Enermax ROSC20
Solar PV water heater

Datasheet

	ROSC20-328E ROSC20-328A	ROSC20-343E ROSC20-343A	ROSC20-34319E ROSC20-34319A	ROSC20-544E ROSC20-544A	ROSC20-54443E ROSC20-54443A
Storage capacity	300 L			500 L	
Empty weight	55 kg	60 kg	67 kg	80 kg	93 kg
Filled weight	355 kg	360 kg	367 kg	580 kg	593 kg
Height	1646 mm			1658 mm	
Width	615 mm			790 mm	
Depth	595 mm			790 mm	
Hot water delivery	—			—	
Standing heat loss	1.3 kWh			1.4 kWh	
Number of heat exchange coils	1	1	2	1	2
Material of heat exchange coils	Stainless steel				
Length of heat exchange coils	28 m	43 m	43 m/19 m	44 m	44 m/43 m
Maximum storage temperature	85°C				
Maximum water pressure	600 kPa (inlet), 1 MPa (heating element), atmospheric (tank storage volume)				
Inlet & outlet connection diameter	25 mm, external thread				
Inner & outer shell material	Polypropylene				
WaterMark license	WM-020095				
ELECTRICAL					
Total efficiency	>99%				
AC	220–240 V, 8.7 A, 2000 W max., 50–60 Hz				
Heating capacity	2000 W for models ending in 'E'. Power relay for external heat source for models ending in 'A'.				
Fuse	16 A				
Stand-by power	0 W in DC operation, <2 W in AC operation				
DC (Solar PV)	100–360 V, 10 A max, 3600 W max				
Connectors	Original MC4, 1 string				
Max short circuit current	15 A				
Number of MPP trackers	1				
Power rating	2000 W at 25°C ambient temperature, derating when overheating				
Recommended PV array	4–8 polycrystalline PV panels with 60 cells in a string array				
MPP-matching efficiency	99.80%				
Topology	Transformerless				
Over-voltage category for each input	Category 2				
Earth fault alarm	Yes, built-in				
ENVIRONMENTAL					
Ambient operating temperature	0–50°C (not suitable for heavy frost)				
Type of protection	IP54				
Environmental category	Outdoor				
Pollution degree	2				
Relative humidity rating	0–99% (not condensing)				
Cooling	Convection				
Maximum altitude	600 m above sea level				
Element housing	Element housing should not be exposed to constant sun/weather conditions				
Water quality	*Suitable for use with potable water only within the following maximum allowable conditions:* pH(6.5–8.0), TDS (600 mg/L), total hardness (200 mg/L), chlorides (150 mg/L, magnesium (10 mg/L), calcium (20 mg/L), sodium (150 mg/L), iron (1 mg/L)				
OTHER					
Warranty	10 years (tank), 3 years (heat-exchange coils), 2 years (heating element), 1 year (other parts/labour)				
PCE device	STCs on the PV array installation may be available				
Product standards	AS/NZS 60335.2.21:2013+A1, AS/NZS 60335.1:2011+A1+A2+A3, IEC 62109-1:2010				
Country of manufacture	Germany (tank), Austria (heating element and electrical). Assembled in Australia.				

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PV information

The PV array should not be functionally earthed. Positive and negative lines of the PV array must not be earthed at any time. Otherwise an earth fault error will occur.

Metal frame and support structure of the PV panels shall be earthed according to AS 5033.

A switch-disconnector (DC isolator) is required adjacent to, within 3m of, and in line of sight to, the Enermax ROSC20.

Additionally a switch-disconnector (DC isolator) *may* be required adjacent to the PV array according to applicable standards and codes.

Note: **Switch-disconnectors (DC isolators) must have: marked on/off, be lockable in the off position, and be load breaking.**

Note: **PV panels, wiring, and switch-disconnectors (DC isolators) are not included with the purchase of an Enermax ROSC20.**

PV ARRAY DESIGN RULES

UPPER VOLTAGE LIMIT EXAMPLE

$$V_{oc\ \mathrm{STC}} = 37.3\,\mathrm{VDC}$$
$$V_{oc}\ \text{temp. coeff} = -0.33\,\%/^{\circ}\mathrm{C}$$
$$\Delta T\ \text{at}\ -15\,^{\circ}\mathrm{C} = -40\,^{\circ}\mathrm{C}$$
$$-40\,^{\circ}\mathrm{C} \times -0.33\,\%/^{\circ}\mathrm{C} = +13.2\,\%$$
$$V_{oc\ \max} = V_{oc\ \mathrm{STC}} + 13.2\,\% = 42.22\,\mathrm{VDC}$$
$$42.22\,\mathrm{V} \times 8\,\text{panels in series} = 337\,\mathrm{VDC} < 360\,\mathrm{VDC}$$

DC voltage is in range.

Note: Panel characteristics at lowest possible temperature are decisive. If voltage exceeds 360 VDC, unit may be damaged.

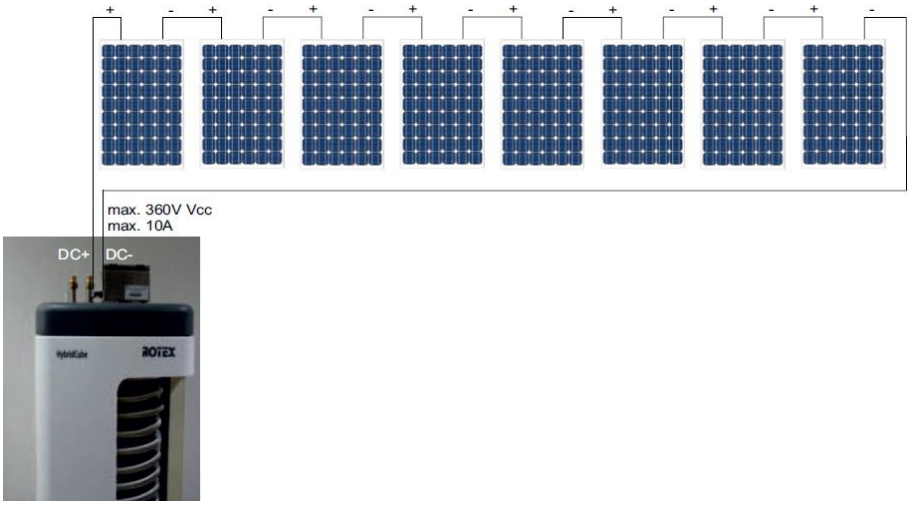
Current will be limited to 10 A.

Note: Over-current will not damage unit!

LOWER VOLTAGE LIMIT EXAMPLE

$$R_{\text{heating rod}} = 15\,\Omega$$
$$I_{mpp\ \mathrm{STC}} = 8.26\,\mathrm{ADC}$$
$$I_{sc}\ \text{temp. coeff} = +0.033\,\%/^{\circ}\mathrm{C}$$
$$\Delta T\ \text{at}\ 65\,^{\circ}\mathrm{C} = 40\,^{\circ}\mathrm{C}$$
$$40\,^{\circ}\mathrm{C} \times 0.033\,\%/^{\circ}\mathrm{C} = 1.32\,\%$$
$$I_{mpp\ \max} = I_{mpp\ \mathrm{STC}} + 1.32\,\% = 8.37\,\mathrm{ADC}$$
$$V_{mpp\ \max} = V_{mpp\ \mathrm{STC}} - 13.2\,\% = 32.4\,\mathrm{VDC}$$

$$\text{minimum voltage} = 8.37\,\mathrm{ADC} \times 15\,\Omega = 125\,\mathrm{VDC}$$
$$\text{minimum num. of panels} = 125\,\mathrm{VDC}/32.4\,\mathrm{VDC} = 4$$

Note: Panel characteristics at highest possible temperatures are decisive. MPP tracking range is 100–360 V. The higher the current, the more voltage is required to utilise the current.

If voltage is less than 100 V, the unit will not work. If the voltage/15 is less than the current, the unit will not run at MPP.