RESOL TLR2

Mounting

Connection

Handling

Fault localization

48001550

Thanks for buying a RESOL product.
Read this manual carefully to get the best perfomance from this unit.

TLR2

GB

Manual

www.resol.de

Contents

Security advice

Please pay attention to the following security advice in order to avoid danger and damage to people and property.

Instructions

Attention should be paid

- to the statutory provisions for prevention of industrial accidents,
- to the statutory provisions for environmental protection,
- to the Health and Safety at Work Act 1974
- to Part P of the Building Regulations 2005
- to BS7671 Requirements for electrical installations and relevant safety regulations of DIN, EN, DVGW, TRGI, TRF and VDE.

This instruction is exclusively addressed to authorised skilled personnel.

- Only qualified electricians should carry out electrical works.
- Initial installation should be effected by named qualified personnel

Declaration of conformity

We, RESOL Elektronische Regelungen GmbH, D-45527 Hattingen, declare under our sole responsibility that our product TLR2 complies with the following standards:

EN 55 014-1
EN 60 730-1

According to the regulations of the above directives, the product is labelled with CE:

89/336/EWG
73/ 23/EWG

Hattingen, 07.07.2006
RESOL Elektronische Regelungen GmbH,

ppa. Gerald Neuse

Technical data

Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 0 ... 40 °C

Size: 172 x 110 x 46 mm

Power supply:
220 … 240V~

breaking capacity:
1 relay output (alternating relay)
Schaltstrom 4(1)A

Ambient temperature:
-20 °C ...bis +40 °C

store nominal temperature:
20 ...90°C

Display: LCD, multi functioning combi display with pictogramms, two 2-digit description field and two 4-digit 7-segment-displays as well a 2-coloured LED.

Installation: wall mounting, control panel-Installation possible

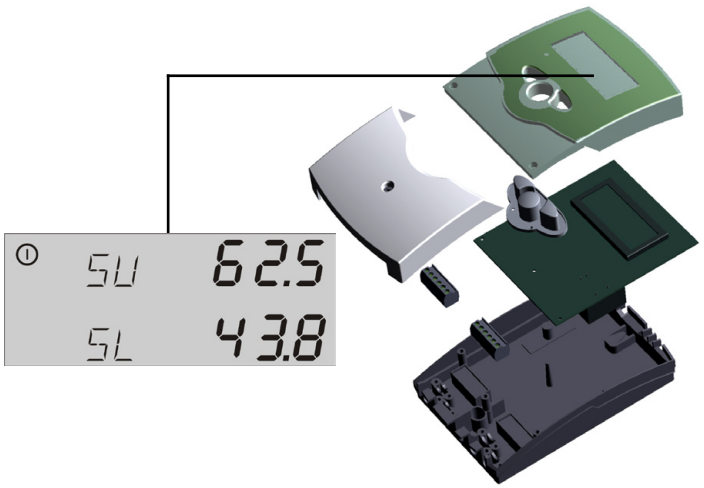
Operation: vie 3 pushbuttons in the front of the housing

Inputs: 2 temperature sensors Pt1000

Degree of pollution: 2

Rating surge voltage: 2,5 kV

Temp. for ball pressure check: 75 °C



TRL2

Electronic store charge controller, with LCD combidisplay for concurrent display of the upper and the lower store temperature for optimised charge with one energy source (e.g. central heating boiler). The temperature is collected by temperature sensors in the upper and lower part of the store. When the switch-on temperature of the upper sensor is under-run, the store is charged until the switch-off temperature is reached in the upper sensor. The controller is menu-driven.
Two sensors from our product range (type Pt1000) are needed, (please order additionally) e.g. 2 x FRP150.

Functioning

The store charge controller RESOL TLR2 optimises the charging of a warm water- heat accumulator via one energy source, e.g. a central heating boiler. The store temprature is collected by sensors S1 and S2 in the upper resp. lower part of the store. The charging cycle starts as soon as the upper sensor S1 collects a temperature thatis lower than the preadjusted switch-on temperature. The charging occurs until the temperature of S2 (in the lower part of the store) exceeds the preadjusted switch-off temperature.

Benefits:

- The store is heated up completely (avoidance of danger caused by Legionellen).
- The heating up of the store takes place in big intervals ; therefore longer burner running time

The controller TLR2 needs two sensors from our product range.

1. Sensor types

For the controller RESOL **TLR2** precision temperature sensors in Pt1000-version **(FKP** and **FRP)** are used.

FK: 1,5 m long weather- and temperatureproof siliconcable for temperatures from -50 °C ...+180 °C, preferably for the collector.

FR: 2,5 m long PVC-cable for temperatures from -5 °C ...+80 °C, preferably for the store.

The corresponding local VDE-regualtions must be obeyed. The sensor cables carry low voltage and musn't be installed in one cable channel with cable that carry more than 50V. The sensor cables can be elongated up to 100 m, whereas the cross-section of the extensioncable must have 1,5 mm^2 (resp. 0,75 mm^2 at cable lengths up 50 m). With long cables and when using cable channels cables with twisted leads should be used. For immersion sensors immersion sleeves must be used.

FK... : collector sensor
FR... : reference sensor (store sensor)

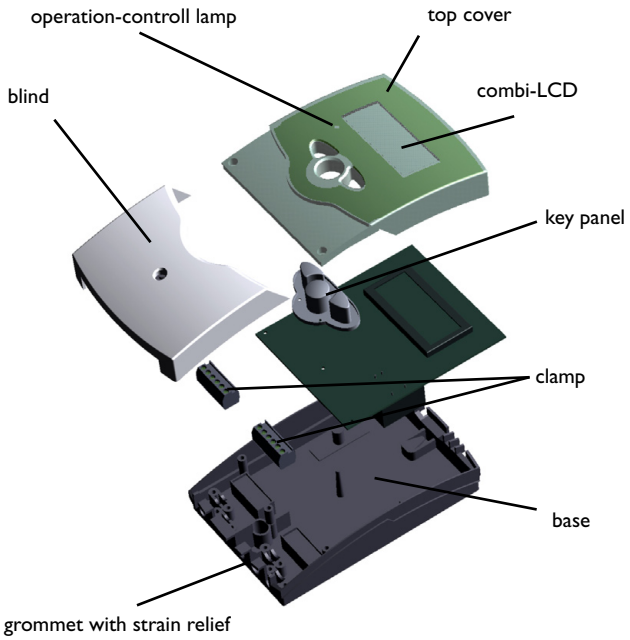
immersion sensor: available in different lengths (immersion depth)
FK...60: 60 mm immersion depth, brass sleeve, chromium-plated
FK...150: 150 mm immersion depth, brass sleeve, chromium-plated
Important: push the sensor completely into the sleeve and tighten the fitting.

Pipe sensor: for any pipe diameter, complete with clamping band
FK...21 or **FR...21**
Der Sensor must have good thermal contact to the pipe. Therefore clean the contact surface carefully and apply heat conduction paste between sensor and pipe. For protection against outside temperature influences wind the sensor cable around the pipe once and insulate well.

Contact sensor: for application to plane surfaces
FK...9 or **FR...9**
Pay attention to good thermal contact. Use heat conduction paste and insulate against outside temperature influences.

2. Installation

2.1 mounting



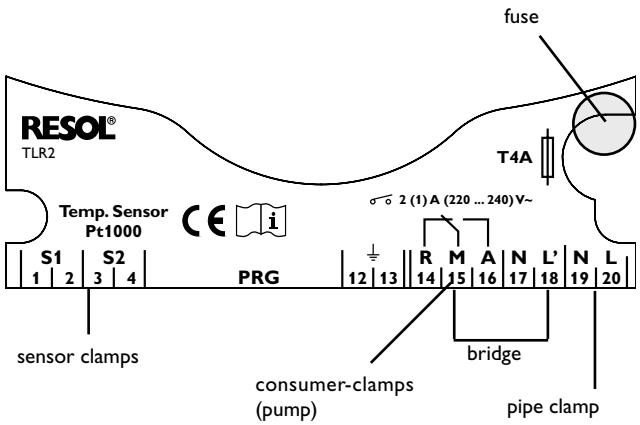
Attention!

Ensure separation from power supply before opening the housing

The mounting has to be made only in dry interiors. Keep in mind that the controller musn't be installed at a place where it can be influenced by strong electromagnetic fields. According to the current regulations for installation the controller must be equipped with an additional set-up which allows the separation from the power line by an isolating distance of at least 3 mm. Attend to separated laying when installing the mains connection cable and the sensor cable.

1. Unscrew the cross-head screw of the blind and pull the blind down from the housing.
2. Mark the upper attachment point on the subsurface and premount the attached dowel with the matching screw.
3. Replace the housing at the upper attachment point, mark the lower attchment point at the subsurface (hole centre distance 130 mm), afterwards fix the lower dowel.
4. Replace housing at the upper point and fix it with a attachment screw.

2.2 Electrical connection



The power supply of the controller must be effected by an external power switch (last workstep!) and the power supply must be 220...240 Volt (50...60 Hz). Flexible cables must be fixed to the housing with the attached strain relief clamp and the matching screws.

The controller is equipped with 1 relay (change-over contact), to which the matching consumer load is attached (e.g. store charge pump):

- Pump-relay R1
  14 = home contact R
  15 = medium contact M
  16 = make contact A

The **temperature sensors** (S1 and S2) are connected to the following clamps with any polarity:

1 / 2 = sensor for the upper store temperature
3 / 4 = sensor for the lower store temperature

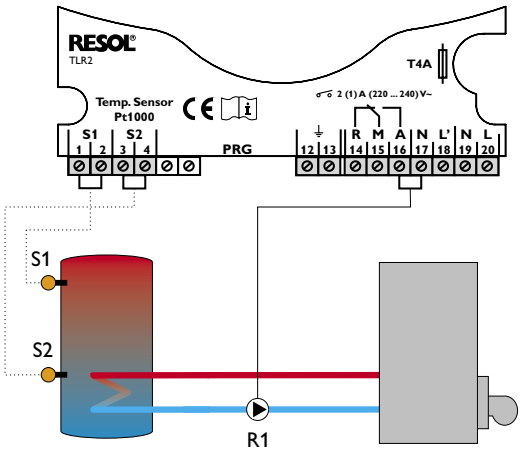
The **mains connection** is at the clamps:
19 = neutral wire N
20 = conductor L
12 = earthing clip

Indication:

The medium contact M (15) and the conductor L' (18) are bridged in delivery condition.

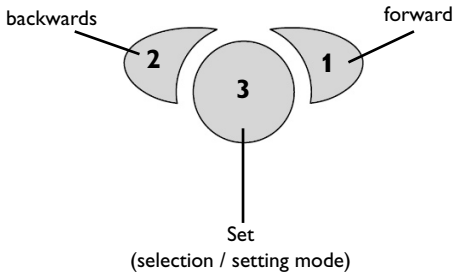
After removing the bridge the change-over contact (RMA) becomes a potential-free relay.

2.3 example of use



3 Operation and functions

3.1 setting switch



The controller is operated by 3 push-buttons below the display. The forward-button (1) serves the function of scrolling forward through the display menu or raising the set values. The backwards button(2) is serves the contrary.

After the display channels there are the setting channels. In order to get to these channels, the forward button has to be pushed for 2 sec. after channel **HO**. If the display shows a **set value**, **SEt** is shown in the display. In this case the setting mode can be changed if the set-button (3) is pushed.

- chose channel with button 1 and 2
- press button 3 quickly, display „SEt“ flashes
- set the value with buttons 1 and 2
- press button 3 quickly, display permanently shows„SEt“ again, the setted value is memorised

3.2 controlparameter and display channels

- **SU** **U**pper **S**tore temperature
  display channel of the current upper store temperature
- **SL** **L**ower **S**tore temperature
  display channel of the current lower store temperature
- **HO** **H**ours of **O**peration
  display channel of the operation hours
- **TOT**emperature **O**n
  setting channel switch-on temperature
- **TFT**emperature of**F**
  setting channel switch-off temperature
- **MM** **M**anual **M**ode
  setting channel manuel mode
- **PG** **P**ro**G**ramm
  display channel programme number
- **VN**Version **N**umber
  Anzeigekanal Versionsnummer

3.3 display channel SU

SU shown the current upper store tempertaure

3.4 display channel SL

SL shows the current lower store temperature

3.5 display channel HO

HO shows the operation hours if the controller

3.6 display channel PG

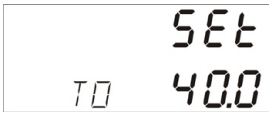
PG shows the programme number of the controller

3.7 display channel VN

VN shows the version-number of the controller software

3. 8 setting channel TO

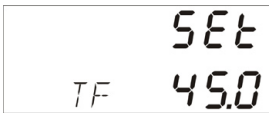
TO:switch-on temperature
setting range 20,0 ... 95,0 °C
in 0,5 steps
factory setting 40,0 °C



When the upper store temperature **SU** falls below the setted value **TO,** the controller switches on the relay/pump and loads the store. The display shows ⏻ and the status-LED glows green.

3.9 setting channel TF

TF: switch-off temperature
setting range 20,0 ... 95,0 °C
in 0,5 steps
factory setting 45,0 °C

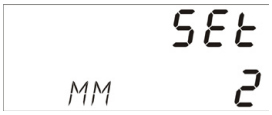


While the controller charges the store the lower store **SL** rises. When this temperature exceeds the value setted in **TF**, the relay/pump is switched-off and the loading of the store stops. The symbol ⏻ disappears from the display and the status-LED glows red.

In order to avoid wrong settings the values TO and TF are blocked against each other.

3.10 setting channel MM

MM: switch-off temperature
setting range 0, 1, 2
factory setting 2 (Auto)



manual operation

0 = on
1 = off
2= Auto

Here you can chose between automatic and manual operation. In the manual operation mode the charging of the store can be started and stopped manually.

For permanently deactivated store charge chose „**0**“, for permanently activated store charging chose „**1**“. If the controller is to charge the store automatically chose „**2**“.

3.11 status-LED blinking codes

constantly green:	relay/pump switched on
constantly red:	relay/pump switched off
flashing green/red:	initialisation
	defective sensor
	manual operation

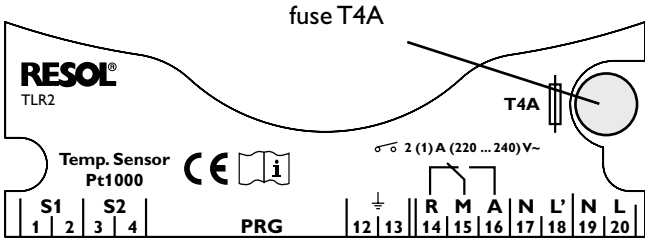
4. Initiation

First switch on the power supply. The controller initialises while the operation control lamp flashes green and red. After finishing the initialisation the controller is in automatic operation mode which ensures by the factory settings an optimum degree of efficiency for most systems.

In case that the individual systems require an adaptation to the controller parameters they can be changed with the corresponding set values (see 3.2).

5. tips for fault location

Attention!
Ensure separation from power supply before opening the housing



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

resistance values of
the Pt1000-sensors

PLease check the following if the controller does not work properly:

1. power supply

In case that the operation control lamp is lapsed please check the power supply of the controller.

The controller is protected with 1 fuse T4A. You can exchange it after removing the blind (spare fuse is in the accessory bag).

2. defecctive sensor

In case that a system fault is caused by a defective sensor the operation control lamp flashes red/green and the symbol is shown in the display. A corresponding error code is shown in the display for the sensors in question.

short-circuit: a short-circuit of the sensorcable with declaration of the affected sensor is shown in the display with the error code -888.8.

wire breakage: Interruption of the sensor cable with declaration if the affected sensor is shown in the display with the error code 888.8.

Pinched off Pt1000-temperature sensors can be checked with a resitance measuring device and have the resitance values shown in the table on the left.

Your specialist dealer:

Note
The design and the specification can be changed without any prior notice.
The pictures can slightly differ from the production model.