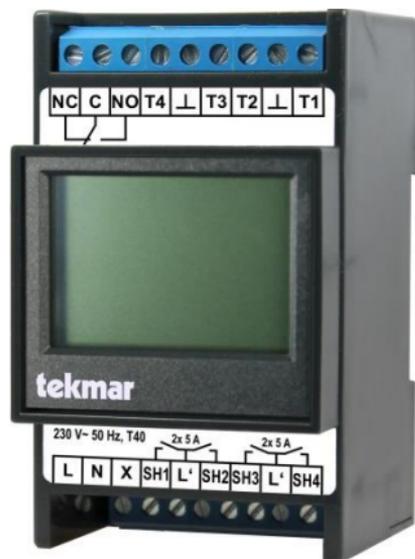


Universal Temperature Controller 1882-UTR, 1883-UTR, 1884-UTR Installation and Adjustment Instructions



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Safety instructions

Always observe the attached safety instructions during installation and operation of the device!

Scope of delivery



Universal temperature controller
1882-UTR,
1883-UTR, /A, /R, /L or
1884-UTR



Installation and Adjust-
ment Instructions



Safety Instructions



tekmar pencil
(Rubber end can be used to
operate the touch display)

Introduction

Overview

The universal temperature controllers 1882-UTR, 1883-UTR and 1884-UTR can be used for varied tasks in the area of temperature control. They are equipped with different relays and sensors. All of them are rail-mounted devices, have a user-friendly backlit touch display and can be flexibly configured.

Features

| | 1882 | 1883 | 1883/L | 1884 |
|--|--------|---------------------|------------------------|--------|
| Sensor input | 2 | 2 | 2 | 4 |
| Power relays (normally open) | 2 (5A) | 1 (20A) | 1 (20A) | 4 (5A) |
| Secondary relay (normally open or normally closed) | | 1 (3A / 6A) * ** | 1 (3A / 6A) * ** ** | |
| Signalling relay (changeover) | 1 | 1 | 1 | 1 |
| USB connection | ● | ● | ● | ● |
| Channels: single control | 2 | 1 | 2 | 4 |
| Channels: double control | 1 | 1 | 1 | 2 |
| Channels: sequential control | 1 | 1 | 1 | 2 |

* optional, 1883/A with normally open contact, 1883/R with normally closed contact

** total permissible current 20 A (main and secondary relay together)

*** load on secondary relay up to 3 A for room temperature applications, otherwise up to 6 A

Applications

All three types of controllers can be flexibly configured using three applications and several functional options for each of these. All applications can be set to heating or cooling, either for the complete controller or for individual control channels.

A device can be configured as a single, double or sequential control. The characteristics of each of these are (also refer to page 17 and subsequent):

- **single control:**
 - 1 sensor and 1 relay for each control channel
 - two-point controller with adjustable hysteresis
 - default application setting
- **double control:**
 - 1 sensor and 2 relays for each control channel
 - two-point controller with adjustable hysteresis
 - second power relay as additional output with its own switching point
- **sequential control:**
 - 2 sensors and 2 relays for each control channel
 - cascaded two-point controller with adjustable hysteresis (controller A triggers controller B)
 - second power relay as output for first control channel or with changeover function

- **all applications**

- upper and lower hysteresis can be individually defined for each switching point
- collective error message and alarm via the signalling relay

Functional options

For each application additional functions can be activated (by default all options except for the ones explicitly mentioned are inactive):

- additional value: additional set value with a second switching point for power or signalling relay (active for double and sequential control)
- threshold value: output is switched off in case of extreme temperatures
- switch-off time: minimum waiting time before the output is switched on again after switch-off
- pulse width modulation: pulsed switching (on/off) of a control circuit

Use cases

- **single control:**

- simple temperature controller for heating or cooling
- also mixed heating or cooling operation within a controller (i.e. different for each control channel)

Introduction

- **single control + additional value:**

- temperature controller with alarm via signalling relay in case actual temperature is too low/high
- controller for trace heating or similar with failure alarm raised to control centre

- **single control + threshold value:**

- gutter heating with switch-off in case a temperature is reached below which there is no melt water on the roof

- **double control (incl. additional value):**

- two-point controller with individual switching points and hystereses for both points
- temperature controller with alarm via power relay (e.g. for local audio alarm) in case the actual temperature is too low/high

- **sequential control (incl. additional value):**

- indoor temperature control via underfloor heating: Channel A controls the room temperature and activates channel B which monitors the floor temperature.
- root heating for outdoor plants: Channel A monitors the root temperature and activates channel B which limits the temperature of the heating plate.

Further relevant documentation:

- Safety Instructions

Terms and functions

Setpoint value

The setpoint value is the value that is to be reached by the main control of the control channel. Depending on the measured actual value, it controls the output relay of the control circuit (i.e. the primary relay in case of a double or sequential control and the single relay in case of a single control).

Additional value

This is the second value set for a control channel. Together with the measured actual value it defines a second switching point. It can either control the signalling relay with a collective message or control the second output relay (secondary relay) of the double or subsequent control circuit.

For each individual control channel it can be defined that the additional value activates the central signalling relay. In case the controller is used, for example, as a multi-channel alarm controller, all alarms can be indicated locally via the secondary relay, but only selected alarms will be passed on to the control centre.

Threshold value

This is the third value set for a control channel. Together with the measured actual value it defines a third switching point. If the temperature falls below the threshold value during the heating operation, the output of the control circuit will be switched off, even if the temperature is below the setpoint value. This applies vice versa for the cooling operation.

The threshold value can be used for example for gutter heating systems or for applications which require a safety switch-off in case of an excessive deviation from the setpoint value (possibly in parallel to an alarm signal).

The threshold value is only effective if it lies below the setpoint value in the heating operation or above in the cooling operation.

Upper and lower hysteresis

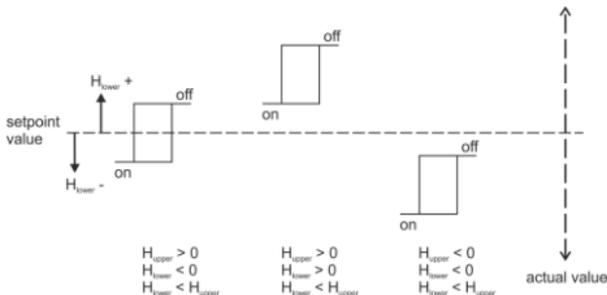
The two hystereses of a set value (setpoint value, additional value or threshold value) define the switching points which trigger the output of a control circuit to be switched on or off after comparison with the measured actual value. Both hysteresis values can be individually defined for all three set values and for each control circuit.

Terms and functions

The upper hysteresis defines the switching value for the higher temperature, i.e. the switch-off point for the heating operation or the switch-on point for the cooling operation. The lower hysteresis defines the lower switching value, i.e. the switch-on point for the heating operation and the switch-off point for the cooling operation. In order to determine the values of the switching points, the hysteresis values are added to the corresponding setpoint value.

Both hystereses can have positive and negative values. It is important that the value of the upper hysteresis (taking into account if it is plus or minus) is always higher than that of the lower hysteresis.

The following figure shows three possible hysteresis settings:



Normally the upper hysteresis has a positive value and the lower hysteresis a negative one. Both switching points lie above or below the set value. However, the two hystereses may also be both set to positive or negative. In this case the switching area lies completely above or below the set value. This may be useful in case the distance to be controlled has a long response time and thus the heating has to be switched off before the setpoint value is reached at the temperature sensor in order to reduce overshoot.

Heating/cooling operations

In all three applications the controller can be used for heating or cooling operations, either in the same operation for all control channels or individually with a different operation for each control channel.

All functions of the control channels work in the same way in the heating and cooling operation, however, with an inversed operating direction with regard to the measured actual value.

Switch-off time

The switch-off time defines a duration during which the output of a control channel will at a minimum remain switched off, after having changed its state from On to Off. This applies even if the actual value

has changed in such a way in the meantime that it would be necessary to switch the output on.

This helps to reduce the switching frequency of a control channel in case the temperature sensor is located in an unfavourable position.

The switch-off time may be defined individually for each control channel (also as 0 = off).

Secondary relay

If the secondary relay of a double control is controlled by the additional value, its function may be inverted for each control channel. This may be useful for example if the relay is used as an alarm output or is operated with an inverted operating direction for a combined heating/cooling control in a two-step controller (states: Heating/Off/Cooling).

The secondary relay of a sequential control is by default allocated to the partial controller A (pre-controller) as an output relay. In this way it may be used to notify a superior function of the fact that the "room is too cold", as it is not needed for the actual control (partial controller B). Optionally the secondary relay of the sequential control may be configured as a "changeover relay" for each control channel, i.e. that it will work in push-pull mode with the primary relay of the control channel.

Signalling relay and error conditions

The signalling relay may be used to notify collective messages of the control channels, e.g. to a control centre or a facility management system.

By default the signalling relay reports all error conditions of the active control channels, such as sensor interruptions and short circuits or internal errors of the controller. These messages cannot be switched off. If the function „Error state activates secondary relay“ is activated, the control channel working as a double control may send these messages to the secondary relay.

If the option „Additional value activates signalling relay“ is set for a control channel, the state of its additional value will also be passed on via the signalling relay, e.g. for alarm messages. The states of the additional value of all active control channels have an OR conjunction so that only one value will be transmitted at a time.

The signalling relay has a changeover output which can be wired according to the closed-circuit current or the operating current principle. By default the signalling relay will be activated if there is an error or if the states of the additional value have been activated for a control circuit.

Terms and functions

The idle state can be inverted by using the option "Invert signalling relay", i.e. the signalling relay is active when in idle state and is released if there is a signal. In this way also a possible power failure of the controller may be detected with the help of a corresponding closed current or load current loop.

Pulse width modulation

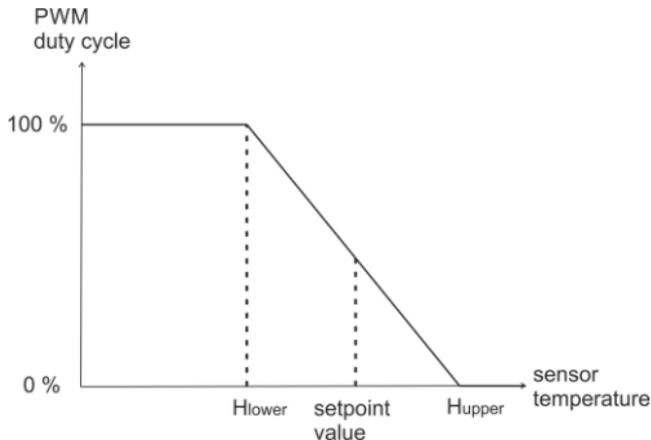
The pulse width modulation (PWM) is used to approach and keep a setpoint temperature in a more controlled way. Without PWM the control circuit is switched on once and only switched off when the setpoint temperature (plus hysteresis) is reached. If PWM is used, the output of a control circuit can be switched on and off once within an interval of 10 to 60 minutes (the PWM interval time). This can be defined individually for each control circuit.

In order to do so, the PWM mode is activated (*Configuration* → *Activate PWM mode*). Consequently the pulse width modulation is effective for the complete device. Additionally the on-off interval (the PWM interval time) can be changed from the preset time of 20 minutes and adapted individually (*Setup* → *Control circuit <No.>* → *Extended settings* →

PWM interval time). The PWM interval time can be different for each control circuit.

The PWM duty cycle (*Info* → *Control circuit <No.>* → *PWM duty cycle*) represents the length of the power-on time of the control circuit as a percentage of the PWM interval time. If the PWM interval time is, for example, 60 minutes, a PWM duty cycle value of 25 % means that the control device is switched on for 15 minutes and off for 45 minutes.

The following graphic demonstrates the relation of the setpoint temperature (setpoint value), its two hystereses and the PWM duty cycle value (in %) during heating operation.



Example:

In case of a setpoint value of 20 °C, an upper hysteresis of 1K and a lower hysteresis of -1K, the pulse width modulation will be active in the range between 19 °C and 21 °C. At a temperature of 19,5 °C the PWM duty cycle value will be 75 %, and at 20,5 °C it will be 25 %.

In case of a sensor error the pulse width modulation will be switched on automatically. Under the menu item *Setup* → *Control circuit* <No.> → *Extended settings* → *PWM duty cycle upon error* the duty cycle value to be used in case of an error can be set.

Installation

 Only qualified electricians who have been authorised by the network operator and trained on the product may install the device. Always observe the attached safety instructions during installation!

Disconnect the control cabinet before installation. Install and wire the device according to the following connection examples.

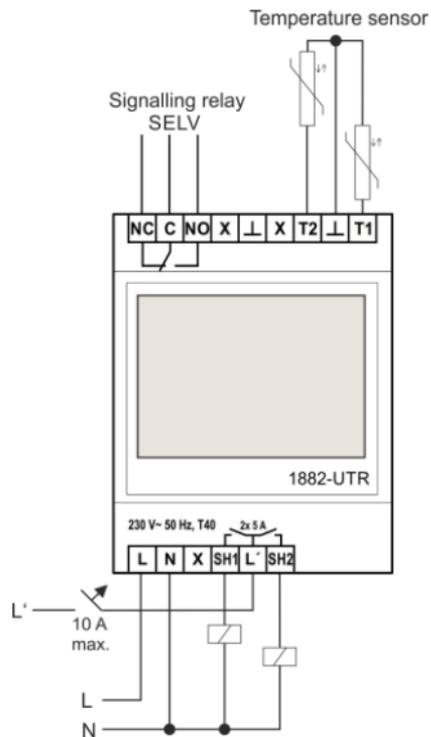
 Important notice:

For the use of the unit, an on-site fuse protection by means of (a) miniature circuit breaker(s) is mandatory. Parameters for fuse protection can be found in the technical data.

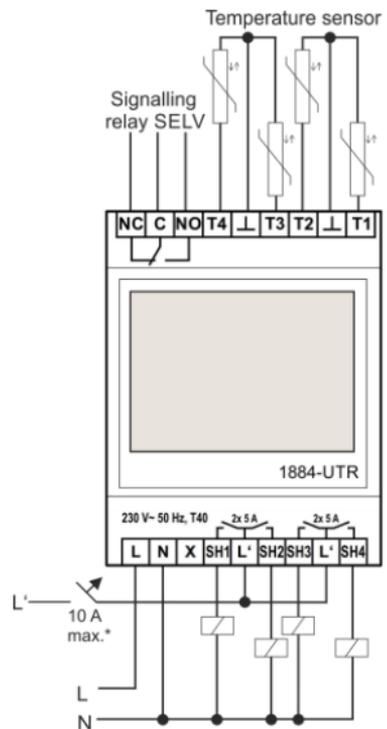
When using the unit for room heating or room temperature control, the maximum current via the secondary relay is limited to 3 A and must be fused off accordingly. For other applications the maximum fuse rating of the secondary relay is 6 A.

When the device is started for the first time, a start screen is displayed in which the menu language must be selected. German is set as the default language which must be confirmed or changed.

Connection example 1882-UTR



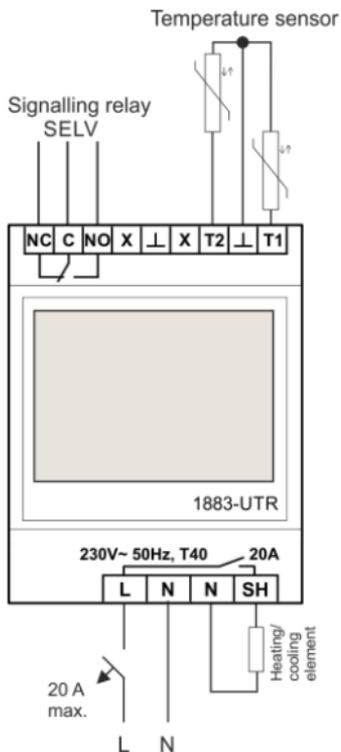
Connection example 1884-UTR



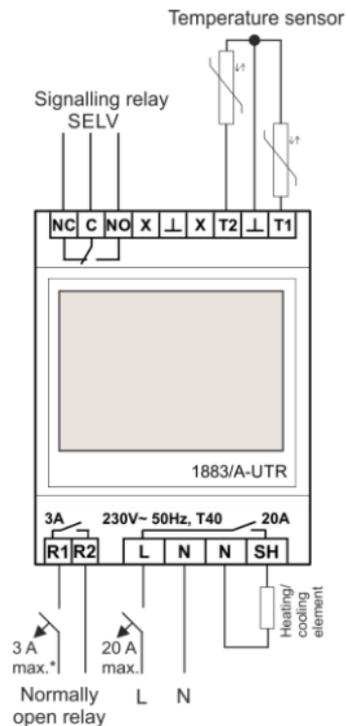
* L' terminals can be fused individually or together via circuit breakers (max. 10 A).

Installation

Connection example 1883-UTR

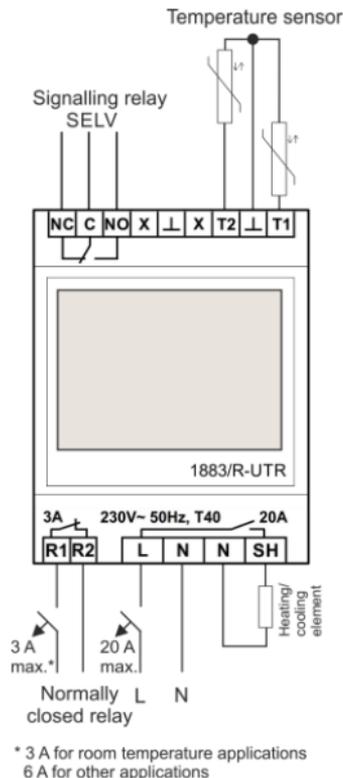


Connection example 1883/A-UTR

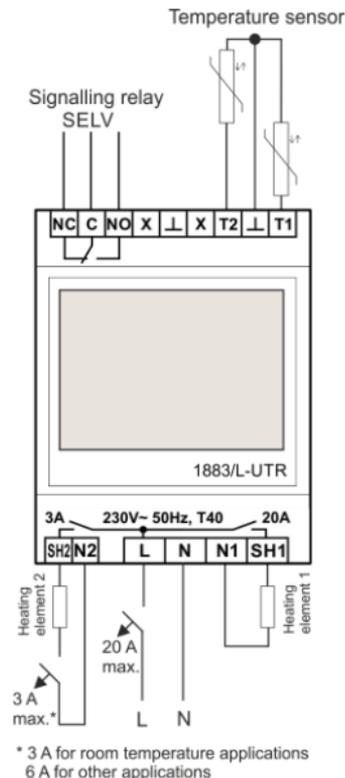


* 3 A for room temperature applications
6 A for other applications

Connection example 1883/R-UTR



Connection example 1883/L-UTR



Installation

Terminal assignment

| Upper terminal panel (SELV) | 1882 | 1884 |
|---|------|------|
| Signalling relay: normally closed contact | NC | NC |
| Signalling relay: common contact | C | C |
| Signalling relay: normally open contact | NO | NO |
| Input: sensor 4 | X * | T4 |
| Ground: sensors 3/4 | ⊥ | ⊥ |
| Input: sensor 3 | X * | T3 |
| Input sensor 2 | T2 | T2 |
| Ground: sensors 1/2 | ⊥ | ⊥ |
| Input: sensor 1 | T1 | T1 |

| Lower terminal panel (mains) | 1882 | 1884 |
|------------------------------|------|------|
| Power supply L | L | L |
| Power supply N | N | N |
| (reserved) | X * | X * |
| Switch output 1 | SH1 | SH1 |
| Power supply L for SH1/2 | L' | L' |
| Switch output 2 | SH2 | SH2 |
| Switch output 3 | - | SH3 |
| Power supply L for SH3/4 | - | L'' |
| Switch output 4 | - | SH4 |

| Upper terminal panel (SELV) | 1883 /A /R /L |
|---|---------------|
| Signalling relay: normally closed contact | NC |
| Signalling relay: common contact | C |
| Signalling relay: normally open contact | NO |
| Input: sensor 4 | X * |
| Ground: sensors 3/4 | ⊥ |
| Input: sensor 3 | X * |
| Input sensor 2 | T2 |
| Ground: sensors 1/2 | ⊥ |
| Input: sensor 1 | T1 |

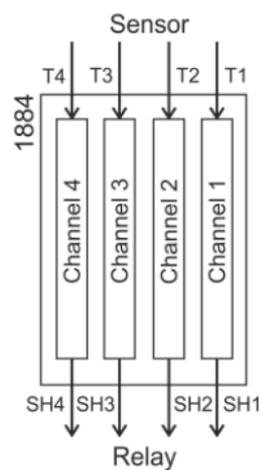
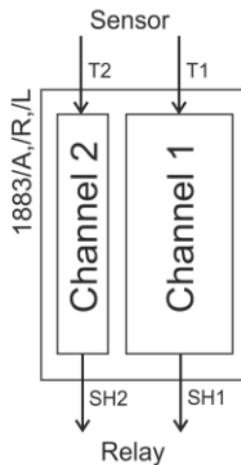
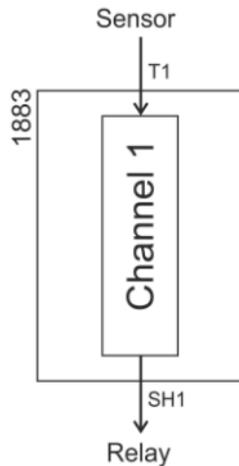
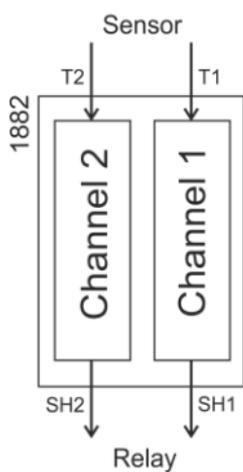
| Lower terminal panel (mains) | 1883 | 1883/A | 1883/R | 1883/L |
|--|------|--------|--------|--------|
| Secondary relay normally open/ closed contact ** | - | R1 | R1 | SH2 |
| Secondary relay normally open/ closed contact ** | - | R2 | R2 | N2 |
| | | | | |
| Power supply L | L | L | L | L |
| Power supply N | N | N | N | N |
| Power supply N for SH | N | N | N | N1 |
| Switch output | SH | SH | SH | SH1 |

* reserved, must not be used as support terminal

** optional, 1883/A normally open, 1883/R normally closed

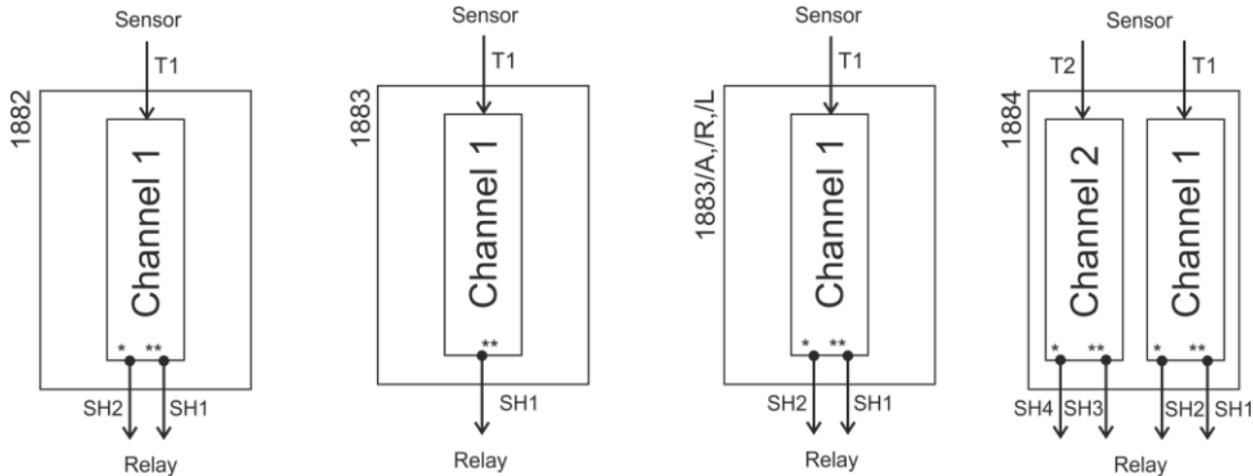
Channel configuration of the applications

Single control



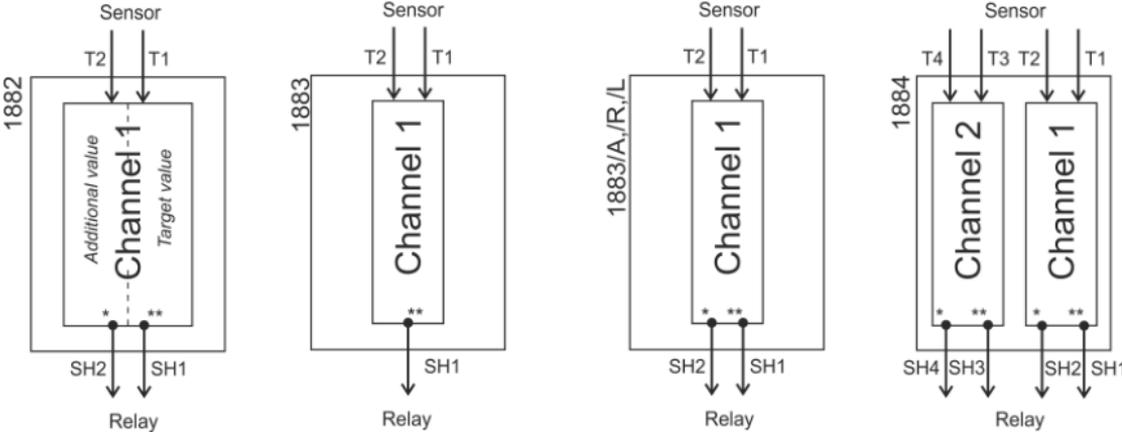
Installation

Double control



- * secondary relay
- ** primary relay

Sequential control



- * secondary relay
- ** primary relay

User interface

Display

The touchscreen may be operated by using the four softkeys at the bottom of the screen, pressing them either with the finger or the rubber end of the enclosed tekmar pencil. The keys have the following functions:

| Symbol | Function |
|--------|---------------------|
| Menu | launch menu |
| >> | next menu level |
| << | one menu level back |
| ↓ | one line down |
| ↑ | one line up |
| > | one setting further |
| < | one setting back |
| + | increase value |
| - | reduce value |
| Chng | change value |
| Esc | escape |

Idle display

The idle display shows the individual control channels alternatively, displaying general information about this control channel. Inactive channels are not shown in the display.

Single control:

- application (SGC for single control), Heating (↑)/Cooling (↓), number of displayed channel and number of channels
- state of the channel, possibly with further information (for example „Off setpoint“ because the setpoint value has been reached)
- Actual: actual temperature value (measured)
- Setpoint: setpoint value to be reached
- switching state of the output relay

The following is an example the idle display of channel 4 of an 1884-UTR used as a single control:

| | |
|--------------|-------------|
| SGC ↑ | Chan 4/4 |
| Off setpoint | |
| Actual | 42°C |
| Setpoint | 20°C |
| Relay | Off |
| 1884-UTR | Menü |

Double control:

- application (DBC for double control), Heating (↑)/Cooling (↓), number of displayed channel and number of channels
- state of the channel, possibly with further information
- Act: actual temperature value (measured)
- Setp: setpoint value to be reached (left) and additional value (right)
- switching state of the primary relay (left) and secondary relay (right)

The following is an example the normal display of channel 2 of an 1884-UTR used as a double control:

| | |
|-----------------------|-------------|
| DBC ↑ Chan 2/4 | |
| Off setpoint | |
| Actual | 42°C |
| Setpoint | 20°C |
| Relay | Off |
| 1884-UTR | Menü |

Sequential control:

- application (SQC for sequential control), Heating (↑)/Cooling (↓), number of displayed channel and number of channels
- state of the channel, possibly with further information
- Act: measured actual temperature main controller (left) and precontroller (right)
- Setp: setpoint value to be reached (left) and additional value for precontroller (right)
- switching state of the primary relay (left) and secondary relay (right)

The following is an example the normal display of channel 1 of an 1884-UTR used as a sequential control:

| | | |
|-----------------------|-------------|------|
| SQC ↑ Chan 1/2 | | |
| Off setpoint | | |
| Act | 42°C | 42°C |
| Setp | 20°C | 20°C |
| Relay | Off | Off |
| 1884-UTR | Menü | |

After pressing the *Menu* button several menu items are available.

User interface

Menu structure

The menu items *Information* and *Setup* may be used to display data and make day-to-day adjustments. Only a qualified electrician may change the settings under the menu item *Configuration*. Depending on the selected application (single control, double control or sequential control) and the active functional options, such as additional value, threshold value and switch-off time, different menu items will be displayed.

The individual menu items are explained in detail in chapter *Commissioning and adjustment*.

| Level 1 | Level 2 | Level 3 | Level 4 | EZR | DPR | FGR | Opt.* | page | |
|-------------|--------------------------|-------------------------------|-------------------------------------|-----|-----|-----|-------|------|----|
| Information | Control circuit <No.> | Channel state | | • | • | • | | 27 | |
| | | Measured value | | • | • | • | | 27 | |
| | | Measured value pre-controller | | | | • | | 27 | |
| | | Setpoint value | | • | • | • | | 7 | |
| | | Additional value | | • | • | • | av | 7 | |
| | | Threshold value | | • | • | • | tv | 27 | |
| | | Remaining switch-off time | | • | • | • | st | 28 | |
| | | Relay | | • | | | | 28 | |
| | | Primary relay | | | • | • | | 28 | |
| | | Secondary relay | | | • | • | | 28 | |
| | | PWM duty cycle | | • | • | • | pwm | 28 | |
| | | Operating hours | Operating hours relay (since reset) | | • | • | • | | 28 |
| | | | Operating hours relay (overall) | | • | • | • | | 28 |

User interface

| Level 1 | Level 2 | Level 3 | Level 4 | EZR | DPR | FGR | Opt.* | page | |
|---------|--------------------------|-------------------|---|-----|-----|-----|-------|------|----|
| Setup | Control circuit <No.> | Setpoint value | | • | • | • | | 28 | |
| | | Additional value | | • | • | • | av | 29 | |
| | | Threshold value | | • | • | • | tv | 29 | |
| | | Extended settings | Activate control channel | | • | • | • | | 29 |
| | | | Channel operating direction | | • | • | • | od | 29 |
| | | | Setpoint upper hysteresis | | • | • | • | | 30 |
| | | | Setpoint lower hysteresis | | • | • | • | | 30 |
| | | | Secondary relay as changeover relay | | | • | • | | 30 |
| | | | Additional upper hysteresis | | • | • | • | av | 30 |
| | | | Additional lower hysteresis | | • | • | • | av | 30 |
| | | | Additional value activates signalling relay | | • | • | • | av | 31 |
| | | | Additional value activates secondary relay | | | • | | av | 31 |
| | | | Error state activates secondary relay | | | • | • | | 31 |
| | | | Invert secondary relay | | | • | • | | 31 |
| | | | Threshold value upper hysteresis | | • | • | • | tv | 32 |
| | | | Threshold value lower hysteresis | | • | • | • | tv | 32 |
| | | | Switch-off time | | • | • | • | st | 32 |

User interface

| Level 1 | Level 2 | Level 3 | Level 4 | EZR | DPR | FGR | Opt.* | page | |
|---|------------------|--|-------------------------------------|-----|-----|-----|-------|------|----|
| | | | PWM interval time | • | • | • | pwm | 32 | |
| | | | PWM duty cycle upon error | • | • | • | | 33 | |
| | | | Operating hours : Reset counters | • | • | • | | 33 | |
| | General settings | Controller operating direction (od) | | • | • | • | | 33 | |
| | | | Invert signalling relay | • | • | • | | 34 | |
| | Display | Contrast | | • | • | • | | 34 | |
| | | | Brightness menu | • | • | • | | 34 | |
| | | | Brightness idle | • | • | • | | 34 | |
| | Configuration | Language | | | • | • | • | | 34 |
| | | Application | | | • | • | • | | 34 |
| Activate additional value (av) | | | | • | | | | 35 | |
| Additional value relative to set-point | | | | | • | • | | 35 | |
| Activate threshold value (tv) | | | | • | • | • | | 35 | |
| Activate switch-off time (st) | | | | • | • | • | | 35 | |

User interface

| Level 1 | Level 2 | Level 3 | Level 4 | EZR | DPR | FGR | Opt.* | page |
|---------|----------------------------------|---------|---------|-----|-----|-----|-------|------|
| | Activate PWM mode (<i>pwm</i>) | | | • | • | • | | 36 |
| | Sensor type | | | • | • | • | | 36 |
| | Restart | | | • | • | • | | 36 |
| | Factory settings | | | • | • | • | | 36 |
| Service | Version | | | • | • | • | | 36 |
| | Serial number | | | • | • | • | | 36 |
| | Set passwords | | | • | • | • | | 37 |

* This column shows which optional parameter activates this menu item: av = Activate additional value, tv = Activate threshold value, st = Activate switch-off time, od = Controller operating direction. pwm = Activate PWM mode

Note:

If the menu does not receive an answer to a data request, the display will show the character string "~~~" (3x tilde) instead of the parameter value.

Commissioning and adjustment

Commissioning procedure

1. Select the application for which the device is to be used (single control, double control or sequential control) under *Configuration* → *Application*. The factory settings for the application are loaded.
2. Activate the desired functional options:
 - activate additional value (set *Configuration* → *Activate additional value* to "On") for the single control; in case of double or sequential control the additional value is automatically active)
 - activate threshold value (set *Configuration* → *Activate threshold value* to "On")
 - activate switch-off time (set *Configuration* → *Activate switch-off time* to "On")
 - activate pulse width modulation (set *Configuration* → *Activate PWM mode* to "On")
3. Select heating or cooling operation under *Setup* → *General settings* → *Controller operating direction*. If this is to be different for the individual control circuits, select *Selection channel* and define the operating direction for each control circuit under *Setup* → *Control circuit <No.>* → *Extended settings* → *Channel operating direction*.
4. Set the setpoint value and possibly the additional value and the threshold value under *Setup* → *Control circuit <No.>*.
5. Adjust the PWM interval time under *Setup* → *Control circuit <No.>* → *Extended settings*.
6. Adjust the extended settings, if necessary, using the information in the following section *Settings in detail*.

Settings in detail

Channel state (menu: Information → Control circuit <No.>)

Display of the channel state (*Reset, StartUp, Deactivated, Off time, Off threshold, Off setpoint, On, PWM 0 %, PWM, PWM 100 %, Sensor error, State error*)

If the pulse width modulation is activated, the channel state may be "PWM 0 %", "PWM" or "PWM 100%". "PWM 0%" is shown in case the PWM duty cycle value is 0 % (i. e. the output is switched off), "PWM" in case the PWM duty cycle value lies between 1 % and 99 %, and "PWM 100 %" in case the PWM duty cycle value is 100 % (i. e. the output is switched on).

Measured value (menu: Information → Control circuit <No.>)

Display of the actual temperature value measured by the sensor

Measured value pre-controller (menu: Information → Control circuit <No.>)

Display of the actual temperature value measured by the second sensor of a sequential control

Setpoint value (menu: Information → Control circuit <No.>)

Display of the setpoint value; also refer to page 7

Additional value (menu: Information → Control circuit <No.>)

Display of the set additional value; also refer to page 7

This menu item is always displayed in case of a double or sequential control, in case of a single control only if the additional value is set to "On" under *Configuration* → *Activate additional value*.

Threshold value (menu: Information → Control circuit <No.>)

Display of the set threshold value; also refer to page 7

This menu item is only displayed if the threshold value is set to "On" under *Configuration* → *Activate threshold value*.

Commissioning and adjustment

Remaining switch-off time (menu: Information → Control circuit <No.>)

Display of the remaining switch-off time of the control circuit; also refer to page 8

This menu item is only displayed if the switch-off time is set to "On" under *Configuration* → *Activate switch-off time*.

Relay (menu: Information → Control circuit <No.>)

Display of the switching state of the relay of a single control (*On* or *Off*)

Primary relay (menu: Information → Control circuit <No.>)

Display of the switching state of the primary relay of a double or sequential control (*On* or *Off*)

Secondary relay (menu: Information → Control circuit <No.>)

Display of the switching state of the secondary relay of a double or sequential control (*On* or *Off*)

PWM duty cycle (menu: Information → Control circuit <No.>)

Display of the duty cycle value related to the pulse width modulation. The PWM duty cycle value is calculated on the basis of the setpoint temperature, the actual temperature and the hysteresis values. For more information also refer to page 10.

This menu item is only shown if the pulse width modulation has been activated (menu: *Configuration* → *Activate PWM mode*).

Operating hours (menu: Information → Control circuit <No.>)

Display of the operating hours of the relays in a control circuit (operating hours of a relay since the last reset and overall operating hours). In case of a double control and a sequential control the operating hours for the primary relay and the secondary relay are shown. This information can be useful for a service technician for control or troubleshooting, for example in order to find out for how long a relay has been switched on since a particular point in time.

Setpoint value (menu: Setup → Control circuit <No.>)

Setting of the setpoint value; also refer to page 7

Factory setting: 20 °C, possible settings: -50 to 300 °C (depending on the type of sensor)

Additional value (menu: Setup → Control circuit <No.>)

Setting of the additional value; also refer to page 7

This menu item is always displayed in case of a double or sequential control, in case of a single control only if the additional value is set to "On" under *Configuration* → *Activate additional value*.

Factory setting: 20 °C, possible settings: -50 to 300 °C (depending on the type of sensor)

Threshold value (menu: Setup → Control circuit <No.>)

Setting of the threshold value; also refer to page 7

This menu item is only displayed if the threshold value is set to "On" under *Configuration* → *Activate threshold value*.

Factory setting: 20 °C, possible settings: -50 to 300 °C (depending on the type of sensor)

Activate control channel (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining if the control channel is active. If not all the existing control channels are needed, they can be switched off so that the signalling relay will not report an error message.

Factory setting: Off (for control channel 2 of the 1882-UTR used as a single control), On (for the other control channels), possible settings: On, Off

Channel operating direction (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the operating direction for the individual control channel. For each channel it can be defined if it is to run in heating or cooling operation.

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This menu item is only displayed if the operating direction of the controller is set to "Selection channel" under *Setup* → *General* → *Controller operating direction*.

Factory setting: Heating, possible settings: Heating, Cooling, Selection channel

Setpoint upper hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the upper hysteresis of the setpoint value; also refer to page 7

Factory setting: 1,0 K, possible settings: - 20,0 to +20,0 K

Setpoint lower hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the lower hysteresis of the setpoint value; also refer to page 7

Factory setting: -1,0 K, possible settings: - 20,0 to +20,0 K

Secondary relay as changeover relay (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining that the secondary relay is to work as a changeover relay; also refer to page 9

This menu item is only displayed in case of a sequential control.

Factory setting: Off, possible settings: On, Off

Additional upper hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the upper hysteresis of the additional value; also refer to page 7

This menu item is always displayed in case of a double or sequential control, in case of a single control only if the additional value is set to "On" under *Configuration* → *Activate additional value*.

Factory setting: 1,0 K, possible settings: - 20,0 to + 20,0 K

Additional lower hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the lower hysteresis of the additional value; also refer to page 7

Commissioning and adjustment

This menu item is always displayed in case of a double or sequential control, in case of a single control only if the additional value is set to “On” under *Configuration* → *Activate additional value*.

Factory setting: -1,0 K, possible settings: - 20,0 to + 20,0 K

Additional value activates signalling relay (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining that the state of the additional value activates the signalling relay; also refer to page 9

This menu item is always displayed in case of a double or sequential control, in case of a single control only if the additional value is set to “On” under *Configuration* → *Activate additional value*.

Factory setting: On (for single control), Off (for double control and sequential control), possible settings: On, Off

Additional value activates secondary relay (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining that the state of the additional value activates the secondary relay; also refer to page 9

This menu item is only displayed in case of a double control.

Factory setting: Off, possible settings: On, Off

Error state activates secondary relay (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining that an error (e.g. a sensor error) activates the secondary relay of a double control; also refer to page 9

This menu item is only displayed in case of a double control.

Factory setting: Off, possible settings: On, Off

Invert secondary relay (menu: Setup → Control circuit <No.> → Extended settings)

Setting defining that the operating direction of the secondary relay is inverted for this control circuit; also refer to page 9

Commissioning and adjustment

This menu item is only displayed in case of a double control.

Factory setting: Off, possible settings: On, Off

Threshold value upper hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the upper hysteresis of the threshold value; also refer to page 7

This menu item is only displayed if the threshold value is set to “On” under *Configuration* → *Activate threshold value*.

Factory setting: 1,0 K, possible settings: - 20,0 to +20,0 K

Threshold value lower hysteresis (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the lower hysteresis of the threshold value; also refer to page 7

This menu item is only displayed if the threshold value is set to “On” under *Configuration* → *Activate threshold value*.

Factory setting: 1,0 K, possible settings: - 20,0 to +20,0 K

Switch-off time (menu: Setup → Control circuit <No.> → Extended settings)

Setting of the minimum switch-off time of the control channel in minutes; also refer to page 8

This menu item is only displayed if the switch-off time is activated (menu: *Configuration* → *Activate switch-off time*).

Factory setting: 0 minutes = Off, possible settings: 0 to 120 minutes

PWM interval time (menu: Setup → Control circuit <No.> → Extended settings)

Time interval in which a control circuit is switched on and off again once in normal operation in order to approach and keep a setpoint temperature with the help of the pulse width modulation. For more information on pulse width modulation also refer to page 10.

The PWM interval time can be set between 10 and 60 minutes.

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Note: It is recommended not to set the PWM interval time at a lower value than necessary because a short PWM interval time may have a negative effect on the lifetime of the relays.

The value *Off* can be used to exclude a control circuit from the PWM mode.

Note: When configuring an 1883-UTR/A, /R or /L as a two-channel single control, the second control circuit must not be run in PWM mode. The PWM interval time of the second control circuit has to be set to *Off*.

This menu item is only shown if the pulse width modulation has been activated (menu: *Configuration* → *Activate PWM mode*).

Factory setting: 20 minutes, possible settings: Off, 10 to 60 minutes

PWM duty cycle upon error (menu: Setup → Control circuit <No.> → Extended settings)

In case of a sensor error the pulse width modulation will be switched on automatically. For more information on pulse width modulation also refer to page 10.

In case of an error the PWM interval time will always be 30 minutes. The PWM duty cycle value upon error can be set here and is system-specific.

Note: If a PWM duty cycle upon error has been defined, the control circuit will be switched on in case of a sensor error according to this percentage, even if this is not necessary due to the actual temperature.

Factory setting: 0 %. possible settings: 0 to 100 %

Operating hours: Reset counters (menu: Setup → Control circuit <No.> → Extended settings)

The counter for the operating hours can be reset to 0 for each control circuit. This can be useful, for example, in order to find out for how long a relay is switched on in a certain period of time.

Controller operating direction (menu: Setup → General settings)

Setting of the operating direction of the controller, i.e. heating or cooling operation. This may either be defined for the controller or for individual channels. When selecting „Selection channel“ the menu item *Chan-*

Commissioning and adjustment

nel operating direction in *Setup* → *Control circuit <No.>* → *Extended settings* is activated so that heating or cooling may be set for the individual control channel.

Factory setting: Heating, possible settings: Heating, Cooling, Selection channel

Invert signalling relay (menu: *Setup* → *General settings*)

Setting defining that the idle state of the signalling relay is inverted; also refer to page 9

Factory setting: Off, possible settings: On, Off

Contrast (menu: *Setup* → *Display*)

Setting of the contrast

Factory setting: 0

Brightness menu (menu: *Setup* → *Display*)

Setting of the brightness of the display when showing the menu

Factory setting: 70%

Brightness idle (menu: *Setup* → *Display*)

Setting of the brightness of the display in idle state

Factory setting: 0%

Language (menu: *Configuration*)

Setting of the desired display language

Factory setting: German, possible settings: German, English

Application (menu: Configuration)

Setting of the desired application of the device, either as single control, double control or sequential control. The functioning of the controller is explained in more detail in chapter *Applications* above. If the application is changed, the new application will apply its own factory settings.

Factory setting: Single control, possible settings: Single control, Double control, Sequential control

Activate additional value (menu: Configuration)

Activation of the additional value in case of a single control; also refer to page 26

In case of a double control and a sequential control the additional value is activated automatically.

After the additional value has been activated for the single control, the menu item *Additional value* under *Setup* → *Control circuit <No.>* becomes active and may be set for each control circuit.

Factory setting: Off, possible settings: On, Off

Additional value relative to setpoint (menu: Configuration)

Activation of the additional value relative to the setpoint

This menu item is only displayed in case of a double control and sequential control.

Factory setting: On, possible settings: On, Off

Activate threshold value (menu: Configuration)

Activation of the threshold value; also refer to page 26

After the threshold value has been activated, the menu item *Threshold value* under *Setup* → *Control circuit <No.>* becomes active and may be set for each control circuit.

Factory setting: Off, possible settings: On, Off

Activate switch-off time (menu: Configuration)

Activation of the minimum switch-off time; also refer to page 26

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After the switch-off time has been activated, the menu item *Remaining switch-off time* under *Setup* → *Control circuit* <No.> → *Extended settings* becomes active and may be set for each control circuit.

Factory setting: Off, possible settings: On, Off

Activate PWM mode (menu: Configuration)

Activation of the pulse width modulation. For more informationen about pulse width modulation also refer to page 10.

Factory setting: Off, possible settings: On, Off

Sensor type (menu: Configuration)

Setting of the type of temperatur sensor. In order to easily identify the sensor, three temperatures (20, 30 und 40 °C) and the corresponding resistance values for each temperature (for example 2k4 as the short form of 2,4 kOhm for the temperature 20 °C for the tekmar Series 31 DIN sensor) are displayed.

Factory setting: tekmar Series 31 DIN, possible settings: tekmar Series 31 DIN, tekmar Series 30, Platinum sensor Pt1000, Silicon-PTC KTY81-210, Schlüter/Deltadore UNI, DEVI NTC 15k, OJ NTC 12K, OJ NTC 10K, Döring UAA 33J1, AEG WRFF 2100, Wagner TF21

Restart (menu: Configuration)

Possibility to restart the device, for example after the configuration has been changed or in case the control device shows an unusual behaviour.

Factory settings (menu: Configuration)

Possibility to reset the device to its factory settings. Also the application is reset to "single control".

Version (menu: Service)

Display of version and build number of the software

Serial number (menu: Service)

Display of the device's serial number

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Set passwords (menu: Service)

Possibility to set passwords for three menu levels (the upper level *Information* is always available without restriction). This is useful, for example, to ensure that only qualified installation staff configures the control device. The password consists of four digits and may be different for each of the three levels.

Password protection of the menu items:

| | |
|---|--------------------------------|
| <i>Information</i> | accessible without restriction |
| <i>Setup</i> <i>Configuration</i> <i>Service</i> → <i>Set passwords</i> | Level 1 password |
| <i>Setup</i> → <i>Control circuit <No.></i> → <i>Extended settings</i> <i>Setup</i> → <i>General settings</i> <i>Configuration</i> <i>Service</i> → <i>Set passwords</i> | Level 2 password |
| <i>Configuration</i> <i>Service</i> → <i>Set passwords</i> | Level 3 password |

A higher-level password is also valid for the lower levels. This means that someone who has access to a higher level will automatically also be able to access the levels below, even if he or she does not know the lower-level passwords.

In case a password has been forgotten or is no longer available for any other reason (such as change of installation technician) access can be regained with the help of a super password. On a website in the tekmar installation technician area the device's serial number can be entered and the super password retrieved. Contact the tekmar service in case of problems.

Factory setting: 0000 (all levels accessible without restriction)

Troubleshooting

If there is a functional problem, the information shown in the display may help find the reason.

| Displayed text | Possible reason for problem | Solution |
|---|--|--------------------------------|
| <i>Plain text error messages</i> | | |
| Error Display | Problem in display processor, e.g. checksum error | Reset ¹⁾ |
| Error Menu | Menu configuration error | Reset ¹⁾ |
| Error Controller | No connection between controller module and display module | Reset ¹⁾ |
| <i>Menu display (parameter display or idle display)</i> | | |
| --- | Software unsuitable for controller (update) | Reset ¹⁾ |
| | Connection to controller unit is disrupted | Reset ¹⁾ |
| | Missing TGN participant or problem with TGN bus | Check wiring |
| <i>Temperature displays</i> | | |
| - # - | Definition problem for sensor or entered value | Factory settings ²⁾ |
| - ^ - | Interrupted or missing sensor | Check wiring |
| - v - | Sensor shortcut | Check wiring |

Hints:

¹⁾ In order to reset the controller, trigger the upstream circuit breaker and reactivate it after 10 seconds..

²⁾ The restoration of the factory settings solves definition problems. After that the individual settings can be repeated.

If the solution described above does not solve the problem, contact the service. It is only possible to repair the controllers in the factory.

Technical data

| | |
|---|--|
| Rated voltage: | 230 V, 50 Hz |
| Acceptable voltage range: | 207 V to 253 V |
| Power consumption: | approx. 2 VA |
| Power relay: | <p>- All information below refers to Ohmic loads.</p> <p>- In-built fuse protection required by means of circuit breaker(s) required, tripping characteristic B, rated current see below.</p> <p>- For the 1883/L, 1883/A or 1883/R, the maximum load on the secondary relay is 3 A for room temperature applications. For other applications the load may be increased to 6 A.</p> <p>1882:</p> <p>- 2 x normally open, 1,15 kW / 5 A, rated current 10 A</p> <p>1883:</p> <p>- 1 x normally open, 4,6 kW / 20 A, rated current 20 A</p> <p>1883/A, /R:</p> <p>- 1 x normally open 4,6 kW / 20 A, rated current 20 A</p> <p>- 1 x normally open/normally closed, 0,7 kW / 3 A, rated current 3 A</p> <p>1883/L:</p> <p>- 1 x normally open 4,6 kW / 20 A, rated current 20 A</p> <p>- 1 x normally open 0,7 kW / 3 A, rated current 3 A</p> <p>1884:</p> <p>- 4 x normally open, 1,15 kW / 5 A, rated current 10 A (alternatively 2 x 10 A)</p> |
| Signalling relay: | zero-potential changeover relay, maximum of 1 A for 30 V= (SELV), potential separation from sensor inputs: 50 V~ |
| Low-voltage connections: | cage clamp terminals for 2.5 mm ² (top), tightening torque ≤ 0,5 Nm |
| Connecting terminals load circuit: (1882/1884): | cage clamp terminals for 2.5 mm ² (bottom), tightening torque ≤ 0,5 Nm |

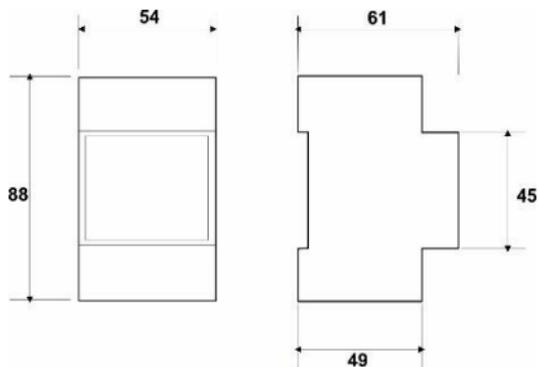
Technical data

| | |
|---|--|
| Connecting terminals load circuit: (1883): | cage clamp terminals for 4 mm ² (bottom), tightening torque ≤ 0,5 Nm |
| Connecting terminals additional circuit: (1883, optional): | cage clamp terminals for 2.5 mm ² (bottom), tightening torque ≤ 0,5 Nm |
| Sensor types: | tekmar Series 31 (NTC according to DIN EN 50350), tekmar Series 30, Platinum sensor Pt1000, Silicon PTC KTY81-210, Schlüter/Deltadore UNI, DEVI NTC 15k, OJ NTC 12K, OJ NTC 10K, Döring UAA 33J1, AEG WRFF 2100, Wagner TF21 |

Further information according to DIN EN 60730-1:

| | |
|--|---|
| Measuring and adjustment range: | maximum of -50 °C to +300 °C (depending on sensor type) |
| Enclosure: | rail-mounted device 3 HP (according to DIN 43880) |
| Mounting: | mounting rail TH-35 (according to DIN EN 60715) |
| Degree of protection, protection class | IP 20 (according to EN 60529), II if installed properly |
| Pollution degree: | 2 |
| Rated surge voltage: | 4000 V |
| Action type: | type 1.B |
| Area of operation: | up to 2000 m above sea level |
| Operating and storage temperature: | -15 °C to +40 °C / -20 °C to +70 °C, no condensation |
| Weight: | approx. 0.25 kg |

Dimensions



Regulations

The product corresponds to the following rules and regulations:

- EMC Directive
- Low-voltage Directive
- RoHS Directive

WEEE-Reg.-No.: DE 75301302



Available accessories

| | |
|---|--|
|  | <p>Temperature sensor 3131</p> <p>Standard temperature sensor of Series 31</p> |
|  | <p>Temperature sensor 3154</p> <p>High-quality brass temperature sensor of Series 31, degree of protection IP 68, bar-shaped, suitable for gutters or open areas</p> |
|  | <p>Temperature sensor 3115</p> <p>2-part temperature sensor of Series 31 in an extension frame, suitable for mounting on walls etc.</p> |
|  | <p>Temperature sensor 3114</p> <p>Magnetic attachment sensor of Series 31, suitable as contact sensor on metallic surfaces</p> |

Glossary

| Term | Explanation |
|------------------|---|
| additional value | second set value which defines a second switching point depending on the actual temperature value |
| hysteresis | switching points which trigger a control circuit to be switched on or off in order to avoid frequent switching in case the actual temperature is very close to the setpoint value |
| PWM | pulse width modulation |
| setpoint value | targeted value which is to be reached by the main control of the corresponding control channel |
| switch-off time | minimum waiting time before the output is switched on again after switch-off |
| threshold value | third set value which triggers the switch-off of the heating/cooling operation if the deviation from the setpoint value is too high |
| UTR | universal temperature controller |

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