Australian Government
Office of the Renewable Energy Regulator

REQUIREMENT

SOLAR WATER HEATER PARAMETERS REQUIRED FOR AS4234 PERFORMANCE RATING – AIR SOURCE HEAT PUMP

Version 5 as updated in July 2010

The Office of the Renewable Energy Regulator (ORER) may request additional information to support your application to make a Solar Water Heater model eligible Renewable Energy Certificates. Please complete and supply this form for each model as requested by the ORER.

The system parameters required as inputs to the simulation deck are outlined below. Some systems may require other parameters to be specified. Add extra parameters if they are necessary for modelling features of your product.

(Attach drawing of typical installation and fill in all spaces – use N/A if not applicable)

Company	
Address	
Phone No	
Email address	
Company officer reporting system characteristics	
Date	
Water heater model number	
Does the system comply with AS2712? (Y/N)	
Date of compliance approval from QAS	

Heat pump

PARAMETER	VALUE	UNITS
Model No		
Type of heat pump		Stand-alone or integral
Compressor manufacturer		
Compressor model		
Refrigerant number		
Evaporator coil area		m^2
Evaporator air flow rate		
Condenser type		External or internal or wrap-around to tank; include schematic
Flow rate in loop between heat pump and tank (stand-alone heat pumps only). If the flow rate is not fixed, provide extra detail.		L/h include test report
Sensor position(s) for heat pump control		e.g., if the sensor is tank mounted, the water volume above the sensor
Set point temperature for heat pump control		^oC
Dead band for heat pump control		K
Power coefficient (AS/NZS 5125)		
$Power = p_0 + p_1\bar{T}_w + p_2\bar{T}_w^2 + p_3\bar{T}_a$		
p_o =		kW
p_1 =		$kW/^oC$
p_2 =		$kW/(^oC)^2$
p_3		$kW/(^oC)^3$
COP coefficients (AS/NZS 5125)		
$COP = a_0 + a_1\left(\bar{T}_w - \bar{T}_a\right) + a_2\left(\bar{T}_w - \bar{T}_a\right)^2 + a_3\left(\bar{T}_{wet} - \bar{T}_{dp}\right)$		
a_0 =		-
a_1 =		-
a_2 =		-
a_3 =		-
Note in the above equations for Power and COP $\bar{T}_w$ may be replaced by $\bar{T}_{wi}$ if this improves the fits to the test data.		
Test laboratory		m^2
Test date		

Test report number	

CONDENSER—Wrap-around

Inner diameter of coil tubing (m)		m
Length of coil (m)		m
Describe bonding method used to connect the condenser coil to the tank		

TANK		
Tank model		
Tank inner diameter		mm
Tank volume (physical not delivery)		L
Tank configuration		Vertical or horizontal
Tank wall thickness		mm
Thermal conductivity of tank wall material		W/(m K)
Volume above flow input from heat pump		L
Volume above flow outlet to heat pump		L
Volume above outlet to load supply		L
Volume above cold water inlet		L
Ratio of insulation thickness at top to bottom of horizontal tank		
Ratio of insulation thickness at the top of the tank to the side of the tank for a vertical tank		
Glass lining thickness (if mantle heat exchanger used)		mm

Tank heat loss		
Tank standing heat loss (AS/NZS 4692 conditions with element in the bottom of the tank)		kWh/day for $\Delta T = 55K$
Test laboratory		
Test report number		
Test date		

SUPPLEMENTARY BOOSTING

Cold ambient temperature cut-off for heat pump operation		°C
Electric Boosting		
Volume of water above the electric element.		L
Volume of water above the thermostat.		L
Element heating capacity		kW
Thermostat set temperature		°C
Thermostat dead band		K
Electric booster power connection		Night rate off-peak (OP1), extended off-peak (OP2) or continuous (C)

Note: If the heat pump uses other boost options or also receives solar boosting, include relevant parameter list sections from other water heater product description sheets here.

HEAT PUMP AND SUPPLEMENTARY BOOSTING CONTROL

Heat pump control strategy		Detail heat pump operating times e.g., continuous, off-peak, extended off-peak, other time control or other strategy (provide separate description of control logic if strategy is not simple time control).
Boosting control strategy (all auxiliary boost options)		Detail supplementary heating times e.g., continuous, off-peak, other time control or other strategy (provide separate description of control logic if strategy is not simple time control).
Legionella control method – provide details		

of control strategy		

HEAT PUMP LOOP PLUMBING (for external condenser)

Direct connection to tank or via heat exchanger If heat exchanger is used provide dimensions and heat transfer characteristics		Direct or heat exchanger
Heat pump supply (inlet) pipe inner diameter		mm
Inlet pipe length (default of 3 m for domestic system)		m
Inlet pipe insulation thickness		mm
Thermal conductivity of inlet pipe insulation material		W/(m K)
Heat pump outlet pipe inner diameter		mm
Outlet pipe length (default of 3 m for domestic system)		m
Thermal conductivity of outlet pipe insulation material		W/(m K)
Outlet pipe insulation thickness		mm

Note if the heat pump also uses a load side heat exchanger or equipment that is not covered in the above lists include relevant parameter list sections from other water heater product description sheets here.