

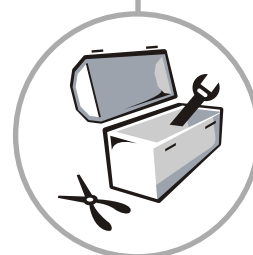
DIEMASOL A

Solar regulator

English
06/01/06



Installation
instructions



Instructions
for use



Technical
instructions



4001028020000

De Dietrich 

www.dedietrich.com

Copyright

All sections of these instructions for installation and use are protected by copyright. Any use likely to breach the copyright requires permission from De Dietrich. This includes reproduction / copies, translation, transfer to microfilm and storage in electronic systems.

Important note

The text and illustrations in these instructions have been produced with the greatest care and desire for accuracy. However, since errors may have escaped our notice, your attention is drawn to the following points:

Your projects must be based entirely on your own calculations and plans, produced in accordance with current regulations. We do not accept any responsibility for the completeness of the illustrations or text in these instructions; they simply provide examples. The use or application of the information given is the sole responsibility of the person concerned. The publisher cannot be held responsible for any inadequate, incomplete or erroneous information or any losses arising from such.

With the reservation that there may be errors and/or technical modifications.

Safety instructions

Please read the following installation and commissioning instructions carefully before operating your equipment. You will thus avoid the risk of damage arising from incorrect operation of your system. Note also that the installation must take into account the configuration of the building. The installation and commissioning must be carried out professionally. Comply with current regulations. Also follow advice for the prevention of accidents issued by accident insurance companies. Incorrect use or unauthorised modifications to the installation or the equipment itself invalidate any right to claim.

Location

With regard to the location, please comply with DIETRISOL instructions.

Work on the equipment

Installation, commissioning, maintenance and repairs must be carried out by authorised specialists (approved heating engineers / installers). Before any work is carried out on the equipment / heating system, the power supply must be disconnected (by means of the appropriate fuse or main switch, for example) and warning must be given before any reconnection. The electricity must be disconnected via a circuit breaker that isolates all non-earthed cables from the mains by a gap of at least 3 mm between the contacts. For any work involving the dismantling of the regulator, check that the internal components are not likely to cause a static electricity discharge.

Repair work

Repair work on components relevant to safety is not permitted.

Commissioning

Commissioning should be carried out by the system manufacturer or a specialist approved by him; the measured values must be recorded in a report.

Information for the user

The system manufacturer must supply the user with an instruction document and explain to him how the system operates.

Description

The new Dietrisol SOLAR installations are equipped with Diemasol AUTO settings. These regulators are of the "smart" solar type. They are self-contained and able to determine the optimum regulation for the system ("matched flow") according to tank temperatures and solar collector temperatures. After rinsing and refilling, the solar installations equipped with Diemasol settings do not require any further adjustment.

1 Diemasol A solar regulator

Diemasol A SOLAR regulation is designed to regulate a Dietrisol SOLAR installation (one single preparer) with built in exchanger. Diemasol A SOLAR regulation is designed for solar power systems producing domestic hot water (CESI).

Diemasol A regulation allows SOLAR installations assisting Heizungsunterstützung to be regulated **without** taking into account the temperature of the heating return using DC or PS preparers. Use of a Diemasol B or Diemasol C is advised in order to optimise SSC operation.

The Diemasol A solar regulator allows the control of other than Dietrisol systems.



DiemasolA_0001

2 Technical characteristics

Box: ABS

Class of protection: IP 20 / DIN 40050

Ambient temperature: 0 ... 40 °C

Dimensions: 172 x 110 x 46 mm

Type of mounting: wall mounting possible in a command panel

Display: multifunction alphanumeric LCD, with 8 pictograms, 2 2-character text fields and 2 2-colour 7-segment 4-character digital LED fields

Controls: via 3 keys on the front panel

Storage temperature: -20 ... +70 °C

Range of measurement: -40 ... +250 °C

Inputs: 3 Pt1000 temperature sensors

Outputs: 1 semi-conductor relay output

Max. current: 4 A - 250 V

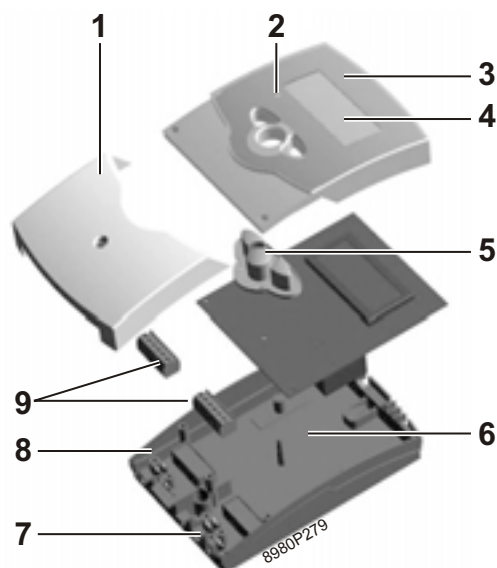
Power supply: 210 ... 250 V (AC), 50 ... 60 Hz

Power consumption: approx. 2 VA

Installation



- The device must be installed inside the building in a dry place.
- Do not expose the appliance to a magnetic field.
- It must be possible for the regulator to be isolated from the mains by a circuit breaker that provides at least a 3 mm gap between all the poles or by a circuit breaker that conforms to installation standards.
- When installing, take care to fit the power supply cable and the sensor wires separately.



Before dismantling anything, take care to disconnect the unit from the mains.

1. Remove the Phillips screw from the cover and separate the cover from the unit by pulling it downwards.
2. Mark the mounting point on the wall and fit the dowel supplied and the matching screw without tightening it.
3. Hang the unit from the upper mounting point. Mark the lower mounting point on the wall (130 mm drilling template), see the back of the base frame, then fit the lower dowel.
4. Hang the unit by the top and tighten the lower screw.

- | | |
|---|--------------------------|
| 1 | Cover |
| 2 | LED |
| 3 | Top cover |
| 4 | Alphanumeric LCD display |
| 5 | Control keys |
| 6 | Base |
| 7 | Cable clamps |
| 8 | Sub-cover |
| 9 | Terminal blocks |

1 Electrical connection

The regulator must be powered via an external switch (last stage!) with a voltage of 210 ... 250 Volts (50 ... 60 Hz). The cables must be clamped in the unit's cable clamps by tightening the screws provided.

The regulation is equipped with a relay to which the Komponente are AC.

- Relay - Electronic pump
- 18 = Cable R1
- 17 = Neutral N
- 13 = Earth terminal \perp

The **temperature sensors** (S1 to S3) must be connected to the following terminals (the poles are interchangeable):

S1: 1/2 = Heat source sensor (for example: Collector temperature sensor)

S2: 3/4 = Heat receiver sensor (for example: Tank sensor)

S3: 5/6 = Optional differential sensor on S2 (for example: Heating return circuit sensor).

Connection to the mains is made via the following terminals:

19 = Neutral N

20 = Live L

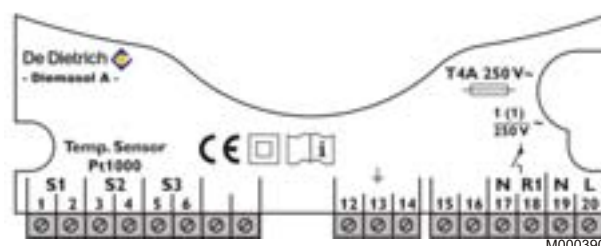
12 = Earth terminal \perp .



High voltage components.



Electrostatic charge may damage electronic components.



M000390

Types of sensors

The Diemasol A regulator uses only very precise temperature sensors, model Pt1000.

The overall efficiency of the system depends to a great extent on the location of the sensors. The temperature of the collector must be measured by the sensor located in the collector thimble tube (See instructions delivered with the collectors). On a calorifier with integrated exchanger, the sensor must be located in the bottom of the calorifier in the position provided. If using external exchangers, the sensor must be located in the bottom of the calorifier or on the secondary return circuit.

The delivery of the Diemasol A regulator includes:

- 2 dip probes

The **FKP** and **FRP** sensor types are similar from a technical point of view and the models are similar. Only their electrical connections are different:

- **FK**: 1.5 m silicone sensor cable, resistant to weather variations and temperature variations, designed for temperatures of -50 °C ... +180 °C, designed for the collector.
- **FR**: 2.5 m HO7 RN-F cable designed for temperatures of +5 °C ... +80 °C, designed for the tank.

Comply with current regulations. The sensor cables carry a low voltage; they should not be in the same cable duct as cables carrying more than 50 volts. The length of the sensor cable can be extended to 100 m. The section of the extension must be 1.5 mm² (or 0.75 mm² for lengths up to 50 m). For longer lengths or when using cable ducts, it is preferable to use twisted-core cables. For dip probes, use sensor tubes.

i To avoid the risk of voltage surge in the collector sensor (for example, due to a nearby lightning conductor), we recommend that you install a **De Dietrich SP1** surge protection system.

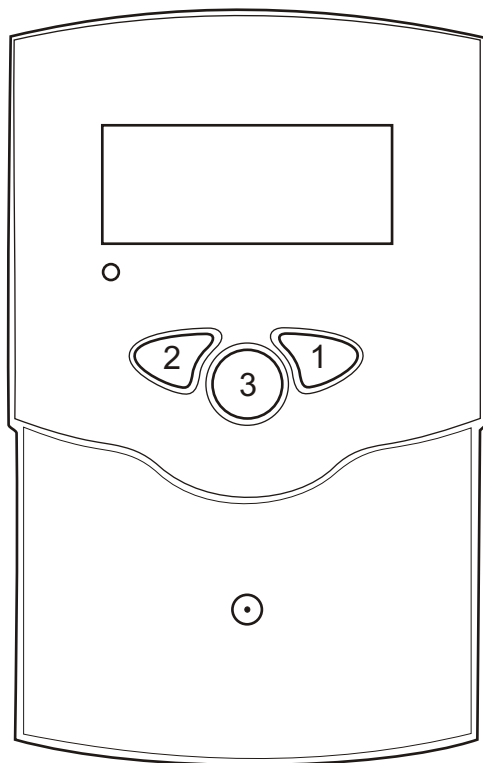


Operation

1 Adjustment keys



M000391



DiemasolA_0004

The regulator is controlled by the 3 keys only located below the display.

The right-hand key (1) takes you to the next menu or increases the adjustment values.

The left-hand key (2) does the opposite.

The adjustment parameters are displayed after the measured values. To access these parameters, press and hold the right-hand key for 2 sec. from parameter **TC**. When the display shows an **adjustment parameter**, the word **SET** appears. To set the value displayed, press the middle button **3**.

1. Select the required parameter using keys **1** and **2**.
2. Press the **3** key: The word **SET** flashes.
3. Adjust the value using keys **1** and **2**.
4. Press the **3** key: The set value is stored. The word **SET** stops flashing.

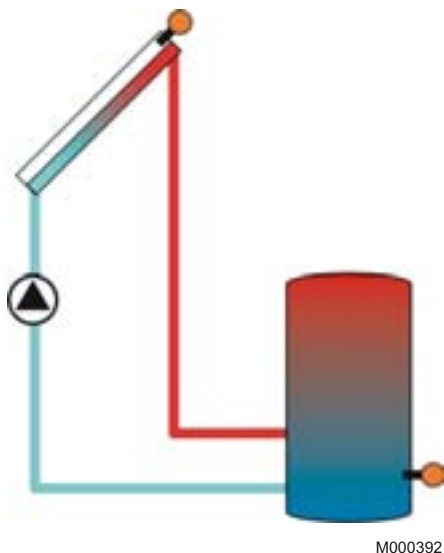
LED message code

Continuously green	PUMPE relay is closed	Regulation operating normally (System Operating) (System Operating)
Continuously red	PUMPE relay is open	The installation is stopped.
Flashing green/red	<ul style="list-style-type: none"> - Initialisation phase - Sensor fault - Manual mode - Maximum tank temperature exceeded 	either: <ul style="list-style-type: none"> - The installation is in manual mode: Set the regulator to automatic mode. - The calorifier has reached the set temperature and the installation is in overheating safety mode. - There is a sensor fault: See chapter "Sensor fault".

1.1 General description of how the unit operates

In automatic mode, the Diemasol A regulator operates in accordance with the following principles:

- The sun's rays heat the transfer fluid in the collector. For the regulation process to be triggered, a minimum temperature of 30 °C is required in the collector and there must be a temperature difference of 10 K by comparison with the tank.
- During the AUTO-calibration stage which follows (tu parameter setting **tu**, factory setting 1 minute) the PUMPE (relay) operates to its full extent (100%).
- Subsequently, the solar pump regime is calculated dynamically depending on a difference between the reference temperature (parameter DT, factory setting 20 K) and the calorifier temperature.
- Depending on the heat available, the system heats up the solar tank and cuts off when the tank storage temperature is reached (adjustment parameter **SX**, factory setting: 60 °C).
- When the temperature in the collectors reaches the maximum value (adjustment parameter **CX**, factory setting 100°C), the solar pump is triggered to cool the collectors. The pump continues to operate until the temperature in the collectors is lower than 5 K at parameter **CX** and/or the maximum storage temperature (80°C) is reached in the hot water storage tank . Regulation goes into cooling mode if the preparer tank temperature is exceeded. As soon as the temperature in the collectors drops below the temperature in the calorifier, the calorifier is cooled down to its set temperature. The installation is thus protected against overheating and repeated stoppages, allowing thus the prolonged absence of the user even in the summer period.



2 Measured values and adjustment parameters

Channel	Abbreviation	Range	Increment	Factory setting
Collector temperature	TC	[-50.0 ... 250.0] °C	-	-
Tank temperature	TS	[-50.0 ... 250.0] °C	-	-
Amount of heat	kWh	[0 ... 9999] kWh	-	-
Pump regime	PC	[0 ... 100] %	-	-
Self-calibration time	tc	[0 ... 5] minutes	-	-
Return temperature	TR	-50...250°C	-	-
Additional temperature	TM*	-50...250°C	-	-
Reference temperature difference	DT	[10 ... 20] K	0.1	20
Set temperature of the solar calorifier	SX	[20 ... 80] °C	0.1	60
Maximum collector temperature	CX	[100 ... 125] °C	0.1	100 °C
Self-calibration phase	tu	[1 ... 5] minutes	1	1
Pump minimum speed	PN	[50 ... 100] %	5	50
Tubular solar collector function	FT	[0 ... 1]	1	0
Maximum flow rate	Fx	[0 ... 20] l/min	0.1	6.7
Manual mode	MM	[0 ... 2]	1	2

*with S3 sensor only (optional)

	Measured values
	Adjustment parameter

i The regulator has a safety system that cuts off the tank at temperatures of over 80°C.

2.1 Measured value TC - Collector temperature

The value **TC** shows the temperature in °C given by the collector sensor in real time.

2.2 Measured value TS - DHW sensor temperature

The value **TS** shows the temperature in °C given by the tank sensor in real time

2.3 Measured value kWh - Amount of heat

The value **kWh** shows in kWh the total amount of heat produced by the installation since the regulator was put into service.

i The quantity of heat (kWh value) can only be used for checks carried out for personal reasons.

2.4 Measured value tc - Self-calibration time

The value **tc** shows the self-calibration phase time remaining in seconds. During the self-calibration phase, the pump operates at full speed (100 %); its speed is only controlled after the self-calibration phase.

2.5 Measured value TM - Additional temperature

An optional additional temperature sensor can be connected to terminals 7 and 8. for example: Temperature in the top of the calorifier.

2.6 Adjustment parameter DT - Reference temperature difference



Range of adjustment: 10 ... 20 K

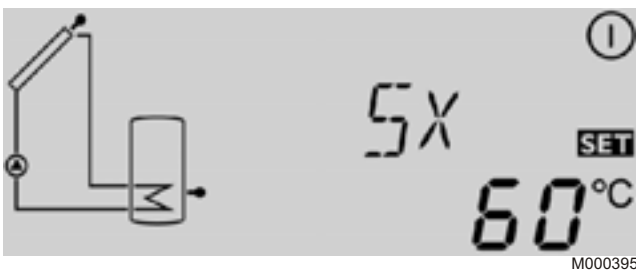
Factory setting: 20 K

- i** Switching-on difference: Non-adjustable value 10 K
Switching-off difference: Non-adjustable value 5 K

The regulator reads the temperatures measured by sensors S1 (**TC**) and S2 (**TS**) and compares the resulting temperature difference with the switching-on difference which is preset to 10 K. Regulation is activated when the temperature difference ΔT is equal to or greater than the preset value. The display shows ①. The LED changes to green. When the value falls below the preset 5 K switching-off difference, the regulator switches off. The regulator tries to achieve a temperature difference of 20 K (factory setting) between the collector and the tank to produce high temperature hot water as rapidly as possible. To do this, it uses dynamic speed control.



2.7 Adjustment parameter SX - Set temperature of the solar calorifier



Range of adjustment: 20 ... 80 °C

Factory setting: 60 °C

- i** Maximum tank temperature (emergency cut-off): Non-adjustable value 80 °C

The set temperature **Sx** is the desired temperature for the solar calorifier.

If the maximum tank temperature is exceeded, tank heating is interrupted to prevent damage due to overheating. The display shows ⚠ and ✨ (flashing) and the LED changes to flashing red/green.

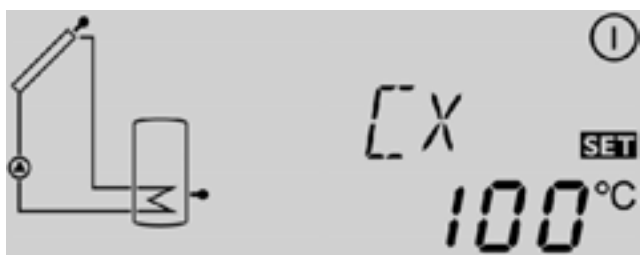
The higher the set temperature for the calorifier, the greater the energy stored. Setting to 60 ... 75°C is suitable for normal use with daily draw-offs.

In the event of prolonged absences (weekend, holidays):

- Reduce the calorifier temperature to 50°C
- Turn off the back-up (boiler or electrical resistance)

The installation is thus protected against overheating and the longevity of the heat conducting fluid is conserved.

2.8 Adjustment parameter CX - Maximum collector temperature



Range of adjustment: 100 ... 125 °C

Factory setting: 100 °C

i Maximum collector temperature (overheating safety): Non-adjustable value: 130 °C.

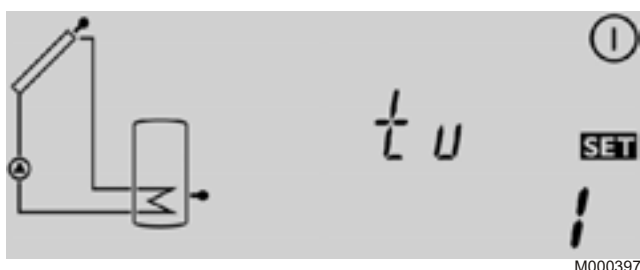
If the temperature in the collector rises above its maximum temperature **CX** even though the solar circuit is stopped (tank set storage temperature reached), the solar pump (R1) switches on and cools the collector (system cooling). In these conditions, the tank temperature rises, but it can't exceed 80 °C (safety cut-off).

If the calorifier reaches the maximum temperature of 80 °C (safety shutdown), the regulator switches off the solar pump.

i The collectors may reach a temperature of 160 ... 200 °C, which is normal for a solar installation.

The cooling functions allows heat to dissipate; the system thus remains operational longer during hot summers. When it leaves the factory, the collector's maximum temperature is preset to 100 °C; however, it is possible to change this within the range 100 ... 125 °C. If the maximum collector temperature is exceeded, the display shows **i**, **A** and **✱** (flashing) and the LED changes to flashing red/green.

2.9 Adjustment parameter tu - Self-calibration phase

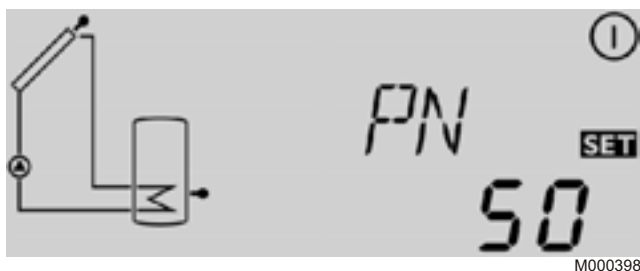


Range of adjustment: 1 ... 5 minutes

Factory setting: 1 minutes

When the solar collector reaches a minimum temperature of 30 °C and a preset temperature difference of 10 K from the tank temperature, the regulator switches on the solar circulating pump at full speed for the time period set by parameter **tu**. During this phase, any air bubbles present in the solar collectors or the pipes are moved to the complete solar station by the high circulation speed in the pipes and eliminated by the Airstop system (manual bleed degasser). After this phase, the regulator changes to "matched flow" mode. The remaining self-calibration time is displayed with parameter **tc**.

2.10 Adjustment parameter PN - Pump minimum speed

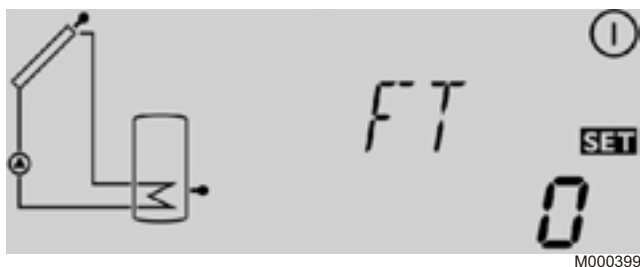


Range of adjustment: 50 ... 100%

Factory setting: 50%

Adjustment parameter PN sets a minimum value for the solar pump speed at the relay R1 output. The lower the pump regime, the lower its flow.

2.11 Adjustment parameter FT - Tubular solar collector function (for Dietrisol POWER)



Range of adjustment: 0/1

Factory setting: 0

0: no

1: yes

If the regulator detects a temperature rise in the collector of 2 K compared to the last measurement, the solar pump runs at full speed for 30 seconds to measure the current average temperature.

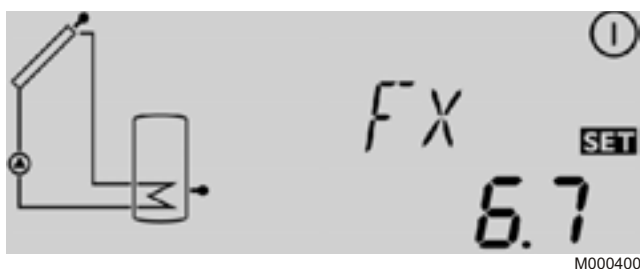
The measured temperature thus becomes the new reference temperature.

If the measured temperature (new reference) then increases again by 2 K, the solar pump starts again for 30 seconds.

The regulator switches automatically to solar heating mode if the temperature difference between the collector and the tank exceeds the switching-on temperature difference when the solar pump is operating or the system is stopped.

If the collector temperature falls by 2 K while the system is stopped, the tubular solar collector activation temperature is rechecked.

2.12 Adjustment parameter Fx - Maximum flow rate



Range of adjustment: 0 ... 20 l/min

Factory setting: 6.7

In order for the regulator to calculate the quantity of heat produced by the installation (parameter kWh), input parameter **Fx**. The parameter **Fx** is equal to the flow in litres per minute in the solar circuit. Determine the value **Fx** using the following tables, according to the configuration of the installation and the number or surface area of the collectors. When the flow is input incorrectly, the display kWh will also be incorrect.

i The quantity of heat (kWh value) can only be used for checks carried out for personal reasons.

Flat solar panels

Solar panel installation	Area m ²	Number of panels	Flow rate l/h	Flow rate l/min
	3 ... 5	1 or 2	400	6.7
	6 ... 8	3 or 4	300	5
	8 ... 10	4 or 5	250	4.1
	8 ... 10	2x2	750	12.5
	12 ... 15	2x3	670	11.2
	16 ... 20	2x4	450	7.5
	12 ... 15	3x2	850	14.2
	18 ... 23	3x3	800	13.4
	24 ... 30	3x4	650	10.9
	16 ... 20	4x2	1200	20
	24 ... 30	4x3	850	14.2

Tubular solar panels

Number of panels	Flow rate l/h	Flow rate l/min
minimum: 1x4	820	13.7
1x5	750	12.5
1x6	680	11.4
1x7	610	10.2
1x8	540	9
1x9	470	7.8
1x10	250	4.1
2x3	1400	20
2x4	1250	20
2x5	1100	18.4
2x6	950	15.9
2x7	750	12.5
2x8	600	10
2x9	540	9
2x10	400	6.7

3 Adjustment parameter MM - Operating mode



Range of adjustment: 0 ... 2

Factory setting: 2

For inspection and maintenance work, it is possible to operate the regulator in manual mode. To operate the regulator in manual mode, it is necessary to input parameter MM from the following table.

MM	R1	LED
0	open	Flashing green/red
1	closed	Flashing green/red
2	automatic	automatic

Commissioning

Switch on the device. The regulator starts an initialisation phase during which the LED flashes red and green. When initialisation is complete, the regulator changes to automatic mode. The factory settings for this mode give optimum performance with most installations.

If special conditions make it necessary to change the settings, the corresponding adjustment parameters can be reset.



M000391

Fault finding

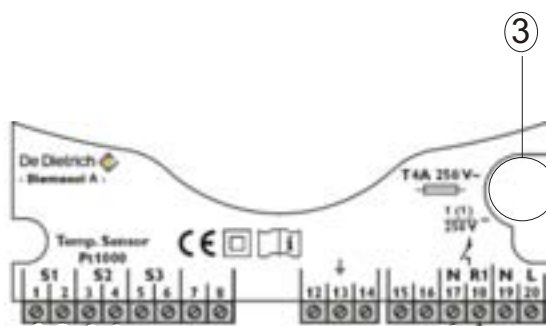
If the regulator is no longer operating correctly, please check the following points:

1 Electricity supply


If the LED is not illuminated, check the main electricity supply to the regulator.

The regulator is protected by a T4 A ③ fuse. To change it, remove the lower cover.

i There is a spare fuse in the accessories kit.



2 Sensor fault

If a sensor fault is causing a problem in the regulator circuit, the LED changes to flashing red/green and the symbol  is displayed.

The display also shows a fault code for the sensor concerned (TC, TS):

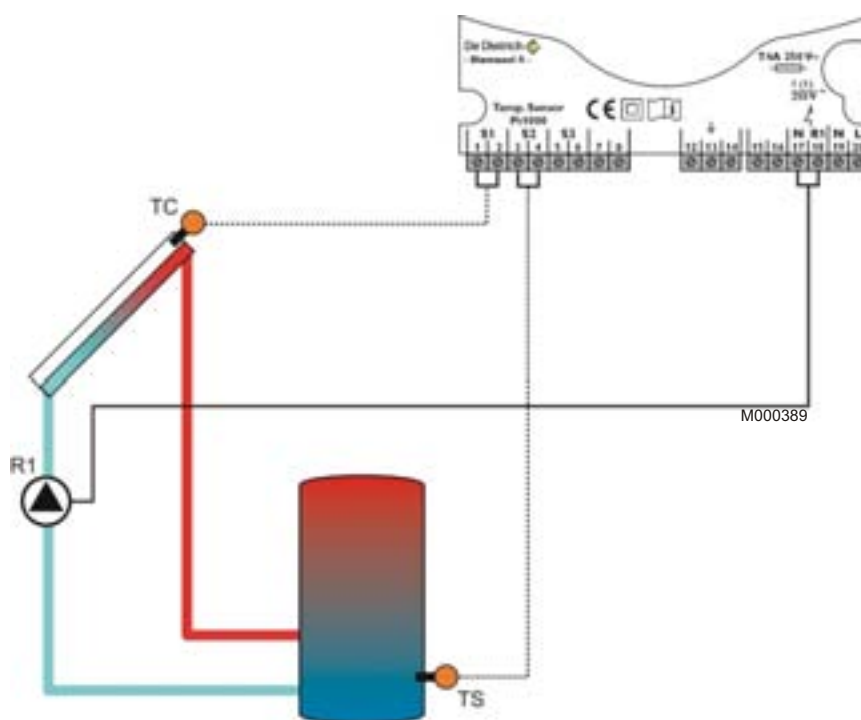
Short circuit: The display shows a short circuit on the sensor cable by displaying the temperature sensor concerned (TC, TS) and the fault code **-888.8**.

Sensor wire broken: The display shows the temperature sensor concerned (TC, TS) and the fault code **888.8** for that sensor.

Disconnected Pt1000 temperature sensors can be checked with an ohmmeter. The temperature/resistance correlation is shown below.

°C	Ω	°C	Ω	°C	Ω
-10	961	35	1136	80	1309
-5	980	40	1155	85	1328
0	1000	45	1175	90	1347
5	1019	50	1194	95	1366
10	1039	55	1213	100	1385
15	1058	60	1232	105	1404
20	1078	65	1252	110	1423
25	1097	70	1271	115	1442
30	1117	75	1290		



Typical systems



- R1** Solar power pump
- TS** Tank sensor
- TC** Logging sensor

Installation report

Record of the configured values at the time of commissioning the Diemasol A regulator and, if necessary, record of changes made to these values compared with factory settings:

Channel	Factory setting	Selected value	Date of the change	Signature
DT	20			
DHW booster temperature settings				
	- boiler circuit			
	- Electric heating resistance			
SX	60			
CX	100 °C			
tu	1			
PN	50			
FT	0			
	 For an installation with collectors other than DIETRISOL PRO or ECO, set the parameter FT to 1.			
FX	6.7			
MM	2			
	 For automatic operation, set parameter MM to 2.			

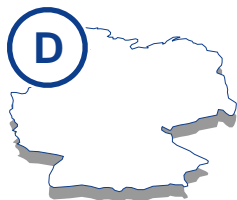
DE DIETRICH THERMIQUE S.A.S.



www.dedietrich.com

Direction des Ventes France
57, rue de la Gare
F- 67580 MERTZWILLER
☎ +33 (0)3 88 80 27 00
☎ +33 (0)3 88 80 27 99

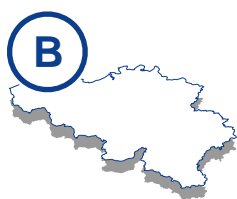
DE DIETRICH HEIZTECHNIK



www.dedietrich.com

Rheiner Strasse 151
D- 48282 EMSDETTEN
☎ +49 (0)25 72 / 23-5
☎ +49 (0)25 72 / 23-102
info@dedietrich.de

VAN MARCKE



www.vanmarcke.be

Weggevoedenlaan 5
B- 8500 KORTRIJK
☎ +32 (0)56/23 75 11

VESCAL S.A.



www.chauffeur.ch / www.heizen.ch

Z.I de la Veyre, St-Légier
1800 VEVEY 1
☎ +41 (0)21 943 02 22
☎ +41 (0)21 943 02 33

NEUBERG S.A.



www.dedietrich.com

39 rue Jacques Stas
L- 2010 LUXEMBOURG
☎ +352 (0)2 401 401

DE DIETRICH HEIZTECHNIK



www.dedietrich.com

Am Concorde Park 1 - B 4 / 28
A-2320 SCHWECHAT / WIEN
☎ +43 (0)1 / 706 40 60-0
☎ +43 (0)1 / 706 40 60-99
office@dedietrich.at



De Dietrich



DE DIETRICH THERMIQUE
57, rue de la Gare F- 67580 MERTZWILLER - BP 30
www.dedietrich.com