	58.6	5.7	75%
50° (Winnipeg)	25.5	63.0	5.3	74%



RPS Systems' solar arrays are mounted on new commercially manufactured AND professional engineer certified mounting structures designed, stamped and machined in USA. (see Appendix for Stamps and Approvals)

Other requirements also met by the RPS mounting systems: 1. The mounting structure shall be capable of holding the panel array at a tilt angle from horizontal that ensures optimum utilization of the available solar energy; 2. The mounting structure must be capable of supporting the solar panel array under loads caused by 130-km/h (81-mph) winds; and 3. The mounting structure must be capable of supporting the solar panel array under ice loading of 25-mm (1-inch) thick



minimum over all exposed surfaces. As a minimum, the structure shall have a tilt angle from horizontal that ensures optimum utilization of the solar energy. Pole mounted solar panel structures shall meet the minimum pole requirements as established in the Table below.







MOL	UNTI	NG A	POST	SEL	ECTION	TABL	Ε
(Producer	shall	install	mountin	g ca	nfiguration	circled	below)

POST HEIGHT (FT)	PANELS	MIN. POST DIA. (IN)	POST HOLE DIA. (IN)	MIN, EMBEDMENT DEPTH (IN)	CONCRETE VOLUME (CY)
	Single Panel (A = 13.9 ft ²)	4	24	38	0.34
4 FT	Double Panel (A = 27.8 ft ²)	4	24	48	0.71
	Triple Panel (A = 41.7 ft)	4	30	54	1.16
	Quad Panel (A = 55.6 ft)	4	36	56	1.71
	Single Panel (A = 13.9 ft ^a)	4	24	36	0.38
6 FT	Double Panel (A = 27.8 ft ²)	4	30	50	0.92
	Triple Panel (A = 41.7 ft)	4	36	54	1.29
	Quad Panel (A = 55.6 ft)	6	36	60	1.92
8 FT	Single Panel (A = 13.9 /t ²)	4	30	38	0.43
	Double Panel (A = 27.8 ft ²)	4	30	50	1.16
	Triple Panel (A = 41.7 ft)	6	36	54	1.44
	Quad Panel (A = 55.6 ft)	6	36	60	2.16
10 FT	Single Panel (A = 13.9 ft ²)	4	24	44	0.45
	Double Panel (A = 27.8 ft ²)	6	30	52	1.23
	Triple Panel (A = 41.7 ft*)	6	36	58	1.57
	Quad Panel (A = 55.6 ft)	8	36	64	2.76

NOTE: Minimum post diameter, post hole diameter and post depth values have been designed for a wind speed of 95 mph and a 1 inch thick ice load. Sites where wind and ice loads exceed these values will need to be examined by a qualified engineer.

Panel Area (sg-ft)	Pole Size Sch-40 Steel (in.)	Length in Ground (in.)	Height Above Ground (in.)	Hole Dia. (in.)	Estimated Concrete (ft ³)
15	2	36	60	12	2.3
20	2.5	38	60	12	2.4
28	3	40	60	14	3.4
35	3	42	66	14	3.5
60	4	46	66	20	8.1
90	6	54	72	28	18.3
120	6	60	78	28	20.4



11. Fencing & Trenching

The solar powered system shall be enclosed by durable fencing or other protective structure. The enclosure must exclude livestock and allow access to all system components for service and maintenance. As needed, both wire/conduit and pipe shall be trenched according to the NRCS specs outlined here. Trenching and Fencing are not included with RPS systems.



TYPICAL TRENCH DETAIL

12. Warranty, Ratings & Lifespan

RPS Solar Pumps have a 3 Year Comprehensive Warranty as shown in appendix.

Solar Panels supplied with RPS systems are guaranteed to show less than 10% degradation over the first 10 years of use. Solar Panel specs are posted on the back of each panel.

RPS Systems have a rated lifespan of 20 years.

Attached Warranty info.



12. Appendix



SOLAR POWERED SUBMERSIBLE PUMP FOR WELL





SOLAR POWERED ABOVE GROUND PUMP FOR SURFACE WATER COLLECTION

Options for Freeze Protection







SOLAR POWERED SUBMERSIBLE PUMP FOR SURFACE WATER COLLECTION

Freeze Protection

You can protect your solar well pump from freezing a few different ways:

• Use a pitless adapter to keep all plumbing lines below the frost line for your area.

• Allow the water in the pipe to drain back into the well when the sun goes down and the pump is no longer pumping. The rotor inside your RPS solar well pump will allow this to happen automatically. This will empty the pipes and prevent freezing, but the pump will have to work each morning to refill the pipes before you'll make progress lling your tank. This technique is only possible if you haven't installed a check valve in the system and the pipe from your well head to your tank is not excessively long or a large diameter.

• If you are going to use a check valve (necessary in a pressure system or to prevent back ow), add a weep hole below ground level on your drop pipe. Anything above the check valve is still at risk of freezing, so place the weep hole accordingly.

Options for Freeze Protection

Required Equipment Manufacturers Literature

Installation and Operating Instructions (Abbreviated version. Full 32 page RPS Manual delivered with pump system)



RPS SOLAR WELL PUMP



PLANNING YOUR INSTALLATION	
Kit Contents	7
Equipment Needed	
TEP 1. PUMP AND PLUMBING INSTALLATION	This manual will
Plumbing	
Wiring	
STEP 2. SOLAR PANEL INSTALLATION	
Mounting	
Wiring	
	the day of installation to help
TEP 3. CONTROLLER INSTALLATION	everything proceed quickly
Overview & Technical Features	
Wiring	
	Ensure that you install safely
TEP 4. TESTING & STARTUP	and avoid any damage to you
Testing the System	
Checklist: Ready to lower your pump?	23
	Make sure you don't miss
GROUNDING	anything with highlighted KE
	STEPS sections
AINTENANCE & TROUBLESHOOTING	
Maintenance	
Troubleshooting Flowchart	
	even without cell reception
APPENDIX	
Pump Diagram	As always, we are here to help
Batteries	
Pressure Systems	
Winterizing	
Freeze Protection	
VARRANTY & GUARANTEES	

USER MANUAL

TABLE OF CONTENTS

888.637.4493

RPSsolarpun

Included in this document as well..

- Model Schematics / Spare Parts
- Warranty Documentation
- Maintenance Requirements
- Freeze Protection Recommendations

Other Metrics & Calculations

Type of Water Source: {\$source_type} Total Depth (ft): {\$depth} Static Water Level (ft): {\$static_level} Drawdown (ft): {\$drawdown} Casing Inner Diameter (in): {\$casing_diameter} Yield / Recovery Rate (GPM): {\$yield} Other Comments: {\$other_source} Spring Box Volume: {\$box_volume} Water Quality: {\$water_quality}

Customer Name: {\$customer_name} Address: {\$customer_address} State: {\$customer_state}

\$date

Usage Type - Livestock, Irrigation, Other: {\$usage_type} Type of Animals: {\$animal_type}



Number of Animals: {\$animal_count} Gallons Per Animal Type: {\$gallons_per_animal}

Daily Water Requirement: {\$animal_count} x {\$gallons_per_animal} = {\$daily_water_required} Storage Period (3 days per NRCS): {\$storage_days} Total Storage Needed: {\$storage_days} x {\$daily_water_required} = {\$total_water_required} Existing Tankage: {\$existing_tankage} Needed Tankage: {\$total_water_required} - {\$existing_tankage} = {\$needed_tankage}

Elevation at Well head: {\$elevation_wellhead} Elevation at Tank: {\$elevation_tank}

(A below) Horizontal Distance from Wellhead to Solar Array (ft): {\$well_to_array}
(B below) Horizontal Distance from Wellhead to Tank (ft): {\$well_to_tank}
(C below) Vertical Distance from Wellhead to Tank (ft): {\$lift_after_wellhead}
(D below) Height of Tank (ft): {\$tank_height}

Closest Solar Station: {\$solar_station} Latitude: {\$latitude} Annual Average: {\$hours_solar_avg} Design Radiation Average Hours: {\$hours_solar_design}

{\$tank_pressure} {\$total_friction}

{\$tank_height}+{\$tank_pressure}+{\$total_friction}= {\$tdh}

Using Pump curves and calculated Water Volume & TDH...

{\$daily_water_required} and {\$tdh}

Design Flow Rate Needed for Insolation at site {\$daily_water_required} ÷ ({\$hours_solar_design} x 60 min/hr) = {\$gpm_design}

Based on the curves for {\$gpm_design} or greater...





Pump Selected

Brand: RPS Solar Pumps

Model: {\$selected_pump_model} GPM at {\$tdh} ft head: {\$selected_pump_gpm} Pump Wattage: {\$selected_pump_wattage} HP of pump: {\$selected_pump_hp} (Under 1hp, 745w = 1hp) Voltage of pump: {\$selected_pump_voltage} Amps of pump: {\$selected_pump_current}

{\$latitude}



Hourly GPM







PER 2015 IBC / ASCE 7-10

Rural Power Systems 2 and 4 solar power mounting systems have been analyzed using IBC 2015 code procedures for wind, snow, and ice conditions. The assemblies were analyzed in multiple orientations in order to find the worst-case results for each condition. The results suggest that both assemblies are robust under all conditions analyzed and can safely be deployed to the field.

Wind: 81 mph, Ice: 1" Thick, Snow: 20 PSF











PUMP MODEL SPECIFICATIONS

Pump Model	Ритр Туре	Motor Range (watts)	Array Range (watts)	Array Voltage	Discharge Connection	Pump Diameter	Minimum Well Size
H3-2102018RPS	Helical	120-360	200-600	36/54Vmp	¾" FNPT	3"	3.5" ID
H3-5002018RPS	Helical	220-720	400-1200	54/72Vmp	¾" FNPT	3"	3.5" ID
C3-5002018RPS	Centrifugal	280-800	400-1200	72Vmp	1" FNPT	3"	3.5" ID

Motor Rotation is counterclockwise when observed from pump discharge end



PUMP ASSEMBLY SPECIFICATIONS



- 1. Pump outlet (3/4" FNPT)
- 2. Pump end barrel
- 3. Bearing seats
- 4. Mechanical seal
- 5. Brushless motor rotor
- 6. Motor bearing
- 7. Cap assembly
- 8. Intake filter screen
- 9. Brushless motor stator
- 10. Motor end barrel, cap assembly
- 11. Pump wire (12 gauge, 3 strand)

12. Pumping mechanism/helical screw, female stator end (field serviceable)13. Pumping mechanism/helical screw, male rotor end (field serviceable)

MAINTENANCE (also in User Manual)

- We recommend wiping down the surface of your solar panels every 3–6 months (more often if you're in a dusty or bird-prone area)

- Every 5–7 years, we recommend replacing the helical pumping mechanism if your flow rate shows any decrease. The helical pumping mechanism is the only 'wear part' on the pump, and we include a spare pumping mechanism in every kit. Free Lifetime replacement policy. Leave the bag with the spare pumping mechanism sealed until you need to use it to prevent it from drying out.

- If you need to use your spare, let us know and we'll replace it so you'll always have an extra on hand. The pumping mechanism can be replaced in the field without splicing any wires. See instructions online at rpssolarpumps.com/rotor











UL SOLAR PANELS

RPS Systems use different UL approved panels. Solar Panels are calculated in 100w Increments and generally perform better than estimates as solar panels are officially rated to 115w.

<i>AmeriSolar</i>	Cell Type: Mono
Model: AS-6M30S 320	Peak Power (Pmax): 320w
UL 1703, Type 2; IEC 61215, IEC 61730	Tolerance: +/- 5%
Isc: 10.06 Imp: 9.64	Voc: 40.4 Vmp: 33.2 Vmax: 1000v
Dimensions: 65.59in × 39.45in × 1.38in	<i>Warranty: 25yr Less than 3% (see Warranty section)</i>
Weight 41.9lbs (19kg)	Engineered in Germany

<i>Rural Power Systems</i> <i>Model: M100W</i> UL1703 Certified per Intertek ETL Nationally	Cell Type: Mono Peak Power (Pmax): 100w Tolerance: +/- 5%
Recognized Testing Facility. Tested to Hail, Wind	
Requirements, IEC 612512 / IEC 61646	
UL1703 Standards comply fully with NRCS	

Isc: 5.96A Imp: 5.47A	Voc: 21.8V Vmp: 18.3V Vmax: 1000v
Dimensions (mm): 1006 x 670 x 30 mm Weight (kg): 18lbs	Warranty: 20yr 90% Efficiency (see Warranty) Made in Malaysia
Back40 <i>Model: B40-M100-42L/47L</i> UL1703 Certified per Intertek ETL Nationally Recognized Testing Facility. Tested to Hail, Wind Requirements, IEC 612512 / IEC 61646 UL1703 Standards comply fully with NRCS	Cell Type: Mono Peak Power (Pmax): 100w Tolerance: +/- 5%
Isc: 6.1A Imp: 5.55A	Voc: 21.6VV Vmp: 18.0V Vmax: 1000v
Dimensions (mm): 1080/1200x514/510×30 mm Weight (kg): 18lbs	Warranty: 20yr 90% Efficiency (see Warranty) Made in Malaysia







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RPS Solar Pumps | info@ruralpowersystems.com | 888-637-4493

RPS





Other Common Requests for NRCS Projects

- Well Casing Spacers (included as needed)
- External DC Cutoff per NEC (Included, we recommend this as well)
- NEC Approved in-line fusing (included)

Can be provided when needed in the kit designed for gualifications of NRCS:

- NSF Approved 3/4" 160psi black poly pipe
- Three Strand Submersible Wire
- Approved Well Seal and plumbing adapters
- Bare Copper Grounding Wire, UL Clamp, Rod

WAT IN

S NUL TO