278HE-279HE

circulation units for solar thermal systems



altecnic

278HE-279HE circulation units for solar thermal systems





278050 HE and 278052HE





278750HE and 278752HE





IMPORTANT

The following instructions must be read and understood before installing, commissioning and servicing the circulation unit.



The safety symbol is used in this manual to draw attention to safety instructions. The meaning of this symbol is as follows:

CAUTION! YOUR SAFETY IS INVOLVED. FAILURE IN FOLLOWING THESE INSTRUCTIONS MAY RESULT IN INJURY.

- The circulation unit for solar thermal systems must be installed by a qualified technician in compliance with relevant national and/or local regulations.
- If the circulation unit is not installed, commissioned and serviced correctly in accordance with the instructions given in this manual, it could malfunction and endanger the user.
- Make sure that all connection fittings are watertight.
- When making the hydraulic connections ensure that threads are not mechanically overstressed. Over time, excessive stress may cause breakages with water leaks and damage to property and/or injury of persons.
- Water temperatures higher than 50°C may cause serious scalding.
- During installation, commissioning and servicing take the necessary precautions to prevent injury to persons caused by high temperatures.



CAUTION: Risk of electric shock. Cut off the electric supply before carrying out . Failure in following these instructions may result in injury of persons or damage to property.

Product Range

Code D	escription
278050HE	Circulation unit with return connection without digital regulator 1 to 13 l/m with UPM3 15-75 pump having internal or external PWM control
278052HE	Circulation unit with return connection without digital regulator 8 to 30 l/m with UPM3 15-75 pump having internal or external PWM control
278750HE	Circulation unit with return connection with UPM3 15-75 pump having internal or external PWM control fitted for connection to DeltaSol® C+ or DeltaSol® SLL digital regulator 1 to 13 l/m
278752HE	Circulation unit with return connection with UPM3 15-75 pump having internal or external PWM control fitted for connection to DeltaSol® C+ or DeltaSol® SLL digital regulator 8 to 30 l/m
279050HE	Circulation unit with flow and return connections with UPM3 15-75 pump having internal or external PWM control fitted for connection to DeltaSol® C+ or DeltaSol® SLL digital regulator 1 to 13 l/m
279052HE	Circulation unit with flow and return connections with UPM3 15-75 pump having internal or external PWM control fitted for connection to DeltaSol® C+ or DeltaSol® SLL digital regulator 8 to 30 l/m
F29883	PWM connector

Function

Circulation units are used on the primary circuit of solar thermal systems to control the temperature in the hot water storage.

The pump inside the units is activated by the signal arriving from the regulator. The units contain the functional and safety devices for optimum circuit control.

They are available with flow and return connection or with return connection only. The return connection is available in versions with or without fitting for connection to the digital regulator.

The units are supplied with a high efficiency pump with PWM control.

The DeltaSol® C+ conventional regulator (code 278001) or the Delta® SLL digital regulator (code 278005) with PWM control (optional)are suitable for the management and control of 9 different types of solar thermal system also in a version with an insulating casing and protective panel.

Technical Specification

Material

Shut-off valve	
Body:	brass EN 12165 CW617
Check valve:	brass EN 12164 CW614
Temperature gauge:	steel/aluminium
De-aerator	
Body:	brass EN 12165 CW617
Instrument Holder Manifold	
Body:	brass EN 12165 CW617N
Sealing gaskets:	EPDM
O-Ring seal elements:	EPDM
Flow meter	
Body:	brass EN 12165 CW617N
Transparent level gauge:	PSU
Flow indicator:	brass EN 12164 CW614
Hydraulic seals:	EPDM
Insulation	
Material:	PPE
Average thickness:	20 m
Density:	45 kg/m ³
Working temperature range:	-5 to 120°
Thermal conductivity:	0.037 W/(m·K) at 10°
Reaction to fire (UL94):	class HBF
Performance	
Medium:	water, glycol solution
Max. percentage of glycol:	50%
Maximum working temperature:	de-aerator side flow: 160°C
	pump side return: 110°C
Max. working pressure:	10 bar
Safety relief valve working temperature ra	ange: -30 to 160°C
Safety relief valve setting: 6 bar (for oth	er settings refer to 253 series
using adapter code F21224)	
Check valve min. opening pressure (Δp):	2 kPa (200 mm w.g.)
Shut-off and check valves working tempe	rature range: -30 to 160°C
Flow meter working temperature range:	-10 to 110°C
Flow rate adjustment range:	1 to 13 l/m or 8 to 30 l/min
Flow rate indicator accuracy:	±10%

Performance Continued

Pressure gauge scale:	0 to 10 bar		
Temperature gauge scale:	0 to 160°C		
Connections:	3⁄4" F		
Hose connection:	3⁄4" M		
Fill/drain connections:	with hose connection Ø 15 mm		
	without hose connection $\frac{3}{4}$ garden hose		

Pump model Solar UPM3 15-75

Body:	cast iron
Electric supply:	230 V - 50 Hz
Max. pressure:	10 bar
Max. temperature:	110°C
Protection class:	IPX4D
Digital regulator (code 278001)	
Electric supply:	230 V - 50 Hz
Nominal power consumption:	1.5 VA (12 V (ac))
4 Pt1000 probe input	
2 relay outputs with semi conductor with co	ontact rating: 1 A
2 temperature probes with working range:	-50 to 200°C
Probe cable working temperature range:	-50 to 70°C
1 temperature probe with working range:	-50 to 200°C
Probe cable working temperature range: -	50 to 180°C
Ambient temperature range:	0 to 40°C
Protection class:	IP 20
Dimensions:	172 x 111 x 49 mm
Digital regulator (code 278005)	
Electric supply:	100 - 230 V - 50/60 Hz
Power consumption:	< 1 W (standby)
4 inputs for temperature probes:	Pt1000, Pt500 or KTY
3 relay outputs (1 potential free low voltage	2
relay with contact rating:	
1 (1) A 240 V	/ ~ (semi conductor relay)
1 (1) A 30	V = (potential free relay)
total c	contact rating 2 A 240 V ~
2 PWM outputs for high efficie	ency pumps speed control
1 pulse input:	V 40
Automatic operation control according to V	/DI 2169
10 selectable basic systems	
PWM frequency:	1000 Hz
PWM voltage:	10.5 V
2 temperature probes with working range:	-50 to 200°C
Probe cable working temperature range:	-50 to 70°C
1 temperature probe with working range:	-50 to 200°C
Probe cable working temperature range: -	50 to 180°C
Ambient temperature range:	0 to 40°C
Protection class:	IP 20
Dimensions:	110 x 166 x 47 mm

H [kPa]

80

SOLAR UPM3 15-75 Pump Characteristics











278HE series - flow rate adjustment range 8 to 30 l/m H [kPa] H [m] 80 8 70 278052H 7 278752HE 60 6 50 5 40 4 30 3 20 2 10 1 00 _ 0 1.8 Q [m³/h] 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 0 0.1 0.2 0.3 0.4 . 0.5 Q [l/s]





7.5 m w.g. 6.5 m w.g. 5.5 m w.g. 4.5 m w.g. MIN	Settings Curve 1 Curve 2 Curve 3	Max. P _{inom} 19 W 18 W 35 W	$\label{eq:electropy} \begin{array}{l} EEI \leq 0.20 \; Part \; 3 \\ PL_{avg} \leq 20 W \end{array}$
	Curve 4	45W	
			Cattlines

Electrica	Electrical data 1 x 230 V 50 Hz			Settings				
Speed	P1 (W)	I 1/1 (A)	PWMA	PWM C	PP	СР	CC	
Min.	2	0.04	-	4	-	-	4	
Max.	45	0.48						

Note:

The pump can operate in accordance with a constant speed internal control or a PWM external control, by means of a specific regulator that adapts performance to system requirements.

For more information refer to the pump installation instruction sheet supplied in the package.

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Components

- 1 Grundfos SOLAR UPM3 15-75 circulation pump
- 2 Safety relief valve with adjustable outlet type 253 series
- 3 Fill/drain cock with control level
- 4 Instrument holder fitting with pressure gauge
- 5 Flow meter
- 6 De-aerator with air vent and shut-off valve with check valve
- 7 Flow temperature gauge
- 8 Return temperature gauge
- 9 Pre-formed shell insulation
- 10 Shut-off ball valve with check valve with temperature gauge holder knob
- 11 Connection kit for expansion vessel (optional)
- 12 Fill/drain hose connection
- 13 Mounting bracket
- 14 Display with synoptic diagram and temperature reading
- 15 Regulating key
- 16 Temperature probe
- 17 Stainless steel probe pocket code 257004 (optional)
- 18 Insulating casing with protective panel and regulator code 278005



DeltaSol[®] C+ digital regulator / DeltaSol[®] SLL







The DeltaSol[®] C+ regulator code 278001 can be combined with units using Solar UPM3 15-75 high efficiency pump with constant speed ON-OFF internal regulation (PWM control disabled).

The DeltaSol[®] SLL regulator code 278005 can be combined with units using the Solar UPM3 15-75 high efficiency pump with PWM control enabled.

Functions

Differential temperature regulator with supplementary and optional functions.

Inputs:

For 4 Pt1000 temperature probes. Outputs:

2 semiconductor relays (code 278001) 3 semiconductor relays (code 278005) Accessories for PWM control:

F29883 PWM connector, electric supply cable length 1 m, for UPM3 Solar 15-75 circulator

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