DATASHEET: Energy Smart Water Solar PV Hot Water System - ROSC20 SERIES

Dated 08.03.2018

Model Numbers ending in E for Electric Boost or A for Alternate Boost	ROSC20-328E or ROSC20-328A	ROSC20-343E or ROSC20-343A	ROSC20-34319E or ROSC20-34319A	ROSC20-544E or ROSC20-544A	ROSC20-54432E or ROSC20-54432A	ROSC20-5443216E or ROSC20-5443216A	ROSC20-54443E or ROSC20-54443A
Rotex Thermal Store - Energy Storage Tank							
Dimensions (L x W x H) mm	595 x 615 x 1646			790 x 790 x 1658			
Storage tank volume	V = 300 l			V = 500 l			
Empty weight	55 kg	60 kg	67 kg	80 kg	90 kg	95kg	93 kg
Total weight (filled)	355 kg	360 kg	367 kg	580 kg	590 kg	595 kg	593 kg
Standby heat expenditure in 24 hours with 60°C	1.3 kWh			1.4kWh			
Drinking water - nominal content:	19 l	27.9l	27.9 l	24.8 l	29l	29l	29 l
- Heat exchange coil 1 (m)	28	43	43	44	44	44	44
- Heat exchange coil 2 (m)			19		32	32	43
- Heat exchange coil 3 (m)						16	
- Intermediary medium:	Unpressurised						
Corrosion protection	corrosion resistant						
Max. permitted storage tank temp.	T_{max}=85°C						
Max. Inlet Water Pressure (Coils)	600 kPa						
Cold and hot water	1" external thread						
Heating feed and return flow	1" external thread						
Installation Clearances	250mm clearance around tank, 1400mm above tank						
myPV Electric photovoltaic powered immersion heater							
Connectors	Original MC4, 1 string						
Display	3 LED						
AC	≈ 220 - 240V/8.7A/2000W max./50/60Hz						
Heating Capacity	2000W						
Fuse	16A						
Cable	3m						
Standby -power	0 W in DC operation, <2 W in AC operation						
DC	= 100 - 360V/10A max./3600W max.						
Number of MPP Trackers	1						
Power rating	2000 W at 25°C surround temp., derating when overheating						
Recommended PV Module Configuration	4-8 pieces polycrystalline PV module with 60 cells in a string array (Panels not included)						
MPP-matching efficiency	99.80%						
General Data							
Maximum Pressure	Max. 10bar (1MPa)						
Total efficiency	>99% power rating						
Interface	Serial IR Interface						
Environmental Rating							
Ambient Operating Temp	0 - 50°C (not suitable for heavy frost)						
Type of Protection	IP54						
Envionmental category	Outdoor						
Pollution Degree	2						
Relative Humidity Rating	0-99% (not condensing)						
Cooling	Convection						
Maximum Altitude	600 metres above sea level						
Overvoltage category for each input	Category 2						
Element Housing	Element housing should not be exposed to constant sun/weather conditions						
Water Quality	Suitable for use with Potable Water Only 1. pH is greater than 7.0 (pH > 7.0) 2. Bicarbonate to sulphate ratio is greater than 2:1 (>2:1) 3 Lanelier Saturation Index (LSI) is greater than negative 1 and less tan plus 0.8 (-1 < LSI < 0.8)						
Warranty - For Domestic and Commercial Applications							
Tank	10 Years						
Heat Exchange Coils	3 Years						
Heating Element	2 Years						
Other Parts	1 Year						
Labour	1 Year						
Compliance							
CEC Registered PCE Device	http://www.solaraccreditation.com.au/products/inverters/approved-inverters.html						
Standards	AS/NZS 60335.2.21:2013+A1; AS/NZS 60335.1:2011+A1+A2+A3; IEC 62109-1:2010						
Earth Fault Alarm	Built in Earth Fault Alarm						

PV array configuration information - Note: Panels not included

PV array must not be earthed at any time! Otherwise an earth fault error would occur. A switch-disconnector is required adjacent to PCE (myPV SC20) and within 3m and line of site of the PCE. Additionally a switch-disconnector (DC isolator) is required adjacent to the PV array.

Note: A switch-disconnect must have: marked on/off; locable in the off position; be load breaking

PV array design rules

Upper voltage limit calculation:	Low voltage limit calculation:
example: Voc STC (25°C cell temp)= 37.3VDC Voc temp. coeff= -0.33%/°C @ -15°C => delta T= -40°C -40°C * -0.33%/°C = +13.2% Voc max =Voc STC + 13.2% = 44.22VDC 42.22V * 8 in series = 337VDC <360VDC DC voltage in range Notice: Panel characteristics at lowest possible temperature are decisive. If voltage exceeds 360VDC potential damage of unit! Upper current limit calculation: Overcurrent will be limited to 10A. Notice: Over current will not damage unit!	Design value is minimum heating rod resistance = 15 Ohm example: Impp STC (25°C cell temp)= 8.26ADC Isc temp. coeff= +0.033%/°C @ 65°C => delta T= 40°C 40°C * 0.033%/°C = 1.3% Impp max = Impp STC + 1.3% = 8.37ADC Vmpp min = Vmpp STC -13.2% = 32.4VDC minimum voltage= 8.37*15 = 125VDC min number of panels: 125/32.4 = 4 Notice: Panel characteristics at highest possible temperature are decisive. MPP tracking range is 100 to 360V. The higher the current, the more voltage is required to utilize the current. If voltage V<100: unit will not work if voltage/15 < current: unit will not run at MPP

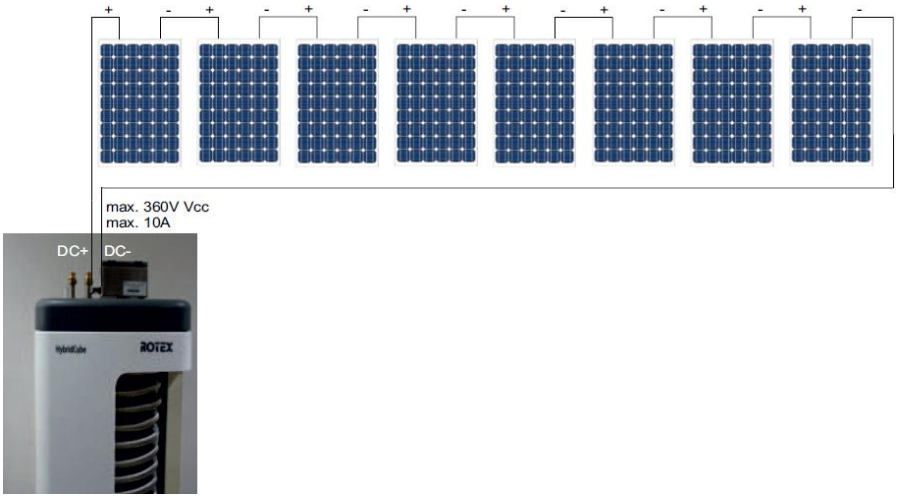

Figure 1: wiring schematic of PV Panels

Temperature Coefficients	
Temperature Coefficient of VOC(β)	-0.33%/°C
Temperature Coefficient of IAC(α)	+0.033%/°C
Temperature Coefficient of Pmax	-0.39%/°C
Nominal Operating Cell Temperature	48±2°C

Permissible Operating Conditions	
Maximum system voltage	1000VDC
Operating temperature	-40~+85°C
Snow Load	Max 5400 Pa
Wind Load	Max 120km/h

Mechanical Characteristics	
Number of poly chrystalline solar cell	60pcsx6"
Aluminium frame, dimension	1640x992x40mm
Glass thickness	3.2mm
Weight	19.5kg
Junction box	IP65
Module	IP65

Electrical Characteristics

Model	Pm(Wp)	Tolerance	Vm(V)	Im (A)	Voc (V)	Isc (A)	η
SYP200S	200W	0 - +3%	28.60	7.00	36.50	7.65	>12.30%
SYP210S	210W	0 - +3%	29.00	7.25	36.50	7.88	>12.93%
SYP215S	215W	0 - +3%	29.20	7.37	36.70	7.92	>13.23%
SYP220S	220W	0 - +3%	29.50	7.46	37.00	8.10	>13.53%
SYP225S	225W	0 - +3%	29.60	7.61	37.00	8.14	>13.85%
SYP230S	230W	0 - +3%	29.80	7.73	37.00	8.22	>14.16%
SYP235S	235W	0 - +3%	30.00	7.84	37.10	8.28	>14.46%
SYP240S	240W	0 - +3%	30.20	7.96	37.20	8.33	>14.78%
SYP245S	245W	0 - +3%	30.30	8.09	37.30	8.34	>15.07%
SYP250P	250W	0 - +3%	30.30	8.26	37.30	8.90	>15.37%

Valued at STC (AM 1.5, 1000W/m^2, 25°C)

Figure 2: Example of a PV panel datasheet