U 468 931 003 451-4

Installation instructions and operating manual for the 8-channel radio receiver with 8-channel timer

GB

IN STAT 868 -a8U / 230

Contents

Warning!
The unit must only be opened by a qualified electrician and should be installed in accordance with the circuit diagram shown on the unit and in compliance with these instructions. All valid health and safety regulations must also be complied with.
This is an electronic device that is mounted in a switch cabinet to control thermostats and valves. It is to be used only in dry rooms and enclosed spaces where normal ambient conditions apply.
The device confirms to EN 60730, it works according operating principle 1C.

1. Application

This unit from the *INSTAT 868* family converts information from the *INSTAT 868* transmitters into control signals for the valves. Additional functions allow the temperature to be altered for a preset period of time.

2. Features

General:
- Ready to plug in to a 230 V power socket.
- Backlit display
- 230 V thermal actuators are directly connectable (a separate version is available for 24V thermal actuators)
- Heating/cooling changeover using an external signal 230V
- Cooling shutdown at dew-point using an external signal (using mains power signal or a directly connected dew-point sensor)
- Pump logic function via volt free relay (pump off is all valves are closed)
- Heater control function via volt free relay output (Heater off if all valve are closed))
- Valve testing function
- Valve/pump protection (prevents jamming)
- Programming is possible even with cover removed (only if the device is disconnected from mains)

Timer
- 8-channel timer for up to 8 time zones
- Preset real-time timer, no setting required
- Automatic summer/winter time changeover
- 6 time profiles, all adjustable
- Holiday function (reduction for a maximum of 200 days)

Radio communication
- 8 reception channels in one casing
- Master/slave function (master timer thermostat specifies switching times, not the integrated timer)
- One transmitter can control several reception channels
- Transmitter has an auto-learn address setting using learning mode
- A signal lamp for each output displays relay status, faults etc.
- Alarm sounds if a fault is detected
- Monitoring of valid addresses
- Transmitter monitoring (if nothing is received from the transmitter for a long period, for instance if the battery is flat), the output is switched on for 30% of the time and the signal lamp blinks.

3. Operating principles

Room 1 ... Room 8	Radio displays for rooms On = relay energized, see 5.1 Blinking = fault, see 5.6
☾ R1... R8	Room is at reduced temperature if arrow is visible Moon = reduced temperature No moon = 'Comfort' temperature
1...7	Weekday
ESC	back
-/+	Select menus change values
OK	Confirm
☼	Cooling active
💧	Dew-point identified
☼	'Comfort' temperature (programming)
☾	Reduced temperature (programming) or Set-back input is active
🧳	Holiday function
Heater	Room 7 is heating or Heater is running
Pump	Room 8 is heating or pump is running

Standard display:
- Actual day of week (1 = Monday)
- Time
- Rooms with reduced temperature (here R1, R3, R5, R7)

Programming with removed display unit (Insatller only)
- switch off mains supply and open the outside cover
- pull of the flat cable from power board
- press OK until the display appears (now without backlight)
- Plug in the display unit only if device is without mains supply.

3.1 Handling Principles

-/+	go through menus change values
OK	activate menu item save value
ESC	cancel or back one step

Activated menu items will be cancelled after 10 Minutes without saving the actual modification

Menu items

13:20	basic mode, read actual time (: is blinking)
CLOC	set time
HOL	set holiday (controls rooms at set-back temperature)
CodE	access protection
ProG	Programming
Pr:Pr	Program Profile
Pr:ro	Program Room
Funk	maintain RF
LErn	establish radio link
dIST	test radio distance
dEL	delete radio link
InST	Installer settings
A:In	invert outputs (for valve NO)
uE:TE	valve test
uE:Sc	valve protection
HY:Ab	Hygrostat or set-back

4. Functional description

The *INSTAT 868-a8U* receiver converts the radio signals from the *INSTAT 868-r...* transmitter into control signals for electrical consumers such as thermal actuators. The consumers are switched by relays, with signal lamp to display the switched status in each case.
For relay switching behaviour, see 'Functional description' in transmitter installation instructions.
Room temperatures can be influenced by varying the time settings at the built-in 8-channel timer.

4.1 Time and Date setting

Press key **+** until CLOC is displayed
Press:
OK — year is displayed, digits are blinking
-/+ — to change
OK — Day, Month is displayed, Day is blinking
-/+ — to change
OK — Month is blinking
-/+ — to change
OK — day of week is blinking
-/+ — to change
OK — Time is blinking
-/+ — to change
OK — to save

4.2 Setting the holiday function 🧳

The rooms can be reduced in temperature to the value selected at their thermostats for a predetermined period (max. 200 days).

Press **+** until HOL will be displayed
Press OK — The number of days is blinking = 00:1d
The arrow is against the 🧳 symbol.
Press **-/+** — to change the figure.
Press OK — to confirm the new setting.

If the holiday function is active, the arrow can be seen against the 🧳 symbol. At midnight on the last day of the holiday period, automatic operation is selected again and the preset program goes back into operation. (If for example 1 day is selected as the holiday period, the automatic function is restored at midnight on that day. To deactivate the function, press ESC.
Master comply with their own holiday periods, not the one selected here.
The function continues after a power failure.
Note: this function has no effect in the "Cooling" mode; the temperature is not raised.

5. Installer Settings

These settings should only be modified from an expert. Wrong adjustments could result in a damage of the heating system.
In order to protect from unwanted modifications a CODE protects these menu items
In order to move to the CODE:
Press:
key **-/+** — until CodE is blinking
OK — press for ~ 5 sec to accept. This activation of the code will be valid for 1h. In this case Code will not displayed any more

In the descriptions below the necessary key presses will be described in order to go to a specific function, this will be done in the form:
Press key **+** until {CodE} ➜ Funk (OK) ➜ LErn is visible.
(OK) means press OK key

5.1 Radio link set-up

Up to eight transmitters control either one or several 'Heating/cooling ON/OFF' channels (1 ... 8) (channel 7, 8 may be illuminated, see 5.8, 5.9).
One or several thermal actuators can be connected to each output.
For an example, see Fig. 1, 2.
Only the INSTAT 868-r1 (without timer) follows the time profile of this receiver in the automatic mode.

The radio link is set up in the following steps:
a) Select the 'Learning mode' at the transmitter for the desired room (see transmitter operating instructions).
b) At the receiver, set the desired channel to the learning mode as follows:
Press key **+** until {CodE} ➜ Funk (OK) ➜ LErn is displayed
OK — already learned channels will be displayed
channel LED 1 and R1 is blinking, F0 L is displayed
-/+ — to change channel until the lamp of required room is blinking
OK — to start learning mode
The channel LED and room arrow are blinking, digit in front of L increments in sec interval e.g. F1:9L
the actual received signal power will be displayed a sound can be heard.
If link is established, blinking and sound stopps, the room arrow remains, to show the latest learned channel
c) Stop the learning mode at the transmitter.
To 'learn' the next room, carry out step a) and select the appropriate channel at the receiver, by using **-/+** key.
To allocate several reception channels to the same transmitter, leave the transmitter in the learning mode and 'learn' the relevant channels one after the other.
ESC — to cancel

Display of signal power
F3= good
F2 = medium
F1 = not enough
F0 = no signal

Notes:
- The function is interrupted automatically if no button is pressed for 10 minutes ➜ return to standard status
- Each channel needs about 30 seconds' learning time.
- Learning at channel 7 cancels heater control.
- Learning at channel 8 cancels pump logic.
- One transmitter can control several reception channels (several valves per transmitter).

5.2 Test radio distance / signal power / learned channels

Each channel provides info about the received signal power. This is used to estimate the signal power/radio distance

Press key **+** until {CodE} ➜ Funk (OK) ➜ dISt is displayed
a) **Note:** Not possible with removed cover
OK — already learned channels will be displayed
channel LED 1 and R1 is blinking, the last signal power will be displayed e.g. F1:dI
-/+ — to change channel
channel LED and room arrow is blinking, the last signal power will be displayed
Signal power see 5.1
The power of the received signals will be displayed (F1...F3).
F0 for no signal (e.g. between signal packages)
b) Move the transmitter away and turn the temperature set point from min to max and vice versa. This allows estimating the distance
Alternative: INSTAT+ 868 Use function "Test radio distance"
INSTAT 868-r1 press Reset, the corresponding channel will blink several times

5.3 Deleting radio links

To delete all radio links:
Press key **+** until {CodE} ➜ Funk (OK) ➜ dEL is displayed
OK — already learned channels will be displayed on the LEDs
dEL will is blinking
OK — to delete all links

5.4 Use of *INSTAT 868-r / INSTAT+ 868* timer thermostat (master - slave)

If learning of a timer thermostat (master) is carried out all the downstream channels (slaves) follow the master unit's switching signals. The timer in this receiver is not used for these channels. The reduced-temperature arrows indicate when the master and slaves have reduced the temperature to the reduced value.

If, for example, the timer thermostat (master) has been learned at channel 4, and channels 5, 6, 7, 8 have no timer (slaves), the slaves at channels 5, 6, 7, 8 will follow the timer profile (temperature lowering times) of the master at channel 4. For an example, see Fig. 3.

Only slaves in the automatic operating mode follow the master settings.

If the master develops a fault, the slaves' reception channels respond to the 'comfort' temperature setting at these control devices.

5.5 Alarm signal

The alarm takes the form of an audible signal (only between 10 h and 20 h).

If the OK button is pressed while the alarm is sounding, the audible warning is switched off until the fault has been rectified. The alarm signal is heard again if a further fault develops.

5.6 Faults in radio link

If faults occur, they set off the alarm.

The signal lamp for the affected channel blinks and an audible warning is heard if appropriate. An error-text can be read.

5.6.1 Duplicate addressing (Er:do)

"Er:do" is displayed, the affected channel blinks and the warning signal is heard. Eliminate this fault by re-learning one of the two transmitters. The output is switched to 30 % of the set value.

5.6.2 Short-term failures of transmitted signal (Er:SE)

If no control signal is received from the transmitter for a period between 1 and 10 hours, the signal lamp blinks, Er:SE is displayed (no audible warning signal). The output is switched to 30% of the set value. If the transmitted signal returns, the alarm is discontinued automatically.

5.6.3 Long term failures of transmitted signal (Er:SE)

If no control signal is received from the transmitter for a period of more than 10 hours, the signal lamp blinks Er:SE will be displayed and the warning signal is heard. The output is switched to 30 % of the set value. If the transmitted signal returns, the alarm is discontinued automatically.

5.6.4 Additional RF-Errors

Er:LE will be displayed if more than one transmitter is in Learn-Mode. -> stop Learn-Mode on the transmitters and re-start it again with on Transmitter only

Notes:

- The audible warning signal can be switched off permanently; see 5.5.
- The audible alarm signal is only heard between 10 h and 20 h.

Applicable to all types of fault:

- Switch operation: if one output has a fault, the others are not affected.
- In an alarm situation, pump and heater will follow the valves.
- Master/slave: if the master develops a fault, the slaves are switched to the 'comfort' operating mode.
- At the end of a power failure affecting the transmitter or receiver, normal operation is restored.
- In difficult local conditions, the radio link between transmitter and receiver may be inadequate (for instance if the receiver is in a metal casing that inhibits the transmission of radio signals. Check whether repositioning the transmitter yields a better result. To test the range of the radio link, see Item 5.2. If necessary, use the repeater.

5.7 Connection of thermal actuators normally open

As delivered, the device is intended for thermal actuators that are closed when the power is shut off. The appropriate pump logic and heater control is retained. To change the type of thermal actuator:

Press key + until {CodE} ➜ InSt (OK) ➜ A:In is displayed

Press OK	activates the function; adjusted value will blink.
Press -/+	to change the effective direction: A:nC = closed when not energised. A:nO = open when not energised.
Press OK	to confirm the change.

5.8 Pump logic

Up to 7 transmitters each control one channel (channels 1...7) for heating/cooling ON/OFF.

The channel 8 output serves as common pump logic, Fig. 4.

The pump is shut down and the 'Room 8' lamp goes out if none of the connected transmitters calls for additional heat. The pump is switched by terminals 4-5 of channel 8 (normally-closed relay).

By wiring the channel 8 outputs in parallel, the pump logic can be extended to cover several groups of receivers; see Figs. 6).

The pump logic works in the correct way for heating/cooling changeover and for dew-point shutdown.

Switch on delay: 1,5 Min (if first valve opens)

Switch off delay 3 Min (if last valve closes)

The pump logic is always activated if channel 8 has not 'learned' a transmitter. To re-activate the pump logic, erase channel 8; see 4.3 "Deleting radio links".

5.9 Heater control

This function is similar to pump control on channel 8.

There are these differences: see fig. 5

- channel 7 (and its lamp) is used
- valve protection is not used
- Switch on delay = 0, switch off delay = 10 min

Note: On channel 8 a valve can be connected

5.10 Valve protection

If this function is switched on, the valves are opened once a day (at 10h in the morning) in summer as well.

To adjust the ON-time of the valve: (OFF = as delivered condition)

Press key + until {CodE} ➜ InSt (OK) ➜ uS:xx is displayed

OK	activates the function, uS:xx is displayed xx is blinking, indicating the actual ON-time
-/+	to change (xx = time in minutes, OFF = OFF)
OK	to accept

Note: If this function is activated here, the valve protection function in the transmitter has to be disabled. Otherwise this function would be activated twice.

5.11 Valve test

To test the valves, all the outputs can be energised.

At the end of the test, the standard operating mode is automatically restored.

Press key + until {CodE} ➜ InSt (OK) ➜ uE:rE is displayed

OK	activates the function; OFF blinks.
Press -/+	to switch on or off: OFF = all outputs off. On = all outputs on.
Press OK	to save

The function is terminated automatically after 10 minutes.

5.12 Heating/cooling changeover ☼ / ☼

With the aid of this function, the receiver can be used for heating and cooling, for instance with a central heat pump, Figs. 7, 8.

The switching pattern is reversed at all outputs (if the pump logic is activated, it remains unchanged if appropriate).

Note: transmitters must not be reset to "Cooling".

For cooling (summer operation):

activated by applying mains voltage to the "Heat/cool" terminals. When cooling is active, this is shown by the arrow against symbol ☼.

Note: In the cooling mode, there is no increased temperature setting; the timer is not used for this. On a master, the temperatures need to be adjusted according the cooling needs e.g. T1=21°, T2=24°, T3=27°

For heating (winter operation)

No mains voltage at the "Heat/cool" terminals.

5.13 Excluding rooms from cooling

With this function, certain rooms, for instance the bathroom, can be excluded from cooling. No cooling takes place in these rooms even if the "Cooling" mode is in use.

Press key + until ➜ {CodE} ➜ InSt (OK) ➜ no:Co is displayed.

OK	Activates the function; the arrow against room 1 on the display blinks.
-/+	to select a room (the arrow on the display moves on each day); the status of the room is displayed.
OK	Activates this room; Co:xx blinks.
-/+	changes between On / OFF (ON for cooling activated, OF for no cooling)
OK	To save the setting
	For additional rooms continue with the items above
ESC	Interrupts the current level.

5.14 Select function of 230V Input (Hyg/Abs) as "Hyg" or as set-back

can be selected if this 230V input is used to activate the Hygrostat function or the set-back function

Press key + until {CodE} ➜ InSt (OK) ➜ HY:Ab is displayed

OK	activates the function, HYG or AbS is displayed, according actual setting
-/+	to change HYG = Hygrostat function see 5.15 AbS = Set-Back Function see 5.16 (= default-setting)
OK	to save

5.15 Dew-point shutdown (HYG, TAU)

By applying a mains voltage to "HYG" (see 5.14) in the cooling mode, all channels and the pump are shut down (Fig. 9). This signal can for example be transmitted by an external hygrostat.

Note:

Transmitters must not be set to "Cooling" mode.

Shutdown dew-point is also possible if sensor TS 193 683 is connected to the "TAU" ("DEW") terminals (Fig. 10). The dew sensor will be scanned in 10 Min intervals.

Use either HYG or TAU, but not both. When HYG or TAU is active, an arrow appears against the 💧 symbol.

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5.16 Set-back all Rooms (ABS = Set-Back)

If the input „AbS" is activated (see 5.14, Fig 11) all rooms will be controlled to the set-back temperature which is adjusted on the room's thermostats. In cooling mode, normal cooling will be executed!

If „AbS" is active, the arrow on symbol ☾ will be displayed, the arrows on all rooms will be active. The set back temperature (-2° or -4°) can be selected in the transmitter.

Note: to activate set-back function see 5.14

5.17 Power failure

If there is a power failure affecting either the transmitter or the receiver, no data are lost. Operation continues as before when the power supply is restored. The timer continues to operate if there is a power failure (but with no display). The channels are switched on again when they receive a radio signal; this can take up to 10 minutes.

5.18 Reset

The following are reset:

All rooms to profile 1
all profiles to the manufacturer's setting; see 5.21
Holidays = 1
All functions are interrupted
The alarm function is re-activated if it was previously switched off; see 5.5

The radio links and the timer are not affected.

Activating the function:

First press reset and hold it in by inserting a pointed implement into the hole between - and +), then press OK briefly.

5.19 Lamp functions

If the round lamp is on, the power supply is present (fuse). The rectangular lamps provide the following information on the various channels/rooms

• Heating/cooling ON/OFF	Comes on during heating/cooling
• Faults	Blinks; see 5.6
• Learning mode	see 5.1
• Valve test	On for 10 minutes; see 5.11
• Pump logic / Heater control	see 5.8, 5.9

5.20 Programming

The device includes a switch clock, it enables to program one of 6 time profiles for each room and each day. The time profiles can be modified according personal needs see 5.22.. Once adjusted to a room and day the events of a profile can be adjusted to that needs. Is an arrow visible on a room R1...R8 then this room will be controlled to the set-back temperature which is adjusted on its thermostat. Is an arrow not visible, the comfort temperature will be used.

5.21 Adjusting time profiles

From Factory, the time profiles are pre-set, they can be modified.

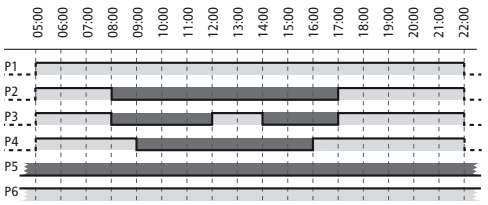
Profile 1 is adjusted to all days and all rooms.

Pre-set profiles

Profile		E1		E2		E3		E4		E5		E6
1	C	05:00	S	22:00	S	---ↄ						
2	C	05:00	S	08:00	C	17:00	S	22:00	S	---ↄ		
3	C	05:00	S	08:00	C	12:00	S	14:00	C	17:00	S	22:00
4	C	05:00	S	09:00	C	16:00	S	22:00	S	---ↄ		
5	S	00:00	S	---ↄ		continuous set-back temp.						
6	C	00:00	C	---ↄ		continuous comfort temp.						

Note: Before the first event, the temperature of the day before will be used

The above table results in the following picture



C = Comfort temperature, S = Set-back temperature

---ↄ no additional events today

Pressing ESC while modifying a profile, event 1 will be selected

Note:

- The first event can be reduced to 00:00h, following events can be reduced to the one before + 10 Min.
- An event can be extended up to 23:50h.
- If key + will be pressed at 23:50, ---ↄ will be displayed and the chevron the next profile is blinking, this is an indication that the next event will be in the next profile/day.
- Using this method, 1...6 Events per day can be used

Change profiles

press key + until {CodE} ➜ InSt (OK) ➜ Prog (OK) ➜ Pr:Pr is displayed

OK	arrow on day 1 = profile 1 is blinking
a) Select profile	
-/+	to select a profile (arrow at day 2, then 3, 4, 5, 6)
OK	to select profile
b) Change events	
	room-arrow at R1 = beginning of event 1 time will be displayed e.g. 05:00 arrow at ☼/☾ is blinking
-/+	to change comfort or set-back mode
OK	time is blinking
-/+	to change (if no additional events are needed, select ---ↄ [by setting 23:50 and pressing key +])
OK	the next switching event is blinking (arrow at R2 or R3, R4, R5, R6). For additional events, continue with b) On last event the next profile will be activated (Day arrow +1)
Repeat items b) for additional events in this profile	
Repeat items a) for additional profile	
ESC	to cancel (at select profile, if day arrow is blinking)

5.22 Setting time profiles to individual rooms

When the device leaves the factory, profile 1 is set for all rooms and all days of the week.

To change the settings:

press key + {CodE} ➜ InSt (OK) ➜ Prog (OK) ➜ Pr:ro (Program Room) is displayed r1P1 (room1, Program 1) is displayed.

	Arrow at the actual day (at 1...7) Room 1 = r1 is blinking
Select room:	
-/+	to change room
OK	number of day is blinking
Select day	
-/+	to change days. Blocks of days are possible. Mon-Fri, Sat-Sun, all days. This makes it easier to adjust days with similar profiles
OK	arrow at profile is blinking, e.g. P1
Select profile (available profiles see 5.21):	
-/+	to change Profile (P1...P6, SP)
OK	to save
For additional rooms, repeat the items above from "select room".	
ESC	to exit

Note: SP (Special Profile) this allows changing the events of an individual day see 5.21 b)

6. Installation / start-up

Installation:
- Only in the electrical or heating circuit junction box on DIN (i.e. “top-hat section”) rails
- Any installed attitude is possible.
- Water must not be allowed to reach the device.

Electrical connections:

> **Caution:** Disconnect the device from the power supply before making the electrical connections. On terminals Heat/Cool and HYG/ABS there can remain voltage

See circuit diagram in the device and Figs. Figs. 1 – 11.
For normally-open thermal actuators, see 5.7

Connecting the operating voltage:
Insert the plug into the power socket. If a direct connection is needed, remove the plug and connect the wires in the power cable directly.
On completion of installation work, a link must be established between the *INSTAT 868-r ...* transmitter and the appropriate channel (1...8) (see 5.1 onwards).
After switching on, the display shows the product variant and the software version briefly.

Note:
When switching on power supply it can last up to one minute until the display becomes visible. In order to shorten this, press and hold down a key.

6.1 Difficult environment conditions

If receiving conditions are difficult or in order to increase the radio distance (up to 90 m), the repeater INSTAT 868-rep can be used.

6.2 What to do if ...

1. **Valve does not open:**
   ➜ see Table 1
   ➜ perform a ‘reset’: see 5.18
2. **A signal lamp for one radio channel is blinking (a beep signal may also be heard)**
   ➜ Basic information: see 5.6
   ➜ Learning mode, valve test, radio link test not interrupted (see 5.18)!
   ➜ Two transmitters are supplying signals with the same address; one of the radio links must be re-learned (see 5.6.1)!
   ➜ No radio link; see Table 1
   ➜ One or more channels are blinking to indicate that they have no link with their transmitter
   Restore the necessary links (see 5.1)
   If necessary, carry out “Delete radio links” (see 5.3) and create new links.
3. **Channel 7 or 8 lights up although no transmitter has been ‘learned’**
   ➜ Channel 7 is used for Heater control or channel 8 is used for pump control (see 5.8, 5.9).

If any unexplained faults develop, it is best to press the ‘Reset’ button on the thermostat and if necessary on the receiver.

7. Technical data

Order reference	*INSTAT 868-a8U /230*
Article No.	0536 80 14
Operating voltage:	230 V 50 Hz
Power consumption:	4 VA
Fuse:	4 A slow-acting
Ambient temperature: (without condensation)	0 ... +50 °C
Storage temperature:	–20 ... +60 °C
Antenna	internal
Dew-point sensor optional:	TS 193 683
Displays: for learning	8
For operating voltage	1
Load circuits:	6 relay normally open, 4(2) A *
Channel 7 Heater control	1 relay CO contact volt free, 4(2)A ***
Channel 8 Pump control	1 relay CO contact volt free, 4(2)A ***
Number of thermal actuators 3 W per channel:	max. 10 **
Enclosure rating:	IP 40 / insulated (Moisture condensation not permitted)
Protection category:	II
Timer: minimum switching period:	10 minutes
Battery life:	~ 4 years
Degree of pollution	2
Software class:	A
Rated impulse voltage	4 kV
Brinell test temperature	75 °C
Voltage and current for EMC emitted interference testing	250 V / 0,1 A
Dimensions (with DIN, i.e. “top-hat section” mounting rail):	310 x 90 x 65 mm
Weight: approx.	850 g

*) Total of all currents ≦ 2 A
**) One device can operate up to 15 thermal actuators (fuse)
***) Do not supply pump from inside the receiver

Batteries

Batteries, rechargeable or not, should not be disposed in to ordinary household waste. They have tot be recycled properly to protect the environment and cut down the waste of precious ressources. Your local waste management authority will upply you with the details concerning the proper disposal of batteries.

In compliance with the EU Directive 2006/66/EC, the button cell battery located on the printed circuit board inside this product, has only to be removed by professional personnel at the end of the product life cycle.

Note: In some rare cases it may not be possible to establish a permanent radio link between the radio transmitter and the radio receiver. We therefore recommend to check the reliability of operation at the specific location. In order to establish longer transmission distances (up to 90 m) or in case of critical locations, the RF repeater INSTAT 868-rep can be used.

This thermostat can be used in all EU and EFTA countries.

CE The manufacturer hereby declares that this device conforms with the basic and other relevant requirements laid down by directive R&TTE 1999/5/EC. The declaration of conformity can be downloaded from „www.funk868MHz.de“.

8. Brief manual

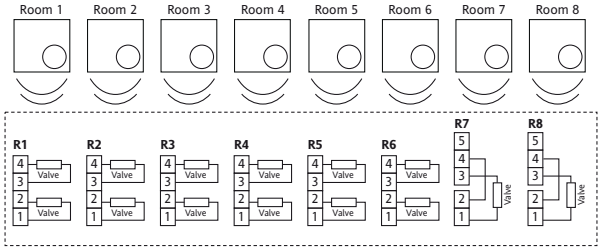
Radio functions	Chapter	Action
CODE	5	OK for 5 Sec to accept (code is valid for 1 h).
Establish the radio link, switch output	5.1	Set the transmitter to the learning mode (see instructions supplied with transmitter) At the receiver: Press key + until CodE ➜ Funt ➜ LErn Is displayed OK ➜ already learned channels will be displayed -/+ ➜ to change channel OK ➜ to start learning mode The channel LED is blinking, digit in front of [L] increments in sec interval the actual received signal power will be displayed If link is established, the channel LED goes off Terminate the learning mode, start learning for next channel if necessary
Test of radio distance signal power already learned channels	5.2	Press key + until CodE ➜ Funt ➜ dISt is displayed OK ➜ already learned channels will be displayed -/+ ➜ to change channel the last received signal power will be displayed e.g. [F1:dI]
Deleting radio link	5.3	Press key + until CodE ➜ Funt ➜ dEL is displayed OK ➜ already learned channels will be displayed ➜ dEL is blinking OK ➜ deletes all channels
Master / slave	5.4	Master = thermostat with timer; slave = thermostat without timer Slaves at channels with a higher number than the master comply with the master, (not with the timer in the receiver)
Audible alarm signal	5.5	Is only sounded between 10h and 20h OK ➜ Stops audible warning if pressed while it is being sounded
Other functions		
Connection of valves normally closed / open	5.7	Press key + until CodE ➜ InSt ➜ A:In is displayed OK ➜ last used value blinking -/+ ➜ A:nC = valve closed when power is shut off, A:nO = valve is open when power in cut off OK ➜ confirm
Pump logic	5.8	always active if channel 8 has not been ‘learned’
Heater control	5.9	always active if channel 7 has not been ‘learned’
Valve protection	5.10	Press key + until CodE ➜ InSt ➜ uS:xx is displayed OK ➜ xx is blinking, (xx = actual value) -/+ ➜ to change, (xx = time in minutes or OFF) OK ➜ to accept
Valve test	5.11	Press key + until CodE ➜ InSt ➜ uE:tE is displayed OK ➜ activates the function; OFF blinks. -/+ ➜ to switch on or off: ➜ OFF = all outputs off. ➜ On = all outputs on. OK ➜ to save
Heating/cooling changeover	5.12	Mains voltage to “heat/cool” terminals activates cooling mode, arrow at ☼
Excluding rooms from cooling	5.13	Press key + until ➜ Co:OF or Co:On is displayed. OK ➜ to activates the function the arrow against room 1 on the display is blinking. -/+ ➜ to select a room the status of the room is displayed. OK ➜ activates this room; Co:xx flashes. -/+ ➜ to change ON / OFF (On for cooling activated, OF for no cooling) OK ➜ To save the setting; next day flashes repeat above points for requested rooms
Select HYG or set-back	5.14	Press key + until CodE ➜ InSt ➜ HY:Ab is displayed OK activates the function, HYG or AbS is displayed -/+ to change HYG = Hygrostat function see 5.15 AbS = Set-Back Function see 5.16 OK to save
Dew-point shutdown	5.15	Mains voltage to “HYG” terminals or dew-point signal from sensor "TAU" terminals = valve off during cooling; arrow at ❄
Set-back all rooms	5.16	Mains voltage at "Abs" will activate set-back mode for all rooms
Timer functions		
Date and Time	4.1	press key + until CLOC is displayed
Year		OK ➜ year is displayed, last 2 digits are blinking -/+ ➜ to change
Month		OK ➜ Month is blinking -/+ ➜ to change
Day		OK ➜ Day is blinking -/+ ➜ to change
Weekday		OK ➜ day of week is blinking -/+ ➜ to change
Time		OK ➜ Time is blinking -/+ ➜ to change OK ➜ to save
Holiday		4.2 ➜ Press + until HOL will be displayed OK ➜ the number of days is blinking -/+ ➜ to change the days OK ➜ to confirm
Time profiles	5.21	press key + until CodE ➜ InSt ➜ ProG ➜ Pr:Pr is displayed
Select profile		OK ➜ arrow on day 1 = profile 1 is blinking -/+ ➜ to change OK ➜ to select profile
Change profile		➜ arrow at ☼/☾ is blinking -/+ ➜ to change OK ➜ time is blinking -/+ ➜ to change OK ➜ the next switching event is blinking (arrow at R...) Repeat items for the needed events and profiles ESC ➜ to cancel (at select profile, if day arrow is blinking)
Time profiles for rooms	5.22	press key + until CodE ➜ InSt ➜ ProG ➜ Pr:ro is displayed
Select room		OK ➜ number of room is blinking e.g. [r 1] -/+ ➜ to change
Select day		OK ➜ arrow at day is blinking -/+ ➜ to change. Blocks of days are possible
Select profile change profile		OK ➜ number of profile is blinking e.g. [P1] -/+ ➜ to change (SP to change events for this day) OK ➜ to save For additional rooms, repeat the items above. ESC ➜ to exit

Table 1: If the radio link does not operate ...

Test as follows	Yes	NO
1 Receiver: is the round signal lamp on?	Continue at 2	Check mains power supply, renew fuse inside receiver if necessary
2. Receiver: Is a channel (1...8) signal lamp flashing Can the audible warning signal be heard? (possibly only after 1 hour)	Duplicate address; see 5.6.1 or Transmitter signal still missing; continue at 3	 Continue at 5
3. Check active links: see 5.2 Are the 'learned' channels visible?	 Continue at 4	 New learning procedure: see 5.1
4. Transmitter: is the battery OK?	Continue at 5	Fit new batteries
5. Transmitter: set to 30 °C Is the relay energised after 30 seconds (lamp comes on)?	 Continue at 6	relay was already on, cont. with 6, or No transmitter signal: continue at 7
6. Transmitter: Set to 5 °C Is the relay switched off after approx. 30 seconds (lamp off)?	 Everything OK	 No transmitter signal: continue at 7
7. Transmitter - receiver - thermal actuator: check wiring, if necessary re-learn link with receiver Can items 5 and 6 now be performed successfully?	 Everything OK	 cont. with 8, test radio link (see 5.2 Radio link range test)
8. Reduce distance between transmitter and receiver to approx. 2 metres. Can items 5 and 6 now be performed successfully?	If necessary, use the Repeater	Receiver may have a fault

Fig. 1

Single-room control with simple thermostat; 8 rooms, each with separate thermostat control

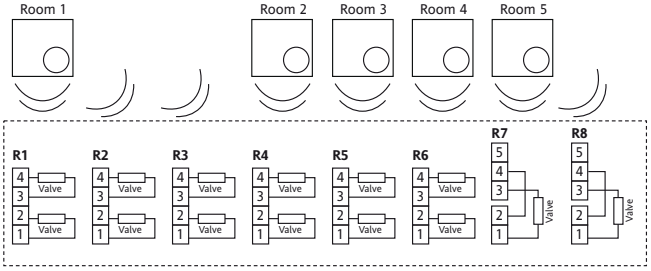


Function change over needed if thermal actuator normally open is used - see 5.7

Fig. 2

Single-room control; one transmitter supplies signals on various channels

(several valves for 1 room); 5 rooms, each controlled by a thermostat. Room 1 = 6 valves; room 5 = 2 valves

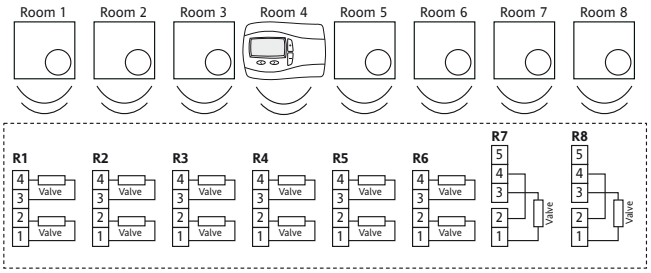


Function change over needed if thermal actuator normally open is used - see 5.7

Fig. 3

Single-room control with master/slave system

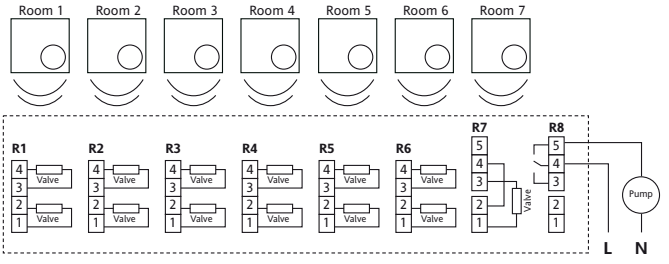
8 rooms, each controlled by a thermostat. Rooms 1 ... 3 comply with the internal timer, rooms 4 ... 8 comply with the master timer program on channel 4.



Function change over needed if thermal actuator normally open is used - see 5.7

Fig. 4

Pump logic – single-room control for 7 rooms, channel 8 for pump logic Note: a valve cannot be connected to channel 8 if the pump logic is used.



Function change over needed if thermal actuator normally open is used - see 5.7

Caution: This high voltage may be available even when supply voltage is dis-connected

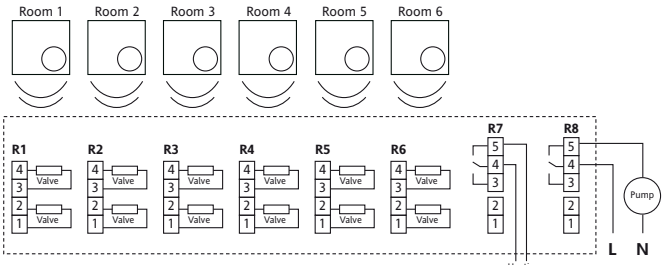
Fig. 5

Pump logic and Heater control

6 rooms are controlled individually

Channel 7 = heater control see 5.8, no valve can be connected

Channel 8 = pump control see 5.9, no valve can be connected

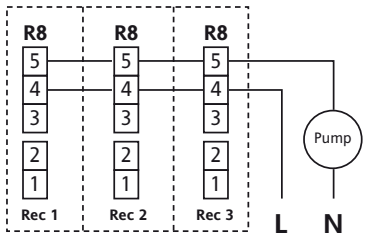


Function change over needed if thermal actuator normally open is used - see 5.7

Caution: This high voltage may be available even when supply voltage is dis-connected

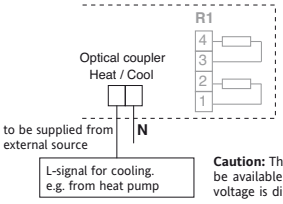
Fig . 6 Pump logic with 3 receivers

for extending heater control use the same principle



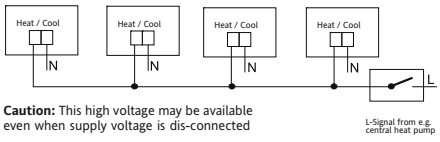
Caution: This high voltage may be available even when supply voltage is dis-connected

Fig. 7 Heating/cooling changeover



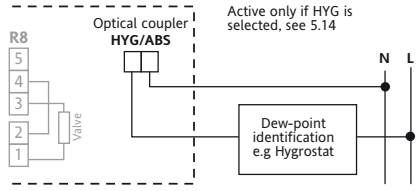
Caution: This high voltage may be available even when supply voltage is dis-connected

Fig. 8 Heating/cooling changeover



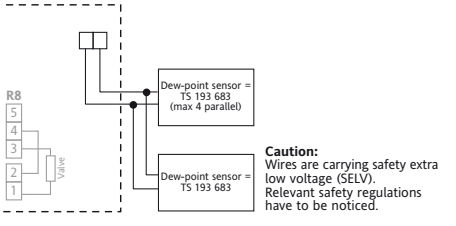
Caution: This high voltage may be available even when supply voltage is dis-connected

Fig. 9 Dew-point identification by hygrostat



Caution: This high voltage may be available even when supply voltage is dis-connected

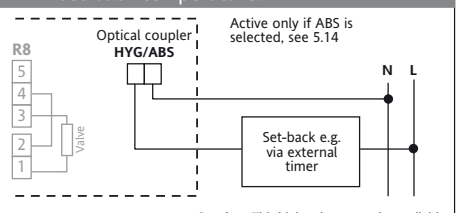
Fig. 10 Dew-point identification by specific dew-point sensor



Caution:
Wires are carrying safety extra low voltage (SELV).
Relevant safety regulations have to be noticed.

Fig. 11 Set-back all rooms

If active, all rooms will be controlled at it's set-back temperature.



Caution: This high voltage may be available even when supply voltage is dis-connected