SIEMENS

WHE5 family
System Manual

WHE5 family System Manual

Contents / Overview

Legal notice

Issue status: Complete Manual Version 3.20 / 13.6.2014
Included “serial flow”
English: CE2M2886en

Document name: WHE5 family System Manual
Source MS Word
Original language: German

Overview

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System Manual
Chapter A

General instructions and restrictions

Chapter A - General instructions and restrictions

Hazard notes and disposal instructions

Safety notes for lithium batteries

Various devices are equipped with lithium batteries.

This type of battery is classified as hazardous.

VALID TRANSPORT REGULATIONS ARE TO BE ADHERED TO IN EACH CASE!

Inspection documents for the batteries used are available on request.

Handling lithium batteries:

~ Store protected from dampness and moisture

~ Do not heat to above 100 °C or throw in fire

~ Do not short-circuit

~ Do not open or damage

~ Do not charge

~ Do not store within the reach of children

Disposal instructions

The heat cost allocators and various partner devices are considered for disposal purposes as used electronics devices in the sense of the European Guideline 2002/96/EC (WEEE) and must not be disposed of with household waste.

The respective national legal requirements must be heeded and the devices must be disposed of through the intended channels.

Local currently valid legislation must be heeded. Used batteries should be disposed off at a dedicated collecting point.

Adhesive installation

Adhesive installation is not permitted for installation plates. Only welded or bolted installation is permitted for these.

Adhesive installation is only permitted for some remote sensor attachment. Please consult the installation specifications.

Adhesives evaporate on account of their chemical properties and can damage the meter's plastic housing.

General instructions

Warranty and guarantee

Warranty and guarantee claims are only valid if the parts in question have been used in accordance with their intended use and if the technical requirements and any applicable technical regulations have been observed.

Application according to specification

This product must be installed professionally and in accordance with the prescribed assembly guidelines. It must only be assembled by qualified and trained experts.

Use not according to specification

Any use other than the use described previously and any changes made to the device constitute improper use. Uses and changes must be queried in writing beforehand and are subject to special approval.

Trained experts

This product must be installed professionally and in accordance with the prescribed assembly guidelines and may therefore only be installed by qualified and trained experts.

Metering devices from other manufacturers

Please note that metering devices from other manufacturers are subject to other conditions and can thus be placed in different installation positions.

The installation specifications contained in this system manual are tailored to the metering devices of the WHE 5 family and may only be used for these.

Safety notes

Improper handling and incorrect assembly can result in leaks on the radiator. Pay attention to the assembly instructions of the heater type being used.

Welded attachments

For welded attachment paint about the size of a one cent piece is removed from the welding spots. After welding bright metal spots must be protected against rust.

Wall bracket for metering devices

Special wall brackets are used for fixing the metering devices to the wall. The wall brackets of the WHE3 and WHE4 series must be replaced by new once since the housing contact is not actuated by the old wall brackets.

Housing opening contact

The metering devices continue counting even when an opening contact has been activated.

Re-programming

The meter statuses already in the heat cost allocators are not converted when the device is re-programmed.

Twist-proof installation

All installation parts must be attached to the radiator in such a way that they are secured against twisting. Please note that the thread of the welded stud (anti-twist protection) in the remote sensor installation plate must be facing the radiator.

Restrictions

Electronic heat cost allocators cannot be used for:

~ Steam heaters

~ Fresh air radiators

~ Underfloor heating

~ Ceiling heating elements

~ Flap-controlled radiators

~ Radiators with detachable front panels (clip attachment)

In the case of combined valve and flap-controlled radiators, metering devices may only be installed if the flap control unit has been removed or disabled in the “open” position.

Convectors that can change their output through an electric blower and towel heaters with an electric heating cartridge must not be fitted with electronic heat cost allocators unless the respective electric system has been removed or disabled.

1-sensor and 2-sensor metering system

A joint use of different metering device types is only allowed within one billing unit as long as they all use a standard metering system and have a standard measuring algorithm.

Compatibility Radio system WHE2

Equally, the metering devices of the WHE5 family must not be used mixed with those of the WHE2 family, since both the measuring algorithm and the radio transmitter fitted in the heat cost allocator (with WHE26) are not compatible.

Exclusion of liability

SIEMENS does not accept any liability for resale in countries for which no current device versions of these products are available.

Changes

We reserve the right to make product changes which exclusively serve the improvement of the product, do not endanger the contractual and application purpose and are reasonable without prior notice.

Notes on patent law

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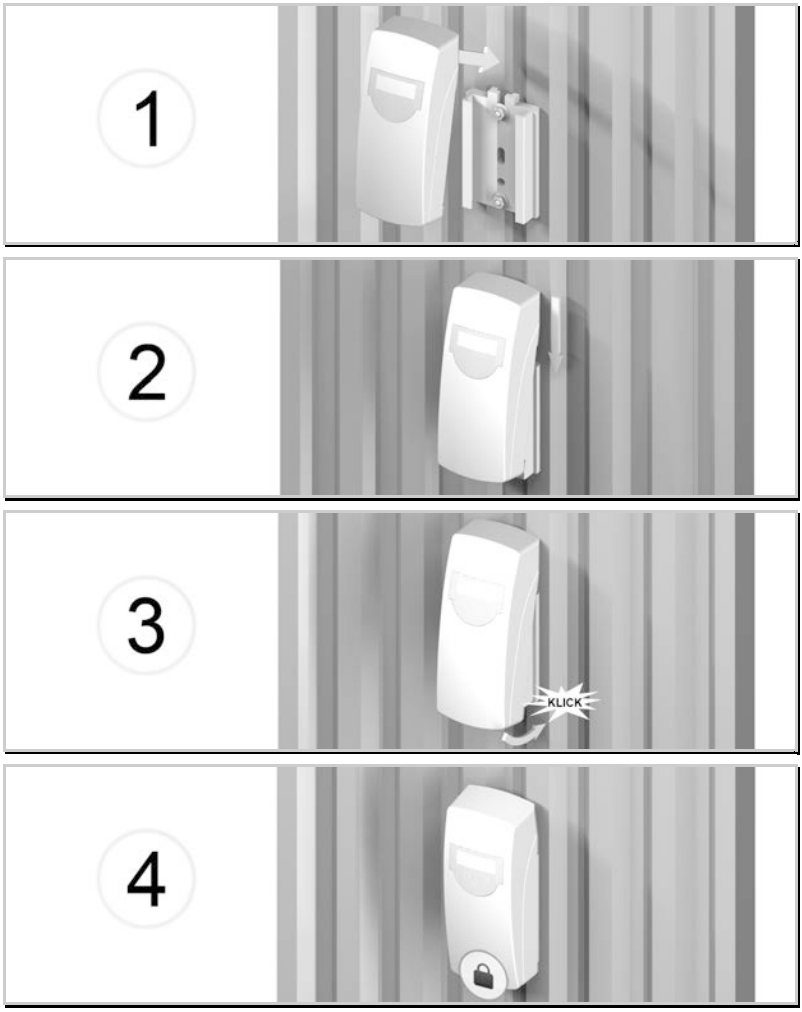
Tight fit of the metering device

Rattling test

Please check the devices are mounted securely by carrying out a rattling test.



WHE5 family
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Chapter B

System description

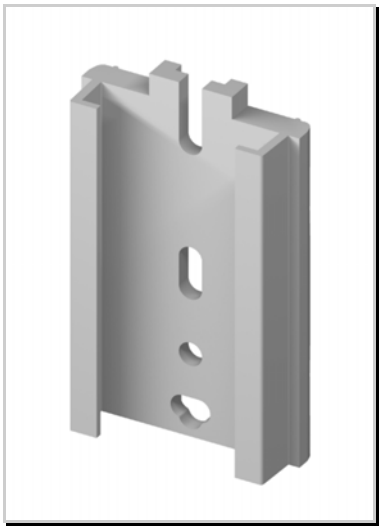
Chapter B - System description

Device views

Metering device of the WHE5 family

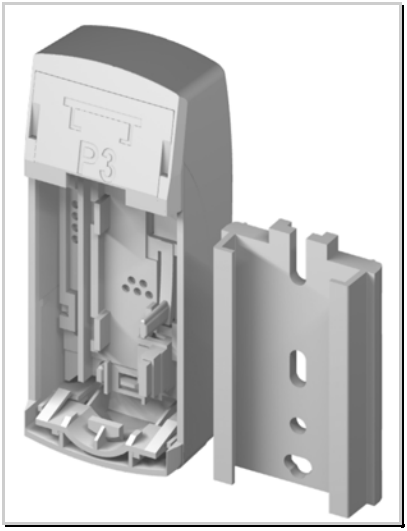
Front view

Front view



Standard installation plate

Rear views



Rear view with installation plate

Seal P3

System description

Electronic heat cost allocator WHE5

The electronic heat cost allocators of the WHE5 family are replacing the heat cost allocators WHE3x and WHE4x.

~ Compatibility with installation plate for WHE2x, WHE3x and WHE4x
~ Compatibility with measuring algorithms in WHE3x and WHE4x
~ Housing with pre-mounted lead seal from the factory
~ Remote sensors can be retrofitted on site at any time
~ Automatic detection of "remote sensor operation"
~ Optionally with radio support as AMR or walk-by version
~ All devices optionally with IrDA close-range interface
~ Integrated manipulation detection (e.g. unauthorised device opening)

Compatibility

Complete
The product range for all requirements (1 and 2-sensor, with or without integrated IrDA interface, with AMR or walk-by radio system, compatible with WHE3 or WHE4).

Individual
The programming possibilities guarantee optimum integration of the devices in your existing processes.

Safe
The electronic opening contact installed as standard in every metering device and a special factory lead seal mean that any attempts at manipulation can be detected.

Flexible
A remote sensor, which can be retrofitted on site at any time, prevents unpleasant surprises during installation and reduces the product variants required.

System modules

walk-by

Devices in the **walk-by** system are readout supported by local radio signals. **Walk-by** makes meter reading as inexpensive as it is easy by using a mobile readout system – just walking by. The meter-reader does not have to enter the user's flat or office. In the case of smaller systems, data can usually be received outside the building in most cases.

How walk-by functions

The metering devices transmit consumption data at the set reading time. The meter-reader only needs his mobile readout system. This comprises a mobile data collector and a netbook with respective software. The data collector collects the radio telegrams and, after a plausibility check, transmits them wirelessly to the netbook via a Bluetooth interface.

AMR

Devices in the **AMR** system are readout radio-supported. All the data recorded by the metering devices are transmitted wirelessly to the stationary network nodes. Each network node has all the consumption information available – on account of continual data exchange between the devices. These data can be readout via the interface at the node, by radio from a (stationary) vehicle or via a gateway by modem or IP interface from a remote location.

How AMR functions

The metering devices transmit the current consumption data in cycles. The battery-operated network nodes receive, check and save the data fully automatically. Data readout can now be carried out at any network node, either directly via the data interface or "from outside" by radio. An even easier option is to readout the data directly from your office via a gateway, e.g. via the GSM phone network, via GPRS or via computer or broadband cable networks. Q AMR is compatible with the European standard for home automation KNX.

Areas of application

Use in new and existing buildings

The numerous kinds of installation and different generations of devices require a systematic approach. Here is an overview that will support you in your decisions and choices. The following pages provide detailed information about the different types of installation.

Installation procedure

New installation

Complete, first-time installation of metering devices.

Special features

During new installation, a property is equipped completely with electronic heat cost allocators for the first time. No evaporators or other metering devices have been used before.

Conversion installation

A billing unit equipped with external devices is to be equipped completely with electronic heat cost allocators.

Special features

The radiators were previously fitted with metering devices from other companies which are removed completely, including the installation plate. The existing welded studs are retained. The installation plates are replaced. Any visible colour deviations on the radiator can be concealed by a snap-on panel that has no effect on the KC value.

Standard replacement

The existing SIEMENS devices that make up one billing unit are completely replaced.

Special features

The radiators were fitted with old SIEMENS metering devices before. The existing welded studs and installation plates remain in their existing position.

Extension installation

With this installation, a billing unit equipped with SIEMENS metering devices is extended by additional metering devices. This can be on account of additional radiators being installed.

Special features

The regulations and specifications from the installation manuals of metering devices already delivered are used for installation and positioning.

Repair replacement

In the case of repair replacement, individual metering devices are replaced by new metering devices. The reason can be a faulty metering device.

Special features

The existing welded studs and installation plates remain in their existing position, only the metering device is replaced.

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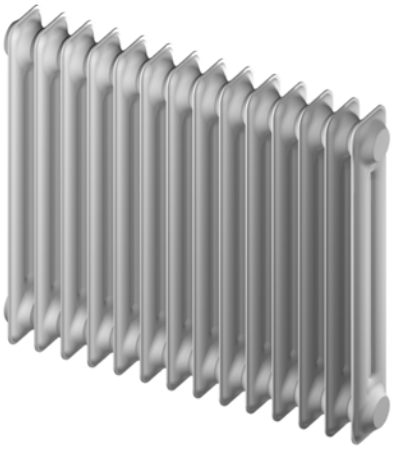
Chapter C

Assignment CIT to radiator

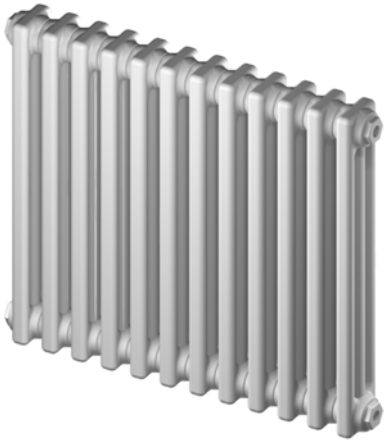
Chapter C - Assignment CIT to radiator

Ribbed radiators CIT01



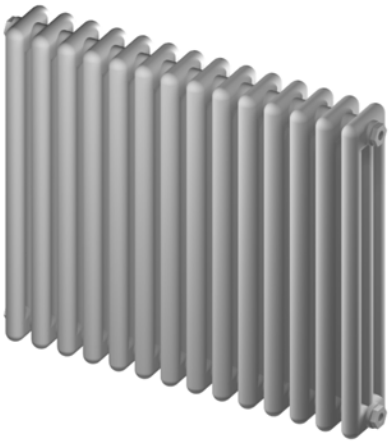
Pitch greater than 40 mm

Type of installation	P3
Compact	CIT01-01
Remote sensor	CIT10-01



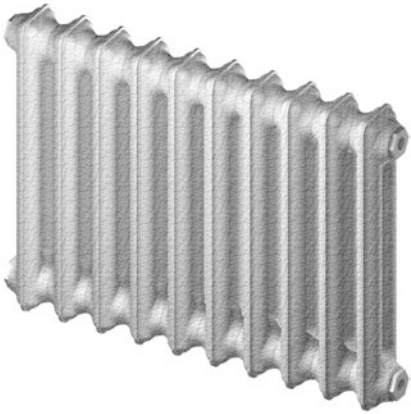
Pitch greater than 40 mm, with flattened edge

Type of installation	P3
Compact	CIT01-01
Remote sensor	CIT10-01



Pitch greater than 40 mm, tubular radiator

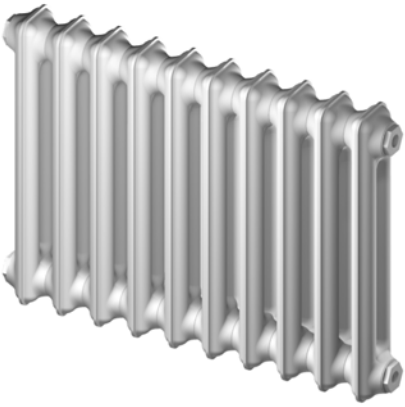
Type of installation	P3
Compact	CIT01-01
Remote sensor	CIT10-01



Pitch greater than 40 mm, cast iron

Type of installation	P3
Compact	CIT01-01
Remote sensor	CIT10-01

Ribbed radiators CIT01

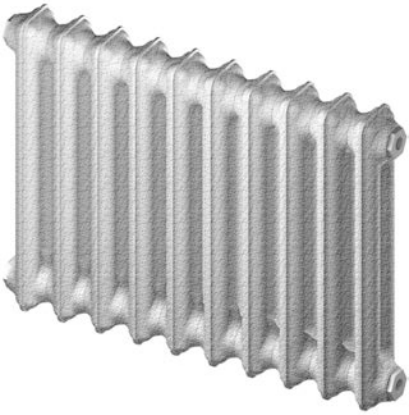


Pitch greater than 40 mm, cast iron radiator type SR

Type of installation	P3
Compact	CIT01-01
Remote sensor	CIT10-03

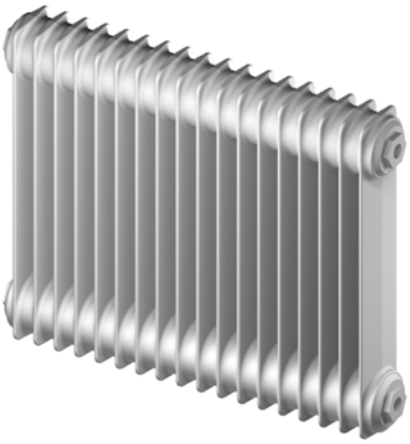
Pitch equal to and smaller than 40 mm

Type of installation	P3
Compact	CIT01-02
Remote sensor	CIT10-02



Pitchequal to and smaller than 40 mm, cast iron

Type of installation	P3
Compact	CIT01-02
Remote sensor	CIT10-02



Cast radiator, slender, pitch 20/40

Type of installation	P3
Compact	CIT01-03
Remote sensor	Not possible

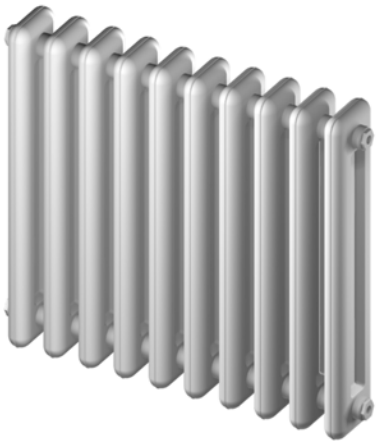
Ribbed radiators CIT01

End faces cast radiator

Type of installation	P3
Compact	CIT01-04
Remote sensor	Not possible

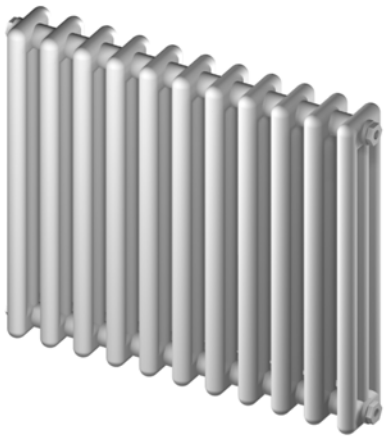
Cast radiator type KR

Type of installation	P3
Compact	CIT01-05
Remote sensor	CIT10-04



Clearance > 40 mm

Type of installation	P3
Compact	CIT01-06
Remote sensor	Not possible



Hygiene radiator, welded installation

Type of installation	P3
Compact	CIT01-07
Remote sensor	CIT10-15

Panel radiators CIT02

Serial flow possible!
See installation instructions chapter:
"CIT02 Panel radiators"

Vertically moulded

Type of installation	P3
Compact	CIT02-01
Remote sensor	CIT10-05

Vertically moulded,
vertical panel containing water

Type of installation	P3
Compact	CIT02-01
Remote sensor	CIT10-05

Serial flow possible!
See installation instructions chapter:
"CIT02 Panel radiators"

Flat surfaces

Type of installation	P3
Compact	CIT02-02
Remote sensor	CIT10-05

Flat surfaces,
vertical channels containing water

Type of installation	P3
Compact	CIT02-02
Remote sensor	CIT10-05

Panel radiators CIT02

Smooth front (loose)

Type of installation	P3
Compact	CIT02-02
Remote sensor	Not possible

With front convection plate horizontal channels containing water

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-12

With front convection plate vertical channels containing water

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-05

Panel radiators CIT02

With front convection lamellae

Type of installation	P3
Compact	CIT02-04
Remote sensor	Not possible

As a bathroom radiator

Type of installation	P3
Compact	CIT02-05
Remote sensor	CIT10-10

Horizontally moulded, turned through 90 degrees

Type of installation	P3
Compact	CIT02-06
Remote sensor	Not possible

Horizontally moulded, turned through 90 degrees, front smooth

Type of installation	P3
Compact	CIT02-06
Remote sensor	Not possible

Bathroom radiators CIT03

Horizontal rib installation

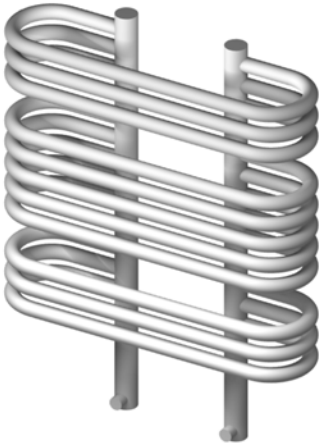
Type of installation	P3
Compact	CIT03-01
Remote sensor	CIT10-06

Collector for welding installation

Type of installation	P3
Compact	CIT03-02
Remote sensor	CIT10-06

Collector for welding installation

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-06



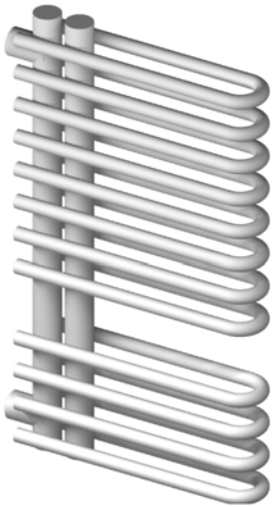
Curved pipes

Type of installation	P3
Compact	CIT03-03
Remote sensor	CIT10-09

Bathroom radiators CIT03

Horizontal flat tubes

Type of installation	P3
Compact	CIT03-04
Remote sensor	CIT10-06



Curved pipes, collector at one side

Type of installation	P3
Compact	CIT03-05
Remote sensor	CIT10-08

Curved pipes, collector at alternate sides

Type of installation	P3
Compact	CIT03-06
Remote sensor	Not possible

Horizontal rib installation on the replacement radiator

Type of installation	P3
Compact	CIT03-07
Remote sensor	Not possible

Bathroom radiators CIT03

Welded installation on the collector on the replacement radiator

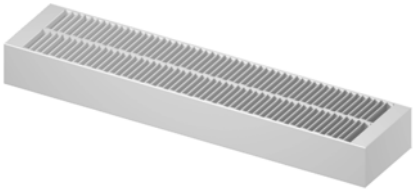
Type of installation	P3
Compact	CIT03-08
Remote sensor	Not possible

Aluminium radiator CIT04

Aluminium ribbed radiator

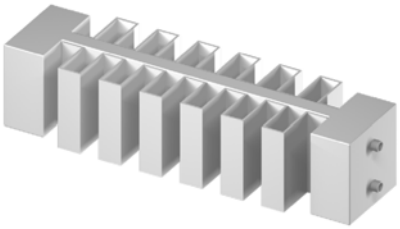
Type of installation	P3
Compact	CIT04-01
Remote sensor	CIT10-11

Heating walls CIT05



70 mm profiles, horizontal flow, 1 to 4 rows

Type of installation	P3
Compact	CIT05-01
Remote sensor	CIT10-12



Flat tube radiator, with front convection panel

Type of installation	P3
Compact	CIT05-02
Remote sensor	On request

Horizontal flow

Type of installation	P3
Compact	CIT05-03
Remote sensor	CIT10-12

Radiators with internal tube registers CIT06

flat water channel

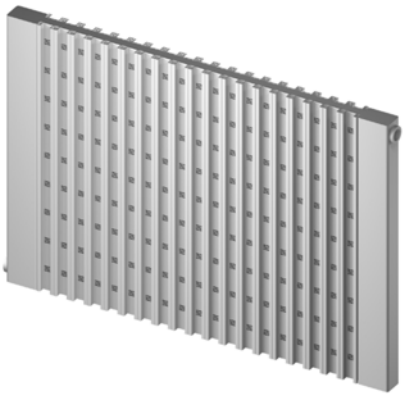
Type of installation	P3
Compact	CIT06-01
Remote sensor	CIT10-13

Flat water channel, with box-type convection parts

Type of installation	P3
Compact	CIT06-01
Remote sensor	Not possible

Deep water channel

Type of installation	P3
Compact	CIT06-02
Remote sensor	CIT10-13



Horizontal water flow

Type of installation	P3
Compact	CIT06-03
Remote sensor	CIT10-13

Radiators with internal tube registers CIT06

Typical Rotherm

Type of installation	P3
Compact	CIT06-04
Remote sensor	Not possible

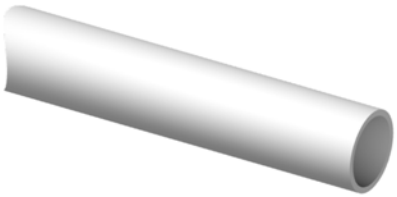
Special installation cases CIT07

Lamella-type radiator

Type of installation	P3
Compact	CIT07-01
Remote sensor	CIT10-14

Steel tube, welded installation

Type of installation	P3
Compact	CIT07-02
Remote sensor	CIT10-15



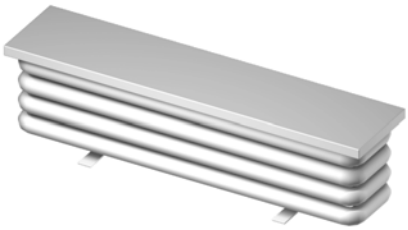
Steel tube, welded installation, horizontal

Type of installation	P3
Compact	CIT07-02
Remote sensor	CIT10-15

Flat tube radiator

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-16

Special installation cases CIT07



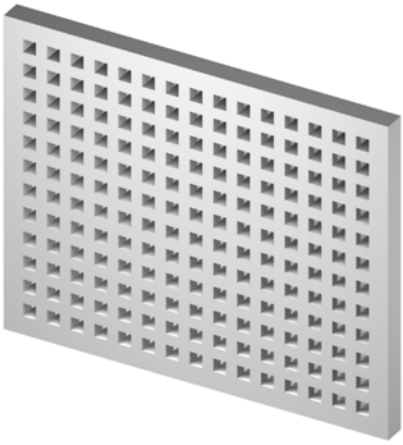
Window ledge radiator

Type of installation	P3
Compact	CIT07-04
Remote sensor	CIT10-17

Radiator with internal corrugated panels with smooth front

Type of installation	P3
Compact	CIT07-05
Remote sensor	Not possible

Remote sensor installation CIT10

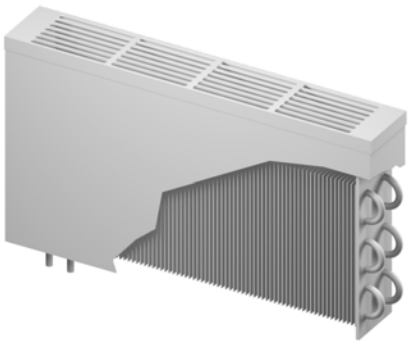


Design radiator (typical Karotherm)

Type of installation	P3
Compact	On request
Remote sensor	CIT10-07

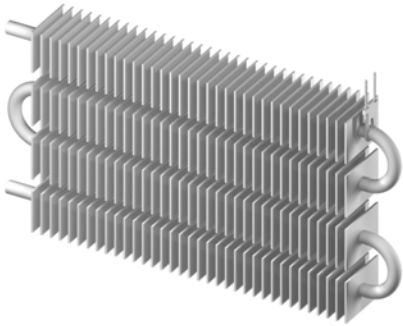
Design radiator (typical Iguana)

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-07



Ribbed convectors

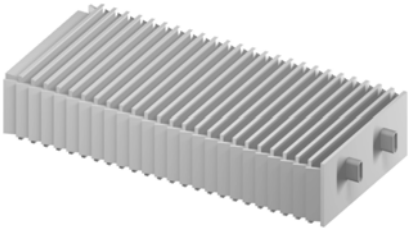
Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-18



Ribbed convectors

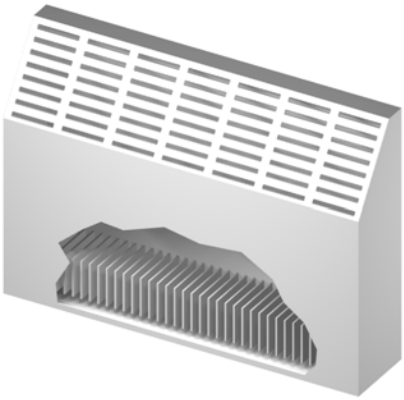
Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-18

Remote sensor installation CIT10



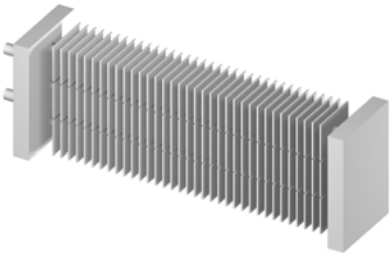
Ribbed convectors

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-18



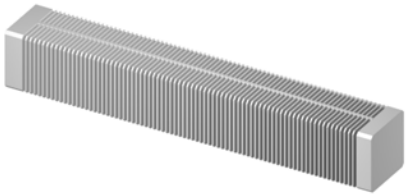
Ribbed convectors, box-type

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-18



Convectors with reversing chamber, welded installation

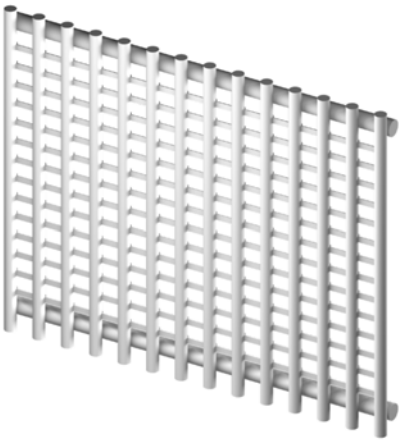
Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-19



Convectors with reversing chamber, welded installation, convector with hood, (typical Joco Cityline)

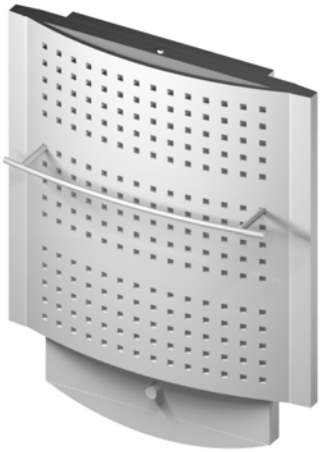
Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-19

Remote sensor installation CIT10



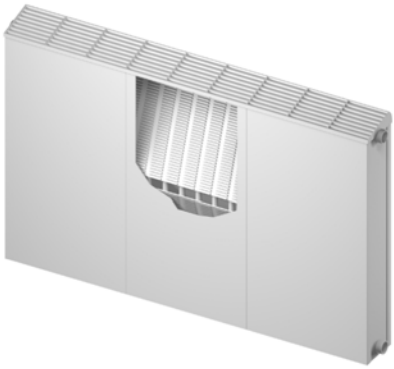
Grid radiator,
welded installation

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-20



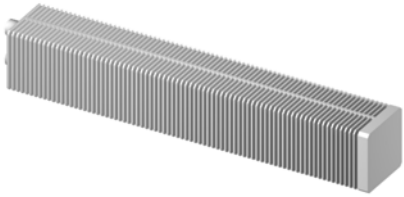
Design radiator
(typical Kermi stainless steel)

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-21



Radiator with internal tube register,
in box design

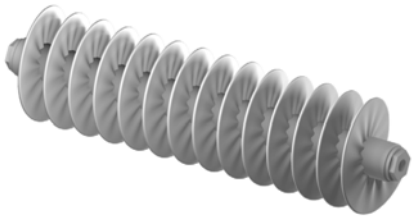
Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-22



Convector,
(typical Schmieg Thermitor 70)

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-23

Remote sensor installation CIT10



Individual pipes and tubular coils

Type of installation	P3
Compact	Not possible
Remote sensor	CIT10-24

Assignment CIT to radiator

WHE5 family
System Manual
Chapter D

Measurement procedure and area of application

Chapter D - Measurement procedures and area of application

Application

The electronic heat cost allocator family WHE5 has been designed for decentralised use. Values are measured through one (radiator) or two (radiator and room air temperature) temperature sensors.

In 1-sensor metering operation, the difference between the radiator temperature and an electronically generated reference temperature is determined.

In 2-sensor measuring operation, the actual difference in temperature between the ambient temperature and the radiator temperature is determined. These measured values are used as a basic for calculation of the consumption calculation.

The main area of application is in central heating systems where the heating energy is used individually by different consumers.

The electronic heat cost allocator can be operated as a 1-sensor or 2-sensor measuring system with product and standard scale.

Such systems are used in e.g.:

~ Apartment buildings

~ Office and administration buildings

Typical users are:

~ Meter reading service companies

~ Housing industry and housing associations

~ Building service companies and property management

The heat cost allocator can be used for the following types of radiator:

~ Ribbed radiators

~ Tubular radiators

~ Panel-type radiators with horizontal and vertical water flow

~ Radiators with internal tube register

~ Convectors

~ Towel warmers

~ Aluminium radiators

Measurement procedure specifications

Before you equip a radiator with electronic heat cost allocators, it must be clarified whether this radiator or the whole property can be equipped with electronic metering devices.

The installation position on the radiator depends directly on the type of radiator involved, its heating capacity and the measuring device. To guarantee correct data acquisition, the metering devices have to be installed and operated in a certain position, observing the requirements.

The heat radiated by the radiator is transferred directly to the sensor or remote sensor of the metering device via the installation plate.

First it must be ensured that correct KC values are available for installation.

General limitations

Electronic heat cost allocators cannot be used with steam heaters, fresh-air radiators, underfloor heating, ceiling heating elements and flap-controlled radiators. In the case of combined valve and flap-controlled radiators, metering devices may only be installed if the flap control unit has been removed or disabled in the “open” position.

NOTE:

Convectors that can change their output through an electric blower, fresh-air radiators and towel heaters with an electric heating cartridge must not be fitted with metering devices unless the respective electric system has been removed or disabled.

It must be noted that different measuring systems (1 and 2-sensor measuring system) must not be used within one overall system (billing unit).

Technology

Measuring principle

The measuring algorithms of the WHE5 are downward-compatible to those of the metering device families WHE3 and WHE4.

1-sensor mode

Determines radiator heat output on the basis of measured and validated radiator temperature.

2-sensor mode

Determines radiator heat output on the basis of measured and validated radiator temperature by means of 2 temperature sensors (radiator and room air temperature)

Metering device type WHE5 (suitable for installation plate WHE2, WHE3 and WHE4)

- Algorithm AL3 parameterised as 2-sensor (WHE3xZ-compatible)
- Algorithm AL3 parameterised as 1-sensor (WHE3x-compatible)
- Algorithm AL4 parameterised as 2-sensor (WHE4xxZ-compatible)
- Algorithm AL4 parameterised as 1-sensor (WHE4xx-compatible)

All device types:

- Version with/without radio transmitter (AMR or walk-by)
- Version with/without IrDA interface (close-range interface)
- Version with modified summer counting function (WHEx.S-variants)

Operation with standard scale

Operation with "standard scale" means that all the metering devices in a system are programmed with the same **evaluation factors**.

Standard is

Evaluation factor KCHF = 1.28	(standard for the 1-sensor measuring system and for remote sensor metering devices)
Evaluation factor KC2F = 2.50	(standard for the 2-sensor measuring system)
Evaluation factor KQ = 1,000 W	(standard for the 1 and 2-sensor measuring system)

Evaluation with radiators of excess length or very large nominal capacities

We recommend fitting two metering devices on radiators longer than approx. 3 m. If these radiators are equipped with only one heat cost allocator, very small flows may not be taken into account, depending on the circumstances.

In the case of radiators with standard capacities greater than 5,500 Watt, we also recommend fitting two or more metering devices.

The standard capacity of the radiator is divided by the number of metering devices installed on it.

Display correction with standard scaling

If the metering device has been operated with standard scaling, the displayed value must be converted to the correct value (billing value).

Equations for calculating the consumption value:

Applies to: Compact metering device 1-sensor
Remote sensor metering device 1-sensor
Remote sensor metering device 2-sensor

$$VW = AW \times 7{,}529 \times 10^{-4} \times K_Q \times K_{CHF}^{1{,}15}$$

Applies to: Compact metering device 2-sensor

$$VW = AW \times 3{,}486 \times 10^{-4} \times K_Q \times Kc_{2F}^{1{,}15}$$

Determining consumption values from the standard scale

Equations and examples

General equation:
The basis for calculating the consumption values when the standard scale is used is the general equation:

$$VW = AW \times \frac{K_Q}{K_{QS}} \times \left(\frac{Kc}{Kc_s}\right)^{1,15}$$

Example for WHE5:

Values of the standard scale: actual values: KCHF = 1.23

KQS	= 1000	HM Galant21	KQ = 869
KCHFS	= 1.28	Reading value	= 1010

$$VW \times 1010 \times \frac{869}{1000} \times \left(\frac{1,23}{1,28}\right)^{1,15} \qquad VW = 838$$

Simplified equation:

$$VW = AW \times K_{ges}$$

Derivation:
The overall evaluation factor is the product of the individual evaluation factors. It results from the general equation for determining consumption values.

$$K_{ges} = \frac{K_Q}{K_{QS}} \times \left(\frac{Kc_{HF}}{Kc_{HFS}}\right)^{1,15}$$

Example for WHE5:

Values of the standard scale: actual values: KCHF = 1.23

KQS	= 1000	HM Galant21	KQ = 869
KCHFS	= 1.28	Reading value	= 1010

$$VW = 1010 \times 0,83 \quad VW = 838$$

Simplified equation:

$$VW = AW \times K_Q \times Kc_{HFnorm}$$

Derivation
The standardised KCHF value is the product of the fraction of the KC values and the fraction 1/KQS. It results from the general equation for determining consumption values.

Determining consumption values from the standard scale

Example for WHE5:

Values of the standard scale:		actual values: KCHF = 1.23	
KQS	= 1000	HM Galant21	KQ = 869
KCHFS	= 1.28	Reading value	= 1010

$$Kc_{norm} = \frac{1}{1000} \times \left(\frac{1}{1{,}28} \right)^{1{,}15} \times 1{,}23^{1{,}15} \quad Kc_{norm} = 0{,}000955$$

$$VW = 1010 \times 869 \times 0{,}000955 \qquad VW = 838$$

Area of application of an electronic heat cost allocator

The possibility of using the metering device depends on whether the circumstances of the system are within the permitted range of application.

The relevant standard is the EN 834

Special cases of radiator installation

If the metering device should project above the radiator or the installation plate is not form-fitted to the radiator over the whole length of the profile, metering devices with remote sensors must be used.

Alternatively, the installation height can be reduced to 50% with the aid of special installation, and the radiator can be equipped with the compact devices by using modified KC values.

Selection criterion of the 1 or 2-sensor measuring system

Heating systems that have been designed for a mean design temperature > 55 °C can be equipped either with heat cost allocators with a 1-sensor measuring system or a 2-sensor measuring system.

Heating systems that have been designed fro a mean design temperature < 55 °C have to be equipped with heat cost allocators with a 2-sensor measuring system.

Restrictions of the 1 and 2-sensor measuring system

A joint use of different metering device types is only allowed within a property if all the metering devices use a standard measuring system.

This means that all the existing metering devices within a property must be operated either in 1-sensor or in 2-sensor mode.

The two measuring modes must **not** be mixed.

Evaluation factors

KQ

The standard heating capacity can be found in the old standard DIN 4704, which refers to temperatures of 90/70/20 °C (supply flow/return flow/ambient temperature).

This is also possible if it has been determined under other temperature conditions (e.g. according to standard EN 442 which refers to 75/65/20 °C). However, the same temperature basis must be used within one billing unit.

** Following publication of the new standard DIN EN 834 the "standard capacity" can also be used in accordance with capacity evaluation using 75/65/20 °C.*

Extract from DIN EN 834, chap. 4.18.1:

"*The standard capacity is the heating capacity of a radiator in a stable-climate test cabin at supply flow, return flow and air temperatures of 90 °C, 70 °C and 20 °C, whereby the air temperature is measured 0.75 m above the floor at a distance of 1.5 m from the heated surface. If the standard capacity of the radiator has been determined under different temperature conditions, it must be converted to the above-mentioned conditions.*"

Other capacity specifications may apply to cased radiators. Please consult manufacturer information in this case.

KC factors

Evaluation of the thermal adaptation to the radiator. It is a value measured on the test stand for the respective radiator.

Possible aids

Viewing of the overall system inc. the boiler room or study of the system planning documents.

In order to adapt the display result of the metering devices to the actual heat output of the respective radiator, the metering devices must be adapted to the radiator design, radiator capacity and installation position on the radiator.

For this reason, the radiator must be identified exactly, which can only be guaranteed by a measurement procedure.

The following points must be determined for every radiator:

~ Radiator manufacturer

~ Radiator design

~ Year of manufacture of the radiator

~ Radiator dimensions

~ Any deviations in installation

~ Form and pitch of the profile

These data can be used to determine the radiator capacity, installation location and the data resulting from these.

Temperature ranges

Use for design temperatures according to EN 834

1-sensor measuring system (with product or standard scale)

Calculation with fixed reference temperature 20 °C

Required evaluation factors: KQ, KCHF

Compact and remote sensor metering device

55 °C - 105 °C mean design temperature (*)

Practical use:

1-sensor metering devices are used where normal ambient temperatures predominate. Radiators that are covered or blocked by furniture are also usually equipped with 1-sensor measuring systems, because a device with a 2-sensor measuring system cannot record the actual room temperature properly on account of the trapped heat.

2-sensor measuring system (with product or standard scale)

Calculation of variable reference temperature T-air sensor

Required evaluation factors: KQ, KCHF, KC

Compact and remote sensor metering device

35 °C - 105 °C mean design temperature	corresponds to WHE3 (evaluated) and WHE4
48 °C - 105 °C mean design temperature	corresponds to WHE3 (non-evaluated)

Practical use:

Devices with 2-sensor measuring systems are used where the exact recording of ambient temperatures is important and/or low-temperature heating systems are used.

Radiators that are covered or blocked by furniture are automatically recognised by the 2-sensor measuring system, which converts its measuring behaviour to a 1-sensor measuring system internally.

KC values reference source

You are given the KC values in the form of a "KC value database".

Evaluation

Evaluation factor KQ

"The evaluation factor (K_Q) is the (dimensionless) numeric value of the standard capacity of the radiator." (Acc. to DIN EN 834)

Heating capacity:

$\mathbf{t_V}$ = Supply flow temperature

$\mathbf{t_R}$ = Return flow temperature

$\mathbf{t_L}$ = Reference air temperature

The standard capacity is given in watts and determined at the following temperatures:

t_v = 90° C **t_R = 70° C** **t_L = 20° C**

This definition originated in DIN 4704. In the meantime, DIN EN 442 has come into force, replacing the old standard. DIN EN 442 contains an important change, with lower temperatures being specified:

t_v = 75° C **t_R = 65° C** **t_L = 20° C**

This makes additional expenditure necessary for the determination of the evaluation factor KQ in some cases.

Radiator capacity always according to DIN 4704

According to DIN 834, the "old" standard capacity (90°/ 70°/ 20°) still has to be used for determining KQ. New radiator types are often only measured according to DIN EN 442. For this reason, there are often no capacity tables according to 90°/ 70°/ 20° available. In this case, KQ must be converted to the temperatures of DIN 4704.

Evaluation factor KC

"The evaluation factor K_C takes the different thermal connection of the temperature sensors to the temperatures to be recorded on different types of radiator design into account." (Acc. to DIN EN 834)

Since the connection of the temperature sensors to the water in the radiator is heavily influenced by the radiator's design shape, there are also different KC values for different radiators.

Evaluation

Use of the standard scale

All heat cost allocators of one billing unit are programmed with the same KC values. The display values of the different radiators read off are converted to consumption values for billing using the evaluation factors.

Compact	1-sensor	K_{QS}	1000
FF	1-sensor 2-sensor	Kc_{HFS} / Kc_{2FS}	1.28
Compact	2-sensor	K_{QS}	1000
		K_{c2FS}	2.50

Evaluation factors for the standard scale

VW = Calculated value (calculated consumption value)

AW = Reading value

KQ = Actual radiator capacity (in watts)

KQS = Radiator capacity (in watts) of the standard scale

KCHF = Actual K factor of the radiator

KCHFS = KC reference for the radiator (standard scale)

KC2F = Actual KC factor for the overall device

KC2FS = KC reference for the overall device (standard scale)

FF = Remote sensor

Copy template measurement procedure sheet page 1

WHE5 family - measurement procedure for metering

System no.: _____ Flat no.: _____ Floor: _____

User name: _____ Postcode:

_____

Street/no.: _____ Town: _____

Sheet no.: _____ dated: _____ Remark: _____

_____

Impression of profile with needle gauge

Photos of the radiators

Ser. no.	Room description	Type of radiator	Design length mm	Design depth	Design height mm	Hub spacing	No. of ribs / no. of tubes	Pitch / Profile	Radiator manufacturer type	CIT Type of installation	Radiator capacity in watts	KCHF	KC2F	KC standardised	HCA no.	HCA type	Meter status after initial start-up
										-							
										-							
										-							
										-							
										-							
										-							
										-							

Enter further radiators and remarks for those evaluating the systems on the back. All dimensions are given in mm.

Note: These are only minimum specifications for the radiators. Depending on the radiator evaluation system, further radiator specifications may be necessary.

Copy template measurement procedure sheet page 2

WHE5 family - measurement procedure for metering

Enter special characteristics or special locations and further radiators on this page.

Ser. no.	Room description	Type of radiator	Design length mm	Design depth	Design height mm	Hub spacing	No. of ribs / no. of tubes	Pitch / Profile	Radiator manufacturer type	CIT Type of installation	Radiator capacity in watts	KCHF	KC2F	KC standardise	HCA no.	HCA type	Meter status after initial start-up
										-							
										-							
										-							

Ser. no.	Remarks about individual radiators	Remarks about individual radiator locations/environments

Radiators measured up by:	Date:	Evaluation carried out by:	Date:	HCA installed by:	Date:

WHE5 family
System Manual
Chapter E

Attachment parts and accessories / installation matrix

Chapter E - Attachment parts and accessories

Installation aids - name / sources

Stud welding machine with gun	Messrs. BTH HEBERLE GmbH 85221 Dachau www.bth-heberle.de
Stud welding machine with gun	Messrs. Heinz Soyer 82237 Wörthsee www.soyer.de
"Convector" installation aid	Order no. FKT0017
Mounting gauge	Order no. BBV4001
Flat-bladed screwdriver *Blade width 6 mm*	Tool retailers
Flat-bladed screwdriver *Blade width 3.5 mm*	Tool retailers
Screwdriver *for cross-slot screws size 0*	Tool retailers
Screwdriver *for cross-slot screws size 1*	Tool retailers
Allen key size 5.5	Tool retailers
Open-ended spanner size 7	Tool retailers
Drill	Tool retailers
HSS drills Ø 2.5 mm, 4 - 5 mm	Tool retailers
Counterbore or hole cutter	Tool retailers
Carbide drills Ø 5 mm, 6 mm	Tool retailers
Heat conduction paste, with silicone	Messrs. Bürklin OHG 82041 Oberhaching www.buerklin.com
Seal film	Messrs. Küchler Etikettenfabrik 73717 Esslingen www.kuechler.de
Bonding adhesive *(ergo superglue)*	Order no. FSS0007

Adhesive installation

Adhesive installation is not permitted for installation plates. Only welded or bolted installation is permitted for these.

Adhesive installation is only permitted for some remote sensor attachment. Please consult the installation specifications.

Adhesives evaporate on account of their chemical properties and can damage the meter's plastic housing.

Ribbed radiators

CIT01 Ribbed radiators		CIT01-01	CIT01-02	CIT01-03
Article description	**Part number**	Pitch greater than 40 mm	Pitch equal to and smaller than 40 mm	Cast radiator, slender, division 20/40 mm
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			1
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009		1	
Clamping bracket trapezoidal 35 mm	FKT0018	1		
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Spacer	FKA0013			
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004	1		1
Cross-slot screw M4 x 50	FNR0005		1	
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005			
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Ribbed radiators

CIT01-04	CIT01-05	CIT01-06	CIT01-07	**CIT01 Ribbed radiators**
End faces Cast radiators	Cast radiator Type KR	Clearance greater than 40 mm	Hygiene radiator, welded installation	**Part number**
				FKT0004
				FNM0002
				FNM0003
				FNM0001
				FKM0002
				FKT0015
				FKT0016
				FKT0009
				FKT0018
		1		FKT0019
				FKT0020
				FKA0004
1 (!)	1 (!)			BOZ4002
1 (!)	1 (!)			BOZ4003
1 (!)	1 (!)			BOZ4004
				FKT0010
			1	FKA0013
				FKA0012
1	1		1	S55563-F115
		1		FKA0022
				FKA0001
				FNR0008
				FNR0003
				FNR0004
				FNR0005
		1		FNR0006
				FKT0013
			2	FKT0011
				FKT0012
				FNM0004
1	1		2	FNM0005
				FNR0007
				FSS0007

Panel radiators

CIT02 Panel radiators		CIT02-01	CIT02-02	CIT02-04
Article description	**Part number**	Vertically moulded	Flat surfaces	With front convection lamellae
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018			
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Spacer	FKA0013			
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005			
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011		2	2
Welded stud M3 x 15	FKT0012	2		
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005	2	2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Panel radiators

CIT02-05	CIT02-06	CIT02 Panel radiators
As a bathroom radiator	Horizontally moulded, turned through 90 degrees	**Part number**
		FKT0004
		FNM0002
		FNM0003
		FNM0001
		FKM0002
		FKT0015
		FKT0016
		FKT0009
		FKT0018
		FKT0019
		FKT0020
		FKA0004
		BOZ4002
		BOZ4003
		BOZ4004
		FKT0010
		FKA0013
		FKA0012
1	1	S55563-F115
		FKA0022
		FKA0001
		FNR0008
		FNR0003
		FNR0004
		FNR0005
		FNR0006
		FKT0013
		FKT0011
2	2	FKT0012
		FNM0004
2	2	FNM0005
		FNR0007
		FSS0007

Panel radiators - Serial flow

CIT02 Panel radiators Vertically moulded		CIT02-51	CIT02-52	CIT02-53
Article description	**Part number**	Water inflow: front-side-top	Water inflow: front-side-bottom	Water inflow: front-centre-bottom
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018			
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Spacer	FKA0013			
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005			
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012	2	2	2
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005	2	2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Panel radiators - Serial flow

CIT02-54 Water inflow: back-centre-bottom		CIT02-61 Water inflow: front-side-top	**CIT02** **Panel radiators** **Flat surfaces** **Part number**
			FKT0004
			FNM0002
			FNM0003
			FNM0001
			FKM0002
			FKT0015
			FKT0016
			FKT0009
			FKT0018
			FKT0019
			FKT0020
			FKA0004
			BOZ4002
			BOZ4003
			BOZ4004
			FKT0010
			FKA0013
			FKA0012
1		1	S55563-F115
			FKA0022
			FKA0001
			FNR0008
			FNR0003
			FNR0004
			FNR0005
			FNR0006
			FKT0013
		2	FKT0011
2			FKT0012
			FNM0004
2		2	FNM0005
			FNR0007
			FSS0007

Bathroom radiators

CIT03 Bathroom radiators		CIT03-01	CIT03-02	CIT03-03
Article description	**Part number**	Horizontal rib installation	Welded installation on the supply flow side	Curved pipes
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			1
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018	1		
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Spacer	FKA0013			
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004	1		
Cross-slot screw M4 x 50	FNR0005			1
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011		2	
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005		2	
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Bathroom radiators / aluminium radiators

CIT03-04	CIT03-05	CIT03-06	CIT03-07	CIT03-08		CIT04-01	CIT03 Bathroom radiators CIT04 Aluminium radiators
Horizontal flat tubes	Curved pipes, collector at one side	Curved pipes, collector on alternate sides	Horizontal rib installation on the replacement radiator	Welded inst. on collector on replacement radiator		Aluminium ribbed radiator	**Part number**
							FKT0004
							FNM0002
							FNM0003
							FNM0001
							FKM0002
							FKT0015
							FKT0016
							FKT0009
	1	1	1				FKT0018
							FKT0019
							FKT0020
							FKA0004
							BOZ4002
							BOZ4003
							BOZ4004
							FKT0010
							FKA0013
							FKA0012
1	1	1	1	1		1	S55563-F115
							FKA0022
							FKA0001
						2	FNR0008
							FNR0003
							FNR0004
	1	1	1				FNR0005
							FNR0006
							FKT0013
2				2			FKT0011
							FKT0012
							FNM0004
2				2			FNM0005
							FNR0007
							FSS0007

Heating walls

CIT05 Heating walls		CIT05-01	CIT05-02	CIT05-03
Article description	**Part number**	70 mm mouldings horizontal flow	Flat-tube radiator with front convection plate	Horizontal flow
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018			
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Spacer	FKA0013			
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005			
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011	2	2	2
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005	2	2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Radiators with internal tube register

CIT06-01	CIT06-02	CIT06-03	CIT06-04	**CIT06** **Radiators with internal tube register**
flat water channel	Deep water channel	Horizontal water flow	Typical Rotherm	**Part number**
				FKT0004
				FNM0002
				FNM0003
				FNM0001
				FKM0002
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
				FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
				FKT0010
	1			FKA0013
				FKA0012
1	1	1	1	S55563-F115
				FKA0022
				FKA0001
				FNR0008
				FNR0003
				FNR0004
				FNR0005
				FNR0006
				FKT0013
2			2	FKT0011
	2			FKT0012
				FNM0004
2	2		2	FNM0005
		2		FNR0007
				FSS0007

Special installation cases

CIT07 Special installation cases		CIT07-01	CIT07-02	CIT07-04
Article description	**Part number**	Lamella-type radiator	Steel tube, welded installation	Window ledge radiator
Threaded bracket (pipe up to 17 mm)	FKT0004			
Shank nut M3 x 3	FNM0002			
Shank nut M3 x 6	FNM0003			
Shank nut M3 x 9.5	FNM0001			
Clamping sleeve special radiator	FKM0002			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			1
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018			
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004	2		
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010	1		
Spacer	FKA0013		1	
Threaded bushing	FKA0012			
Installation plate	S55563-F115	1	1	1
Installation plate P3 wide	FKA0022			
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003	1		
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005			1
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011		2	
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004	1		
Self-locking nut with serrated bearing M3	FNM0005		2	
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Special installation cases

CIT07-05	CIT07 Special installation cases
Lamella-type radiator with smooth front	**Part number**
	FKT0004
	FNM0002
	FNM0003
	FNM0001
	FKM0002
	FKT0015
	FKT0016
	FKT0009
	FKT0018
	FKT0019
	FKT0020
	FKA0004
	BOZ4002
	BOZ4003
	BOZ4004
	FKT0010
	FKA0013
	FKA0012
1	S55563-F115
	FKA0022
	FKA0001
	FNR0008
	FNR0003
	FNR0004
	FNR0005
	FNR0006
	FKT0013
2	FKT0011
	FKT0012
	FNM0004
2	FNM0005
	FNR0007
	FSS0007

Remote sensor installation

CIT10 Remote sensor installation		CIT10-01	CIT10-02	CIT10-03
Article description	**Part number**	Ribbed radiators, pitch greater than 40 mm	Ribbed radiators, Pitch equal to and smaller than 40 mm	Cast radiator Type SR
Threaded hoop (pipe 18 to 30 mm)	FKT0014			
Threaded bracket (pipe up to 17 mm)	FKT0004			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009		1	
Clamping bracket trapezoidal 35 mm	FKT0018	1		1
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Clamping piece (threaded hoop 17 mm)	FKA0003			
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008			
Installation plate for remote sensor	FKA0009	1	1	1
Prism	FKA0001		1	
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004	1		
Cross-slot screw M4 x 50	FNR0005		1	1
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013			
Welded stud M3 x 12	FKT0011	1	1	1
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005			
ergo superglue	FSS0007			

Remote sensor installation

CIT10-04	CIT10-05	CIT10-06	CIT10-07	CIT10-07 Adhesive	**CIT10 Remote sensor installation**
Cast radiator Type KR	Panel radiators Welded installation	Bathroom radiator, Collector for welding installation	Design radiator (typical Karotherm)	Design radiator (typical Iguana)	**Part number**
					FKT0014
					FKT0004
					FKT0015
					FKT0016
					FKT0009
					FKT0018
					FKT0019
					FKT0020
					FKA0004
1 (!)					BOZ4002
1 (!)					BOZ4003
1 (!)					BOZ4004
					FKT0010
					FKA0003
					FKA0008
1					FKA0009
					FKA0001
					FNR0008
					FNR0003
					FNR0004
					FNR0005
					FNR0006
	2	2	2		FKT0013
1					FKT0011
					FKT0012
					FNM0004
1	1	1	2		FNM0005
				1	FSS0007

Remote sensor installation

CIT10 Remote sensor installation		CIT10-08	CIT10-09	CIT10-10
Article description	**Part number**	Bathroom radiators, Curved pipes collector on one side	Bathroom radiators, curved pipes, Welded installation	Panel radiator as a bathroom radiator, Welded installation
Threaded hoop (pipe 18 to 30 mm)	FKT0014			
Threaded bracket (pipe up to 17 mm)	FKT0004			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018	1		
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Clamping piece (threaded hoop 17 mm)	FKA0003			
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008			
Installation plate for remote sensor	FKA0009	1		
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005	1		
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013		2	2
Welded stud M3 x 12	FKT0011	1		
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005		1	1
ergo superglue	FSS0007			

Remote sensor installation

CIT10-11	CIT10-12	CIT10-13	CIT10-14	CIT10 Remote sensor installation
Aluminium Ribbed radiators	Panel radiators, horizontally moulded	Radiators with internal tube register	Lamella-type radiators	**Part number**
				FKT0014
				FKT0004
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
			2	FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
			1	FKT0010
				FKA0003
				FKA0008
			1	FKA0009
				FKA0001
2				FNR0008
			1	FNR0003
				FNR0004
				FNR0005
				FNR0006
	2	2		FKT0013
			1	FKT0011
				FKT0012
			1	FNM0004
	1	1		FNM0005
				FSS0007

Remote sensor installation

CIT10 Remote sensor installation		CIT10-15	CIT10-16	CIT10-17
Article description	**Part number**	Steel tube, Welded installation	Flat tube radiator	Window ledge radiator
Threaded hoop (pipe 18 to 30 mm)	FKT0014			
Threaded bracket (pipe up to 17 mm)	FKT0004			
Clamping bracket (pipes TE 36 mm)	FKT0015			
Clamping bracket (pipes TE 46 mm)	FKT0016			1
Clamping bracket shortened	FKT0009			
Clamping bracket trapezoidal 35 mm	FKT0018			
Clamping bracket trapezoidal 50 mm	FKT0019			
Clamping bracket trapezoidal 65 mm	FKT0020			
Expanding bracket for lamella-type radiator	FKA0004			
Square bolt 4.5 mm with cross pin	BOZ4002			
Square bolt 6 mm with cross pin	BOZ4003			
Square bolt 12 mm with cross pin	BOZ4004			
Spacer sleeve	FKT0010			
Clamping piece (threaded hoop 17 mm)	FKA0003			
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008			
Installation plate for remote sensor	FKA0009			1
Prism	FKA0001			
Self-tapping screw B 2.9 x 13	FNR0008			
Cross-slot screw M4 x 30	FNR0003			
Cross-slot screw M4 x 40	FNR0004			
Cross-slot screw M4 x 50	FNR0005			1
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013	2		
Welded stud M3 x 12	FKT0011			1
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Self-locking nut with serrated bearing M3	FNM0005	1		
ergo superglue	FSS0007		1	

Remote sensor installation

CIT10-18	CIT10-19	CIT10-20	CIT10-21	CIT10-22	CIT10-23	CIT10-24	**CIT10 Remote sensor installation**
Ribbed convectors	Convectors with reversing chamber, Welded installation	Grid radiator, welded installation	Design radiator, (typical Kermi stainless steel)	Radiators with internal tube register, in box design	Convector, (typical Schmieg Thermitor 70)	Individual pipes or tubular coils	**Part number**
							FKT0014
1							FKT0004
							FKT0015
							FKT0016
							FKT0009
							FKT0018
							FKT0019
							FKT0020
							FKA0004
							BOZ4002
							BOZ4003
							BOZ4004
							FKT0010
1							FKA0003
							FKA0008
							FKA0009
							FKA0001
							FNR0008
							FNR0003
							FNR0004
							FNR0005
							FNR0006
	2	2	2	2	2		FKT0013
							FKT0011
							FKT0012
							FNM0004
3	1	1	1	1	1		FNM0005
						1	FSS0007

WHE5 family System Manual Chapter F

Programming

Chapter F - Programming

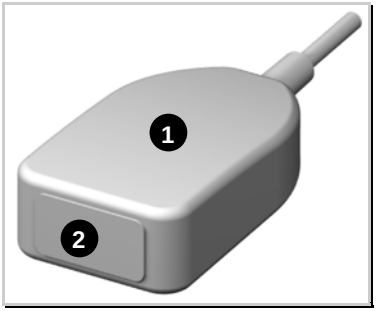
Programming

Programming adapter

The programming adapter is used for communication with the metering devices. It can be used as a combined adapter with the IrDA programming and readout head or as an individual programming tool.

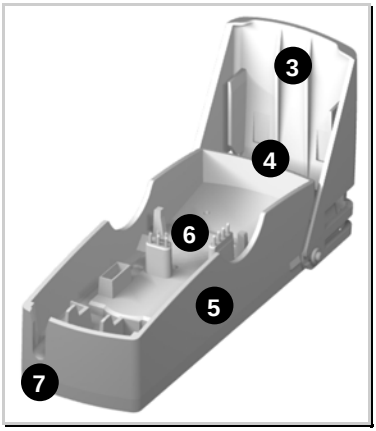
There is a movable protective cover on the head which can be hinged down to protect the contact pins during transport. When opened, the protective cover is used as a bracket base for the IrDA programming and readout head.

IrDA programming and readout head

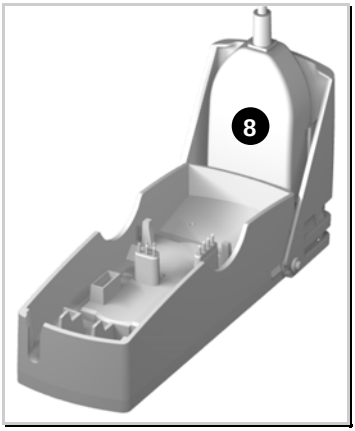


IrDA programming and readout head

Programming adapter and IrDA programming and readout head



Programming adapter

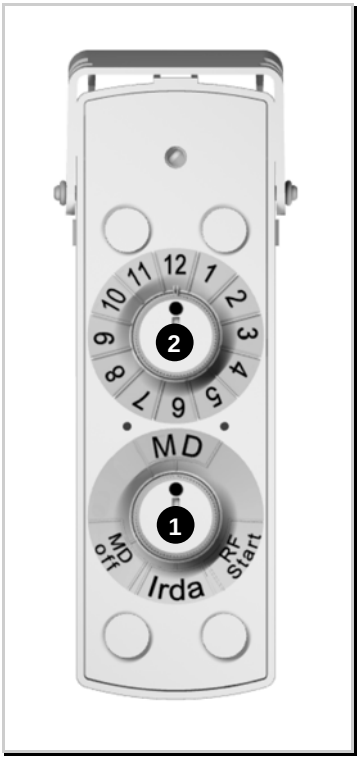


IrDA programming and readout head

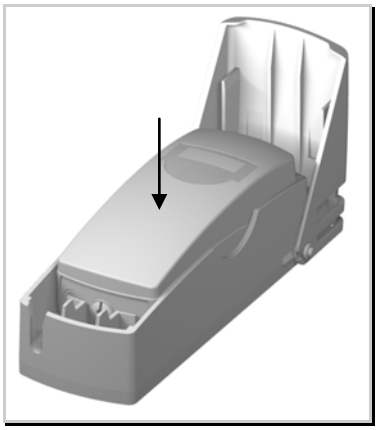
Functional elements

1 IrDA programming and readout head
2 Communication window
3 Protective cover
4 Adapter fitting
5 Metering device holding fixture (tray)
6 Contact pins
7 Cable duct for remote sensor
8 IrDA programming and readout head inserted

Using the programming adapter



Operating elements



Push the inserted metering device into place

Operating elements

There are two rotary buttons on the back of the programming adapter.

After a function has been selected, the metering device is pressed into the tray for programming.

Notes:

The metering device must be inserted flush at the top.

The metering device must be kept pressed during the programming phase. Do not remove the metering device until programming has been completed. The end of programming is indicated by an acoustic signal.

The metering device must be removed from the programming adapter for at least 1 second between successive function selection. The metering device must not have any contact to the pins during function selection.

Using the programming adapter

Operating elements and workflows

1. Rotary button with 4 main functions (main switch)

MD **Programming the due date**

Due date last day of the month, (February always 28th)
At the same an error reset is carried out and the due date shown for 4 seconds on the display. The programming process is concluded when the signal sounds.

MD OFF **Deleting due date**

Due date is set to 0 and confirmed by an acoustic signal. The displays for due date, due date value and checksum are hidden from the display.

IrDA **Communication with a PC / software**

The IrDA programming and readout head is plugged into the adapter fitting. For a connection to be able to be set up and maintained to the PC or to the software, the metering device must be kept pushed into the tray. S is shown on the display during communication. You can remove the metering device when communication has been completed.

RF START **Radio activation**

Radio activation is triggered (InSt shown on the display) and the installation telegrams are transmitted. If the device is in sleep mode, the "F" of the radio code "FA" or "Fb" is hidden on the display. You can remove the metering device from the programming adapter following the first InSt display. "SLEEP" returns to the display after about 4 minutes.

Sleep modus ("SLEEP") is cancelled when the metering device is inserted onto the installation plate!

2. Rotary button for due date months

1, 2, ... 12 Month 1 to 12 (January to December)

Note that the setting is only relevant for switch position "MD".

Note:
Check programming in the display afterwards!

WHE5 family System Manual Chapter G

Device description

Chapter G - Device description

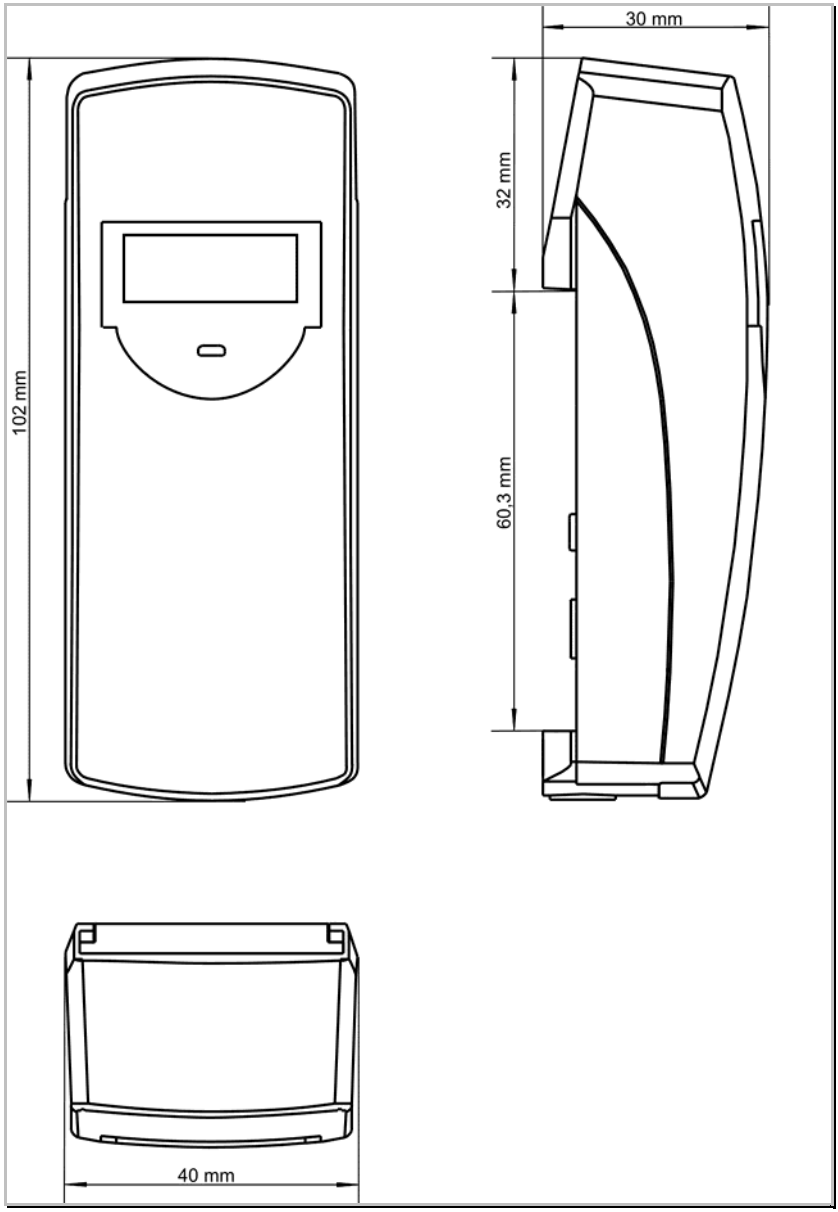
Electronic heat cost allocator

The metering devices of the WHE5 family are replacing the heat cost allocators WHE3 and WHE4.

The new device concept unites greatest possible compatibility with predecessor models with the latest knowledge in the heat cost metering segment.

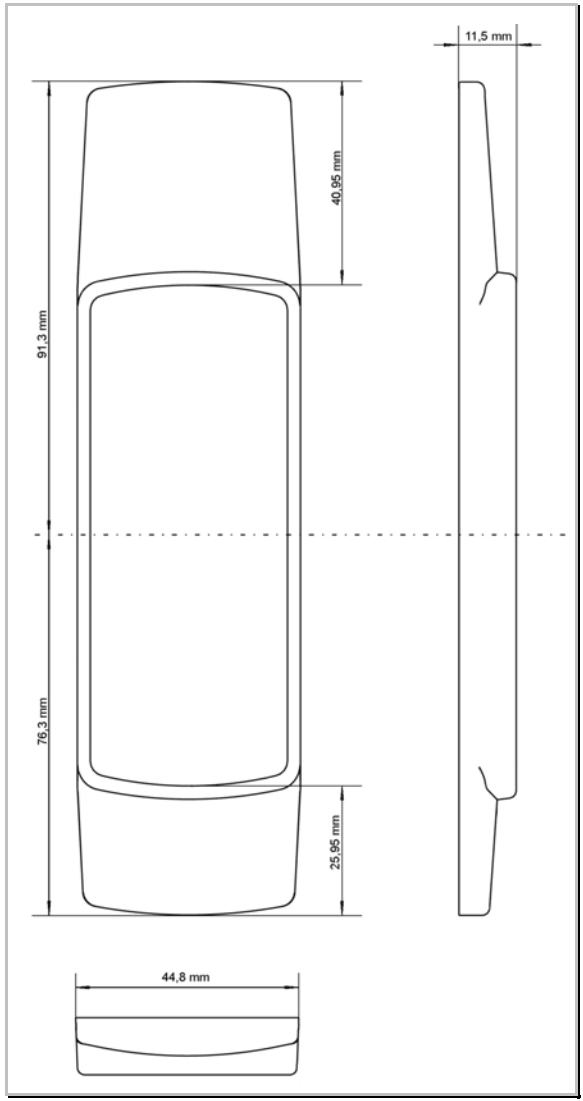
~ Standard housing for all types
~ Different measuring and evaluation algorithms:
AL3 (WHE3-compatible) and AL4 (WHE4-compatible)
~ Housing with pre-mounted lead seal from the factory (own colour)
~ Optional remote sensor (can be retrofitted)
~ Automatic detection of "remote sensor operation"
~ Device optionally with radio support as AMR or walk-by version
~ Device optionally with IrDA interface)
~ Standard version with manipulation detection (e.g. unauthorised opening of device)
~ 2-sensor metering devices can be converted to 1-sensor versions on site
~ Saving of min. and max. temperatures
~ Saving of duration of exception reporting

Design dimensions of the metering device



Technical dimensions

Design dimensions of the cover plate



Technical dimensions

General technical data

Supply

Battery type	3V lithium battery
Battery service life	typ. 10 years

Radio

Radio frequency	868 MHz with 1 % duty cycle
Transmission power	0 dBm[1)] (typ. 3 dBm)
Radio protocol	Wireless M-Bus acc. to EN13757-4

[1)] In connection with an AMR network node, a horizontal range of around 15 m and a vertical range of around 1 floor up or down are achieved in a typical building. The PC radio module (WTZ.RM) is available for exact range calculation. The range specification is purely informative and does not represent any guaranteed system parameters.

Measuring principle

1-sensor or 2-sensor	
Area of application[2)]:	
1-sensor WHE3x algorithm	$t_{min,m}$ = 55 °C, $t_{max,m}$ = 105 °C
1-sensor WHE4x algorithm	$t_{min,m}$ = 55 °C, $t_{max,m}$ = 105 °C
2-sensor WHE3x algorithm	
Standard scale:	$t_{min,m}$ = 48 °C, $t_{max,m}$ = 105 °C
Scaled:	$t_{min,m}$ = 35 °C, $t_{max,m}$ = 105 °C
2-sensor WHE4x algorithm	$t_{min,m}$ = 35 °C, $t_{max,m}$ = 105 °C
Start of metering: (t_Z refers to the temperature of heating medium determined)	
1-sensor devices	$t_Z \geq$ 30 °C (at t_L = 20 °C) non-evaluated $t_Z \geq$ 28 °C (at t_L = 20 °C) evaluated
2-sensor devices	$t_z - t_L \leq$ 5 K

[2)] Definitions according to DIN EN 834

$t_{min,m}$	Lowest mean design heating medium temperature at which the heat cost allocator may be used. With single-tube heating systems this is the mean design heating medium temperature of the last radiator in the strand.
$t_{max,m}$	Highest mean design heating medium temperature at which the heat cost allocator may be used.
t_Z	Mean heating medium temperature of the radiator at which the counter of the heat cost allocator starts up
t_L	Reference air temperature
t_m	Mean heating medium temperature

General technical data

Norms and guidelines

EU-conformity (CE)	CE2T2886xx *)

Product family norm

Heat cost allocator for acquiring consumption data for room heating	DIN EN 834

Protection data

Protection class	III acc. to EN61140
Protective rating for housing	IP32 acc. to EN60529

Environmental compatibility

The Product environment declaration CE2E2886en *) contains data about environmentally friendly product design and evaluation (RoHS conformity, substances used, packaging, environmental benefits, disposal)

Dimensions	(W x H x D):	40 x 102 x 31 mm
Remote sensor cable length		1.5; 2.5 or 5.0 m
Weight	Device packed with attachments	58 g
Housing material		PC-ABS
Housing colours		RAL 9016 Traffic White

Ambient conditions	**Operation** EN 60721-3-3	**Transport** EN 60721-3-2	**Storage** EN 60721-3-1
Climatic conditions	3K4	2K3	1K3
Temperature	5...70 °C	-25...70 °C	-5...45 °C
Humidity		<95% rel. hum.	
Mechanical conditions	3M2	2M2	1M2
Maximum altitude		no data	

*) The documents can be downloaded under http://siemens.com/bt/download.

Technical data – radio

Uni-directional radio 868 MHz (wireless M-bus in accordance with EN 13757-4) according to current specification for AMR and walk-by.

Useful data content of the AMR telegrams

~ Device number (8-digit)
~ Device type/software version
~ Time/date
~ Error status
~ Error date
~ Current consumption
~ Due date
~ Due date value
~ Counter status at end of last month

Useful data content of the walk-by telegrams

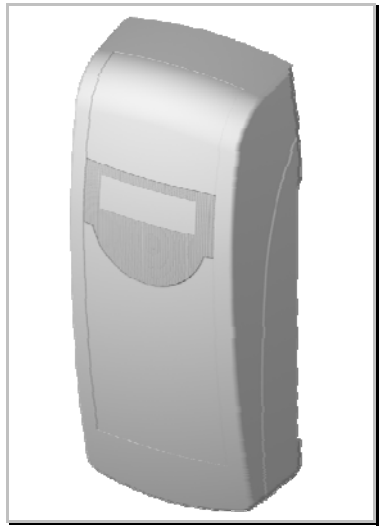
~ Device number (8-digit)
~ Device type/software version
~ Time/date
~ Error status
~ Error date
~ Current consumption
~ Due date
~ Due date value
~ Counter status at end of last month
~ 15 Statistic values

Device views

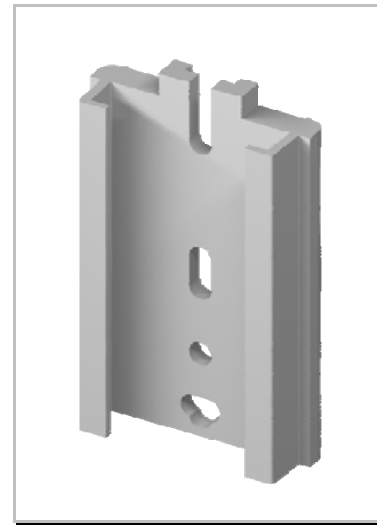
Standard metering device of the WHE5 family

The device housing and installation plate P3 are used as the standard metering device.

Front view

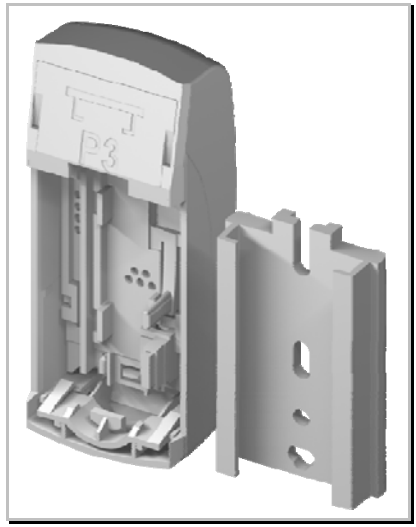


Front view



Standard installation plate

Rear views

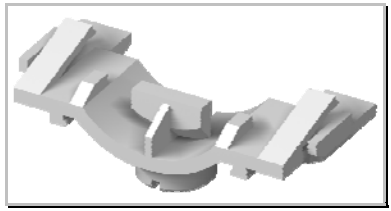


Rear view with installation plate

Device views

Lead seals

The meters are delivered with a lead seal in place.



Lead seal

Replacement lead seals

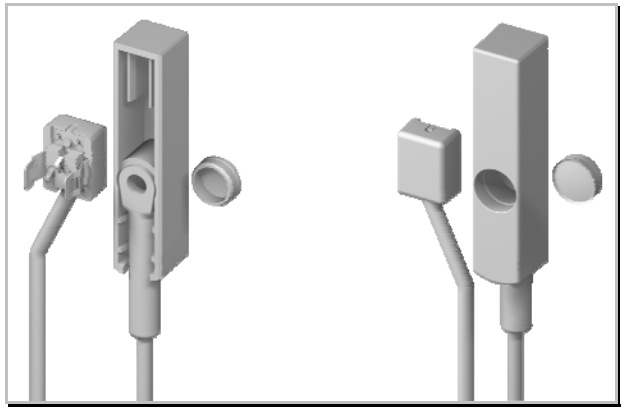
Please only use the blue replacement lead seals provided. The white lead seals for the WHE3 and WHE4 metering devices are not suitable in terms of material technology.

Remote sensor

All metering devices can be equipped with a remote sensor.

The remote sensor is inserted into an interface on the rear of the metering device. This procedure cannot be reversed.

Once a standard metering device has been equipped with a remote sensor, it can only be operated using this.



Remote sensor rear and front view

Device views

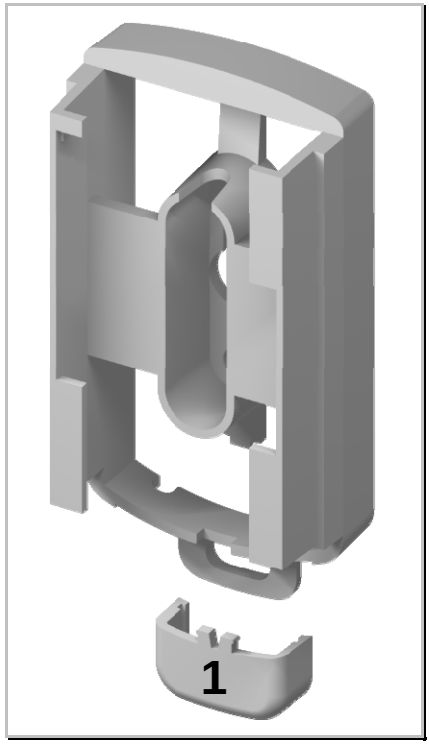
Wall bracket

A wall bracket is part of the remote sensor installation package.

This is required for the remote sensor cable and device support.

Special wall brackets (no. FKK0044) are used for the metering devices of the WHE5 family.

Wall brackets already mounted may have to be replaced.



Wall bracket

Wall bracket parts-installation kits

P3 wall brackets are used for fixing remote sensor metering devices to the wall. The wall brackets used for devices from other manufacturers must be replaced, as otherwise the housing contact will not be actuated.

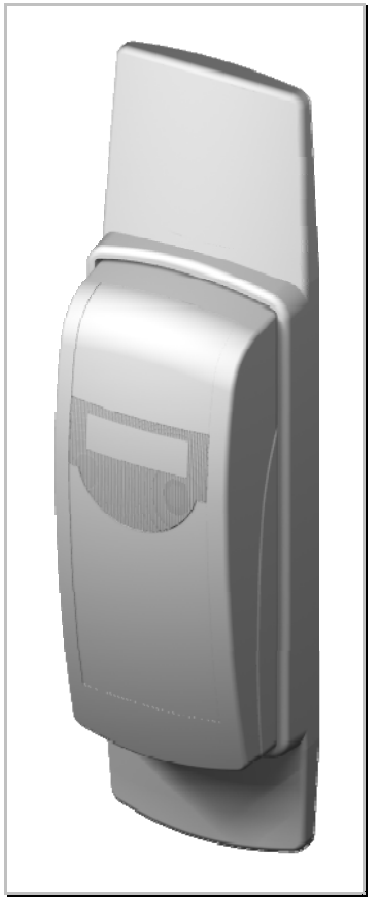
Sealing

At the end of remote sensor installation the protective cap of the wall bracket (1) is pushed and sealed. This applies for all remote sensor installation.

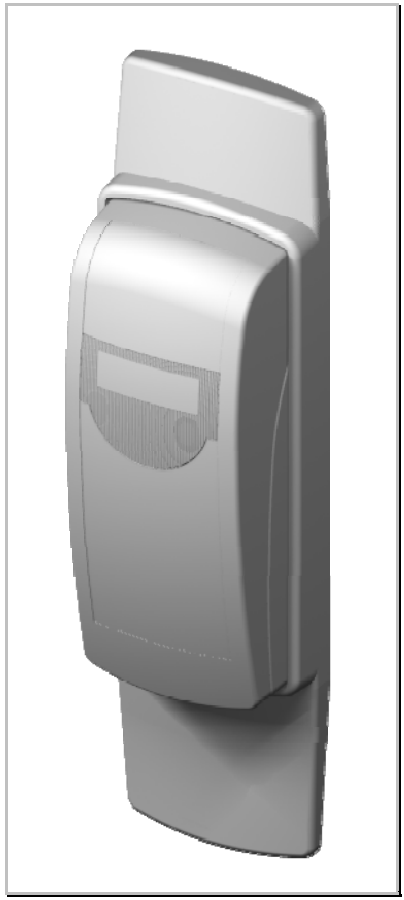
Device views

Cover plate

You can fit a cover plate to the metering device to cover signs of pre-installation. The cover has cover shells of different sizes and can be turned through 180 degrees.



With cover shell



With cover plate turned through 180 degrees

Compatibility

Measuring principle

The measuring algorithms of the WHE5 family are downward-compatible to those of the metering device families WHE3 and WHE4.

1-sensor mode

Determines radiator heat output on the basis of measured and validated radiator temperature.

2-sensor mode

Determines radiator heat output on the basis of measured and validated radiator temperature by means of 2 temperature sensors (radiator and room air temperature)

Metering device type WHE5 (suitable for installation plate WHE3 and WHE4)

~ Algorithm AL3 parameterised as 2-sensor (WHE3xZ-compatible)

~ Algorithm AL3 parameterised as 1-sensor (WHE3x-compatible)

~ Algorithm AL4 parameterised as 2-sensor (WHE4xxZ-compatible)

~ Algorithm AL4 parameterised as 1-sensor (WHE4xx-compatible)

All device types:

~ Version with/without radio transmitter (AMR and walk-by)

~ Version with/without IrDA interface (close-range interface)

~ Version with modified summer counting function (WHEx.S-variants)

Display loops

Sleep mode display

The metering devices are delivered from the factory in sleep mode. Measuring operation is inactive.

Display loops

Overview of the variable display messages

XX variable on the display:

"**FA**" Code for the AMR radio system
" **A**" Code for an active AMR radio system (device in sleep mode)
"**Fb**" Code for the walk-by radio system
" **b**" Code for an active walk-by radio system (device in sleep mode)
"**AL**" Algorithm, no radio system available

Y variable on the display:

"**3**" Code for the WHE3x algorithm
"**4**" Code for the WHE4x algorithm

Z variable on the display:

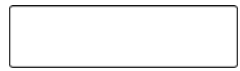
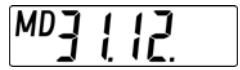
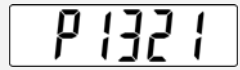
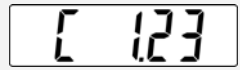
"**1**" Code for 1-sensor measuring system
"**2**" Code for 2-sensor measuring system
"***S***" Sensor

Display loops

Standard operation metering device

Device states, consumption values and measuring system information are displayed on the LCD in a display loop.

Display loops

Current consumption		2 S
Display test: Everything on		0.5 S
Display test: Everything off		0.5 S
Due date e.g. 31st December		2 S
Due date value (flashing)		5 S
Checksum		2 S
KQ value (corresponds to the rated radiator capacity in W)		1 S
KC value (Evaluation factor which takes thermal connection of the temperature sensors into account)		1 S
Variable display (See page 14)		1 S

These display steps only become visible if a device from the WHE5x family has been given a product scale.

Special displays

Depending on the type of operation, different special displays are shown, which map certain device statuses.

Error display (0.5 seconds alternating)
"Err 1" appears permanently.
All other error messages are displayed in quick succession alternating with consumption data.

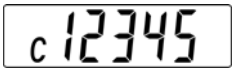
Consumption display suppressed (0.5 seconds alternating)
Is displayed in the event of an error in place of the invalid consumption values, depending on programming.

End of battery service life (0.5 seconds alternating)
Is displayed after the end of service life, alternating with the consumption values, depending on programming.

Plain text

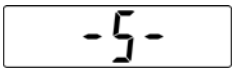
Manipulation or housing opening (0.5 second)

Is displayed in the event of manipulation either as plain text alternating with the consumption values or by the indicator "c" shown discreetly on all displays, depending on programming.

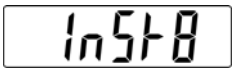


discreet

Example: Display “current value” with “c”.



Date interface (10 seconds)
This display signalises an active close-range interface.

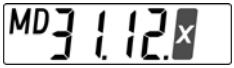


Radio system activated (AMR / walk-by) (30 seconds)
The transmission of installation telegrams is indicated in this display.

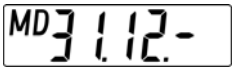
Display sequence: INST8, INST7, ... INST1

Start-up (3 seconds)
This display appears following clipping to the installation plate. Then the display changes to the normal mode display loop.

Remote sensor detection (3 seconds)
The metering device has detected a remote sensor and adjusts its measuring behaviour accordingly.



"X" (year)
The due date is skipped in the 1st year.



"-" character
Due date and due date value do not match since the due date has been adjusted.

Error messages on display

The metering device carries out a self-test every 4 minutes. Any errors detected are shown on the display.

Possible error messages are:

Err 1 Device not initialised

Err 2 Temperature value too small, <= -15 °C

Err 3 Temperature value too large, >= 120 °C or temperature sensor faulty

Err 4 Gen. temperature measuring error

Err 6 Checksum error (ROM/Flash)

Resetting error messages

Generally speaking, the programming adapter can be used to reset all errors.

Please remember, however, that this resetting procedure does not eliminate mechanical errors (e.g. faulty temperature sensor).

The metering device may have to be returned to the manufacturer for troubleshooting.

Sleep mode

Measuring mode is inactive in sleep mode. The radio connection can already be active.

Extended monitoring functions

The following data are stored in the memory of the heat cost allocator for the billing period that has expired (due date):

For the proof of heating operation, the hours are counted during which the radiator sensor measured a temperature higher than 41°C, the maximum temperature is also recorded with the date.

For “mould argumentation”, the hours are counted during which the radiator sensor measured a temperature lower than 10 °C, the minimum temperature is also recorded with the date.

Device functions

Function control

The metering device carries a self-test out every 4 minutes.

An error is indicated by the display “Err x” when the error lasts for five consecutive measuring cycles (20 minutes).

After the error has been registered and displayed, the metering device stops measuring operation. The data of the error occurrence is stored internally.

Device opening

If device opening is detected this is not a metering error. The device continues to count normall.y

IrDA data interface

This is used to program the parameters for commissioning and readout of the consumption values. A PC, netbook with readout head is required for this. The IrDA data interface can be protected against access by an individual user password.

Due date

A due date can be programmed by storing the meter status recorded thus far in the old value store.

Note

The current meter status then begins at zero again (optional setting). The old value must be readout within one due date year, otherwise it will be lost.

We recommend not reading out the measured value until 3 days after the actual due date.

The due date can be set at one of the 12 months once per year. The measured values are always stored on the last day of the month after the due date has changed (special point: 28.02. is also valid in leap years).

Due date February 29

Only February 28 can be programmed. The consumption values on Febuary 29 are still recorded and assigned to the next due date period.

Due date "0" - "MD off"

The setting "MD off" prevents the measured value being reset on the due date. No old value is stored when "0" is entered as the due date. The displays for the due date, the due date value and the checksum are hidden. The consumption values incurred are added up as in a roller type counter.

Converting meter statuses

When reprogramming the evaluation factors, there is a choice of retaining or deleting the historic meter statuses.

There is no conversion of the meter statuses on the basis of the new evaluation factors!

Device functions

Due date value

The measured values are stored for 1 year retrospectively. They can be requested at any time.

No zeroing on due date - roller type counter

The meter status of the heat cost allocator is not "zeroed" on the due date, it continues to count like a water or heat meter.

This means the new meter status is always higher than the old one and the annual value is formed from the difference between the old and the new status on the due date.

The standard setting is that the value is always reset to "0" on the due date so that the consumption can always be readout on the heat cost allocator (without calculating the difference). The display behaviour can be reprogrammed on site at any time.

Postcard mode

When the due date is set, a 4-digit checksum which is valid for the due date value appears on the LCD. This checksum is used to check the plausibility of the readout value.

Monthly values

The meter statuses at month end are automatically saved. Monthly values for the past 15 months are available.

Sleep mode

On delivery, the metering devices are in sleep mode. This means that the metering function is not active. This state is indicated by the word "SLEEP" on the display. Wake-up takes place automatically when the device is mounted to the installation plate.

Manipulation detection / opening contact

The metering device is equipped with an electromechanical opening contact which detects unauthorised opening of the device after installation on the radiator. This is either indicated by a plain text message "cOPEn" on the display, or discreetly by the pictogram "c". The opening detection date is stored in the device.

The heat cost allocator continues metering even when housing opening has been detected!

Note

The metering devices should remain in their packaging until shortly before they are installed in the property. This prevents the opening contact being actuated unintentionally.

This opening contact also has the effect of automatically wakening the metering device from sleep mode during installation.

Device functions

Discreet opening indicator

In the case of discreet opening detection, the removal of the heat cost allocator from the installation spot (on the radiator or on the wall) is not shown by plain text on the display, but discreetly by the pictogram "c" appearing additionally on all display views.

The standard setting is that housing opening is displayed as a plain text message "c OPEn" alternating with the current value or previous year's value (old value). The display can be changed from discreet to plain text (or vice versa) on site at any time.

Battery warning

The heat cost allocator has service life monitoring. If the option is selected, the display shows "bat00" as a message, so that there is an optical message after the service life has expired.

The standard setting is that there is no message at the end of the service life. Activation of service life monitoring can be switched on and off on site at any time.

Showing values in the event of unit errors

If this option is activated, the units accumulated up to the failure of the HCA are shown as a meter status on the display. In the past, some users expected these values to appear on the bill although the unit had failed during the year (error display ignored).

The standard setting is that no consumption values are displayed when a device fault makes these values useless for billing procedures. In place of a meter status not suitable for billing, the display shows "- - - - -", the meter statuses up until the failure and the failure date are stored in the heat cost allocator and can be readout (by the billing company). The display option can be reprogrammed on site at any time.

WHE5 family
System Manual
Chapter H

Installation positions

Chapter H - Installation positions

Reference and installation positions

General features

- ~ The reference point determined on the radiator determines the installation position of the metering devices and remote sensor.
- ~ This reference point depends directly on the type of radiator used and the thermal correction factors (e.g. KC values) and must be observed.
- ~ The number of ribs on ribbed radiators or the position of the tubes carrying water on panel radiators can be different. If the reference point is not suitable as an installation location (e.g. where there is an odd number of ribs on a ribbed radiator), the installation position must always be corrected towards the supply flow for new systems.

Diagrams and installation drawings

The radiator sketches depicted in this installation manual are designed to help you recognise your radiator type and the respective type of installation.

It is possible that the radiators you find on site do not correspond 100% in every detail with the diagrams in this manual.

The diagrams show the striking characteristics of a radiator group, which are an indication of the basic different types of installation or of which type of metering device must be chosen.

Determining the installation position

In order to determine the installation position (reference point) on the radiator, you require the following information.

- ~ Radiator design height
- ~ Radiator design length
- ~ Calculation factor installation height (75% of the radiator design height)
- ~ Calculation factor horizontal installation position (50% of the radiator design length)

Sometimes the design or profile shape of the radiator must also be used to determine the exact installation position.

Standard installation

The standard installation position of the metering devices and remote sensors is at:

75% of the radiator design height

50% of the radiator design length

This calculated position is used as a **standard reference point.** Most installation plates and remote sensors are installed in this position. All deviated installation positions are described in detail as special installation cases.

Example calculation for standard installation

Radiator specifications: Radiator design height: 1000 mm, radiator design length: 1400 mm

Installation height specification: 75%

Design length specification: 50%

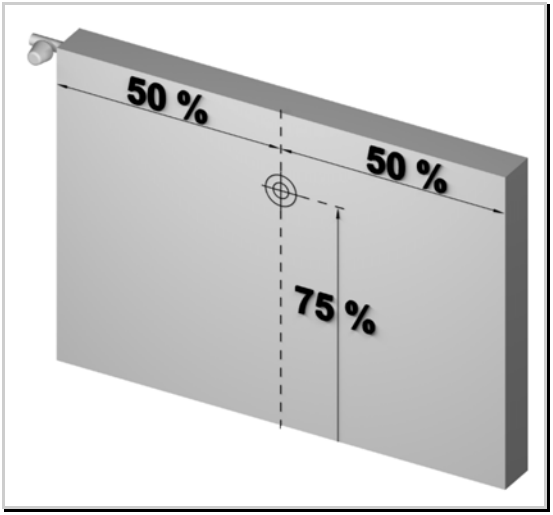
Calculation

Design height x 75%: 1000 mm x 75% = 750 mm

Design length x 50%: 1400 mm x 50% = 700 mm

Result

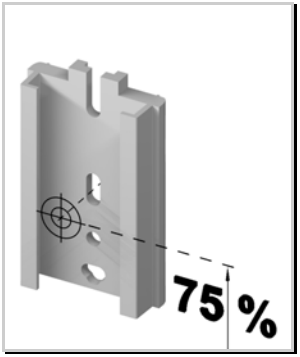
The metering device is attached at a height of 750 mm and in the centre of the radiator at 700 mm. The thus calculated reference point must be brought into line with the reference points of the installation plates and the remote sensor.



Calculation factors 75% design height and 50% design length

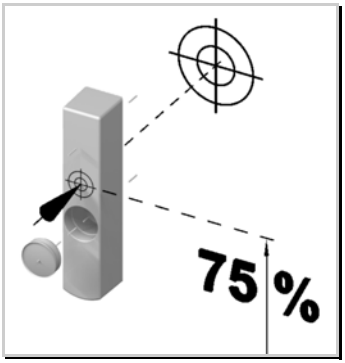
Standard installation

Reference points installation plate

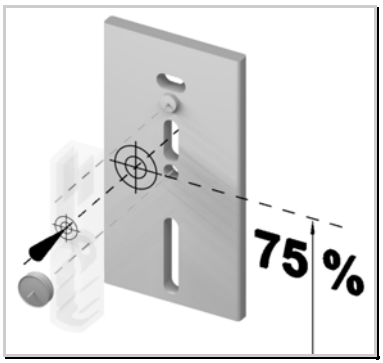


Reference point installation plate

Reference points remote sensor and remote sensor installation plate



Reference point remote sensor



Reference point remote sensor installation plate

Reference point remote sensor

The reference point of the remote sensor is 10 mm above the mounting bore with the round cover cap!

Remote sensor accessories

For remote sensor installation you need a wall bracket for the metering device in addition to the standard parts for recording the measured value on the radiator.

For complete remote sensor installation you require 3 sets:

1 x remote sensor installation set with the required cable length
1 x wall bracket installation set for the metering device
1 x installation set according to CIT installation for attachment to the radiator

Standard installation

Even and odd number of ribs

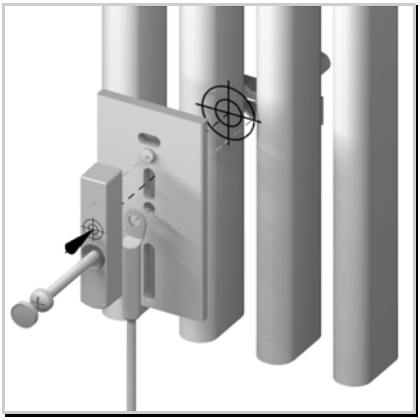
Even number of ribs:
In the case of radiators with an even number of ribs (..., 10, 12, 14, ...) you will find a gap between the ribs at 50% of the radiator design length.

If installation prescribes attachment to a radiator rib, you must choose the next available radiator rib towards the supply flow **for installation in this case.**

Odd number of ribs:
In the case of radiators with an odd number of ribs (..., 11, 13, 15, ...) you will find a radiator rib at 50% of the radiator design length.

If installation prescribes attachment between two ribs, you must choose the next available radiator gap towards the supply flow **for installation in this case.**

Standard installation plate on the ribbed radiator



Remote sensor installation plate on the ribbed radiator

Anti-twist protection for remote sensor installation plate

A welded stud size M3 x 12 mm is screwed into the upper thread hole on the remote sensor installation plate to prevent twisting. When the remote sensor installation plate is mounted, the welded stud thread must be facing the radiator.

The welded flange of the welded stud serves as anti-twist protection for the remote sensor housing.

Standard installation

Correcting the standard installation position

You may have to slightly adapt the calculated installation position to the radiator design for installation to be completed.

Deviation of the standard installation position

If KC values are available for 75% and 50%, all other positions between the two installation heights can be calculated.

Direction of supply flow (standard rule)

Adaptation of installation position towards the supply flow can also be used for panel radiators.

If there are no corrugations, water-carrying tubes or other radiator-typical elements at the "standard installation" position, the position is corrected to the next possible position in the direction of the supply flow.

Exception

When using metering devices of the WHE5 family as replacement devices in an already existing billing unit/property, the metering devices must be installed according to installation requirements, which you will find in the property. This includes corrections to the installation position, which usually have to be carried out on site.

All devices within one property must be installed according the same conditions.

Standard installation

Radiators with internal tube registers

There is not a water-carrying tube or water-carrying channel behind every groove or smooth surface (vertical area between the ribs) of a radiator with internal tube register. If these radiator elements cannot be seen by looking down from the top, the panelling must be removed for the installation position to be determined.

If this is the case, the next water-carrying tube or water-carrying channel in the direction of the supply flow must be used for installation.

Projecting collectors

In the case of radiators with projecting collectors or respectively shaped panels, certain design heights may prevent the metering device being able to be inserted onto the installation plate from above.

In such situations, the installation plate is shimmed by the "remote sensor installation plate". This sandwich construction raises the installation plate by 4 mm.

Please note that the sandwich construction may require longer welded studs or bolts to be used.

Projecting installation plates or metering devices

As a basic principle, the installation plates or metering devices must not project beyond the radiator in their installation position. This also applies to the remote sensors.

The installation plate and the remote sensor must be completely flush for heat absorption.

Special installation cases

There are numerous installation specifications which cannot be covered by standard installation. In these cases, a detailed procedure for determining the installation position or type of attachment is described under "Special installation" in the respective installation chapter.

Special designs

Standard installation is not used on radiators of excessive length (> 3000 mm) and/or low design height (< 470 mm). You will find more detailed information about this in the "Special designs" section of this chapter.

Welded installation

The radiator paint must be removed from the welding spots before welding. We recommend circular areas of about 6 mm diameter.

After welding bright metal spots must be protected against rust.

Sealing

The safety cap of the sensor housing is used as a safety seal. At the end of remote sensor installation the safety cap is pushed completely into the sensor housing. This applies for all remote sensor installation.

Standard installation

Gap between welded studs for standard installation plate: 50 mm
Reference point = centre of stud gap

Gap between welded studs for remote sensor: 20 mm
Reference point = centre of stud gap

Welding position installation plate

Welding position remote sensor

Shank nut

If the welded studs are too short, a shank nut with washer can be used for attachment.

Shank nut / washer (optional)	
Shank nut M3 x 3 mm	FNM0002
Shank nut M3 x 6 mm	FNM0003
Shank nut M3 x 9.5 mm	FNM0001
Washer M4	FNC0001

Shank nut/washer through the remote sensor installation plate

Reference points standard installation

Panel radiators

Reference point installation plate

Type of attachment:	Welded stud
Gap between studs:	50 mm
Reference point:	**Centre bore hole installation plate**
Stud length:	8 mm, 12 mm and 15 mm

Ribbed radiators

Reference point ribbed radiator

Type of attachment:	Rib attachment matched to the radiator
Rib attachment:	Bolt fitting
Reference point:	**Centre bore hole installation plate**
Bolt length:	30 mm, 40 mm, 50 mm and 70 mm

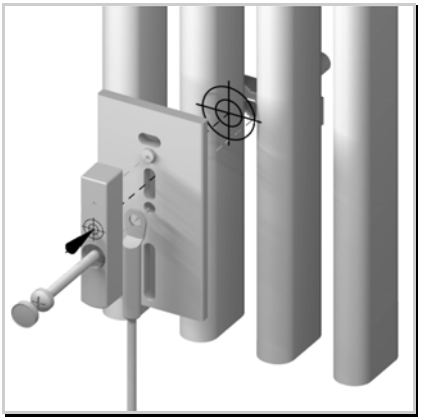
Reference points standard installation

Panel radiator - remote sensor

Reference point remote sensor

Type of attachment:	Welded stud
Gap between studs:	20 mm
Reference point:	**Centre point between the two welded studs**
Anti-twist protection:	Upper stud
Stud length:	8 mm

Ribbed radiator - remote sensor



Reference point ribbed radiator

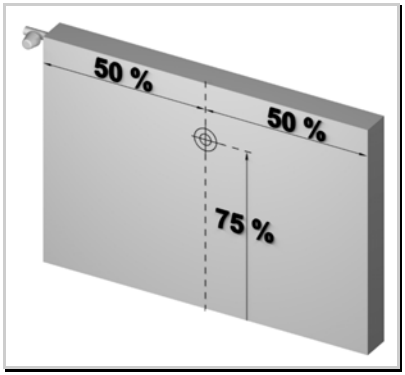
Type of attachment:	Rib attachment matched to the radiator
Rib attachment:	Bolt fitting
Reference point:	**Centre between stud anti-twist protection and stud opening**
Stud length:	30 mm, 40 mm, 50 mm and 70 mm

Special designs - determining positions

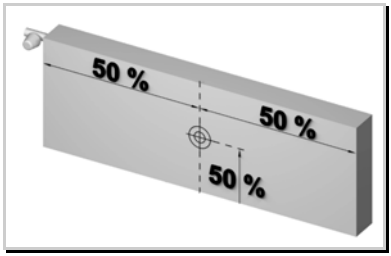
Design lengths up to 3000 mm:
1 metering device in the centre of the radiator design length

Installation height:
75% of the radiator design height

50% of the radiator design height for design heights smaller than 470 mm



Determining the position with standard design height 470 mm

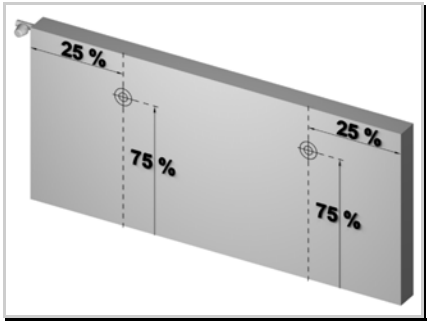


Determining the position for design height smaller than

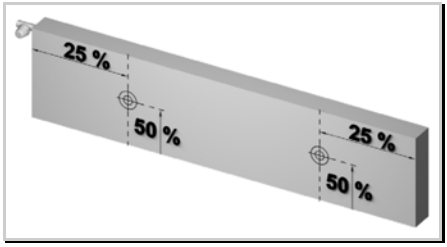
Design lengths over 3000 mm: 2 metering devices each 25% away from the edge

Installation height:
75% of the radiator design height

50% of the radiator design height for design heights smaller than 470 mm



Determining the position for excessive lengths from 3000 mm



Excessive lengths from 3000 mm and design height smaller than 470 mm

Remote sensor installation

Special feature

Remote sensors are mainly used where the metering device cannot be installed directly on a radiator.

The design characteristics of the radiator or the surroundings usually determine the way the sensor is installed.

Optical aspects can also play a role in remote sensor installation.

Splash water

If the installation point is near splash water (shower), metering devices with remote sensors must always be used.

Installation

For remote sensor installation, an external temperature sensor which is connected with the metering device by a plug-type contact is fitted to the installation point determined on the radiator.

The metering device is fixed to the wall somewhere else. The heat radiated by the radiator is transmitted directly to the metering device via remote sensor cable.

The installation position of the remote sensor is determined according to the same conditions as for positioning a metering device.

Wall bracket for metering devices

Special wall brackets are used for fixing the metering devices to the wall. The wall brackets of the WHE3 and WHE4 series must be replaced by new once since the housing contact is not actuated by the old wall brackets.

Wall position 1-sensor measuring system

In the case of remote sensor installation with 1-sensor metering devices the position of the metering device, which is only used as a "display unit" for the consumption values determined by the remote sensor in this case, can be determined freely.

Wall position 2-sensor measuring system

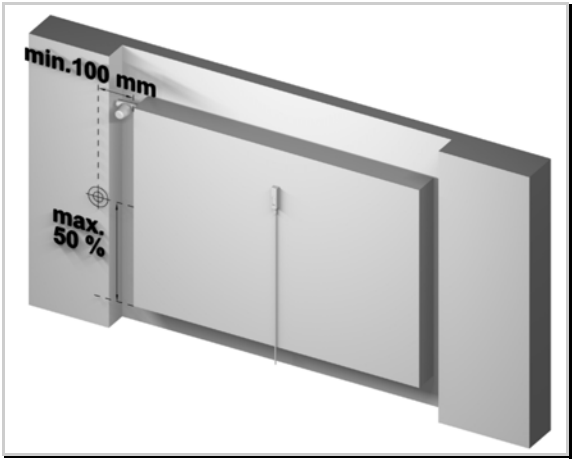
In the case of remote sensor installation with 2-sensor metering devices, the position of the metering device on the wall may **not be** determined freely.

In the case of 2-sensor devices, there is an additional **second temperature sensor** in the metering device mounted on the wall. This influences the measuring behaviour and the resulting display units in the metering device.

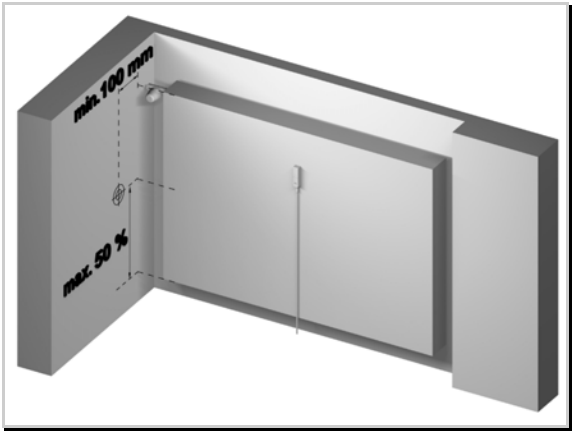
To guarantee standard-conform measurement, **the metering device must** be mounted in a specific point next to the radiator. The metering device must not be exposed to the radiator's heat flow.

Remote sensor installation

Position of metering device for 2-sensor measuring system



Wall position of metering device for 2-sensor measuring system



Corner wall position of metering device for 2-sensor measuring system

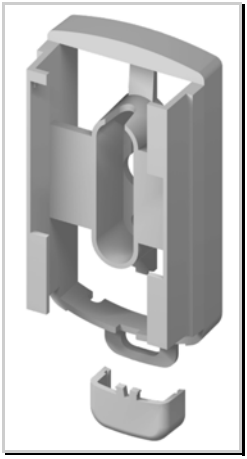
The metering device must be attached to the wall next to the radiator at a distance of at least **100 mm** to the radiator at **max. 50% of the radiator design height**.

IMPORTANT NOTE 2-sensor measuring system

If technical reasons prevent the metering device being installed at 50% of the radiator design height, a lateral gap must be chosen at which the metering device is not exposed to the radiator heat flow.

Remote sensor installation

Wall bracket



Wall bracket

For complete remote sensor installation you require 3 sets:

1 x remote sensor installation set with the required cable length
1 x wall bracket installation set for the metering device
1 x installation parts according to CIT installation for attachment to the radiator

Remote sensor set

1.5 m remote sensor:	**HCAI K010 0S1**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

2,5 m remote sensor:	**HCAI K010 0S2**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

5,0 m remote sensor:	**HCAI K010 0S5**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

Sealing

The round safety cap of the sensor housing is used as a safety seal. At the end of remote sensor installation the safety cap is pushed completely into the sensor housing. This applies for all remote sensor installation.

Mounting the wall bracket

Step 1 - Mounting the remote sensor on the radiator.

Follow the installation specifications for the remote sensor position in the CIT installation instructions.

Determine the wall position for the metering device.
In the case of remote sensor installation **with 1-sensor metering devices,** the metering device, which is **only** used as a "display unit" for the consumption values can be located where is convenient.

Special wall position for 2-sensor measuring system
In the case of remote sensor installation **with 2-sensor metering devices,** the position of the metering device on the wall **must be according to the rules in this book**.

In the case of 2-sensor devices, there is an additional **second temperature sensor** in the metering device mounted on the wall. This influences the measuring behaviour and the resulting display units in the metering device.

To guarantee standard measurement, **the metering device must** be mounted in a specific position next to the radiator. The metering device must not be exposed to the radiator's heat flow.

Step 2 - Putting wall bracket and metering device together

Prior to the following steps, you have already fixed the remote sensor to the radiator and determined the installation position for the wall bracket.

~ Remote the protective cap from the wall bracket. (1)

~ Drill 2 holes at the installation position for the wall bracket and insert the dowels. (Gap between bore holes 50 mm / 6 mm diameter)

~ Screw a screw into the upper dowel. Adapt the screw for the correct wall bracket position. To do this, screw the screw into the dowel in the wall at least so far that the wall bracket can be pushed in place with the screw attachment for the wall bracket (3). For this, the wall bracket must be flat to the wall.

~ Pull the wall bracket down again.

~ Route the connector from the remote sensor from behind through the lower cable duct (5) of the wall bracket. (Fig. 1)

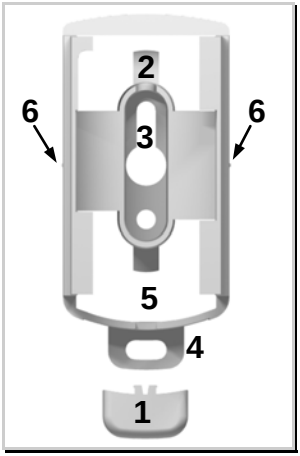
~ Insert the connector from the remote sensor into the metering device until you clearly hear it "click" into place. (Fig. 2 / Fig. 3)

~ Clip the metering device onto the wall bracket.
NOTE: The metering device is then firmly connected to the wall bracket. You can only remove the metering device from the wall bracket again by destroying the seal!

Step 3 - Attaching and sealing the wall bracket
Further procedure for completing installation can be found on pages 6 and 7.

Installing the wall bracket

Wall bracket



Wall bracket P3

1. Protective cap / seal wall bracket
2. Cable spike
3. Upper screw attachment
4. Lower screw attachment
5. Lower cable duct
6. Side marking aid

Thread / insert remote sensor cable / wind up residual cable

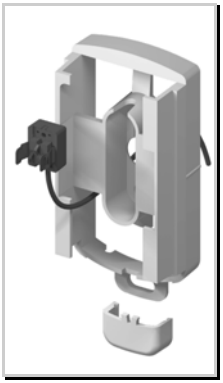


Fig. 1 - Thread remote sensor cable

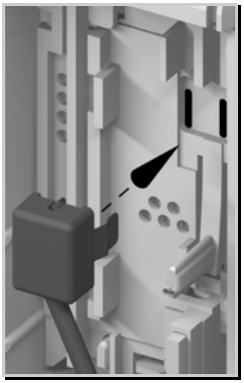


Fig. 2 - Insert remote sensor cable

Fig. 3

Fig. 4

Note in remote sensor display
As soon as the remote sensor has been inserted correctly, " ***- FF -*** " appears for 3 seconds on the metering device display.

The metering device has detected the remote sensor and adjusts its measuring behaviour accordingly. The metering device cannot be reset to a compact metering device.

Mounting the wall bracket

Step 3 - Attaching and sealing the wall bracket

Prior to the following steps you have placed the metering device on the wall bracket. The remote sensor is fixed to the radiator and the installation position for the wall bracket is known.

~ Hold the wall bracket with the metering device in place in the intended wall position.

~ Determine the length of remote sensor cable required to the remote sensor.

~ Wind the remaining cable length around the cable spike. (Fig. 1)

~ Fit the wall bracket with the metering device onto the upper screw. During this, align the marking aid on the wall bracket (Fig. 2) to the height of the upper screw.

~ Attach the wall bracket to the lower screw attachment using the 2nd screw. (Fig. 3)

~ At the end of installation (Fig. 4) seal the sensor housing (1) using the round safety cap and seal the lower screw attachment (2) using the protective cap.

Sealing

The safety cap of the sensor housing and the protective cap of the wall bracket are used as safety seals. At the end of remote sensor installation, the safety cap is pushed completely into the sensor housing and the protective cap of the wall bracket is pushed in place. This applies for all remote sensor installation.

Wall bracket parts-installation kits

Special wall brackets are used for fixing remote sensor metering devices to the wall. The wall brackets used for devices from other manufacturers must be replaced, as otherwise the housing contact will not be actuated.

Wall bracket set

Wall bracket:	**HCAI K010 0P3**
(1 wall bracket, 2 Dowel 6 mm, 2 Screw B 3.9 x 45)	

Mounting the wall bracket

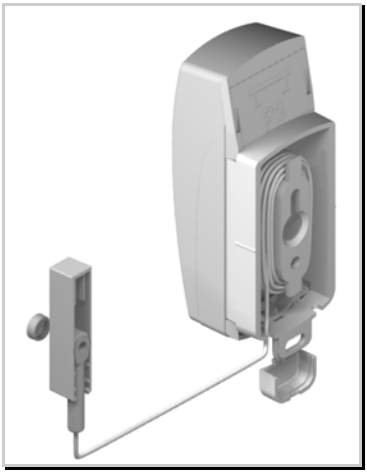


Fig. 1 - Wind the remaining cable

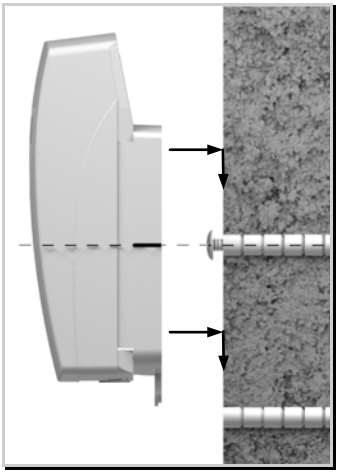


Fig. 2 - Marking aid at screw height

Fig. 3 - Lower screw

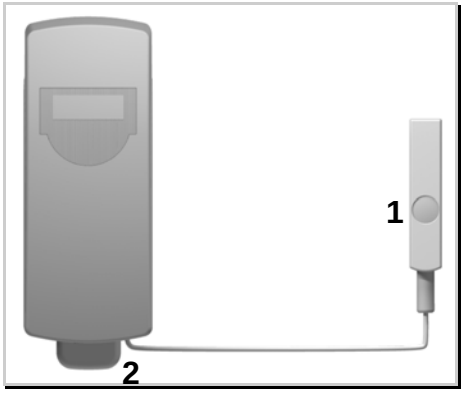
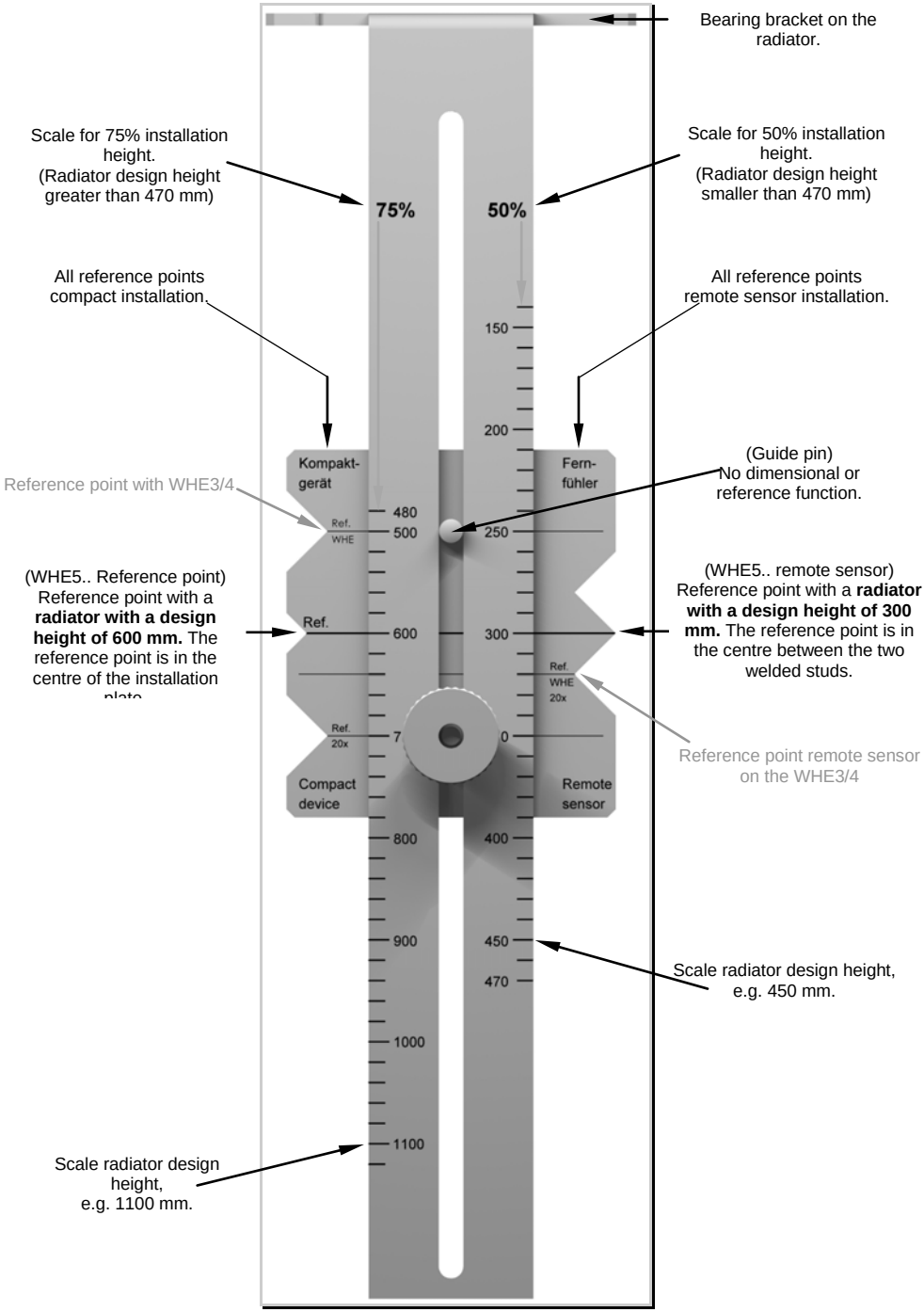


Fig. 4 - Sealing

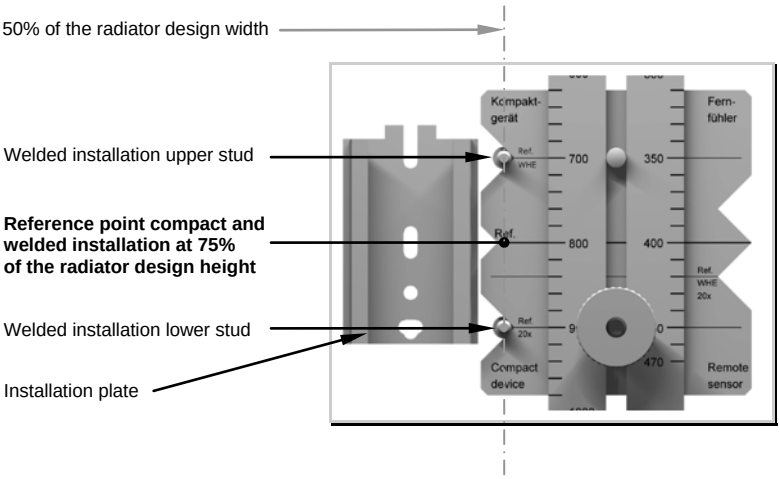
Mounting gauge



Mounting gauge

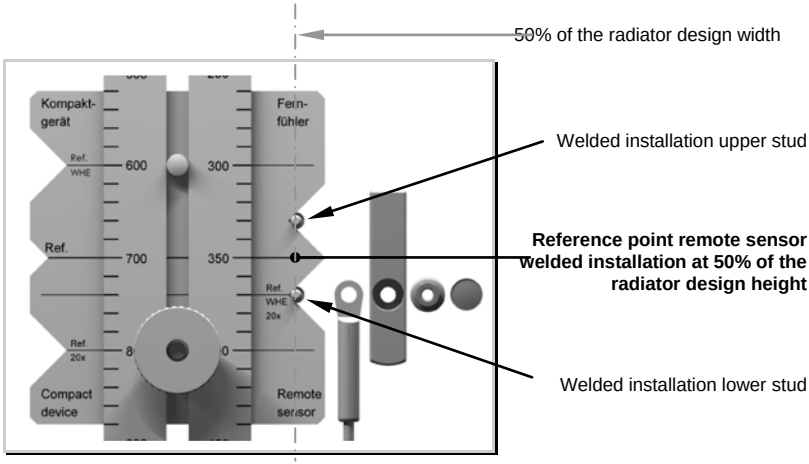
Installation example for compact device

Compact or welded installation, at 50% of the radiator design width,
800 mm radiator design height, at 75% installation height



Installation plate for remote sensor

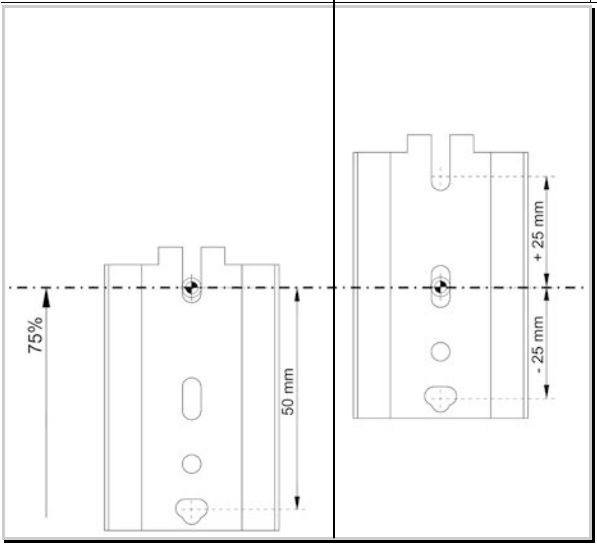
Remote sensor installation at 50% of the radiator design width,
350 mm radiator design height, at 50% installation height



History of installation plates / reference points

Comparative diagram for installation plates and reference points.

Comparison of installation plates/reference point history WHE3 / WHE4 and WHE5 family		
WHE3 and WHE4	WHE3 family	



Comparison

WHE5 family
System Manual
Notes

Notes

WHE5 family
System Manual
Chapter CIT01

Ribbed radiators

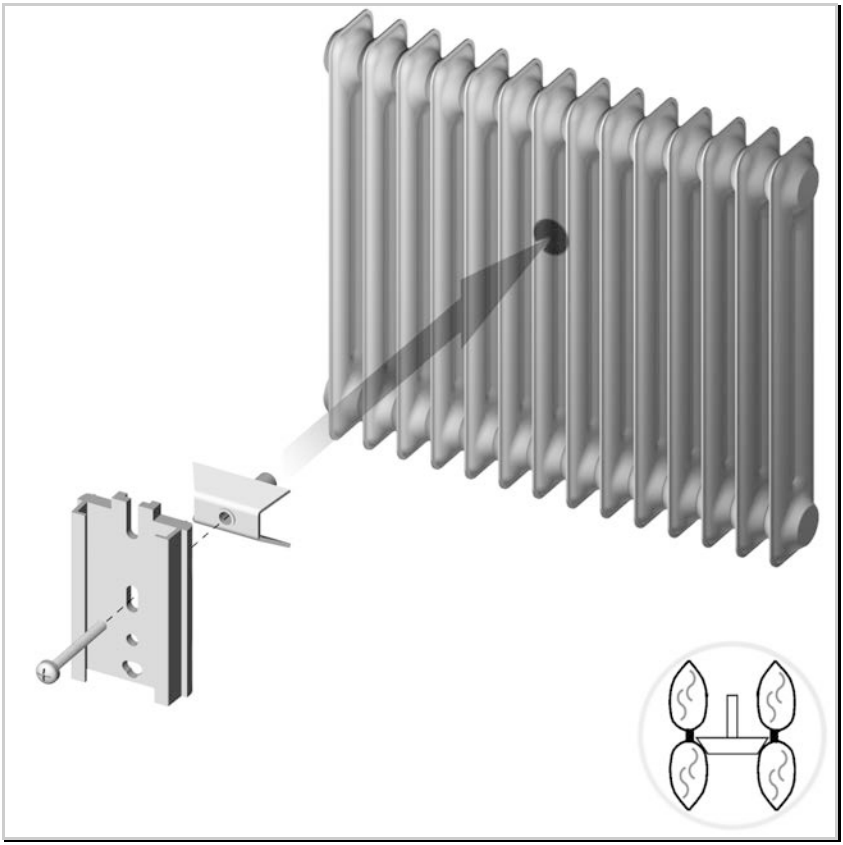
Chapter CIT01 – Ribbed radiators

Properties

Ribbed radiators

- Ribbed radiators are made up of combinations of elements that have either been pressed together in the case of cast material or welded or bolted together in the case of steel material.
- The gap between the individual ribs is used for installation of the consumption data meters.
- Clamping brackets are used to attach the installation plate as the carrier for the metering device on the radiator.
- From a certain pitch (distance between individual ribs and the resulting space), widened installation plates must be used.
- Depending on the radiator design, the installation bolts in the installation kit may be too short. Please use longer bolts in these exceptional cases.

CIT01-01 Pitch greater than 40 mm



Main installation

Installation parts:	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x installation plate	S55563-F115
1 x cross-slot screw 4 x 40 mm	FNR0004

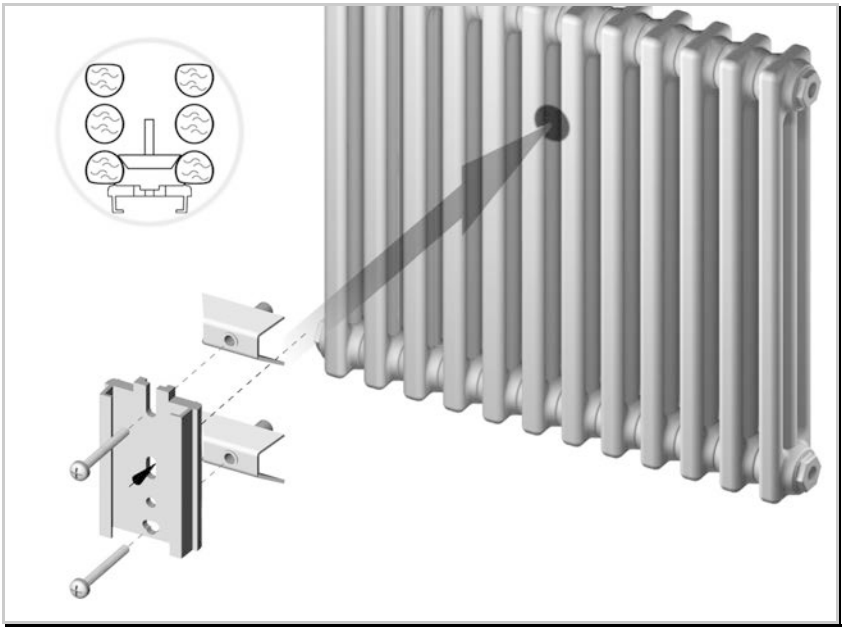
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Alternatively, clamping bracket 50 mm or 65 mm can be used for larger rib gaps for trapezoidal clamping bracket 35 mm.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal clamping bracket 65 mm	FKT0020

Remote sensor installation	
Chapter	CIT10-01

CIT01-01 Pitch greater than 40 mm

With flattened edge

Special features:
In the case of radiators with flattened edges, a second clamping bracket is used to prevent twisting.



See main installation for installation position CIT01-01

Supplements / additional information:	
2 x trapezoidal clamping bracket 35 mm	FKT0018
2 x cross-slot screw 4 x 40 mm	FNR0004

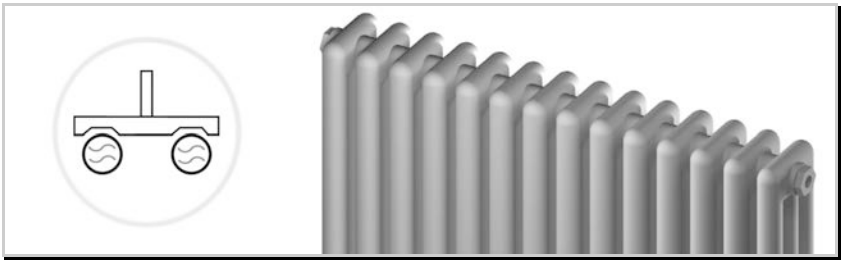
Remote sensor installation	
Chapter	CIT10-01

Further details about this CIT no. can be found on the following pages.

CIT01-01 Pitch greater than 40 mm

Tubular radiators

Special features:
Special clamping brackets are required for installation heights greater than 900 mm. This prevents the heating tubes being pushed apart by the trapezoidal clamping bracket.



See main installation for installation position CIT01-01

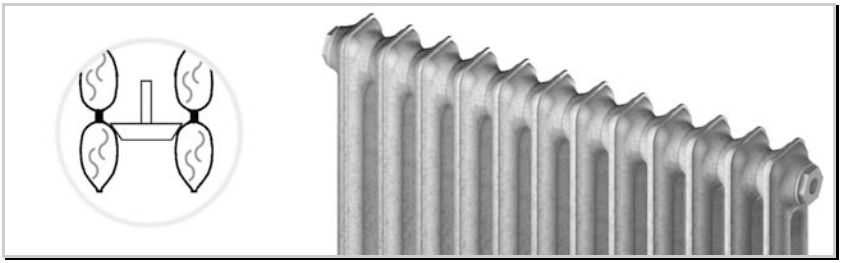
Supplements / additional information:	
1 x clamping bracket for tubes TE 46 mm	FKT0016
or 1 x clamping bracket for tubes TE 36 mm	FKT0015

Remote sensor installation	
Chapter	CIT10-01

CIT01-01 Pitch greater than 40 mm

Cast iron radiators

Special feature:
Cast iron radiators have a rough surface.

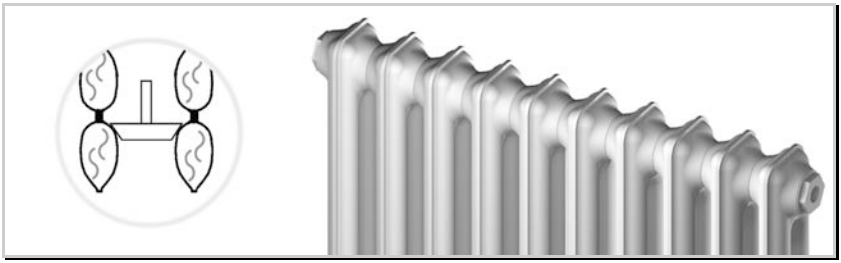


Installation position see main installation CIT01-01

Remote sensor installation	
Chapter	CIT10-01

Cast radiator type SR

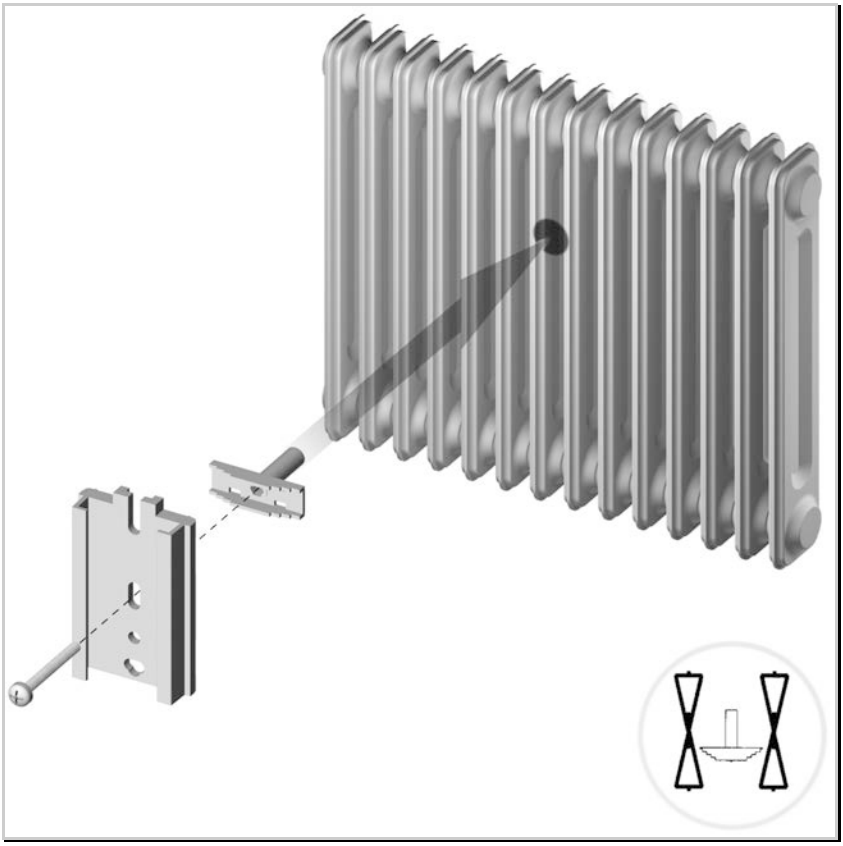
Special feature:
Cast iron radiators have a rough surface.



Installation position see main installation CIT01-01

Remote sensor installation	
Chapter	CIT10-03

CIT01-02 Pitch equal to or smaller than 40 mm



Main installation

Installation parts:	
1 x shortened clamping angle	FKT0009
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

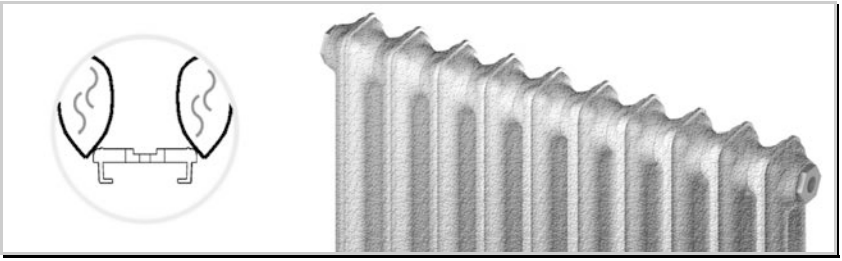
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Alternatively, trapezoidal clamping bracket 35 mm can be used for the shortened trapezoidal clamping bracket.	
1 x trapezoidal clamping bracket 35 mm	FKT0018

Remote sensor installation	
Chapter	CIT10-02

CIT01-02 Pitch equal to or smaller than 40 mm

Cast iron radiators

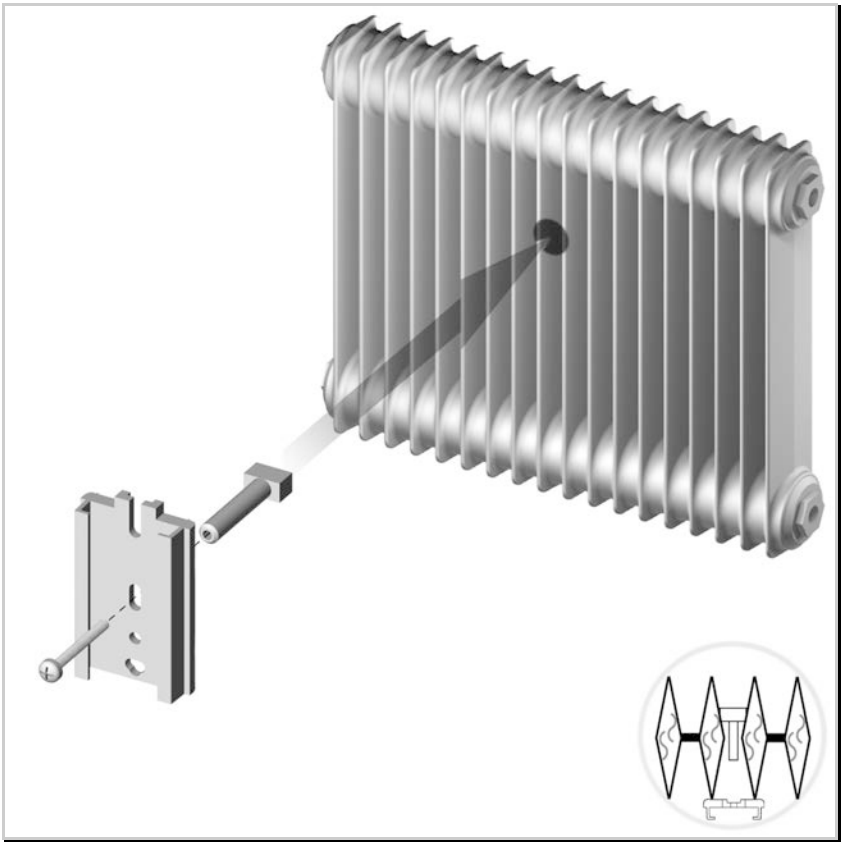
Special feature:
Cast iron radiators have a rough surface.



See main installation for installation position CIT01-02

Remote sensor installation	
Chapter	CIT10-02

CIT01-03 Cast radiators, slender, division 20/40 mm



Main installation

Installation parts:	
1 x clamping sleeve	FKM0002
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 40	FNR0004

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

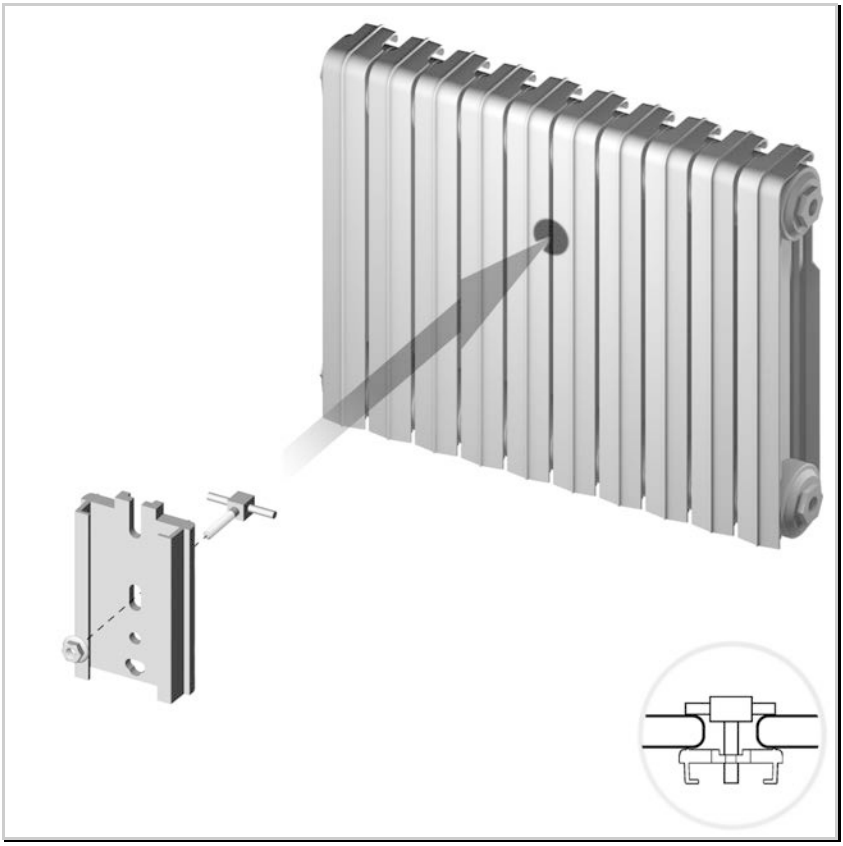
Remote sensor installation	
- not possible -	

CIT01-03 Cast radiators, slender, division 20/40 mm

Installation procedure:

The clamping sleeve is inserted between the radiator ribs at the planned installation spot and then turned through 90° to be fixed in place.

CIT01-04 End faces cast radiators



Main installation

Installation parts	
1 x square bolt	See installation instructions on the next page
1 x installation plate	S55563-F115
1 x self-locking nut M3	FNM0005

Montageposition	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
- not possible -	

CIT01-04 End faces cast radiators

Installation procedure:
Insert the pre-mounted attachment bracket into the groove on the radiator at the planned installation spot and then turn it through 90°.

You need different square bolts for different groove widths.

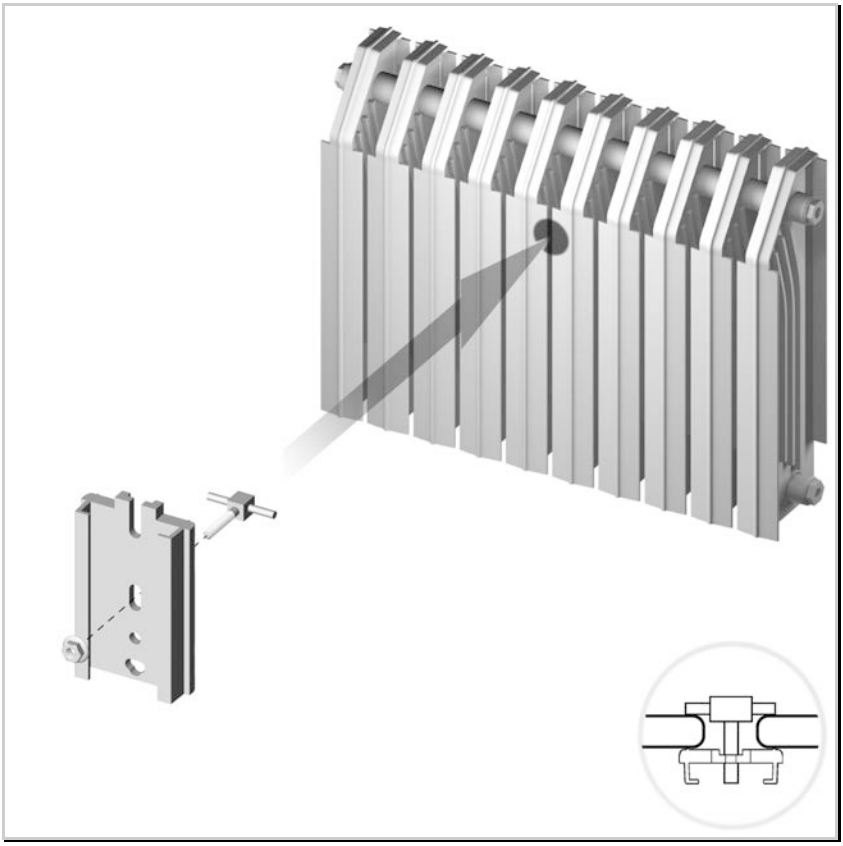
If the square bolt is too long, shorten it using a side cutter.

Installation instructions:

Square bolt	
The square bolt must be ordered separately to match the groove.	
1 x square bolt 4.5 mm with cross pin	BOZ4002
1 x square bolt 6.0 mm with cross pin	BOZ4003
1 x square bolt 12.0 mm with cross pin	BOZ4004

Auxiliary material:
A side cutter if required.

CIT01-05 Cast radiators type KR



Main installation

Installation parts	
1 x square bolt	See installation instructions on the next page
1 x installation plate	S55563-F115
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 50 % of the radiator design height At 50 % of the radiator design width

Remote sensor installation	
Chapter	CIT10-04

CIT01-05 Cast radiators type KR

Installation procedure:
Insert the pre-mounted attachment bracket into the groove on the radiator at the planned installation spot and then turn it through 90°.

You need different square bolts for different groove widths.

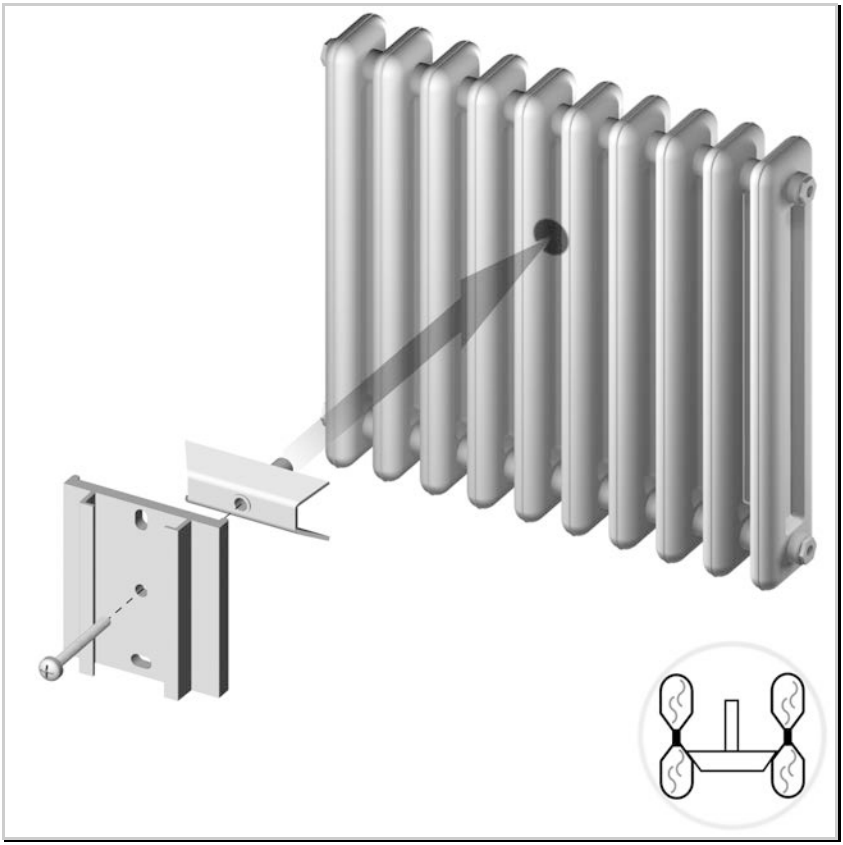
If the square bolt is too long, shorten it using a side cutter.

Installation instructions:

Square bolt	
The square bolt must be ordered separately to match the groove.	
1 x square bolt 4.5 mm with cross pin	BOZ4002
1 x square bolt 6.0 mm with cross pin	BOZ4003
1 x square bolt 12.0 mm with cross pin	BOZ4004

Auxiliary material:
A side cutter if required.

CIT01-06 Clearance > 40 mm



Main installation

Installation parts	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x wide P3 installation plate	FKA0022
1 x cross-slot screw M4 x 70	FNR0006

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Alternatively the trapezoidal clamping bracket 36 mm can be used.	
1 x trapezoidal clamping bracket 65 mm	FKT0020

Remote sensor installation	
- not possible -	

CIT01-06 Clearance > 40 mm

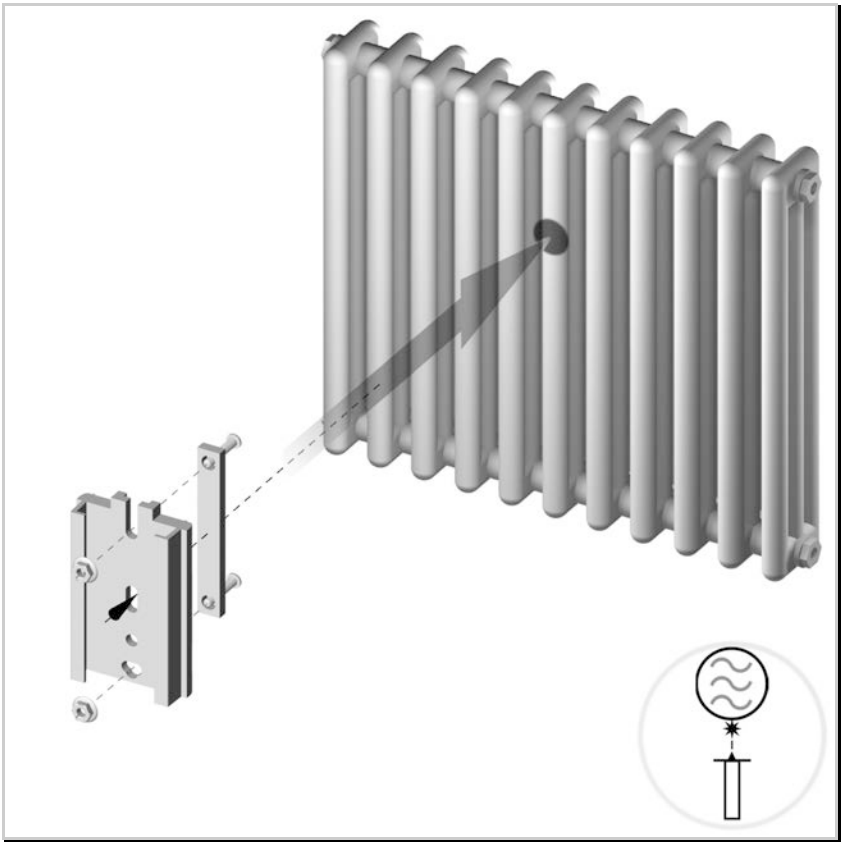
Installation procedure:
Standard installation with wide installation plate.

Radiator with column thickness SD > 35 mm

See main installation for installation position CIT01-06

Supplements / additional information:	
1 x trapezoidal clamping bracket 65 mm	FKT0020

CIT01-07 Hygiene radiators, welded installation



Main installation

Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x spacer	FKA0013
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
Chapter	CIT10-15

CIT01-07 Hygiene radiators, welded installation

Special features:
In this special case, the metering device is not attached by rib fixture but by welded installation.

Ribbed radiators

WHE5 family System Manual Chapter CIT02

Panel radiators

Chapter CIT02 - Panel radiators

Serial flow - Vertically moulded

Serial flow - Flat surfaces

General instructions

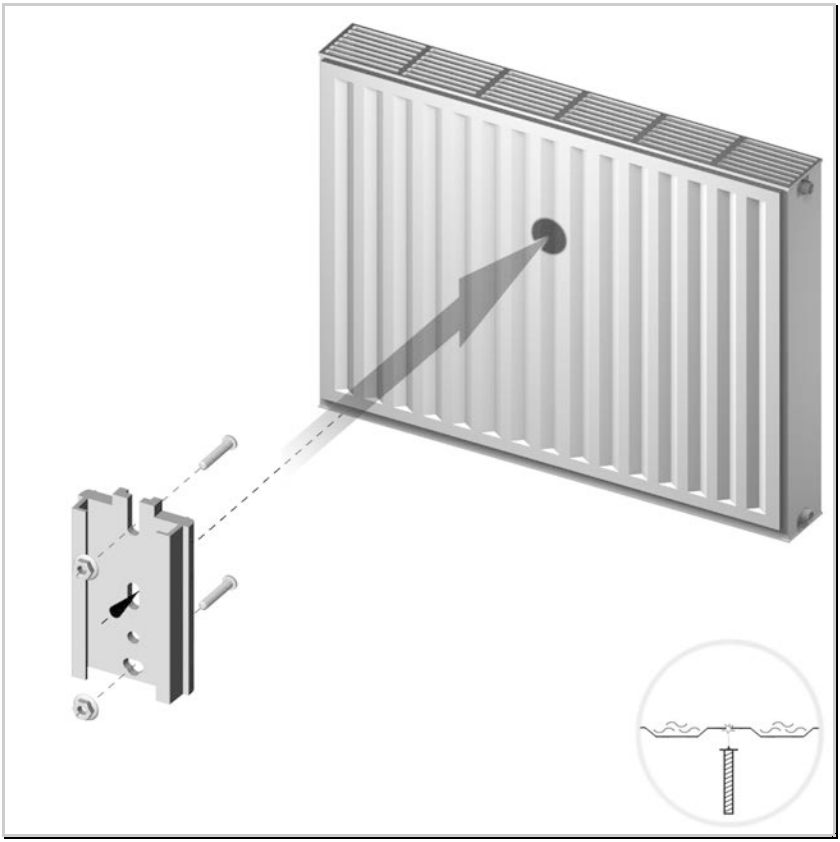
Panel radiators

- With panel radiators, channels carrying water are usually behind a smooth or profiled radiator front. The installation plate is always located on and screwed to threaded bolts that have been welded on in advance.
- Before welding, you must find out which material the radiator is made of. Only steel parts may be welded to steel radiators. At the welding spots, paint about the size of a cent has to be removed.
- Welding cannot be carried out on aluminium radiators.
- The threaded bolts are usually welded in place in a recess between two channels carrying water.
- Incorrectly positioned threaded bolts must never be torn off as this may damage the radiator. These parts must be nipped, sawn or cut off and the spot then sanded down smoothly.

Serial flow

- The serial flow through the radiator causes a change in temperature distributioncompared with standard flow on the panel facing the room.
- The medium flows through the panel facing the room first (example: Kermi Therm X2) before it flows through different panels mounted on the wall side.
- The installation position of the metering devices depends on the inflow position of the water into the radiator and can vary greatly.
- Other KC values are used.

CIT02-01 Vertically moulded



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Special installation for serial flow	Changed installation positions with serial-flow panel radiators!. Please refer to the relevant instructions on page 50 of this chapter.

Remote sensor installation	
Chapter	CIT10-05

CIT02-01 Vertically moulded

Special features:
The welded studs for the installation plates are welded in a recess between two channels carrying water.

Further details about this CIT no. can be found on the following pages.

CIT02-01 Vertically moulded

Vertical panel containing water

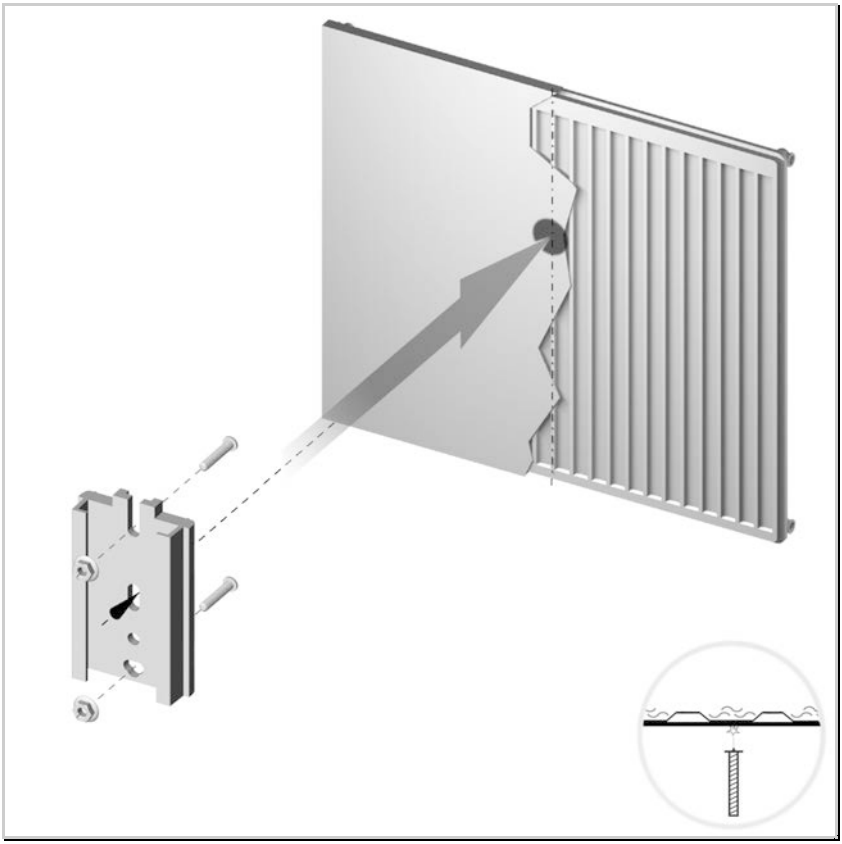
Special features:
The welded studs are welded in the middle of the panel carrying water.

Installation see main installation CIT02-01	
Note: 12 mm welded bolts are welded for this installation.	
2 x welded studs M3 x 12	FKT0011

Remote sensor installation	
Chapter	CIT10-05

CIT02-01 Vertically moulded

CIT02-02 Flat surfaces



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Special installation for serial flow	Changed installation positions with serial-flow panel radiators!. Please refer to the relevant instructions on page 80 of this chapter.

Remote sensor installation	
Chapter	CIT10-05

CIT02-02 Flat surfaces

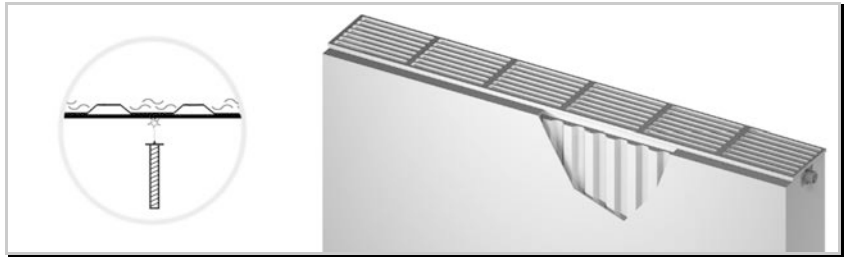
Special feature:
The welded studs are welded to the smooth panel. Tubes or channels carrying water must be beneath the welding spots.

Vertical channels containing water

Installation see main installation CIT02-02	

Remote sensor installation	
Chapter	CIT10-05

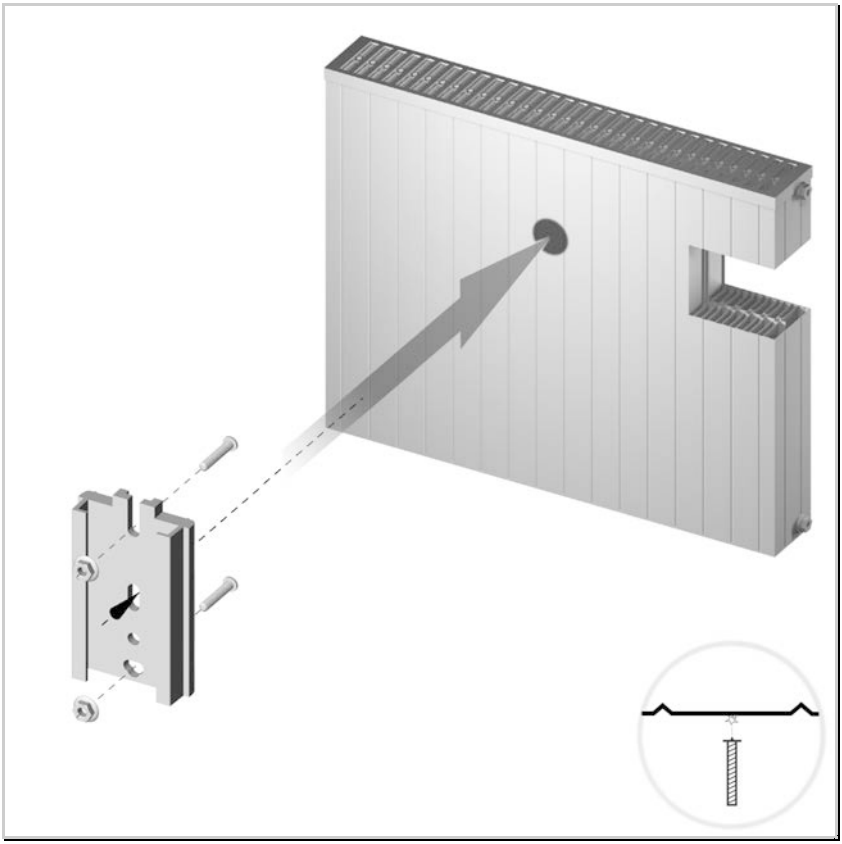
Smooth front (loose)



Installation see main installation CIT02-02

Remote sensor installation
- not possible -

CIT02-04 With front convection lamellae



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

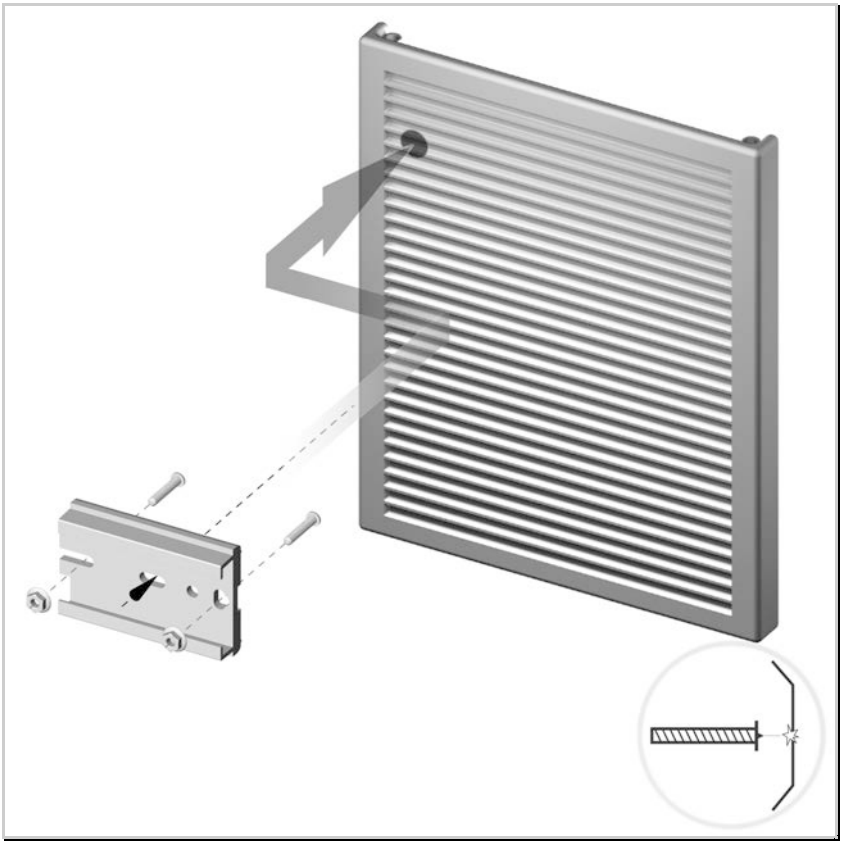
Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
- not possible -	

CIT02-04 With front convection lamellae

Special feature:
The welded studs are welded to the cover plate.

CIT02-05 As bathroom radiator



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Special installation:	Installation plate mounted horizontally at 75% of the radiator height on the supply side, as near as possible to the collector

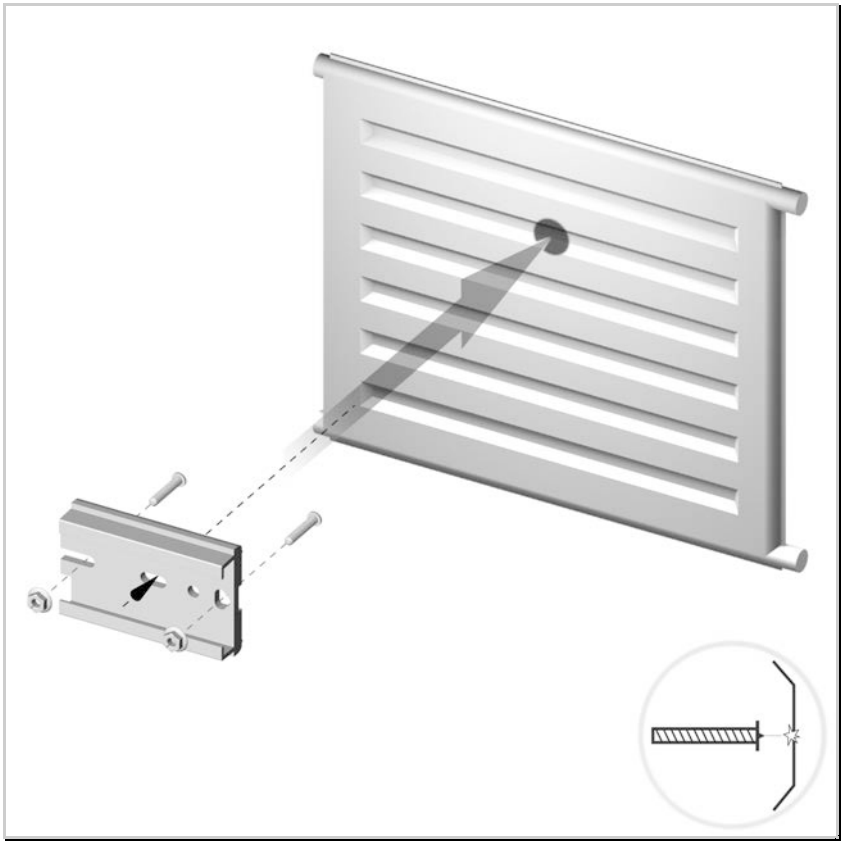
Remote sensor installation	
Chapter	CIT10-10

CIT02-05 As a bathroom radiator

Special features:
The welded studs for the installation plates are welded to a recess between two channels carrying water.

In the case of radiators with a plastic cover over the collector, the lateral distance to the cover must be chosen in such a way that the metering device can still be clipped onto the installation plate.

CIT02-06 Horizontally moulded, turned through 90 degrees



Main installation

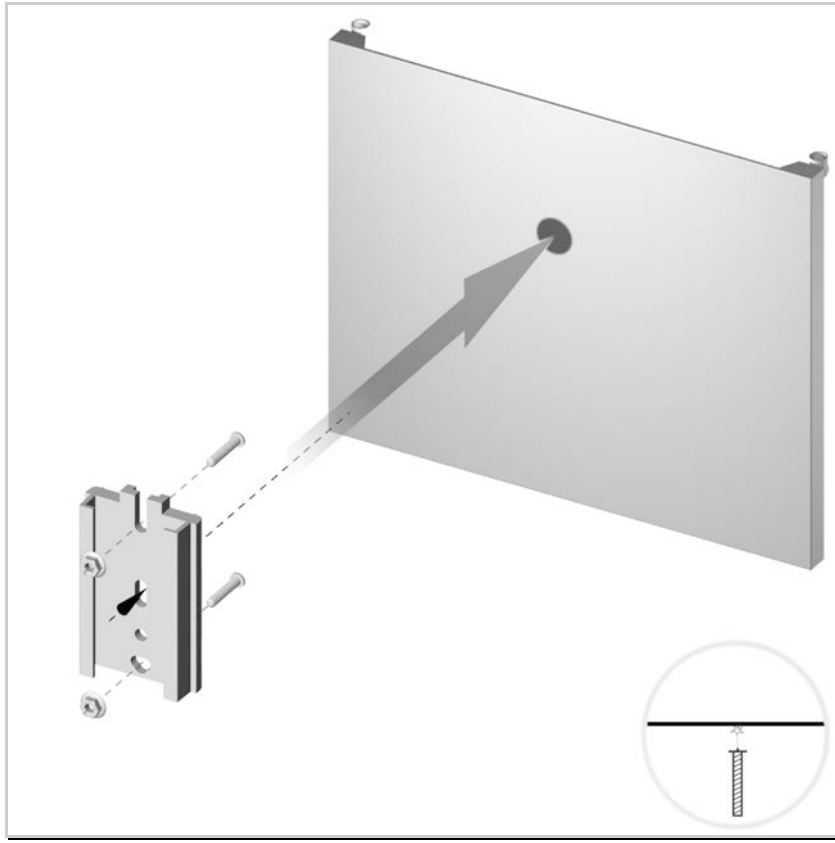
Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
In this case, the welded studs for the installation plate are welded crossways in a recess.	

Remote sensor installation	
- not possible -	

CIT02-06 Horizontally moulded, turned through 90 degrees

Front smooth

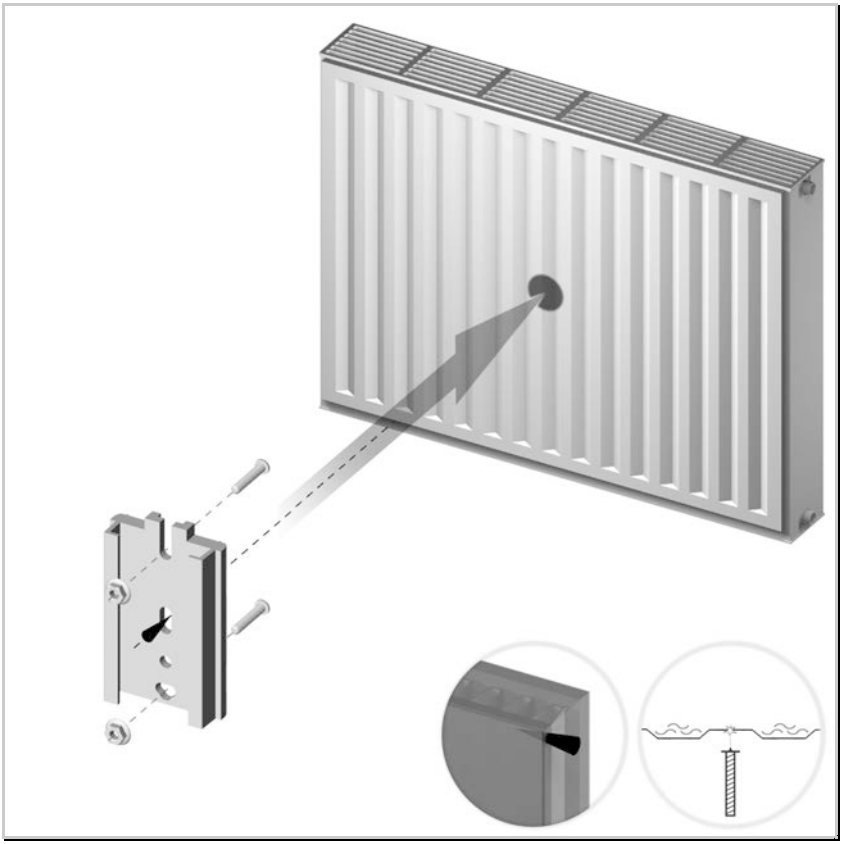


Main installation	
Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
- not possible -	

CIT02-51 Water inflow: front-side-top



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position with serial flow	
Water inflow	front-side-top
Installation position	At 50 % of the radiator design length At 50 % of the radiator design height

Remote sensor installation	
On request	

CIT02-51 Water inflow: front-side-top

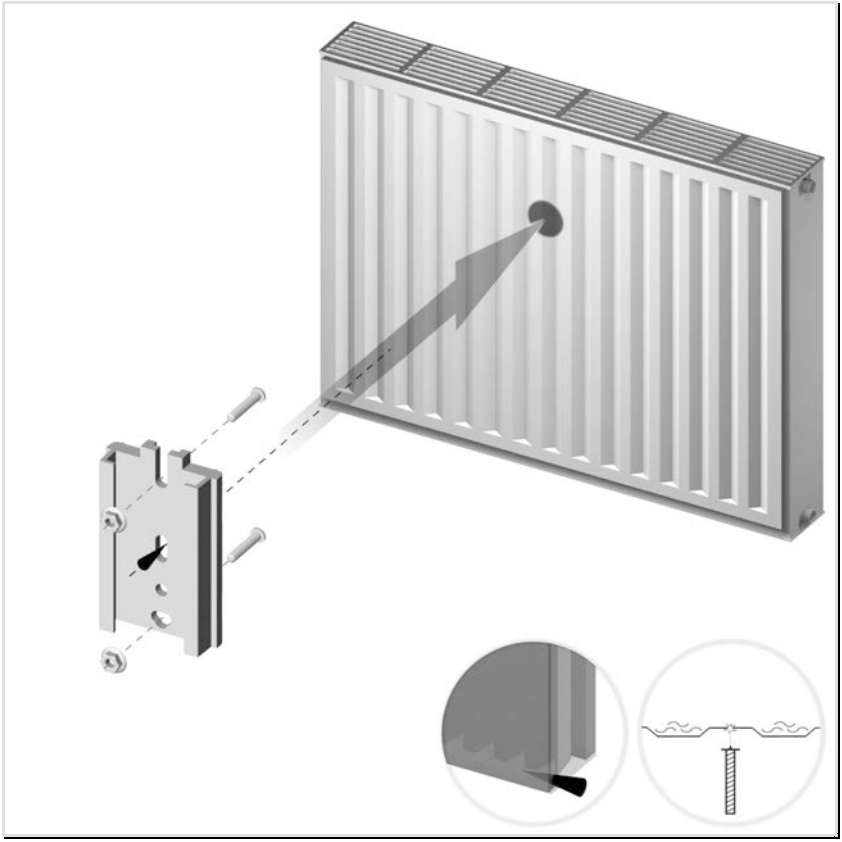
Special features:
The water flows from the side at the top exclusively into the panel on the room side. The temperature level in this panel is therefore extremely high.

For this reason, installation is at 50 % of the design height (BH) and 50 % of the design length (BL).

Manufacturers include, for example:

Name	Radiator	Identifying feature
Kermi	therm X2	Bolts at the back of the front panel **Remark:** Installation also possible at 75 % KC-values available
De Longhi	PHD	S and D on the T-piece **Remark:** 2 profile types possible

CIT02-52 Water inflow: front-side-bottom



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position with serial flow	
Water inflow	front-side-bottom
Installation position	At 50 % of the radiator design length At 75 % of the radiator design height

Remote sensor installation	
On request	

CIT02-52 Water inflow: front-side-bottom

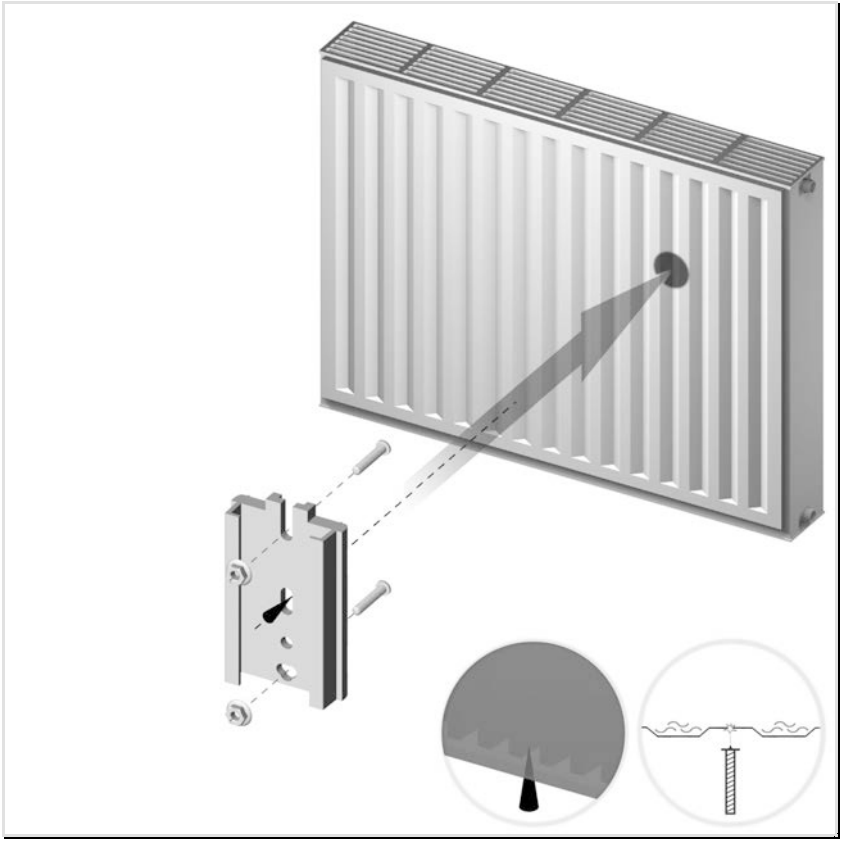
Special features:
The water flows from the side at the bottom into the panel on the room side.

The surface temperature of the radiator in the centre is at a reliable level. For this reason, the heat cost allocator is installed at 50 % of the design length (BL) and 75 % of the design height (BH).

Manufacturers include, for example:

Name	Radiator	Identifying feature
Stelrad	Novello eco	Connections at the centre and side at the bottom **Remark:** KC-values available
Henrad	Premium eco	Connections at the centre and side at the bottom **Remark:** KC-values available

CIT02-53 Water inflow: front-centre-bottom



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position with serial flow	
Water inflow	front-centre-bottom
Installation position	At 25 % of the radiator design length At 75 % of the radiator design height

Remote sensor installation	
On request	

CIT02-53 Water inflow: front-centre-bottom

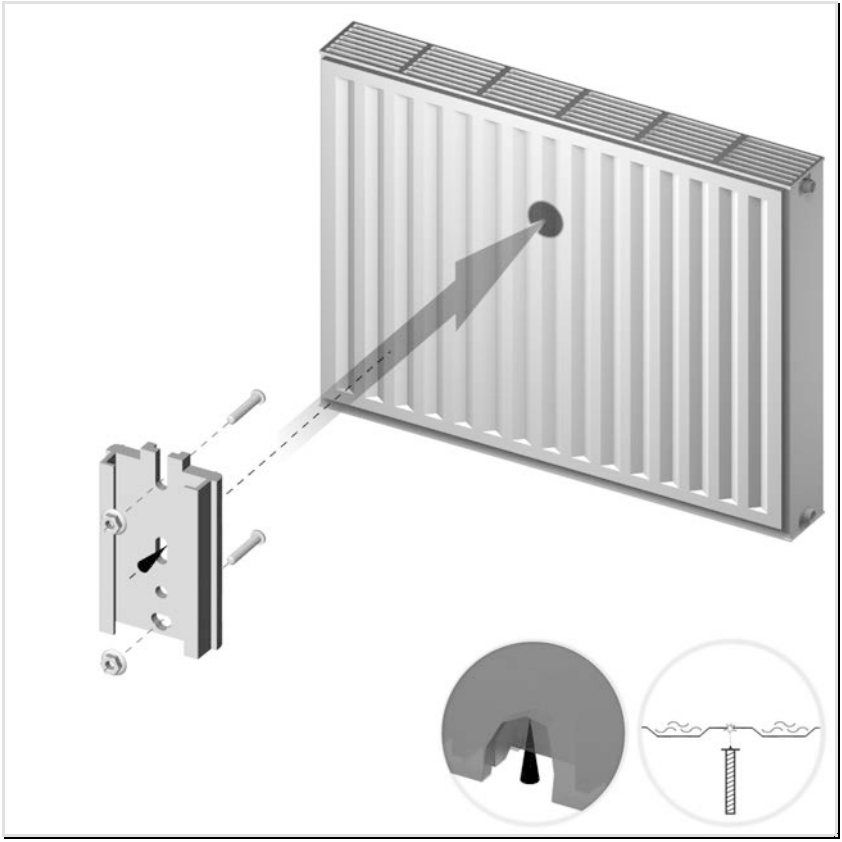
Special features:
The water flows from the front centre directly into the panel on the room side. The temperature level in the centre of the radiator design length is therefore too high in the panel on the room side.

For this reason, the heat cost allocator can only be mounted at 25 % of the design length (BL) and 75 % of the design height (BH).

Manufacturers include, for example:

Name	Radiator	Identifying feature
Stelrad	Novello eco M	Central connection without pipes **Remark:** is no longer being manufactured
Henrad	eco	Central connection without pipes **Remark:** is no longer being manufactured
Muhr	Centara / Classic M	Central connection without pipes

CIT02-54 Water inflow: back-centre-bottom



Main installation

Installation parts	
2 x welded studs M3 x 15	FKT0012
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position with serial flow	
Water inflow	back-centre-bottom
Installation position	At 50 % of the radiator design length At 75 % of the radiator design height

Remote sensor installation	
On request	

CIT02-54 Water inflow: back-centre-bottom

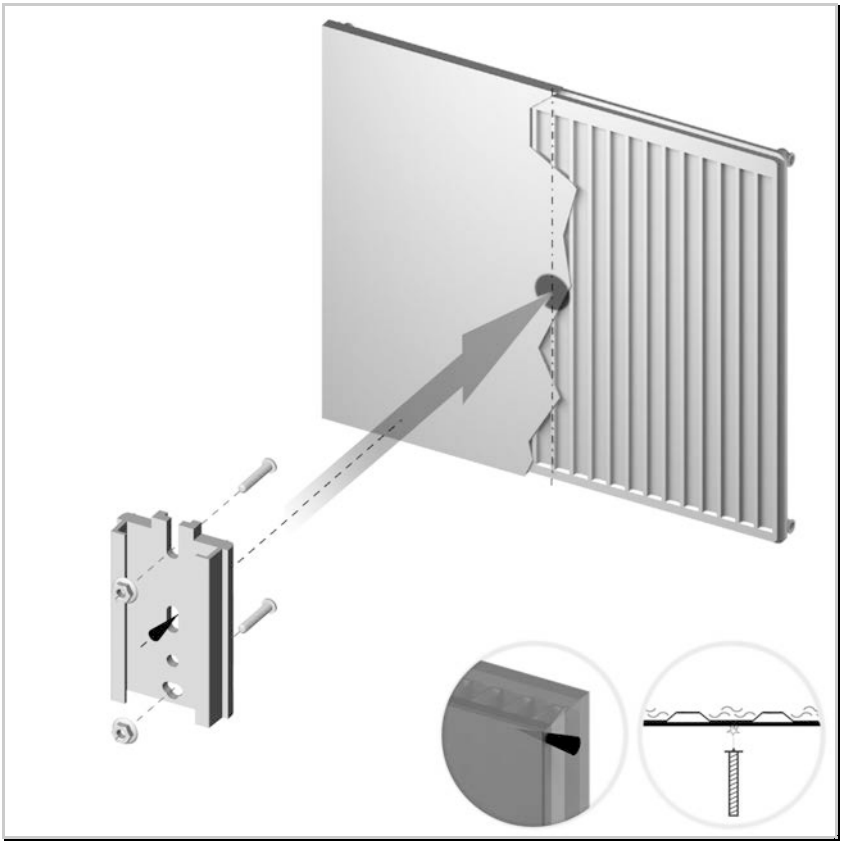
Special features:
The water flows from the centre at the bottom into the panel on the wall side. The panel on the room side is heated through the valve.

In this case, installation is possible according to the standard rules of 50 % of the design length (BL) and 75 % of the design height (BH).

Manufacturers include, for example:

Name	Radiator	Identifying feature
Muhr	Centara alt	Central connection without pipes **Remark:** danger or mix-up with Centara

CIT02-61 Water inflow: front-side-top



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x standard P3 installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position with serial flow	
Water inflow	front-side-top
Installation position	At 50 % of the radiator design length At 50 % of the radiator design height

Remote sensor installation	
On request	

CIT02-61 Water inflow: front-side-top

Special features:
The water flows from the side at the top exclusively into the panel on the room side. The temperature level in this panel is therefore extremely high.

For this reason, installation is at 50 % of the design height (BH) and 50 % of the design length (BL).

Manufacturers include, for example:

Name	Radiator	Identifying feature
Kermi	therm X2	Bolts at the back of the front panel **Remark:** Installation also possible at 75 % KC-values available

WHE5 family System Manual Chapter CIT03

Bathroom radiators

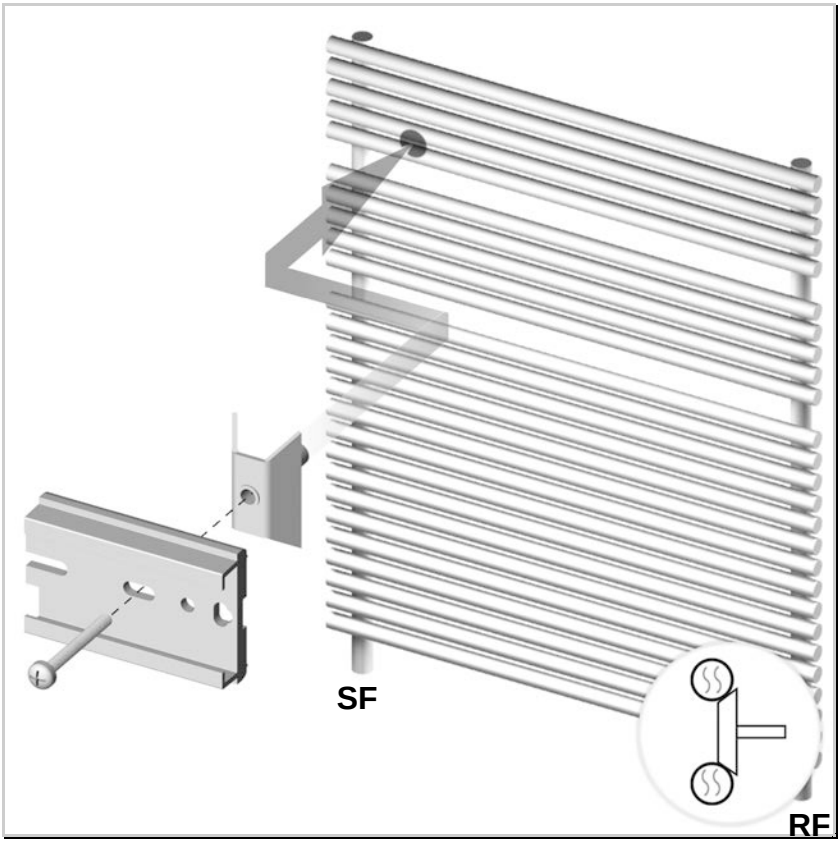
Chapter CIT03 - Bathroom radiators

General instructions

Bathroom radiators

- The metering device must not be installed near splash water (shower). Only metering devices with remote sensors are used in such spots.
- Bathroom radiators often have unusual shapes. Installation specifications which deviate from standard installation are generally used.
- Towels are dried on bathroom radiators. For this reason, the metering devices must not be covered or impaired in any way.

CIT03-01 Horizontal rib installation



Main installation

Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x installation plate	S55563-F115
1 x cross-slot screw 4 x 40 mm	FNR0004

Installation position	
Special installation	At 75% of the radiator design height Installation near to the supply flow pipe

Remote sensor installation	
Chapter	CIT10-06

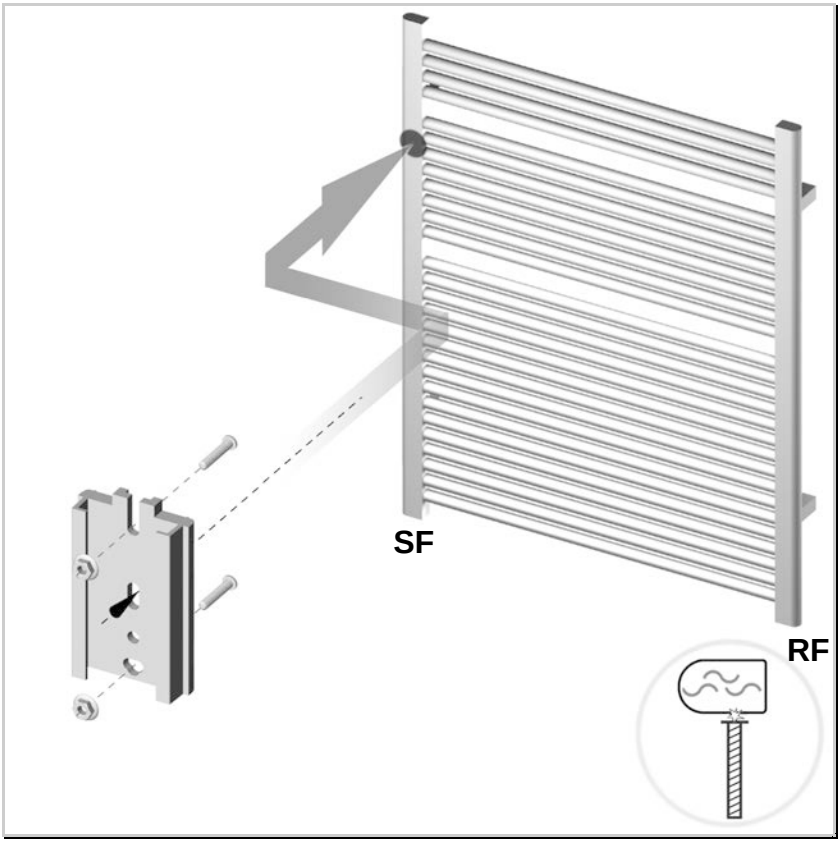
CIT03-01 Horizontal rib installation

Special feature:
If the metering device is installed near splash water (shower), a device with remote sensor must be used.

Installation procedure:
The installation plate must be flush to the water-carrying heating pipes at both sides for heat conduction.

If the installation plate does not correlate with a gap between two water-carrying heating pipes at the calculated position, the position must be corrected to the next gap.

CIT03-02 Welded installation on the supply flow side



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 75% of the radiator design height Installation on the supply flow pipe Profiled filler for use with a round supply flow pipe

Remote sensor installation	
Chapter	CIT10-06

CIT03-02 Welded installation on the supply side

Special feature:
If the metering device is installed near splash water (shower), a device with remote sensor must be used.

Installation procedure:
The metering device may also be installed mid-side or mid-rear on the supply flow collector.

Installation variants:

Fig. 1

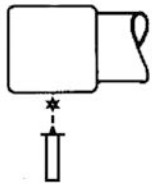


Fig. 2

Fig. 3

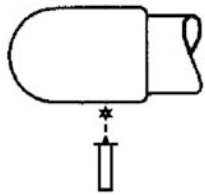


Fig. 4

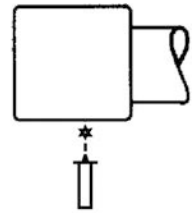
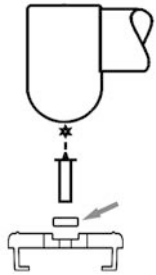


Fig. 5



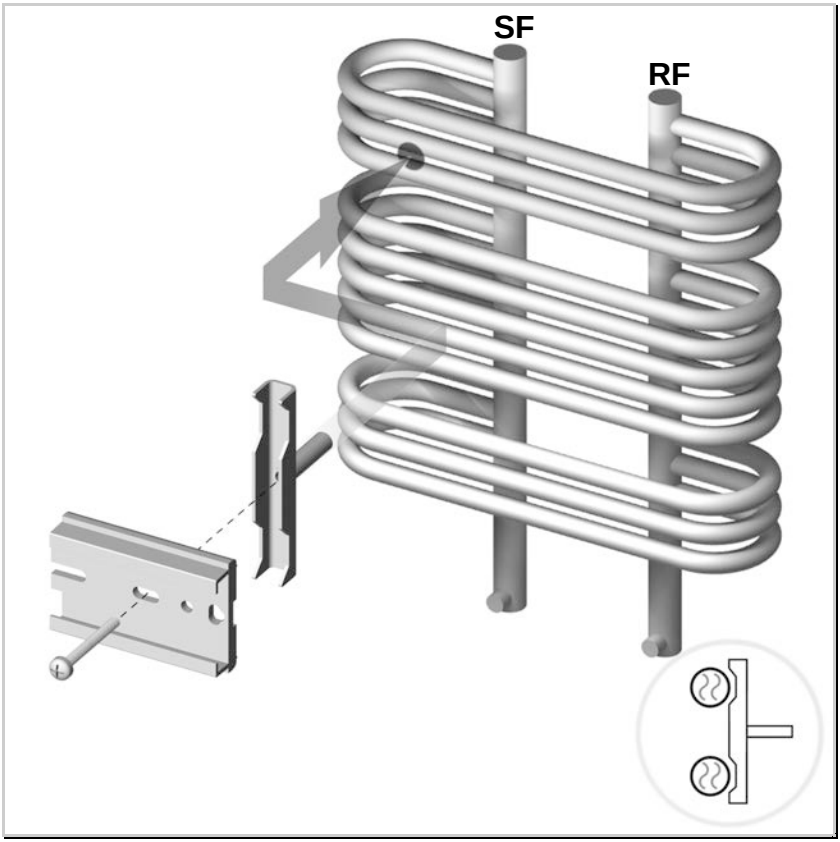
Installation procedure Fig. 5

For installation on a round supply or return pipe, the spacer must be inserted into the groove in the installation plate.

Spacer: FKA0013

Note:
Installation on the return flow collector is possible if KC values are available for this.

CIT03-03 Curved pipes



Main installation

Installation parts	
1 x clamping bracket (tubes TE 46 mm)	FKT0016
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

Installation position	
Special installation	Horizontal installation plate At 75% of the design height Horizontal at 25% of the radiator design width supply flow side

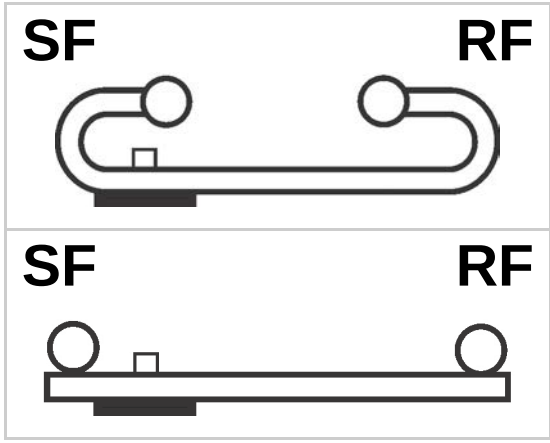
Remote sensor installation	
Chapter	CIT10-09

CIT03-03 Curved pipes

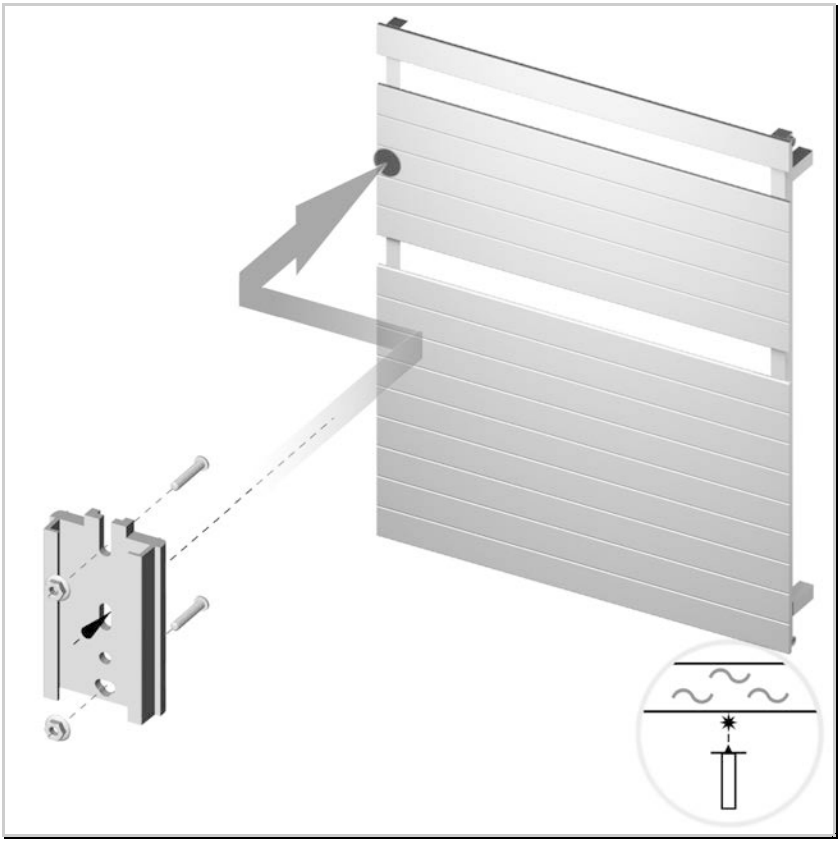
Special feature:
If the metering device is installed near splash water (shower), a metering device with remote sensor must be used.

Installation instructions	
Alternatively, clamping bracket for tubes TE 36 mm can be used for clamping bracket for tubes TE 46 mm.	
1 x clamping bracket (tubes TE 36 mm)	FKT0015

Connection variants



CIT03-04 Horizontal flat tubes



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

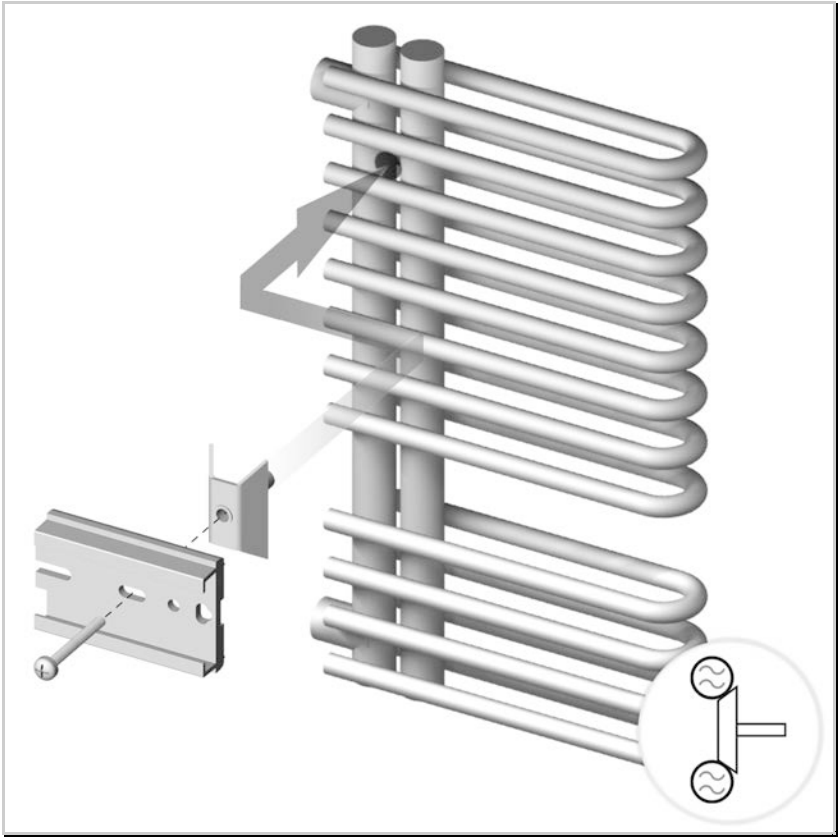
Installation position	
Special installation	At 75% of the radiator design height Installation 80 mm away from the supply flow edge

Remote sensor installation	
Chapter	CIT10-06

CIT03-04 Horizontal flat tubes

Special feature:
The installation plate must not project beyond the edge of the horizontal panel. If necessary, the reference point (75% of the radiator design height) must be corrected upwards or downwards.

CIT03-05 Curved pipes, collector at one side



Main installation

Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

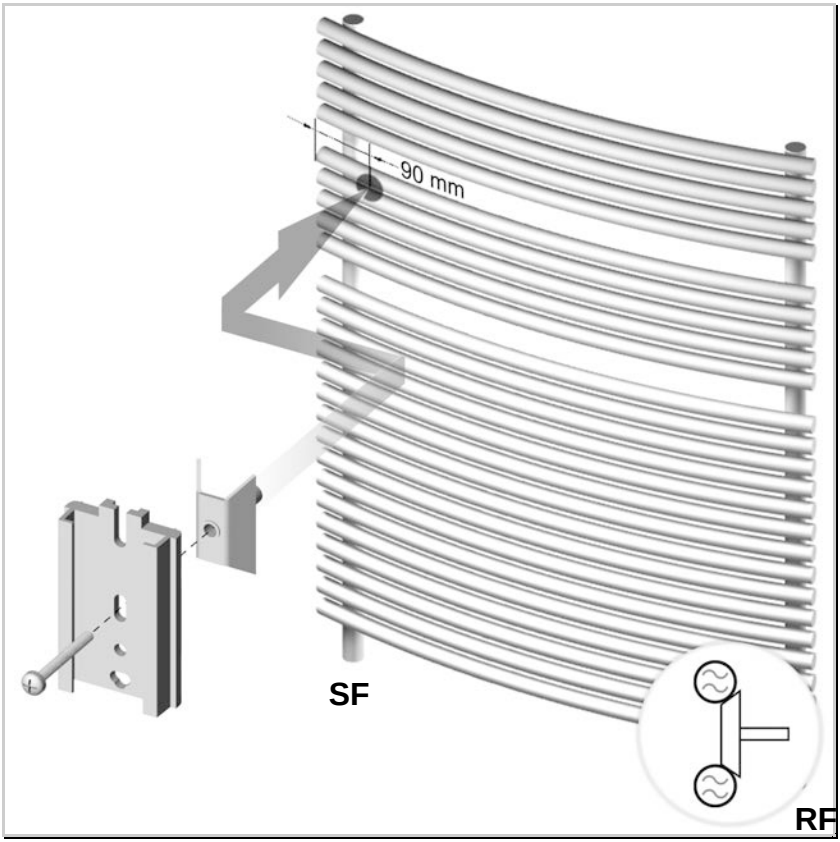
Installation position	
Special installation	At 75% of the radiator design height Installation on two supply flow horizontal pipes Between both collectors

Remote sensor installation	
Chapter	CIT10-08

CIT03-05 Curved pipes, collector at one side

Special feature:
The metering device is installed in a horizontal position.

CIT03-06 Curved pipes, collector at alternate sides



Main installation

Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

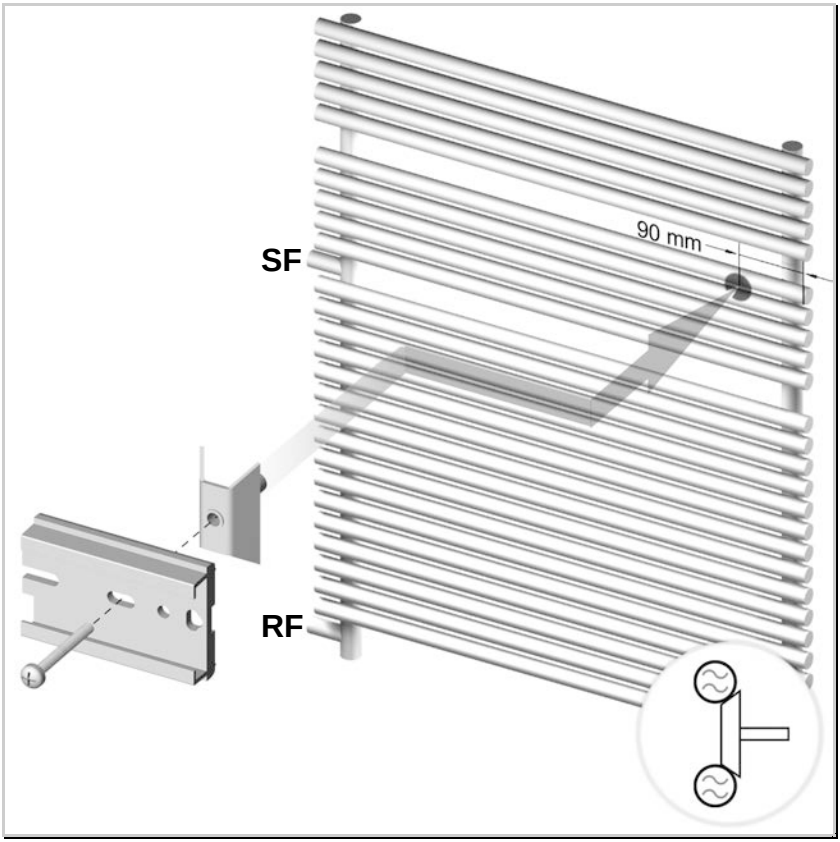
Installation position	
Special installation	At 75% of the radiator design height Installation on two supply flow horizontal pipes 90 mm away from the edge of the radiator
Alternatively, trapezoidal clamping brackets 50 or 65 can also be used.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal clamping bracket 65 mm	FKT0020

Remote sensor installation	
- not possible -	

CIT03-06 Curved pipes, collector at alternate sides

Special feature:
The horizontal pipes can have different curved shapes.

CIT03-07 Horizontal rib installation on the replacement radiator



Main installation

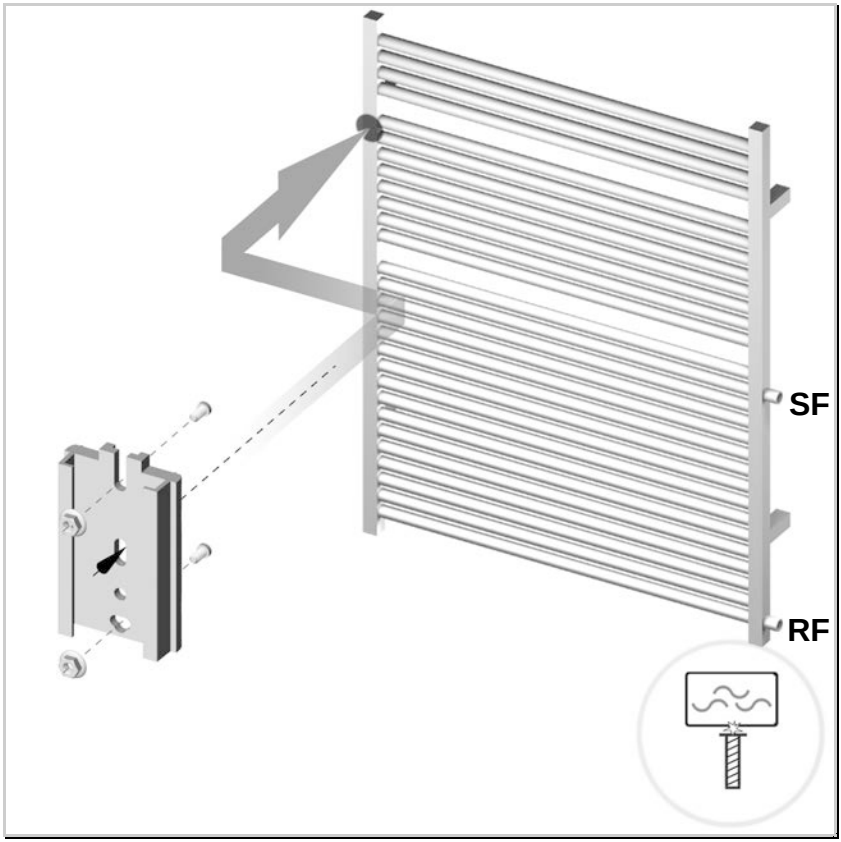
Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

Installation position	
Special installation	At 75% of the radiator design height Installation on the vertical collecting pipe opposite the connections 90 mm away from the edge of the radiator
Alternatively, trapezoidal clamping brackets 50 or 65 can also be used.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal clamping bracket 65 mm	FKT0020

Remote sensor installation	
- not possible -	

CIT03-07 Horizontal rib installation on the replacement radiator

CIT03-08 Welded installation on collector on replacement radiator



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 75% of the radiator design height Installation on the vertical collecting pipe opposite the connections

Remote sensor installation	
- not possible -	

CIT03-08 Welded installation on collector on replacement radiator

Installation procedure:
The metering device may also be installed mid-side or mid-rear on the supply flow collector.

Installation variants:

Fig. 1

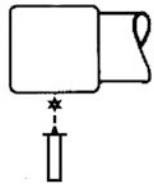


Fig. 2

Fig. 3

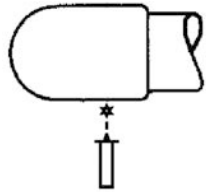


Fig. 4

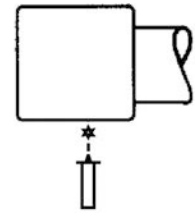
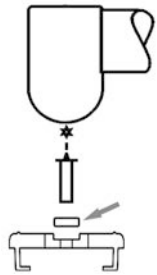


Fig. 5



Installation procedure Fig. 5

For installation on a round supply or return pipe, the spacer must be inserted into the groove in the installation plate.

Spacer: FKA0013

Bathroom radiators

WHE5 family
System Manual
Chapter CIT04

Aluminium radiators

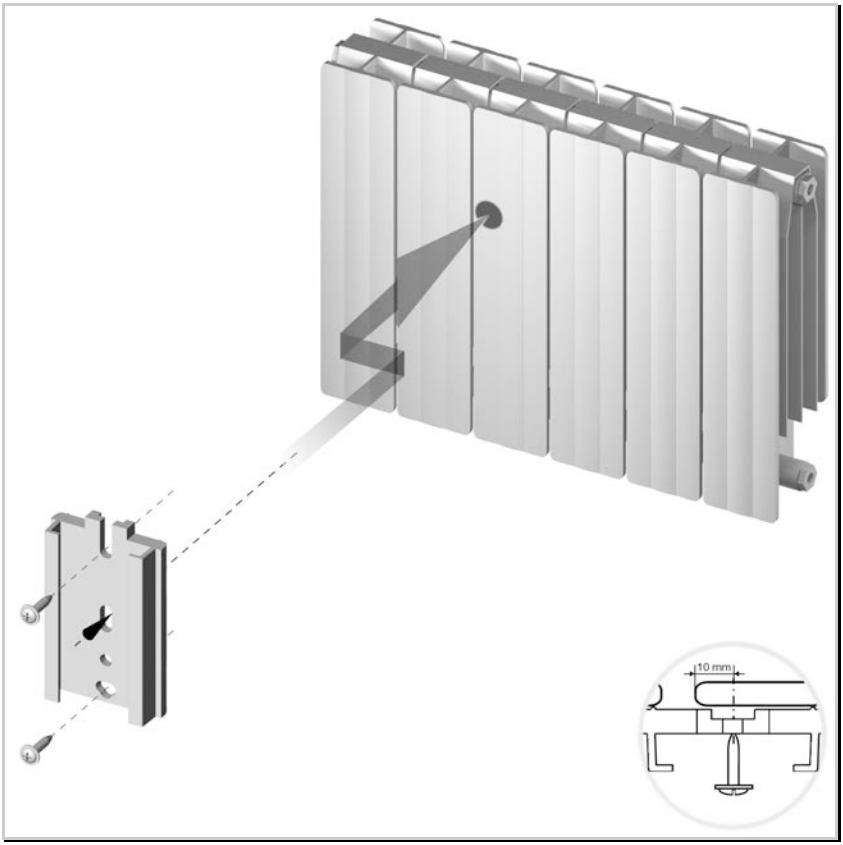
Chapter CIT04 - Aluminium radiators

Properties

Aluminium radiators

- Welding cannot be carried out on aluminium radiators.
- Bolts are usually used, with the installation plate of the metering device being directly bolted to the radiator.

CIT04-01 Aluminium ribbed radiators



Main installation

Installation parts:	
1 x installation plate	S55563-F115
2 x self-tapping screw 2.9 x 13 mm	FNR0008

Installation position:	
Special installation	At 75% of the radiator design height 10 mm away from the left-hand edge of the central rib using 2 self-tapping screws

Remote sensor installation	
Chapter	CIT10-11

CIT04-01 Aluminium ribbed radiators

Special features:
The installation plate is fastened in place using self-tapping screws.

Installation procedure:
A spiral drill (2.5 mm) is used to bore two holes 50 mm apart at the left-hand edge (10 mm away from the left-hand edge of the rib).

Screw the installation plate in place using the self-tapping screws.

WHE5 family System Manual Chapter CIT05

Heating walls

Chapter CIT05 - Heating walls

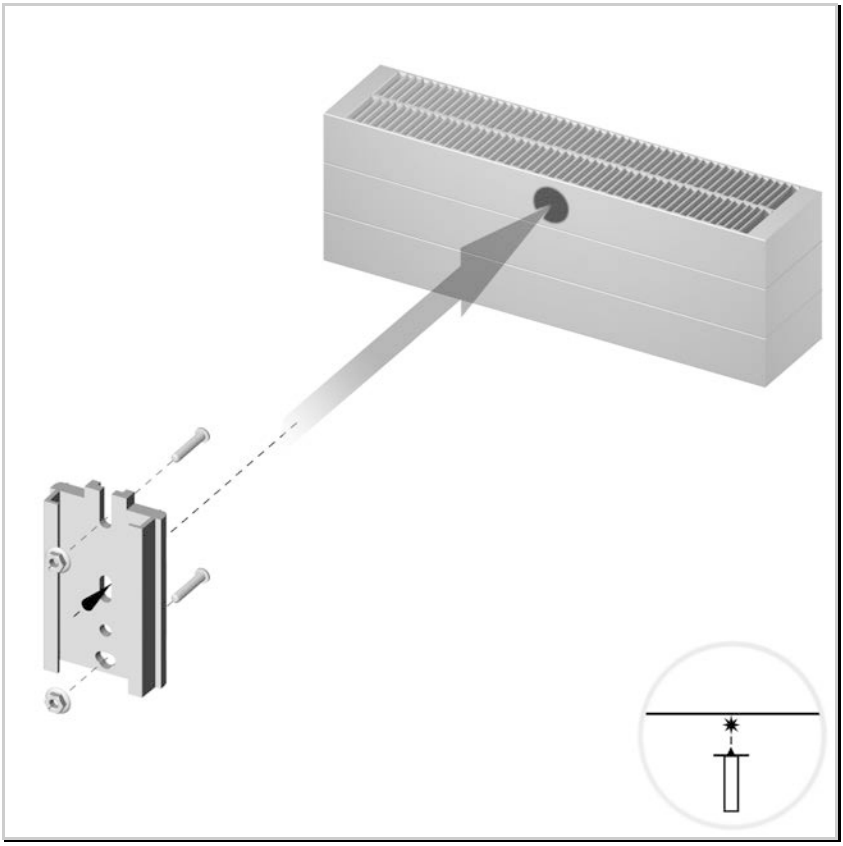
Properties

Heating walls

~ Heating walls are usually made of flat special section tubes.

~ The special section tubes can be arranged horizontally or vertically. They are connected together by collectors.

CIT05-01 70 mm profiles, horizontal flow



Main installation

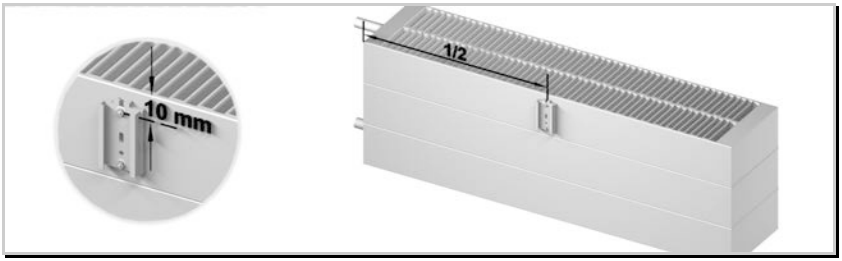
Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Special installation	Upper bolt 10 mm away from the edge of the radiator **(1)** 2 to 3-layer radiator with connection on the same side **(2)** 1 to 3-layer radiator with connection on alternate sides **(3)** 1 to 3-layer radiator with connection on the same side, 2-rows **(4)** For a new installation cross-wise possible.

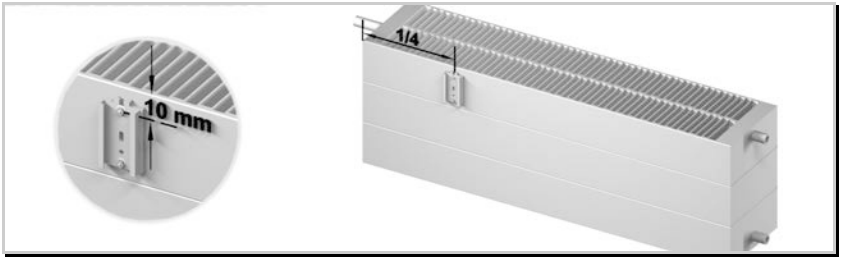
Remote sensor installation	
Chapter	CIT10-12

CIT05-01 70 mm profiles, horizontal flow

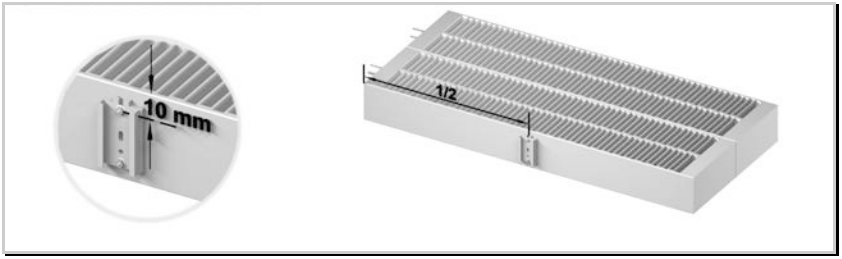
Special features:
Only one metering device is installed even on radiators more than 3 m long.



(1) *2 to 3-layer radiator with connection on the same side*



(2) *1 to 3-layer radiator with connection on alternate sides*

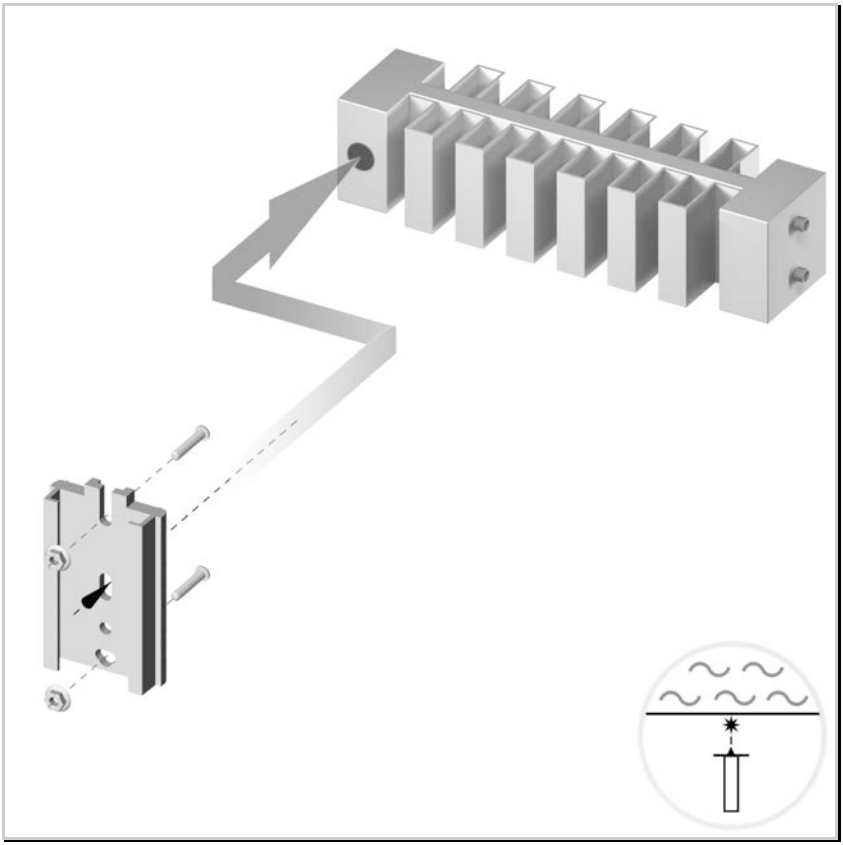


(3) *1 to 3-layer radiator with connection on the same side, 2-rows*

New installation

(4) *For a new installation, the mounting plate P3 can also be installed cross-wise, (for 1/4 and 1/2 positions).*

CIT05-02 Flat tube radiator with front convection panel



Main installation

Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Special installation	At 50% of the reversing chamber design height At 50% of the reversing chamber design width

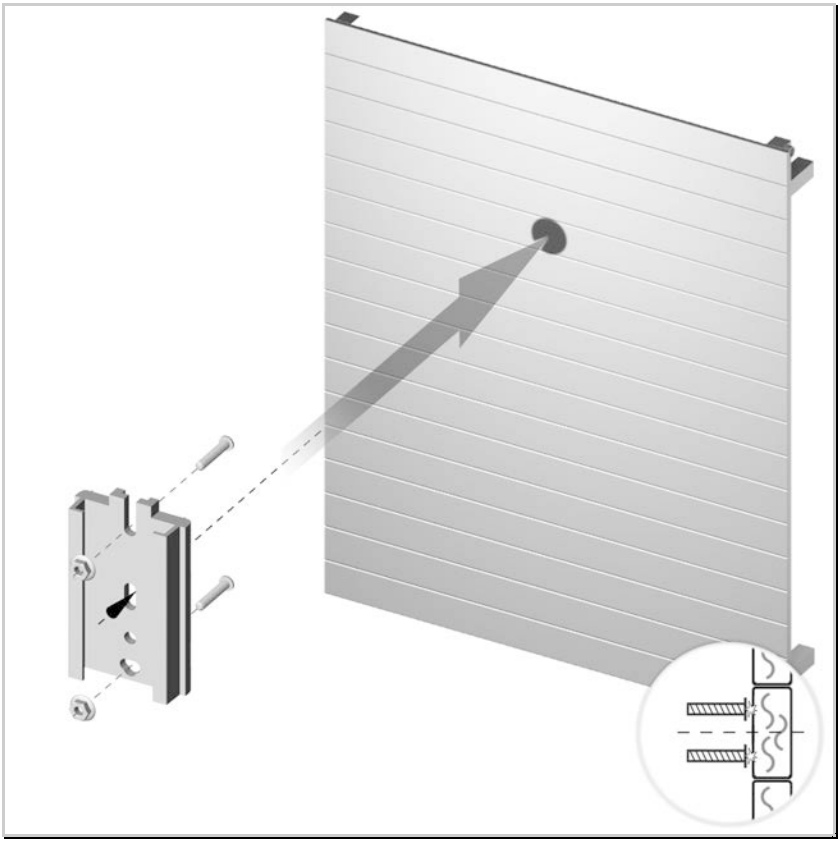
Remote sensor installation	
- not possible -	

CIT05-02 Flat tube radiator with front convection panel

Special features:
The metering device is attached to the reversing chamber.

The radiator is connected at the same side.

CIT05-03 Horizontal flow



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 75% of the radiator design height At 50% of the radiator design width In the case of radiators with design lengths over 3 m, only one metering device is ever installed here, deviating from standard installation (2 metering devices). In the case of radiators with design heights smaller than 270 mm the installation specification in **CIT05-01** is applied.

Remote sensor installation	
Chapter	CIT10-12

CIT05-03 Horizontal flow

Special features:
The metering device is fixed to the centre of a horizontal, water-carrying panel.

The calculated reference point may have to be corrected upward (preferably) for the metering device to be able to be attached to the centre of the panel.

Moulded panel:

Installation instructions	
The panel can be moulded, depending on the type of radiator involved. Longer welded studs can be used for the safe installation of the installation plates.	
Welded stud M3 x 15	FKT0012 for heavily moulded panel

WHE5 family
System Manual
Chapter CIT06

Radiators with internal tube register

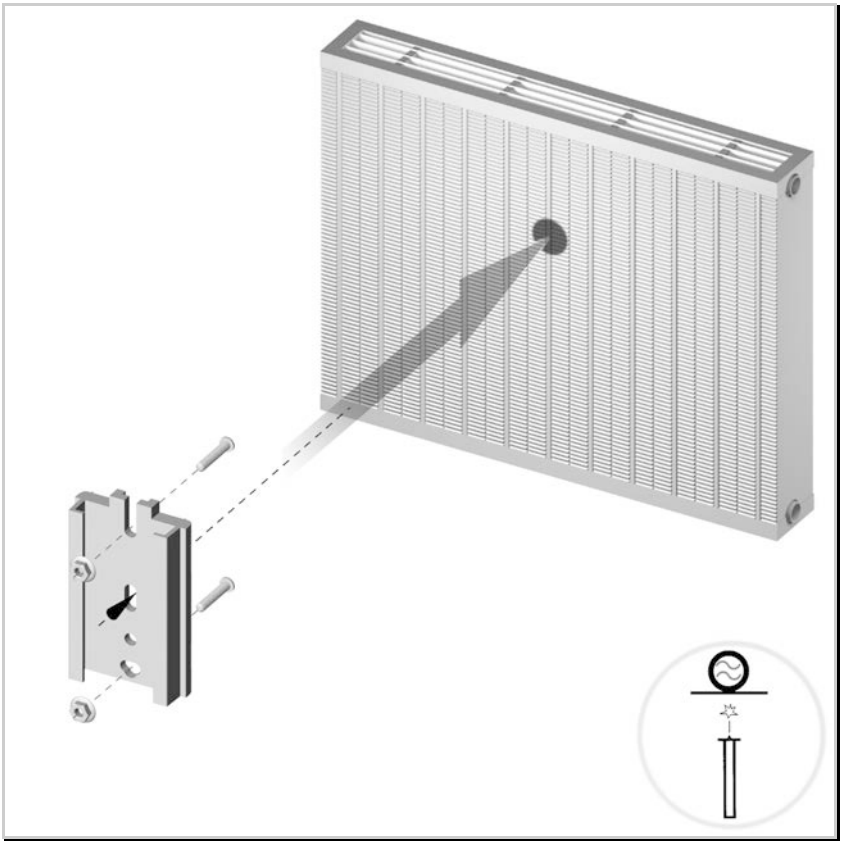
Chapter CIT06 - Radiators with internal tube register

Properties

Radiators with internal tube register

- They are usually fitted with cladding panels. The panels are available smooth with ribs or with horizontal and vertical slots.
- The horizontal and vertical slots can be on all sides of the radiator.
- There is not a water-carrying channel behind every groove or smooth surface (vertical area between the ribs) of a radiator with internal tube register. If this is the case, the next water-carrying tube or water-carrying channel in the direction of the supply flow must be used for installation.
- The panelling may have to be removed to be able to see into these radiators from above.

CIT06-01 Flat water channel



Main installation

Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
Chapter	CIT10-13

CIT06-01 Flat water channel

Installation procedure:
Installation between the ribs on the groove over a tube carrying water.

Special features:
There is not a water-carrying tube or water-carrying channel behind every groove or smooth surface (vertical area between the ribs) of a radiator with internal tube register. This can usually be seen by looking into the radiator from above.

If this is not possible, the upper panelling must be removed.

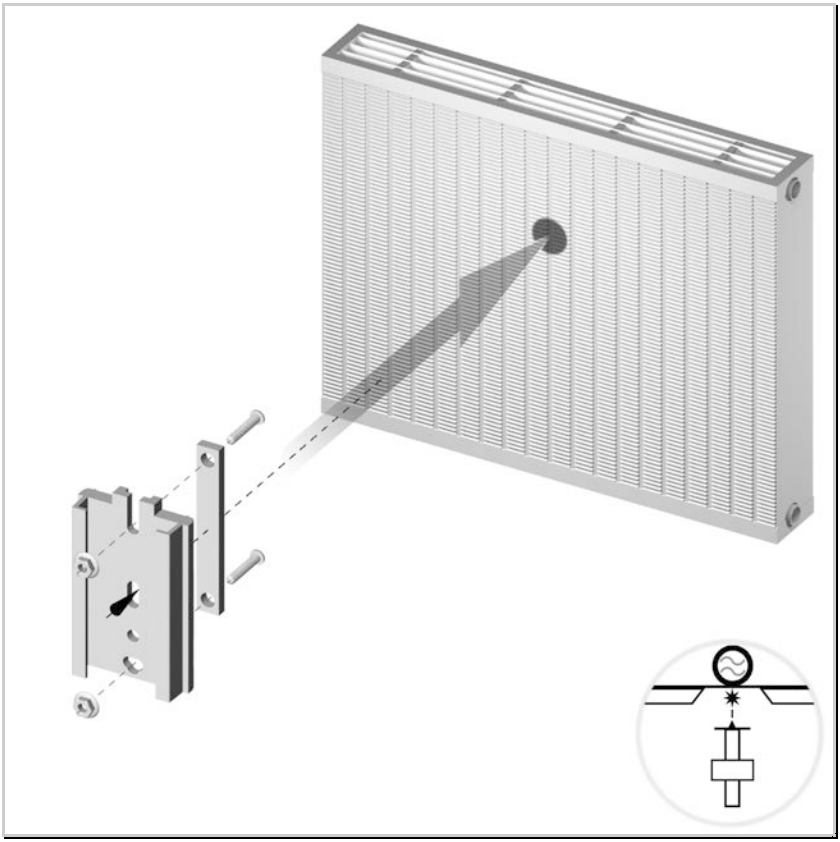
IMPORTANT:
If the ribs project over the groove (vertical area with tubes carrying water), installation **CIT06-02** must be used.

With box-type convection parts

See main installation for installation position CIT06-01

Supplements / additional information:
The welded studs are welded to the water-carrying channel.

CIT06-02 Deep water channel



Main installation

Installation parts:	
2 x welded studs M3 x 15	FKT0012
1 x spacer	FKA0013
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
Chapter	CIT10-13

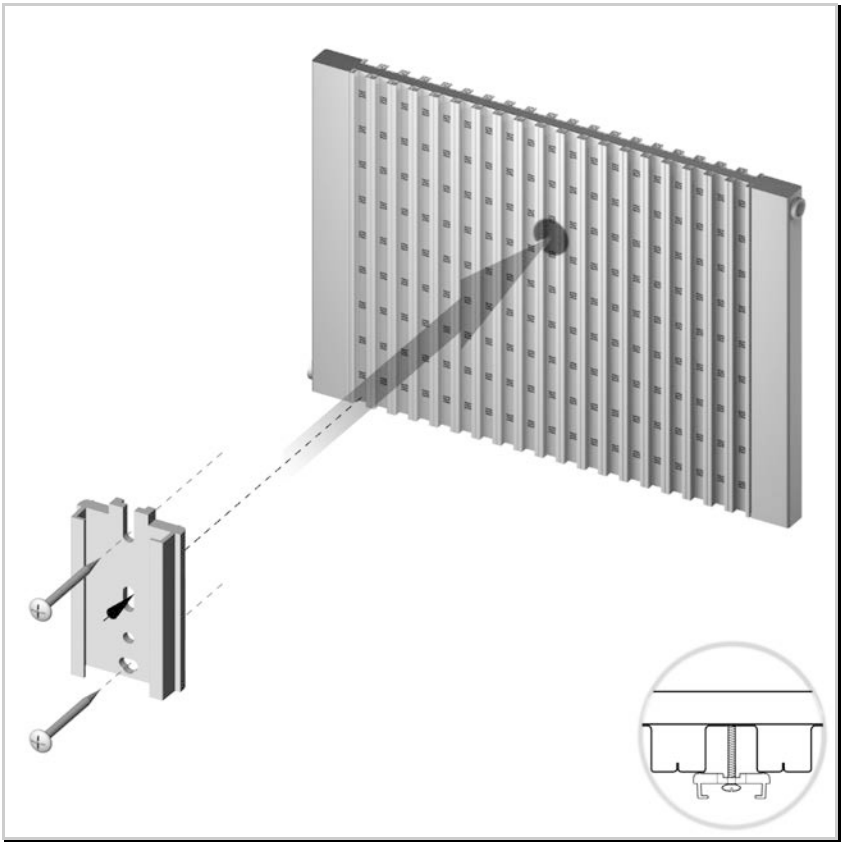
CIT06-02 Radiators with internal tube register, deep water channel

Installation procedure:
Installation between the ribs on the panel over a tube carrying water. The installation plate is shimmed using a spacer.

Special features:
There is not a water-carrying tube or water-carrying channel behind every groove or smooth surface (vertical area between the ribs) of a radiator with internal tube register. This can usually be seen by looking into the radiator from above.

If this is not possible, the upper panelling must be removed for this.

CIT06-03 Horizontal water flow



Main installation

Installation parts:	
1 x installation plate	S55563-F115
2 x screw B 3.9 x 45 mm	FNR0007

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
Chapter	CIT10-13

CIT06-03 Horizontal water flow

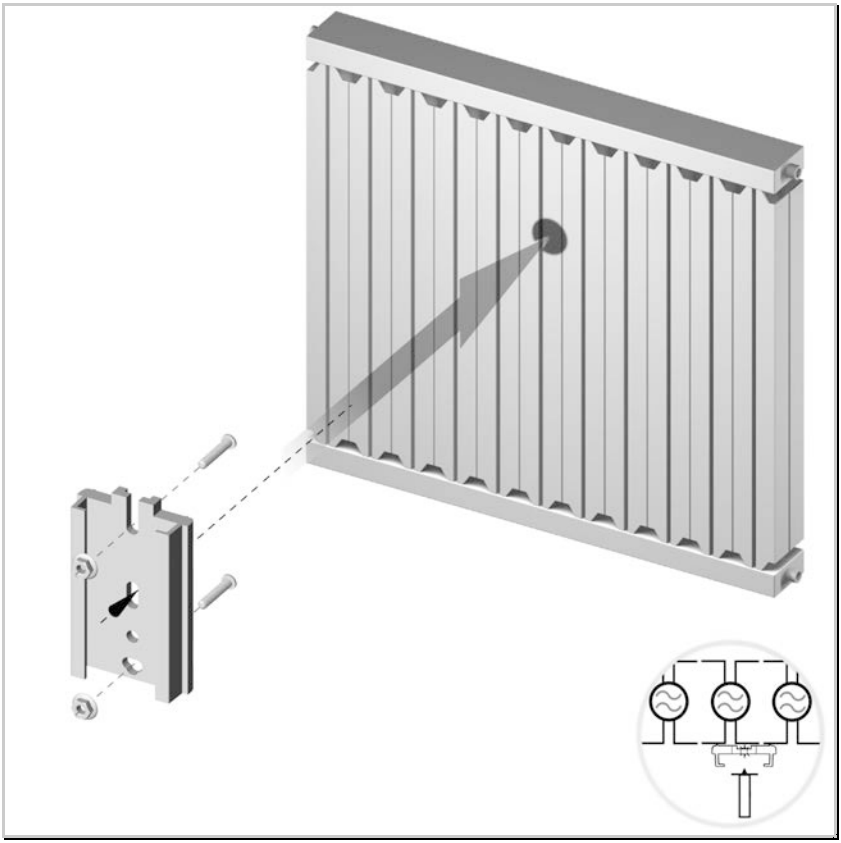
Special feature:
Installation with two long self-tapping screws.

Installation position see main installation CIT06-03

Supplements / additional information	
Bore hole 3.0 mm	Pre-drilled holes for the self-tapping screws

Installation procedure:
Do not drill into the cross markings (**X**). There are tubes carrying water behind these markings!

CIT06-04 Typical Rotherm



Main installation

Installation parts	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Remote sensor installation	
Chapter	CIT10-13

CIT06-04 Typical Rotherm

Installation procedure:
The installation plate must be flush with the panelling. It must not project into the gaps.

Note:
If necessary, correct the calculated position to the next possible spot where there is a tube carrying water.

Radiators with internal tube register

WHE5 family System Manual Chapter CIT07

Special installation cases

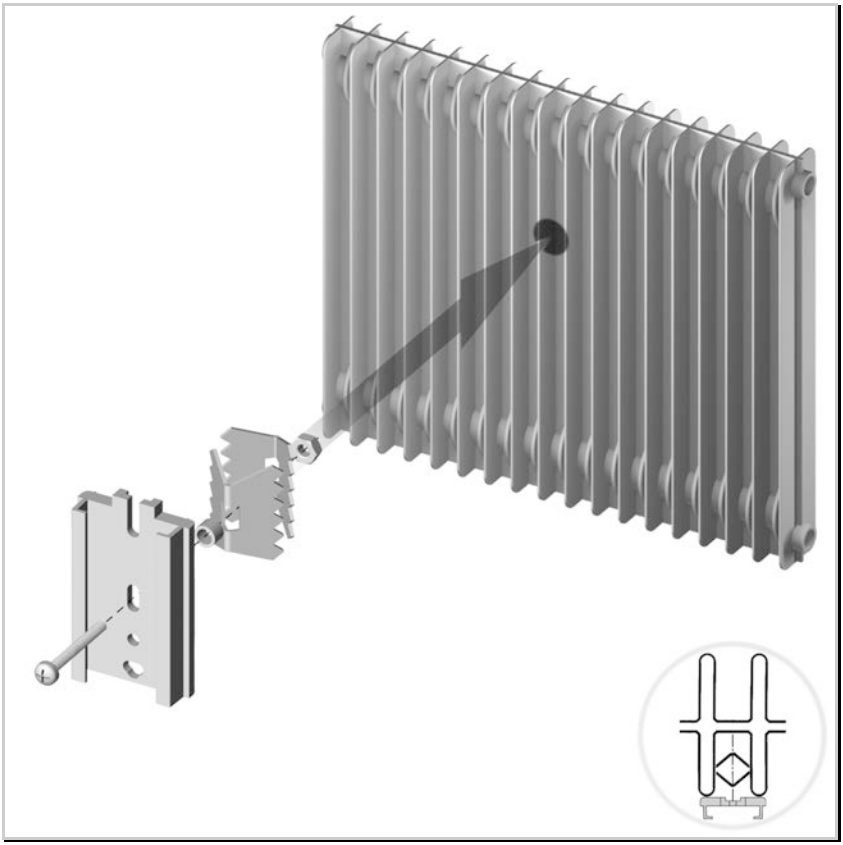
Chapter CIT07 - Special installation cases

Properties

Special installation cases

- "Special installation cases" includes unusual design radiators.
- Installation deviating from standard is usually necessary. Please heed the installation specifications.

CIT07-01 Lamella-type radiators



Main installation

Installation parts:	
1 x hexagon nut M4	FNM0004
2 x expanding bracket for lamella-type radiator	FKA0004
1 x spacer sleeve	FKT0010
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 30	FNR0003

Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
Chapter	CIT10-14

CIT07-01 Lamella-type radiators

Installation procedure:
Loosely screw the installation parts together into a unit. The hexagon nut must be in the central recess of the rear expanding bracket and be secured against twisting.

1. Press the installation plate with the elements loosely screwed in place between the designated radiator ribs.
2. Use a screwdriver to tighten the cylinder screw while pressing the installation plate in place.

Note:
During tightening/expanding of the expanding bracket, the screw must not touch the base. The screw may have to be shortened.

CIT07-02 Steel tube, welded installation

Main installation

Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x spacer	FKA0013
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Special installation	The reference point is at 25% of the way away from the supply flow.

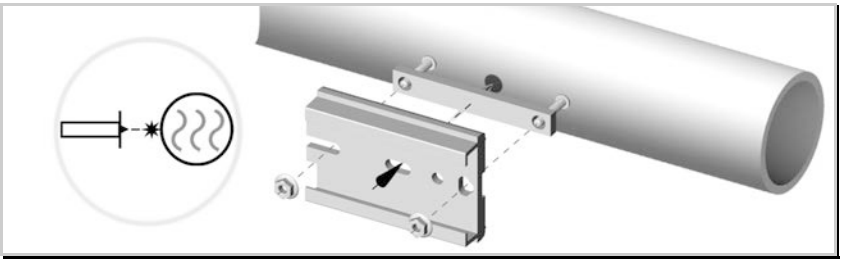
Remote sensor installation	
Chapter	CIT10-15

CIT07-02 Steel tube, welded installation

Special features:
The metering device may also be fitted on the side of the pipe.

Installation procedure:
If the metering device is installed near splash water (shower), a device with remote sensor must be used.

Horizontal



See main installation for installation position CIT07-02

Supplements / additional information:
The reference point is at 25% of the way away from the supply flow.

CIT07-04 Window ledge radiators

Main installation

Installation parts:	
1 x clamping bracket for tubes TE 46 mm	FKT0016
1 x installation plate	S55563-F115
1 x cross-slot screw M4 x 50	FNR0005

Installation position:	
Special installation	At 50% of the radiator design length At 50% of the radiator design height

Remote sensor installation	
Chapter	CIT10-17

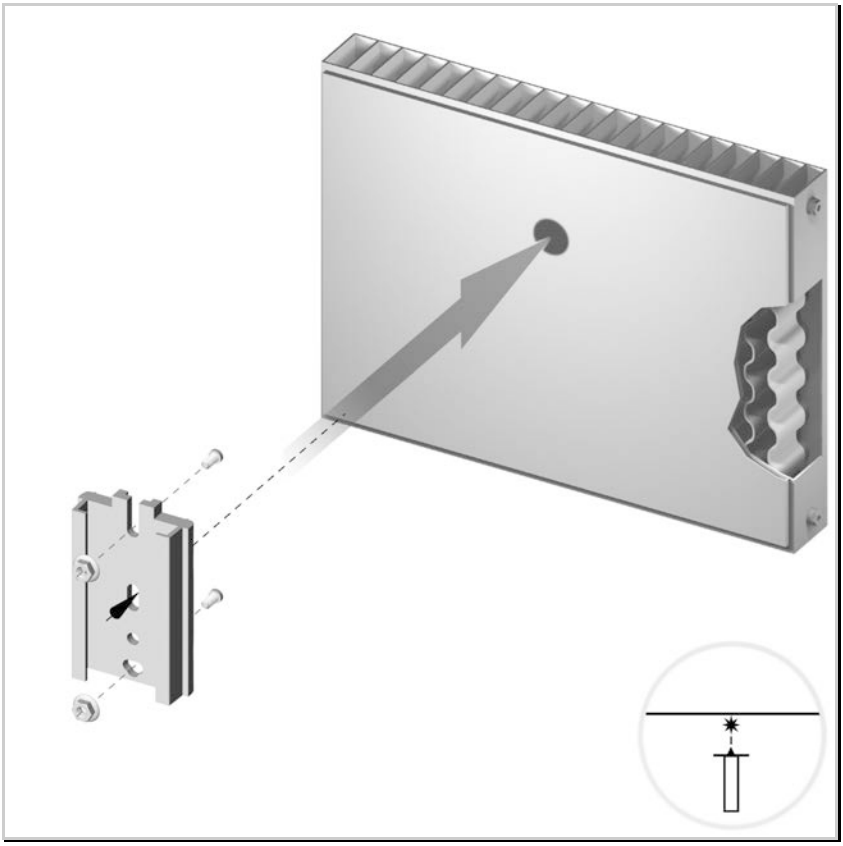
CIT07-04 Window ledge radiators

Special features:

The installation plate or metering device is installed horizontally.

Installation instructions:	
Alternatively, clamping bracket for tubes TE 36 mm can be used for clamping bracket for tubes TE 46 mm.	
1 x clamping bracket (tubes TE 36 mm)	FKT0015

CIT07-05 Lamella-type radiator with smooth front



Main installation

Installation parts:	
2 x welded studs M3 x 12	FKT0011
1 x installation plate	S55563-F115
2 x self-locking nut M3	FNM0005

Installation position:	
Special installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation	
- not possible -	

CIT07-05 Lamella-type radiator with smooth front

WHE5 family
System Manual
Chapter CIT10

Remote sensor installation

Chapter CIT10 - Remote sensor installation

General instructions

Remote sensor installation

In the case of remote sensor installation, a wired temperature sensor which is inserted in the metering device is attached to the radiator in the calculated metering or installation position.

For welded attachment paint about the size of a one cent piece is removed from the welding spots. After welding bright metal spots must be protected against rust.

This installation can be carried out in three different ways:

1. Direct attachment by means of welding
2. Screw attachment using the installation plate for remote sensors
3. Attachment using threaded hoops

The metering device is installed in a different position, depending on the remote sensor cable length or the metering system used. As for metering device installation, the installation specifications must be heeded for remote sensor installation on the radiator. Usually, the structural features of the radiator make the choice of a remote sensor version necessary. External features (damp locations, showers, ...) or optical aspects may also play a role in the choice.

For complete remote sensor installation you require 3 accessories:

1 x remote sensor installation kit with the required cable length
1 x wall bracket installation kit for the metering device
1 x installation parts according to CIT installation for attachment to the radiator

Remote sensor set

1.5 m remote sensor:	**HCAI K010 0S1**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

2,5 m remote sensor:	**HCAI K010 0S2**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

5,0 m remote sensor:	**HCAI K010 0S5**
(1 Remote sensor, 1 Sensor housing, 1 Safety cap for sensor housing)	

Sealing

The round safety cap of the sensor housing is used as a safety seal. At the end of remote sensor installation the safety cap is pushed completely into the sensor housing. This applies for all remote sensor installation.

Mounting the wall bracket

Step 1 - Mounting the remote sensor on the radiator.

Follow the installation specifications for the remote sensor position in the CIT installation instructions.

Determine the wall position for the metering device.

In the case of remote sensor installation **with 1-sensor metering devices,** the metering device, which is **only** used as a "display unit" for the consumption values can be located where is convenient.

Special wall position for 2-sensor measuring system

In the case of remote sensor installation **with 2-sensor metering devices,** the position of the metering device on the wall **must be according to the rules in this book**.

In the case of 2-sensor devices, there is an additional **second temperature sensor** in the metering device mounted on the wall. This influences the measuring behaviour and the resulting display units in the metering device.

To guarantee standard measurement, **the metering device must** be mounted in a specific position next to the radiator. The metering device must not be exposed to the radiator's heat flow.

Step 2 - Putting wall bracket and metering device together

Prior to the following steps, you have already fixed the remote sensor to the radiator and determined the installation position for the wall bracket.

~ Remote the protective cap from the wall bracket. (1)

~ Drill 2 holes at the installation position for the wall bracket and insert the dowels. (Gap between bore holes 50 mm / 6 mm diameter)

~ Screw a screw into the upper dowel. Adapt the screw for the correct wall bracket position. To do this, screw the screw into the dowel in the wall at least so far that the wall bracket can be pushed in place with the screw attachment for the wall bracket (3). For this, the wall bracket must be flat to the wall.

~ Pull the wall bracket down again.

~ Route the connector from the remote sensor from behind through the lower cable duct (5) of the wall bracket. (Fig. 1)

~ Insert the connector from the remote sensor into the metering device until you clearly hear it "click" into place. (Fig. 2 / Fig. 3)

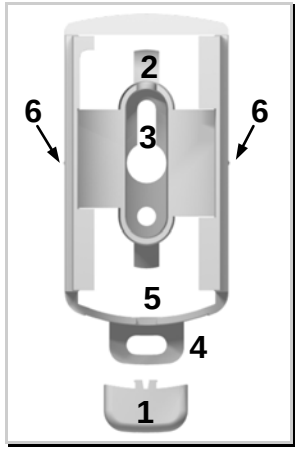
~ Clip the metering device onto the wall bracket.
NOTE: The metering device is then firmly connected to the wall bracket. You can only remove the metering device from the wall bracket again by destroying the seal!

Step 3 - Attaching and sealing the wall bracket

Further procedure for completing installation can be found on pages 6 and 7.

Mounting the wall bracket

Wall bracket



Wall bracket P3

1. Protective cap / seal wall bracket
2. Cable spike
3. Upper screw attachment
4. Lower screw attachment
5. Lower cable duct
6. Side marking aid

Thread / insert remote sensor cable / wind up residual cable

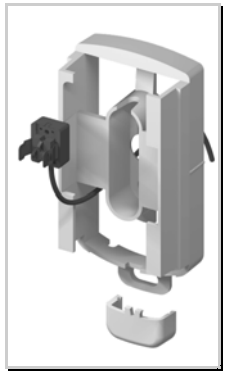


Fig. 1 - Thread remote sensor cable

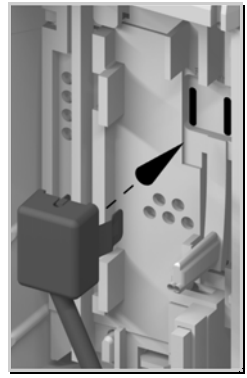


Fig. 2 - Insert remote sensor cable

Fig. 3

Fig. 4

Note in remote sensor display
As soon as the remote sensor has been inserted correctly, " - **FF** - " appears for 3 seconds on the metering device display.

The metering device has detected the remote sensor and adjusts its measuring behaviour accordingly. The metering device cannot be reset to a compact metering device.

Mounting the wall bracket

Step 3 - Attaching and sealing the wall bracket

Prior to the following steps you have placed the metering device on the wall bracket. The remote sensor is fixed to the radiator and the installation position for the wall bracket is known.

~ Hold the wall bracket with the metering device in place in the intended wall position.

~ Determine the length of remote sensor cable required to the remote sensor.

~ Wind the remaining cable length around the cable spike. (Fig. 1)

~ Fit the wall bracket with the metering device onto the upper screw. During this, align the marking aid on the wall bracket (Fig. 2) to the height of the upper screw.

~ Attach the wall bracket to the lower screw attachment using the 2nd screw. (Fig. 3)

~ At the end of installation (Fig. 4) seal the sensor housing (1) using the round safety cap and seal the lower screw attachment (2) using the protective cap.

Sealing

The safety cap of the sensor housing and the protective cap of the wall bracket are used as safety seals. At the end of remote sensor installation, the safety cap is pushed completely into the sensor housing and the protective cap of the wall bracket is pushed in place. This applies for all remote sensor installation.

Wall bracket parts-installation kits

Special wall brackets are used for fixing remote sensor metering devices to the wall. The wall brackets used for devices from other manufacturers must be replaced, as otherwise the housing contact will not be actuated.

Wall bracket set

Wall bracket:	**HCAI K010 0P3**
(1 wall bracket, 2 Dowel 6 mm, 2 Screw B 3.9 x 45)	

Mounting the wall bracket

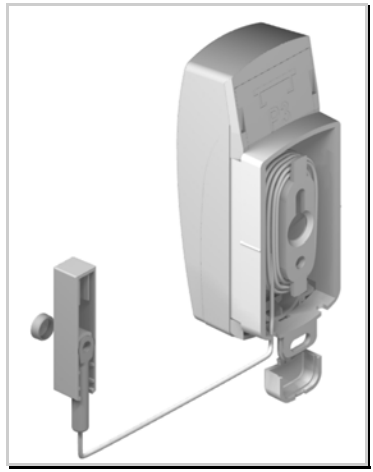


Fig. 1 - Wind the remaining cable

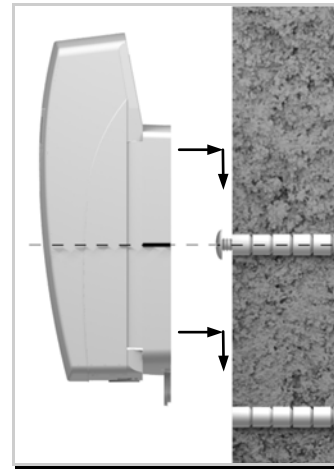


Fig. 2 - Marking aid at screw height

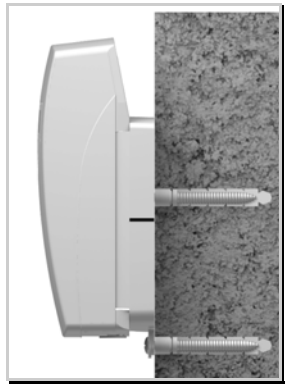


Fig. 3 - Lower screw

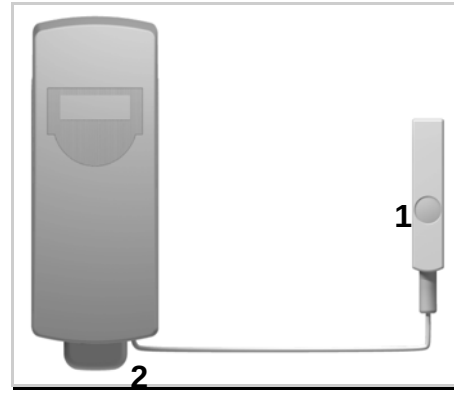
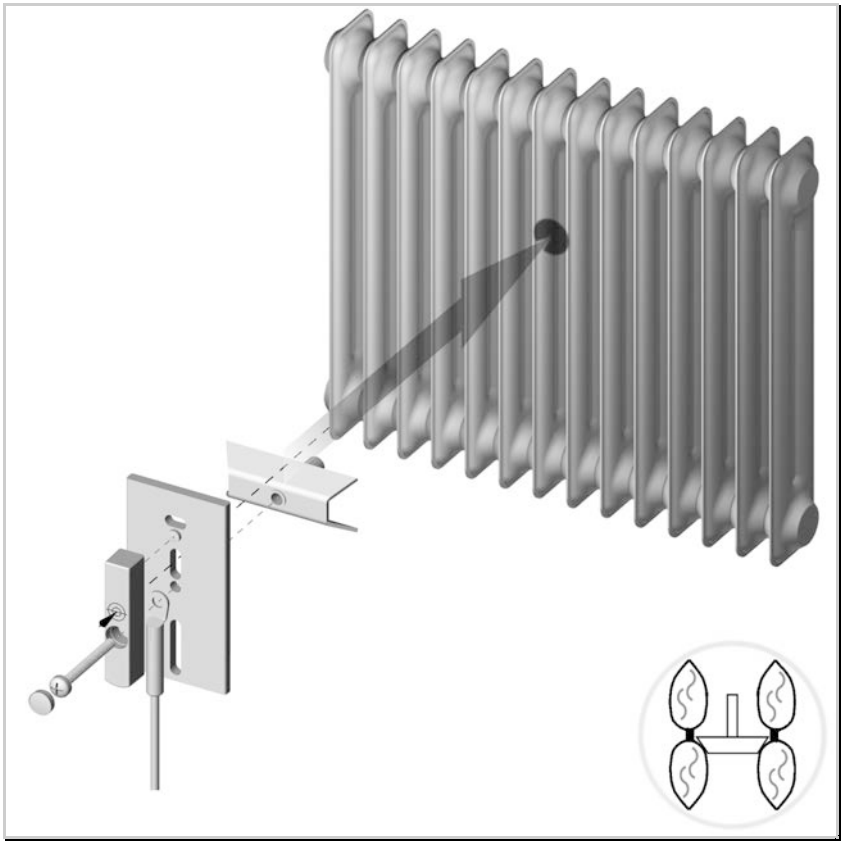


Fig. 4 - Sealing

CIT10-01 Ribbed radiators, pitch greater than 40 mm



Main installation

Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 40	FNR0004

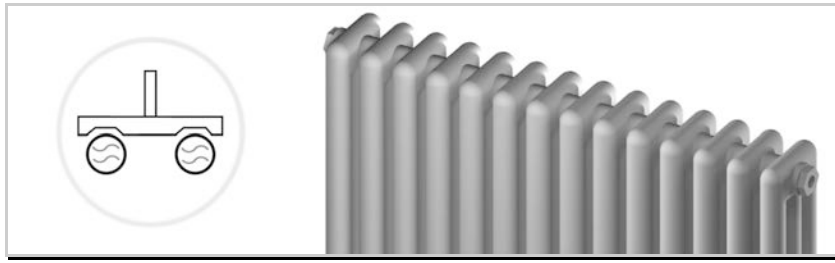
Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation"
Alternatively, clamping bracket 50 mm or 65 mm can be used for larger rib gaps for trapezoidal clamping bracket 35 mm.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal clamping bracket 65 mm	FKT0020

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-01 Ribbed radiators, pitch greater than 40 mm

Tubular radiators

Special features:
Special clamping brackets are required for installation heights greater than 900 mm. This prevents the heating tubes being pushed apart by the trapezoidal clamping bracket.

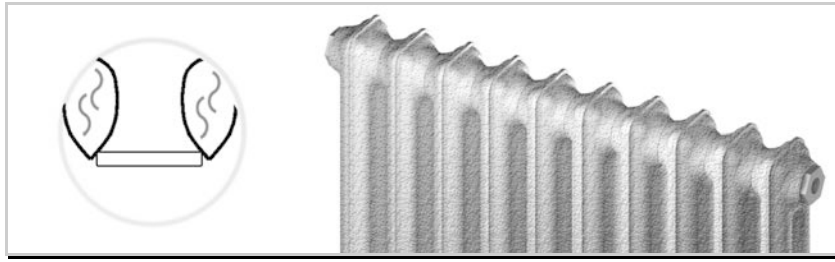


Installation position see main installation CIT10-01

Supplements / additional information	
Clamping bracket tubes TE 46 mm	FKT0016
or 1 x clamping bracket for tubes TE 36 mm	FKT0015

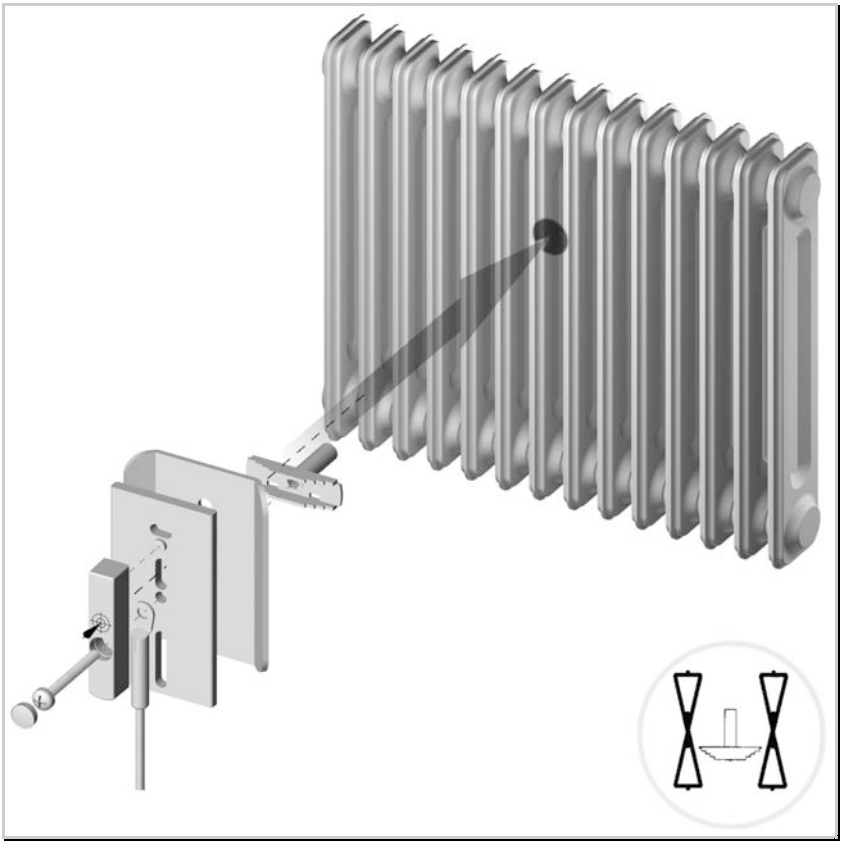
Cast iron radiators

Special feature:
Cast iron radiators have a rough surface.



Installation position see main installation CIT10-01

CIT10-02 Ribbed radiators, pitch equal to and smaller than 40 mm



Main installation

Installation parts	
1 x shortened clamping angle	FKT0009
1 x prisma	FKA0001
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 50	FNR0005

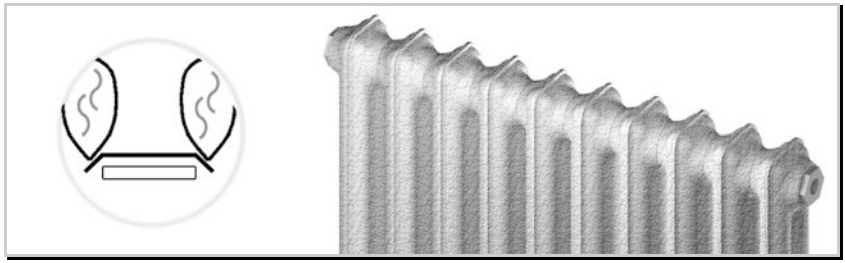
Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation"

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-02 Ribbed radiators, pitch equal to and smaller than 40 mm

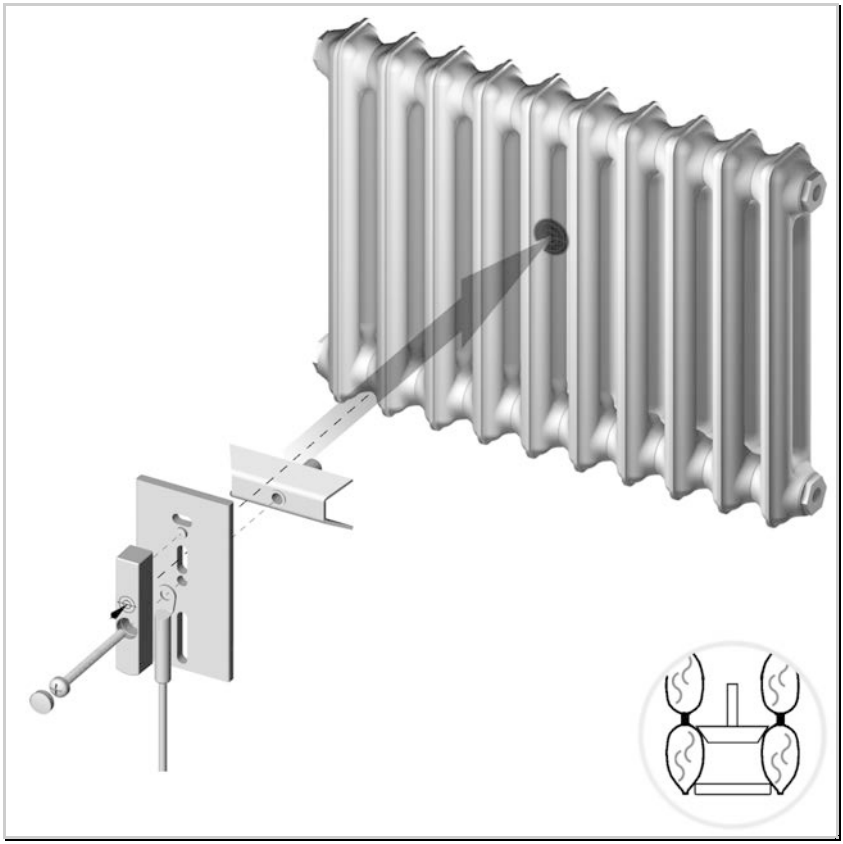
Cast iron radiators

Special feature:
Cast iron radiators have a rough surface.



Installation position see main installation CIT10-02

CIT10-03 Cast radiator type SR



Main installation

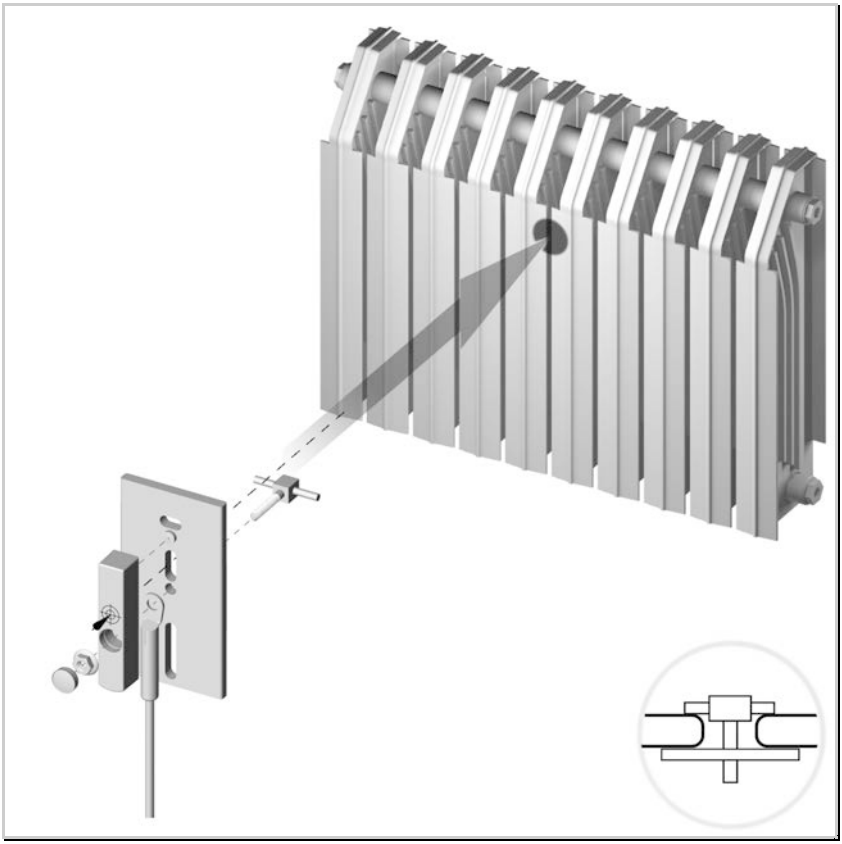
Installation parts	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 50	FNR0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation"

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-03 Cast radiator type SR

CIT10-04 Cast radiatorType KR



Main installation

Installation parts	
1 x square bolt	See installation instructions on the next page
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 50 % of the radiator design height At 50 % of the radiator design width

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-04 Cast radiatorType KR

Installation procedure:
Insert the pre-mounted attachment bracket into the groove on the radiator at the planned installation spot and then turn it through 90°.

You need different square bolts for different groove widths.

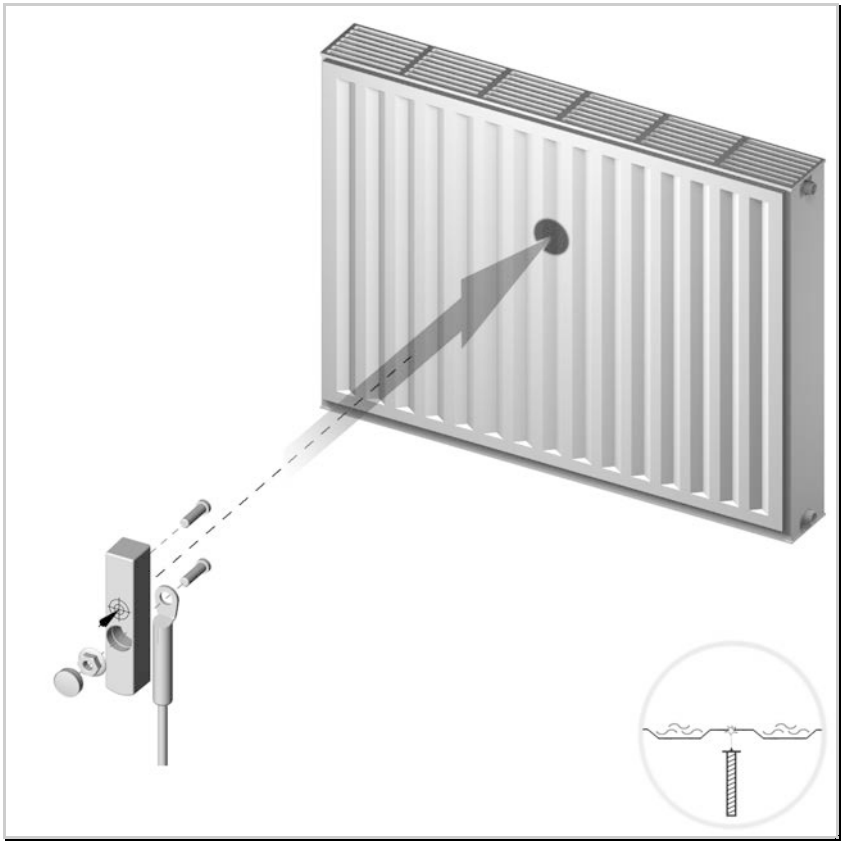
If the square bolt is too long, shorten it using a side cutter.

Installation instructions:

Square bolt	
The square bolt must be ordered separately to match the groove.	
1 x square bolt 4.5 mm with cross pin	BOZ4002
1 x square bolt 6.0 mm with cross pin	BOZ4003
1 x square bolt 12.0 mm with cross pin	BOZ4004

Auxiliary material:
A side cutter if required.

CIT10-05 Panel radiators welded installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-05 Panel radiators welded installation

Special features:
The welded studs are welded in a recess between two channels carrying water.

Serial flow

The serial flow through the radiator causes a change in temperature distributioncompared with standard flow on the panel facing the room.

Other KC values are used.

Remote sensor installation on request!

Further details about this CIT no. can be found on the following pages.

CIT10-05 Panel radiators welded installation

Smooth surface, panel firmly connected

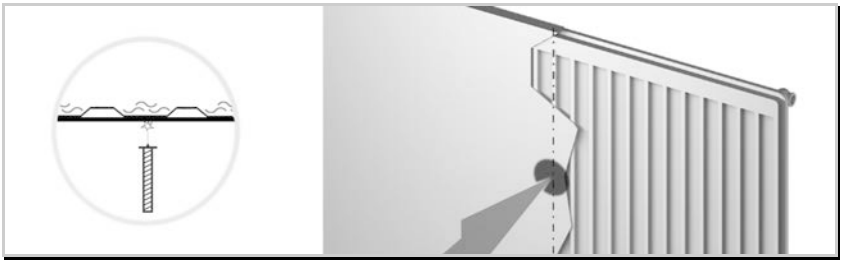
Special features:
The welded studs are welded to the smooth panel. Tubes or channels carrying water must be beneath the welding spots.

Serial flow

The serial flow through the radiator causes a change in temperature distributioncompared with standard flow on the panel facing the room.

Other KC values are used.

Remote sensor installation on request!



Installation position see main installation CIT10-05

Supplements / additional information
This type of installation is only used when the smooth panel is firmly connected to the radiator (welded or glued)

Vertical panel containing water

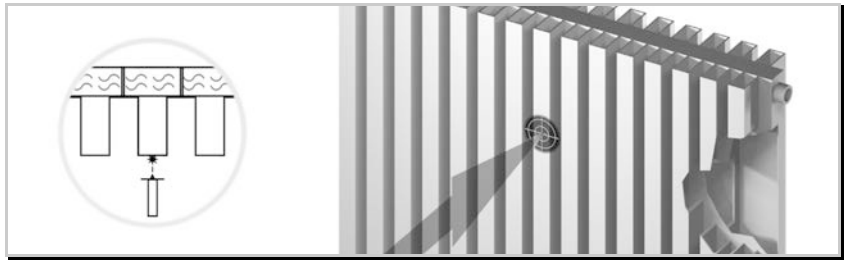
Special features:
The welded studs are welded in the middle of the panel carrying water.

Installation position see main installation CIT10-05

CIT10-05 Panel radiators welded installation

Front convection plate

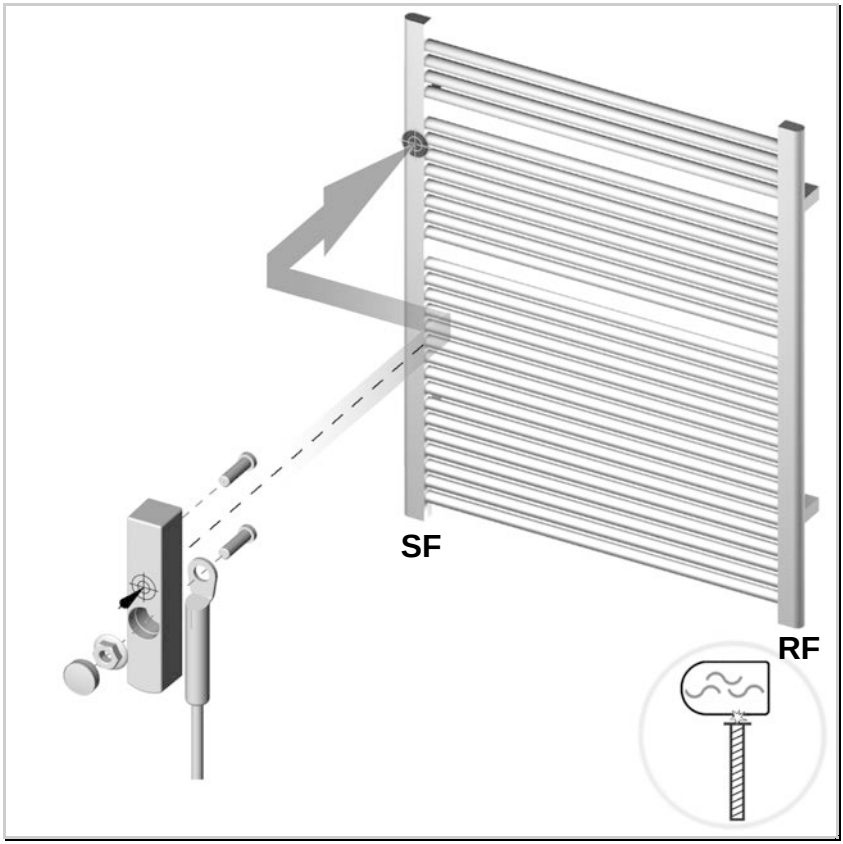
Special features:
The welded studs are attached to a vertical convection plate.



Installation position see main installation CIT10-05

Supplements / additional information
The front convection plates are on vertical water channels.

CIT10-06 Bathroom radiators, collector for welding installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 75% of the radiator design height Installation on the supply flow pipe

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

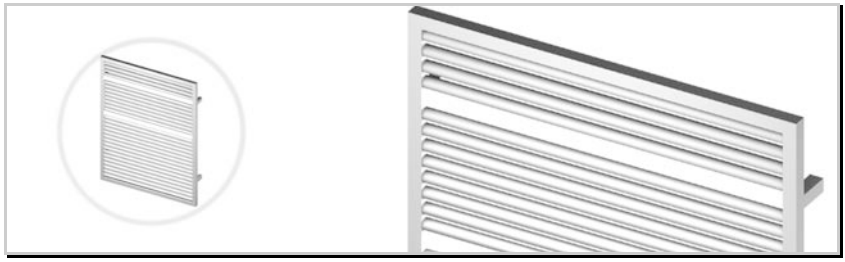
CIT10-06 Bathroom radiators, collector for welding installation

Special feature:
No metering devices may be installed near any sources of splash water.

Installation procedure:
The remote sensor may also be installed mid-side or mid-rear on the supply flow collector. This is particularly necessary for radiators with projecting horizontal pipes.

Shape of the supply flow collector:
The shape (**cross-section**) of the supply flow collector can differ. It can have a round, square, oval or semi-circular shape.

Note:
Installation on the return flow collector is possible if KC values are available for this.

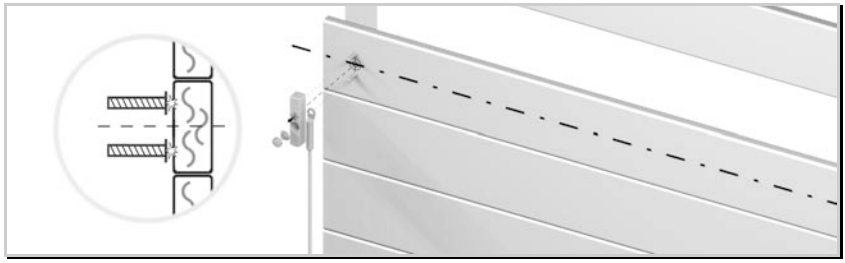


Return flow collector installation is always used in the case of radiators with an all-round collector. **In both cases, installation is at 75% of the radiator design height.**

Horizontal flat tubes

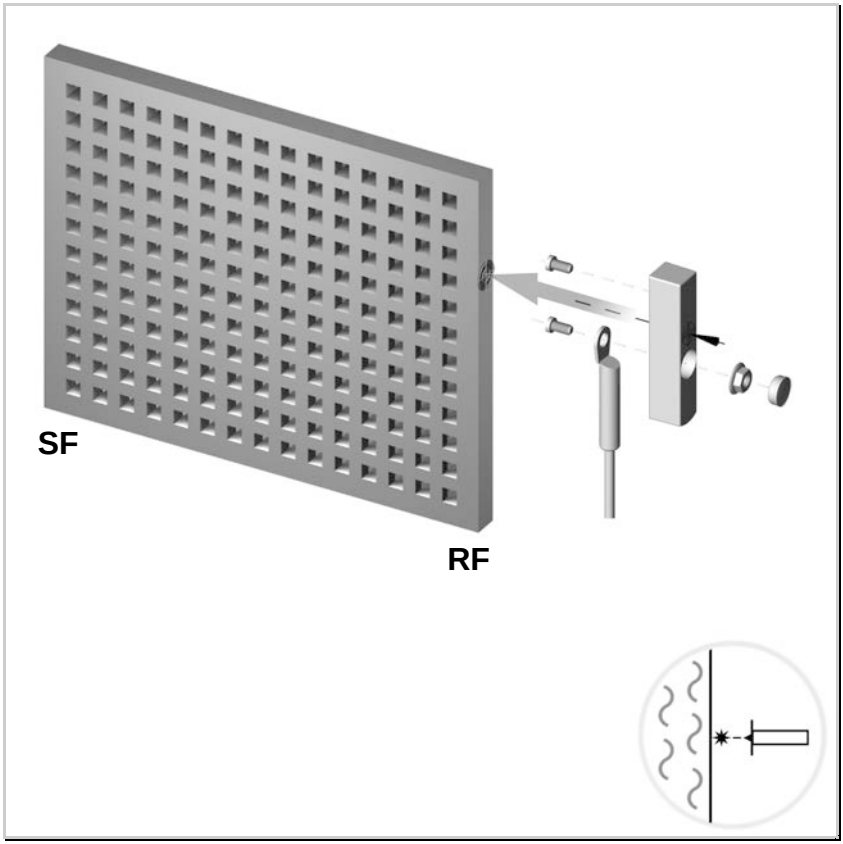
Special features:
The remote sensor must not project beyond the edge of the horizontal panel. If necessary, the reference point (75% of the radiator design height) must be corrected upwards or downwards.

Installation must be in the centre of the horizontal panel above the supply flow pipe.



Installation position see main installation CIT10-06

CIT10-07 Design radiators (typical Karotherm)



Main installation	
Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

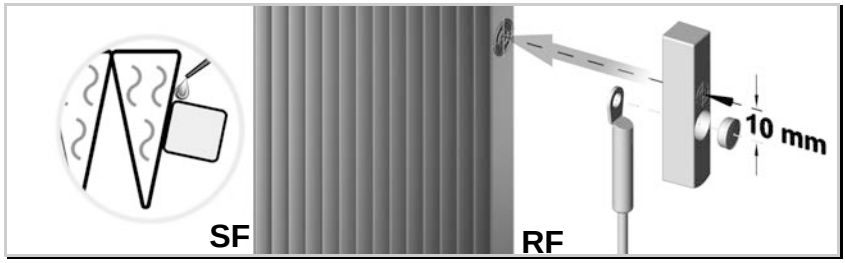
Installation position	
Special installation	At 75% of the radiator design height Different designs are possible (slim, upright, cross, ...) Welded installation opposite the supply flow side

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-07 Design radiators (typical Iguana)

Special features:
The remote sensor is fastened in place using superglue.

Different designs are possible (slim, upright, cross, ...)

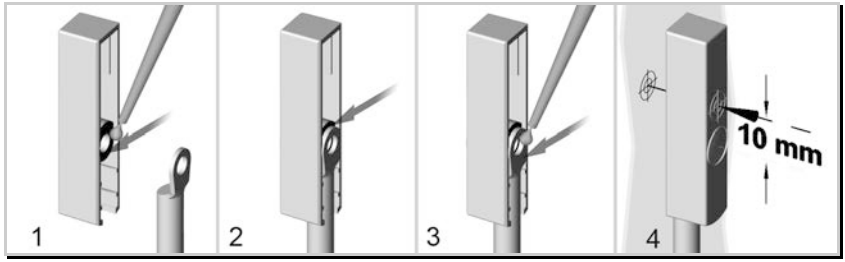


Installation parts	
1 x ergo superglue	FSS0007

Installation position	
Special installation	At 75% of the radiator design height Adhesive installation on return pipe

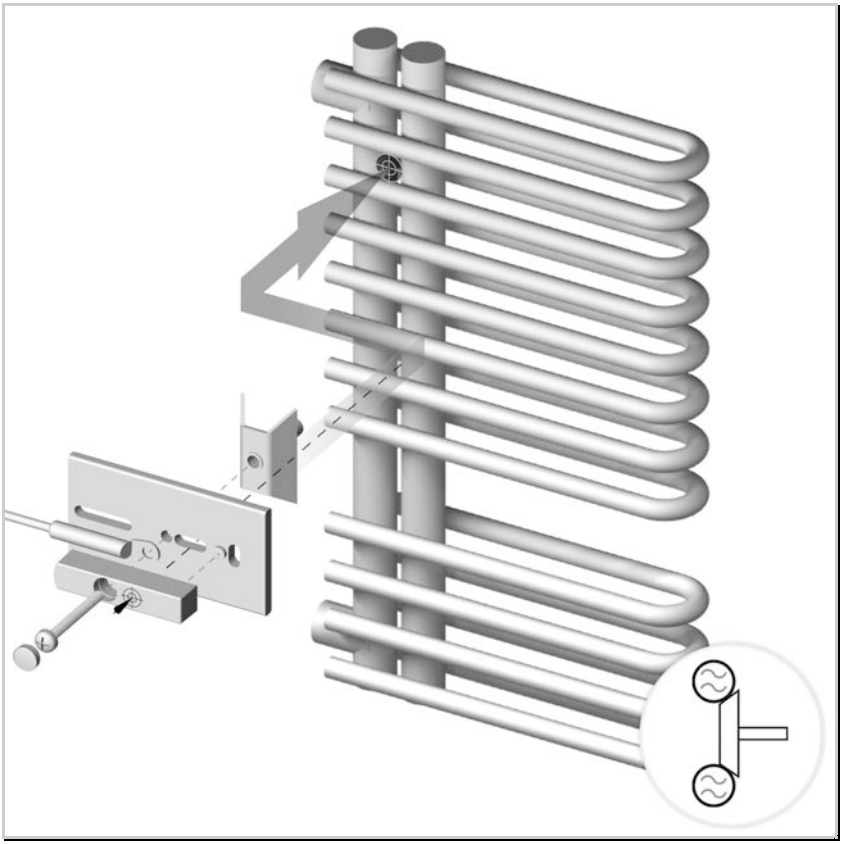
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

Preparing for adhesion:
The radiator paint must be cleaned at the adhesive position.



1. Apply superglue to the contact surface of the sensor in the sensor housing.	**3.** Apply superglue to the sensor.
2. Glue sensor to the contact surface.	**4.** Glue remote sensor to the installation position determined.

CIT10-08 Bathroom radiators, curved pipes, collector at one side



Main installation

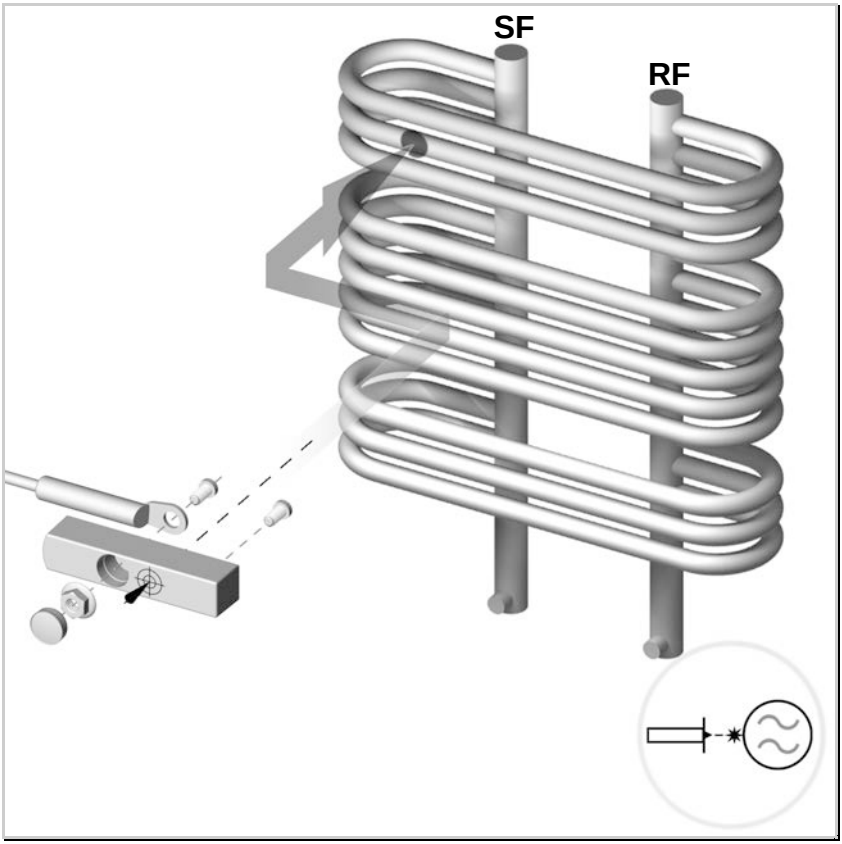
Installation parts	
1 x trapezoidal clamping bracket	FKT0018
1 x remote sensor installation plate	FKA0009
1 x cross-slot screw M4 x 50	FNR0005
1 x welded studs M3 x 12	FKT0011

Installation position	
Special installation	At 75 % of the radiator design height Horizontal installation on 2 supply flow horizontal pipes Position - in the middle between two collectors

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-08 Bathroom radiators, curved pipes, collector at one side

CIT10-09 Bathroom radiators, curved pipes, welded installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

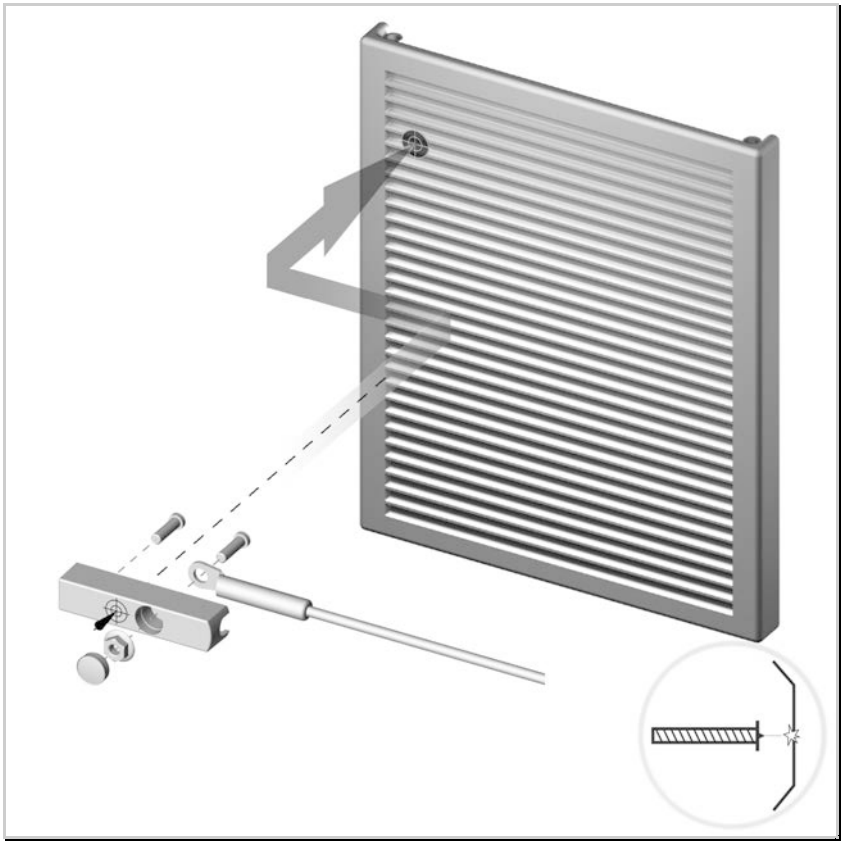
Installation position	
Special installation	Remote sensor mounted horizontally 2nd pipe from the top 25% of the radiator design width away from the bent edge on the supply flow side

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-09 Bathroom radiators, curved pipes, welded installation

Special feature:
No metering devices may be installed near any sources of splash water.

CIT10-10 Panel radiators as bathroom radiators, welded installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

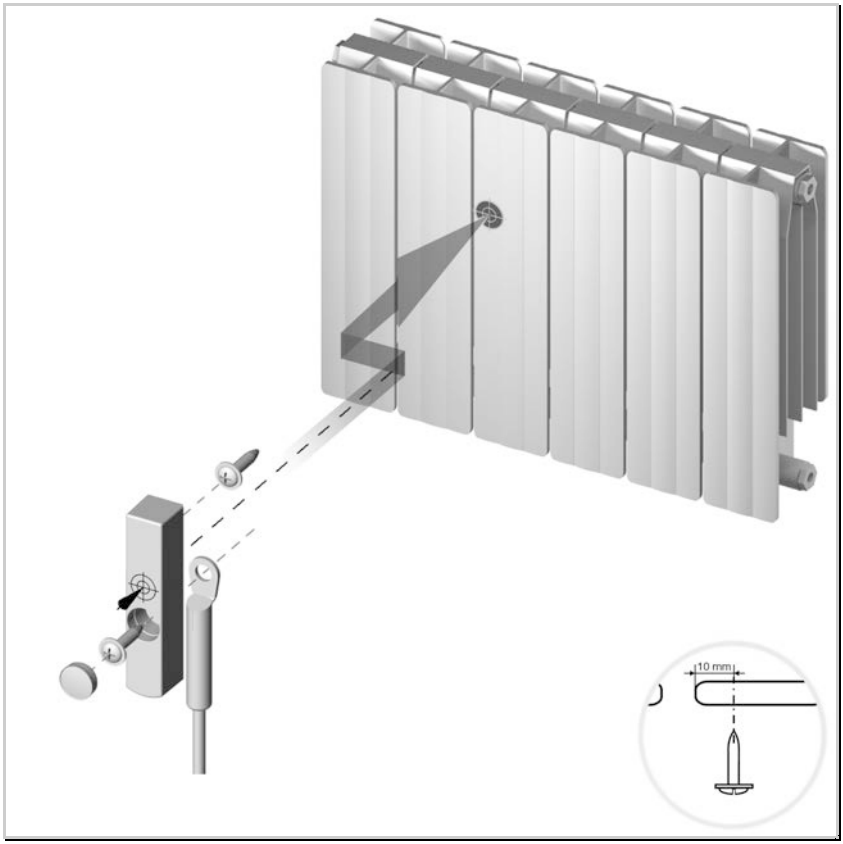
Installation position	
Special installation:	Remote sensor mounted horizontally at 75 % of the radiator height on the supply side, as near as possible to the collector

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-10 Panel radiators as bathroom radiators, welded installation

Special features:
The welded studs for the remote sensor are welded in a recess between two channels carrying water.

CIT10-11 Aluminium ribbed radiators



Main installation

Installation parts	
2 x self-tapping screw B 2.9 x 13	FNR0008

Installation position	
Special installation	At 75 % of the radiator design height 10 mm away from the left-hand edge of the central rib

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-11 Aluminium ribbed radiators

Special feature:
The remote sensor is fastened in place using self-tapping screws.

Installation procedure:
A spiral drill Ø 2.5 mm is used to bore two holes 20 mm apart at the left-hand edge (10 mm away from the left-hand edge of the rib).

Screw in the upper self-tapping screw by about 1/3 and then cut the screw head off. This screw stub is used to stop the remote sensor housing twisting.

You can then fix the remote sensor in place using the second self-tapping screw.

CIT10-12 Panel radiators, horizontally moulded

Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

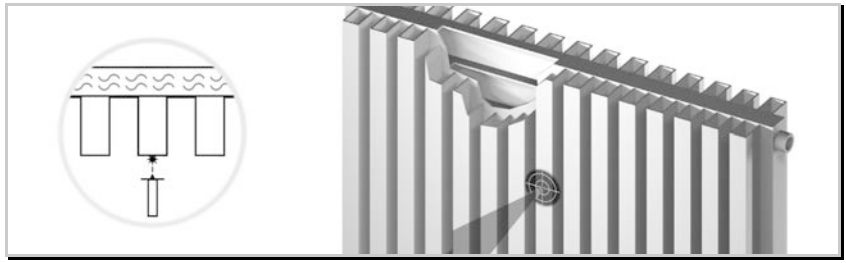
Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-12 Panel radiators, horizontally moulded

Front convection plate

Special features:
The welded studs are attached to a vertical convection plate.

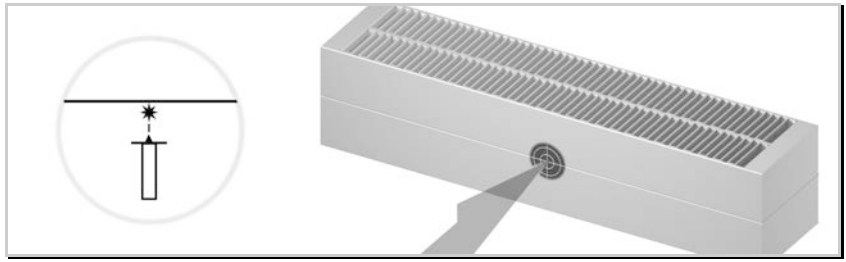


Installation position see main installation CIT10-12

Supplements / additional information
The front convection plates are on horizontal water channels.

70 mm profiles, horizontal flow 1 to 4 rows

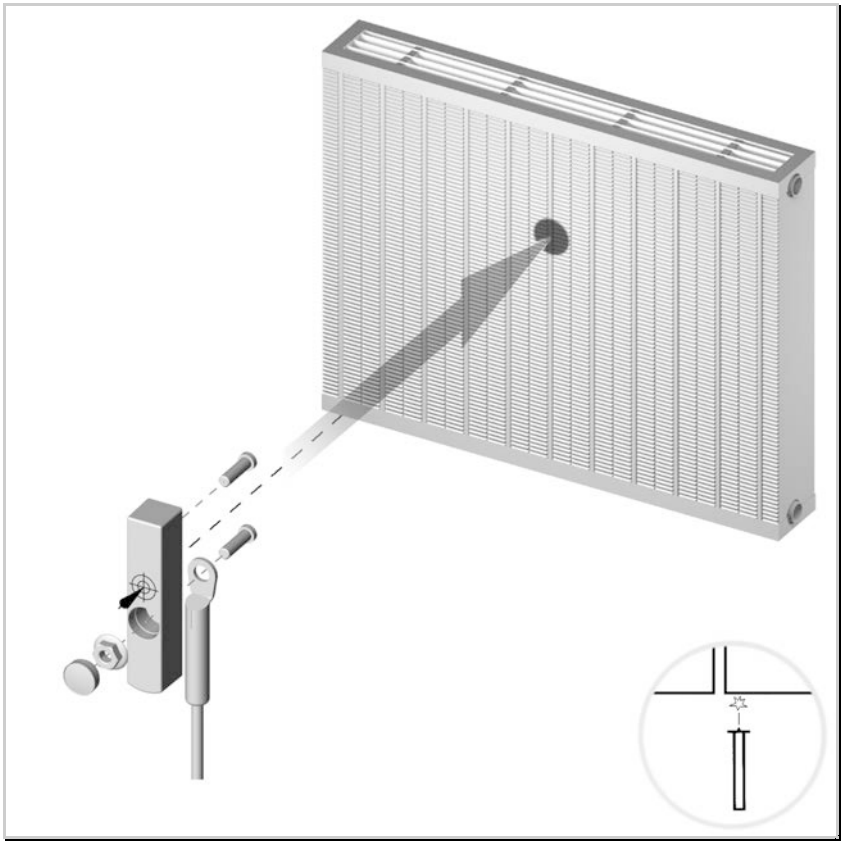
Special features:
The remote sensor is fixed to the centre of a horizontal, water-carrying panel.



Installation position see main installation CIT10-12

Supplements / additional information
The radiator can have several rows. The remote sensor is always attached in the centre and vertically to the design width and design height.

CIT10-13 Radiators with internal tube register



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

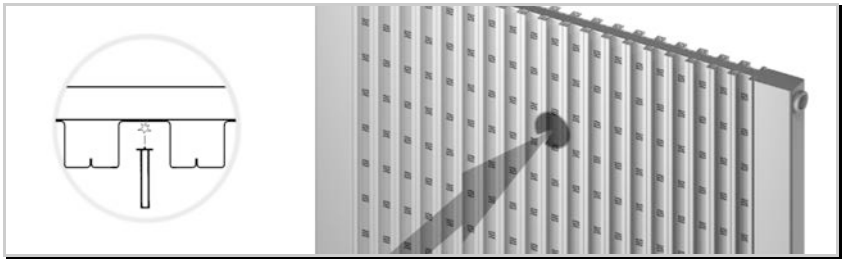
CIT10-13 Radiators with internal tube register

Special feature:
The welded studs must be fitted at the segment edge.

Note:
There is not a water-carrying tube or water-carrying channel behind every groove or smooth surface (vertical area between the ribs) of a radiator with internal tube register. This can usually be seen by looking into the radiator from above.

If this is not possible, the upper panelling must be removed.

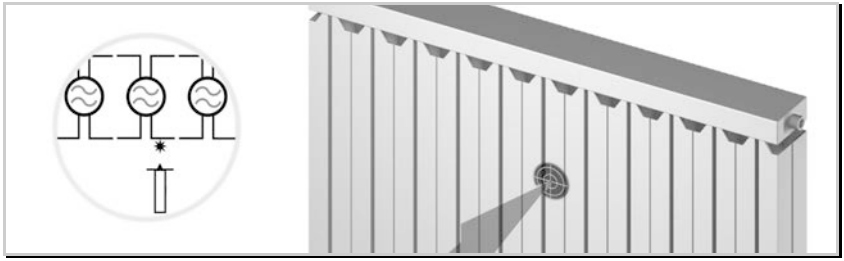
Horizontal water flow



Installation position see main installation CIT10-13

Supplements / additional information
The welded studs must be welded in the recess and to a smooth surface.

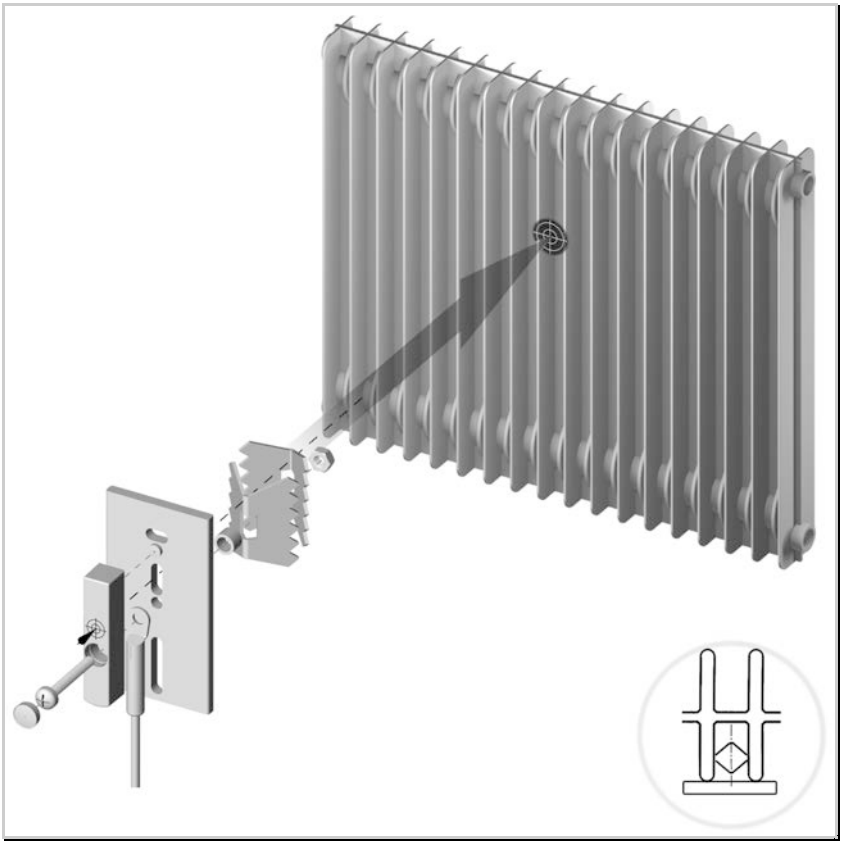
Typical Rotherm



Installation position see main installation CIT10-13

Supplements / additional information
If necessary, correct the calculated position to the next possible spot where there is a tube carrying water.

CIT10-14 Lamella-type radiators



Main installation

Installation parts	
1 x hexagon nut M4	FNM0004
2 x expanding bracket for lamella-type radiator	FKA0004
1 x spacer sleeve	FKT0010
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 30	FNR0003

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation"

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

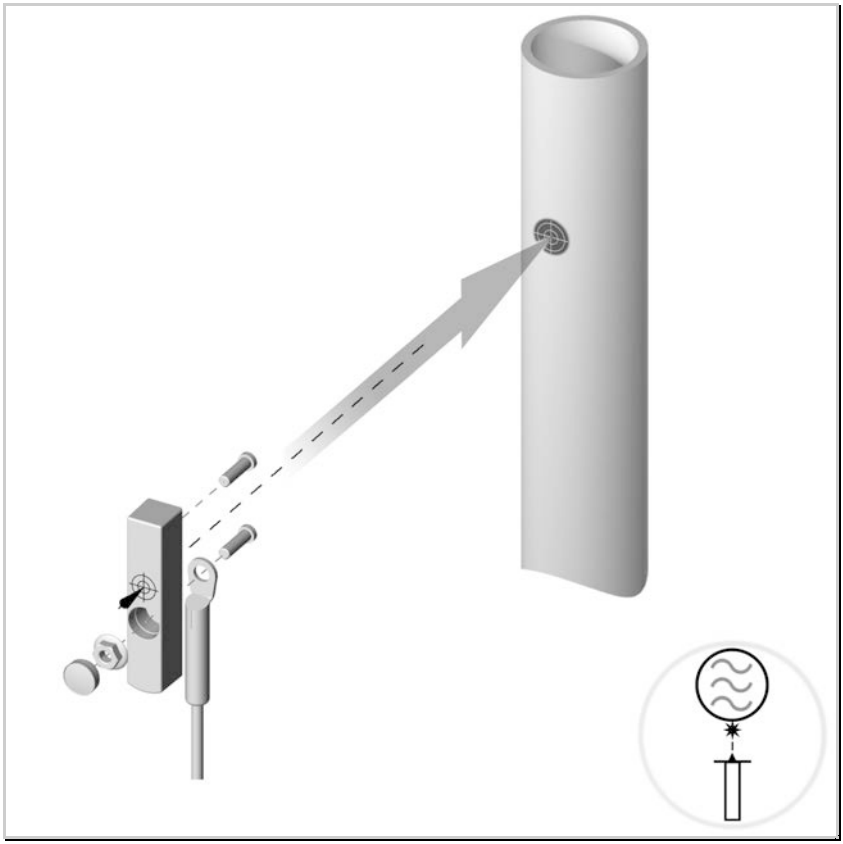
CIT10-14 Lamella-type radiators

Installation procedure:
Loosely screw the installation parts together into a unit. The hexagon nut must be in the central recess of the rear expanding bracket and be secured against twisting.

1. Press the installation plate with the elements loosely screwed in place between the designated radiator ribs.
2. Use a screwdriver to tighten the cylinder screw while pressing the installation plate in place.

Note:
During tightening/expanding of the expanding bracket, the screw must not touch the base. The screw may have to be shortened.

CIT10-15 Steel tube, welded installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation"

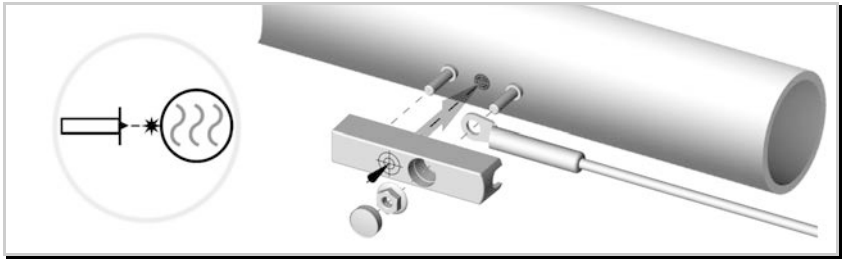
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-15 Steel tube, welded installation

Special feature:
The remote sensor may also be fitted on the side of the pipe.

Shape of the collector:
The shape (**cross-section**) of the collector can differ. It can have a round, square, oval or semi-circular shape.

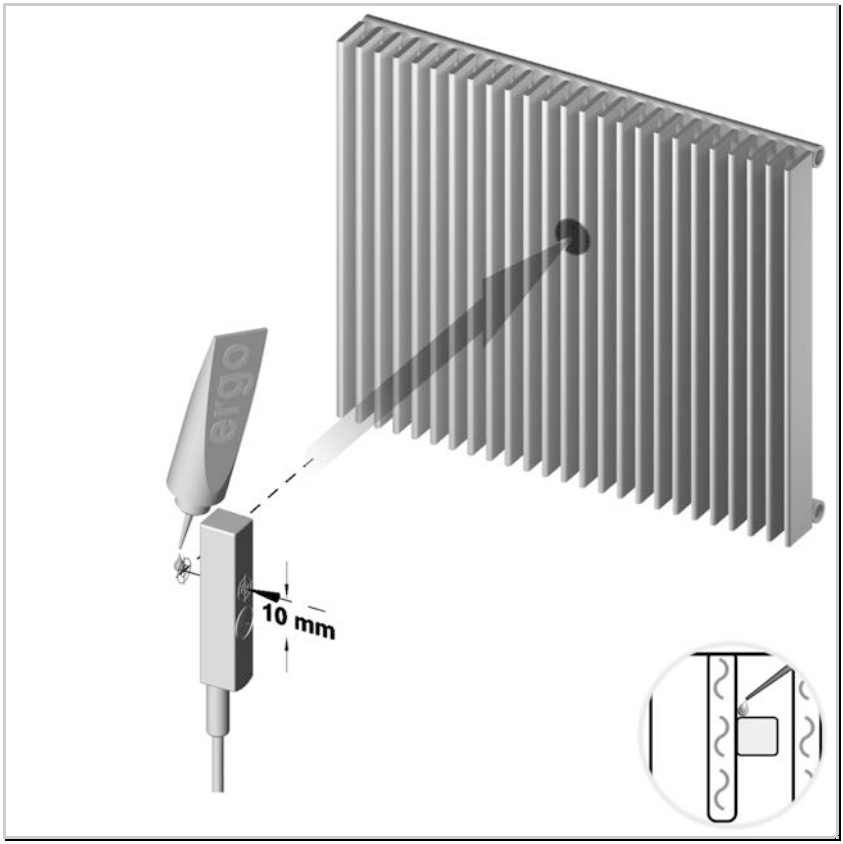
Installation procedure:



Installation position see main installation CIT10-15

Supplements / additional information
In the case of horizontal pipes, the device is installed at 50% of the distance along the flow length.

CIT10-16 Flat tube radiators



Main installation

Installation parts	
1 x "ergo 5039 Gel" superglue	FSS0007

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

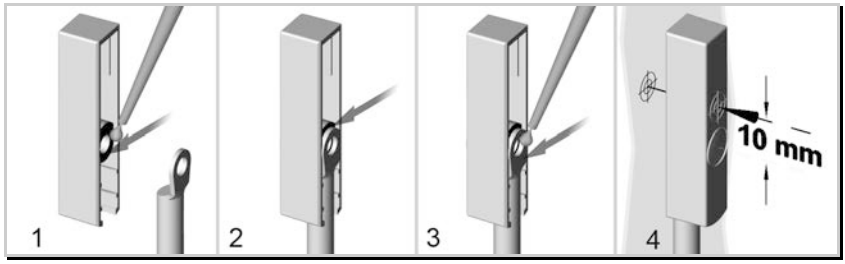
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-16 Flat tube radiators

Special feature:
The remote sensor is glued to the centre/side of a flat tube carrying water.

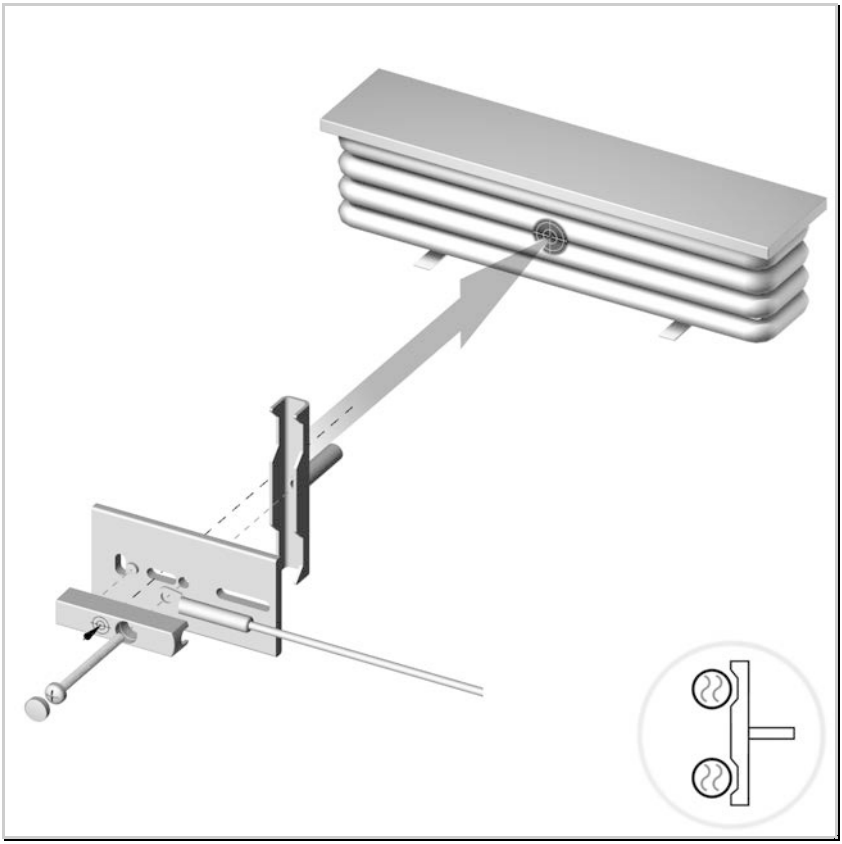
Note:
The adhesive spot must be roughened a little.

Preparing for adhesion:
The radiator paint must be cleaned at the adhesive position.



1. Apply superglue to the contact surface of the sensor in the sensor housing.	**3.** Apply superglue to the sensor.
2. Glue sensor to the contact surface.	**4.** Glue remote sensor to the installation position determined.

CIT10-17 Window ledge radiators



Main installation

Installation parts	
1 x clamping bracket (tubes TE 46 mm)	FKT0016
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 50	FNR0005

Installation position	
Special installation	At 50 % of the radiator design length Between the 2nd and 3rd tube from the top horizontally mounted remote sensor installation plate

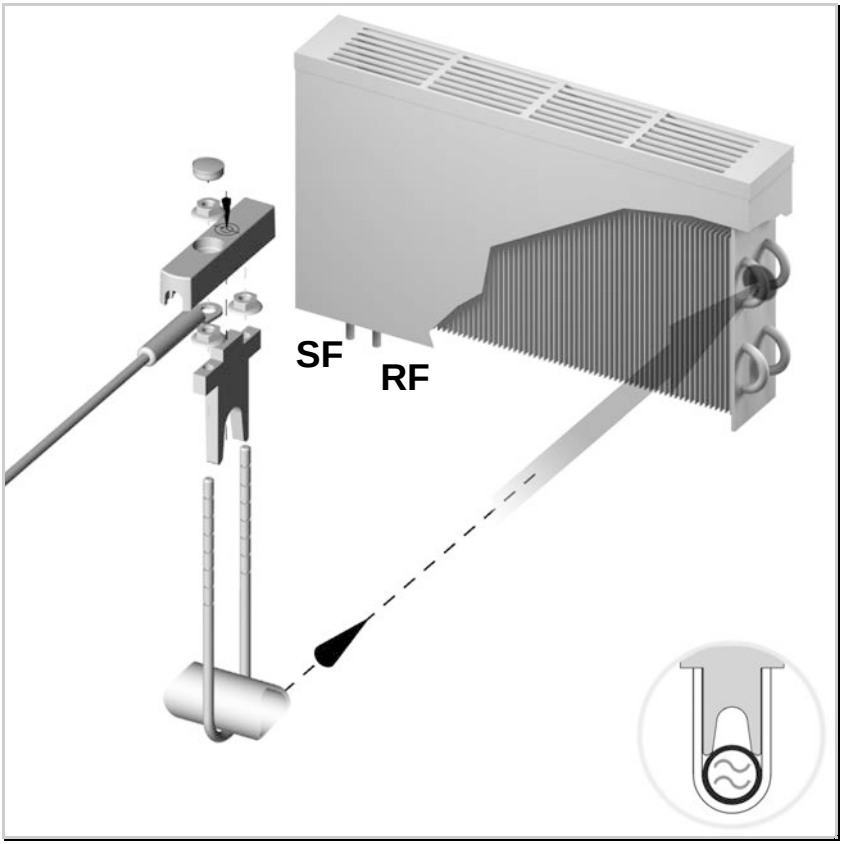
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-17 Window ledge radiators

Special feature:
The remote sensor is installed horizontally.

Installation instructions	
Alternatively, clamping bracket for tubes TE 36 mm can be used for clamping bracket for tubes TE 46 mm.	
1 x clamping bracket (tubes TE 36 mm)	FKT0015

CIT10-18 Ribbed convectors



Main installation

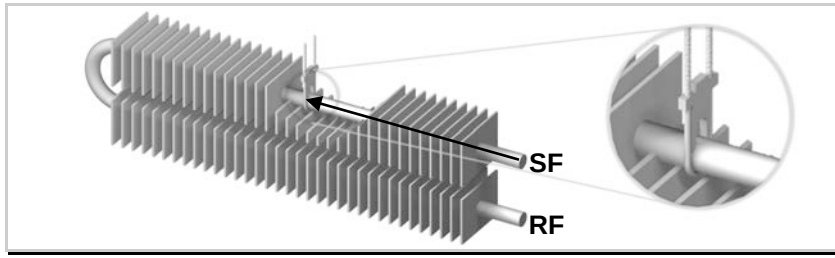
Installation parts	
1 x threaded hoop (tube up to 17 mm)	FKT0004
1 x clamping piece (threaded hoop 17 mm)	FKA0003
3 x self-locking nut M3	FNM0005

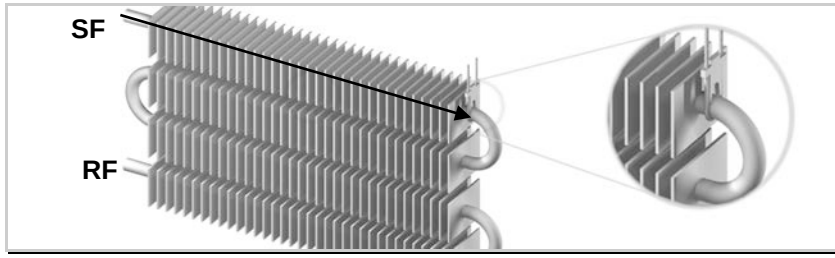
Installation position	
Special installation	The remote sensor must be installed 25% of the way along the flow length of the pipe.
Installation instructions	
A different threaded hoop with clamping piece is used for tubes from 18 to 30 mm.	
1 x threaded hoop (tube up to 18 - 30 mm)	FKT0014 (optional)
1 x clamping piece (tube up to 18 - 30 mm)	FKA0008 (optional)

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of this chapter.

CIT10-18 Ribbed convectors

Installation procedure:

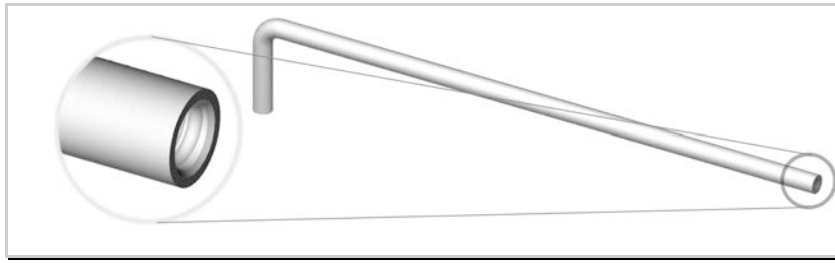




Installation instructions
Installation of the remote sensor is on the supply pipe, 25% (arrow) of the way away from the supply flow connection.

Installation aid for convectors

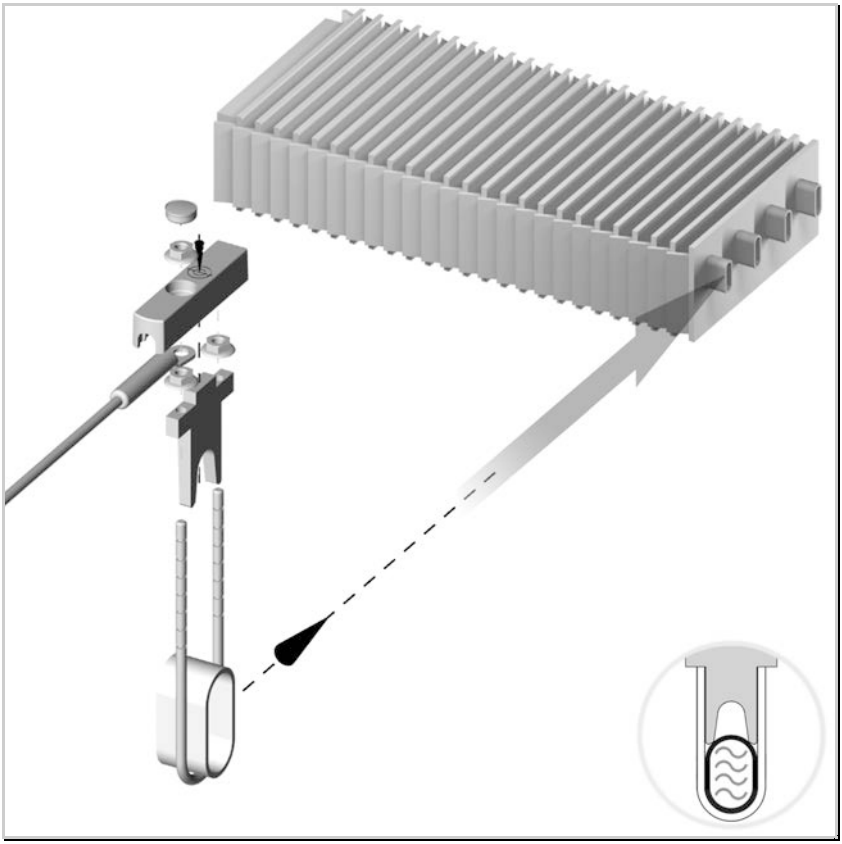
Installation aid convector (optional):
Use the installation aid convector for installation.



Installation instructions
1. Threaded opening in the installation aid: to extend the threaded hoop, in order to insert it between the ribs. 2. Angled end of the installation aid: for fixing or positioning the threaded hoop during installation.

Further details about this CIT no. can be found on the following pages.

CIT10-18 Ribbed convectors



Main installation

Installation parts	
1 x threaded hoop (tube up to 17 mm)	FKT0004
1 x clamping piece (threaded hoop 17 mm)	FKA0003
3 x self-locking nut M3	FNM0005

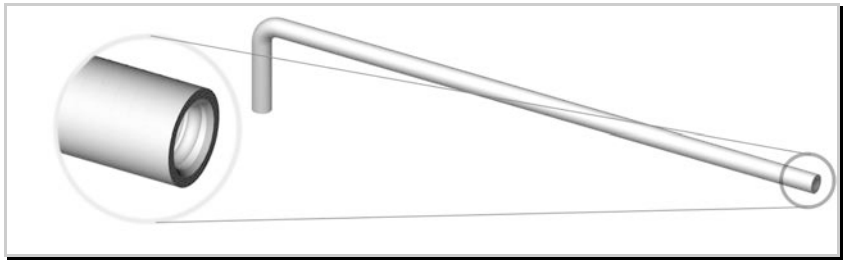
Installation position	
Special installation	The remote sensor must be installed 25% of the way along the flow length of the pipe.

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-18 Ribbed convectors

Special feature:
The remote sensor must be installed in the **centre** of the tube length flown through.

Installation aid convector (optional):



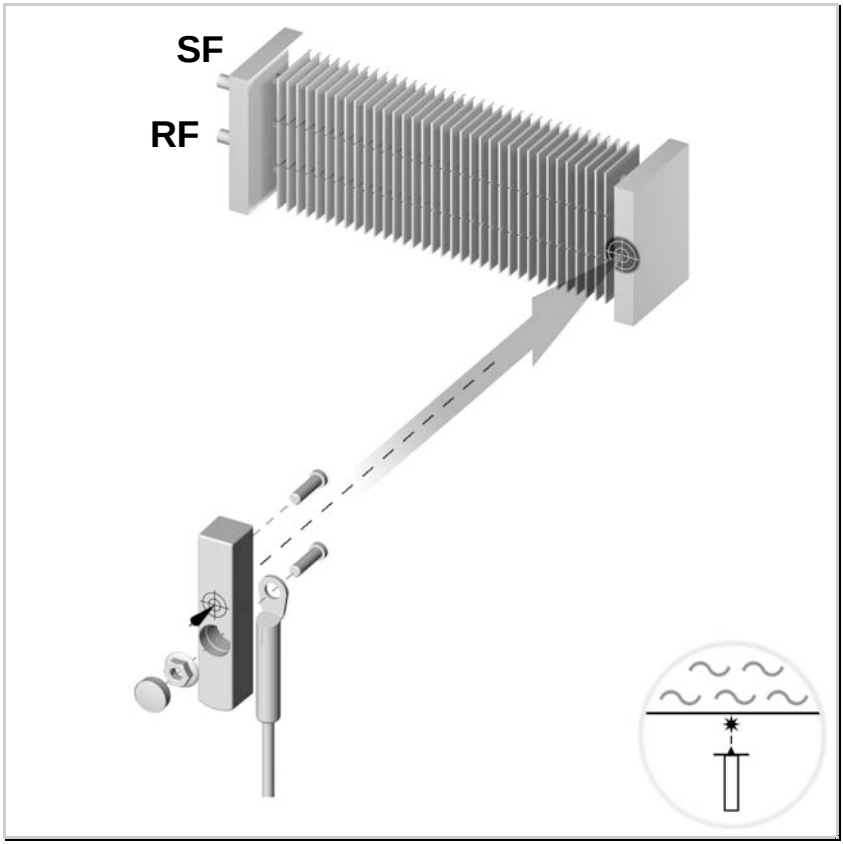
Installation instructions
1. Threaded opening in the installation aid: to extend the threaded hoop, in order to insert it between the ribs. 2. Angled end of the installation aid: for fixing or positioning the threaded hoop during installation.

Box design

Installation position see main installation CIT10-18

Supplements / additional information	
The remote sensor must be installed 25% of the way along the flow length of the pipe.	
Installation instructions	
Different threaded hoops must be used for tubes from 18 to 30 mm. The convector panelling must be removed for remote sensor installation.	
1 x threaded hoop (tube up to 18 - 30 mm)	FKT0014 (optional)
1 x clamping piece (tube up to 18 - 30 mm)	FKA0008 (optional)

CIT10-19 Convectors with reversing chamber, welded installation



Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	In the centre at 50% of the reversing chamber height

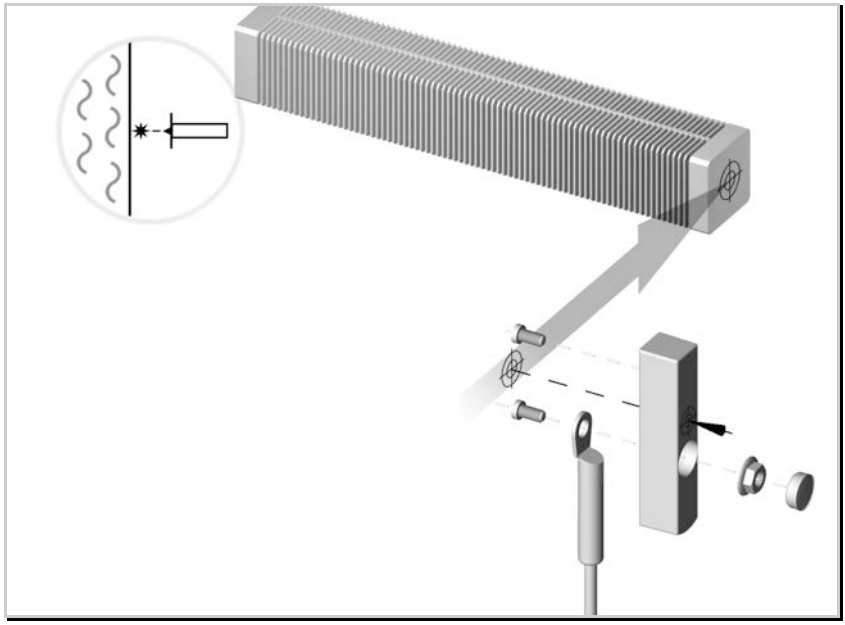
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-19 Convectors with reversing chamber, welded installation

Note:
The radiator design is typically termed bath convector.

Special feature:
The radiator is connected at the same side.

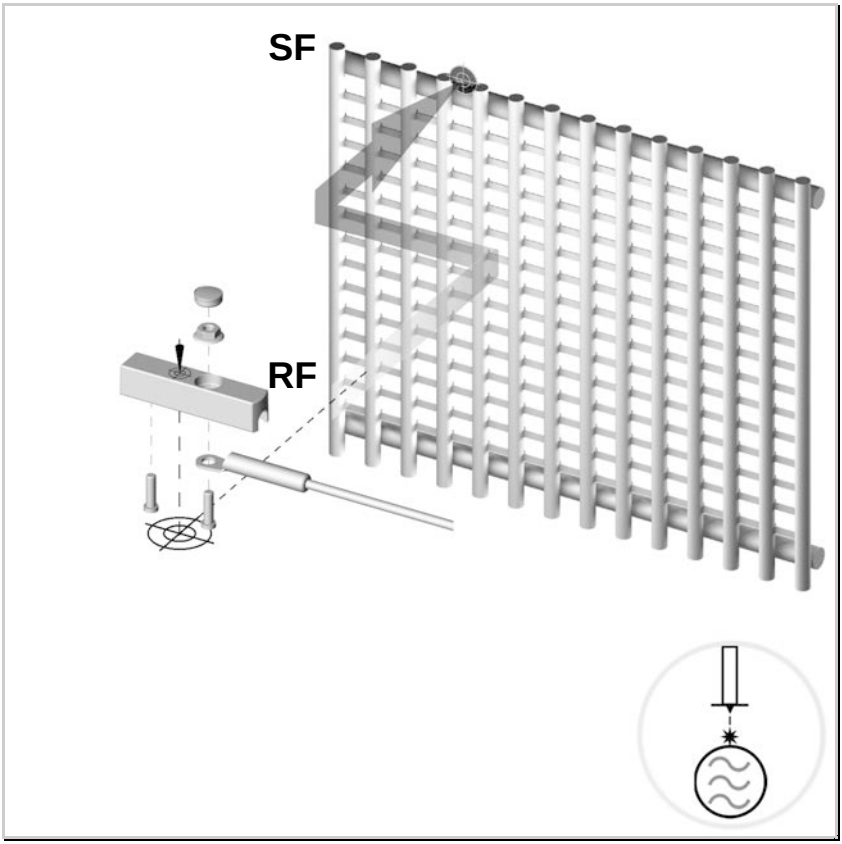
Convector with hood (typical Joco Cityline)



Installation position see main installation CIT10-19

Supplements / additional information
The remote sensor is attached centrally on the reversing chamber.

CIT10-20 Grid radiators, welded installation



Main installation

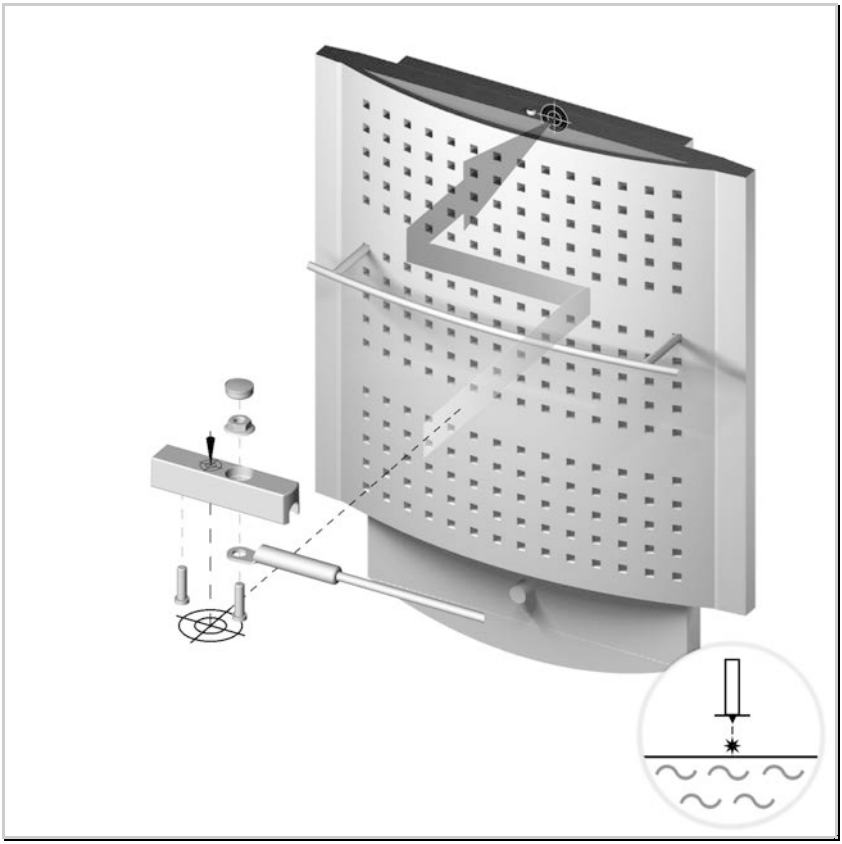
Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	At 25% of the radiator design width (supply side), on the upper horizontal tube.

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-20 Grid radiators, welded installation

CIT10-21 Design radiators (typical Kermi stainless steel)



Main installation

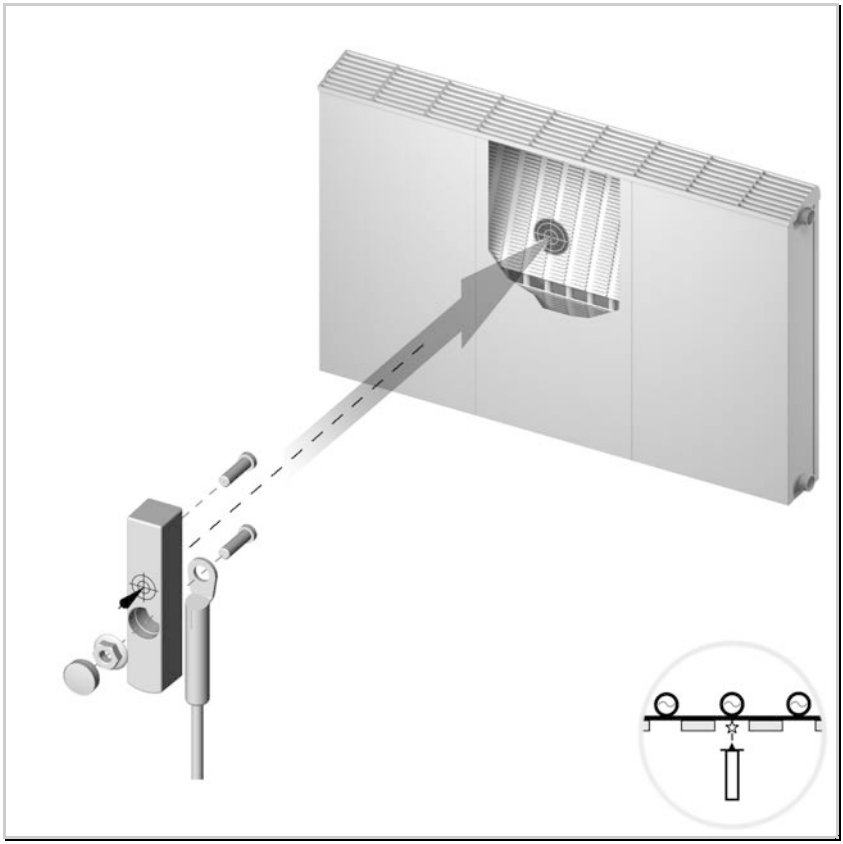
Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	At the top on the rear register Reference point 20 mm next to the bleeding point (supply side)

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-21 Design radiators (typical Kermi stainless steel)

CIT10-22 Radiators with internal tube register, in box design



Main installation

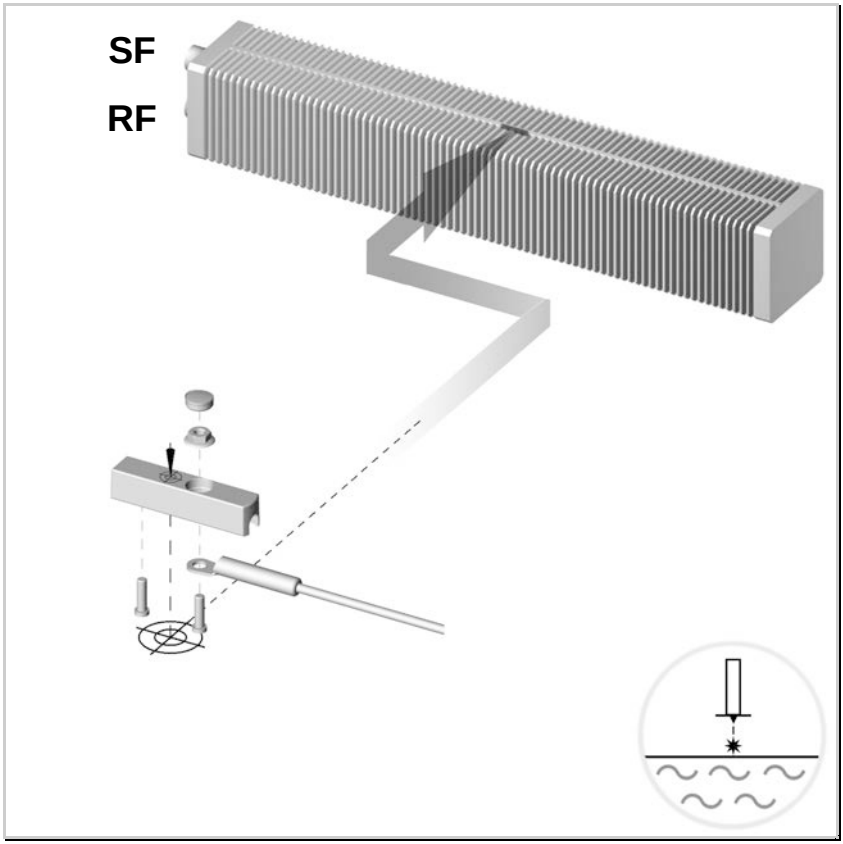
Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-22 Radiators with internal tube register, in box design

CIT10-23 Convector (typical Schmieg Thermitor 70)



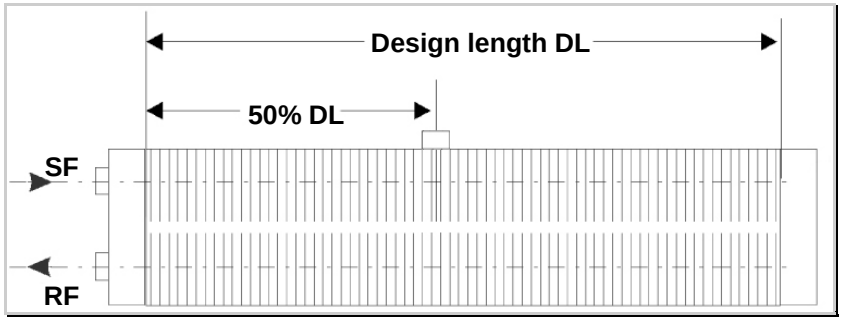
Main installation

Installation parts	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position	
Special installation	Installation of the remote sensor is on the supply pipe, 25% of the way away from the supply flow connection (50% design length).

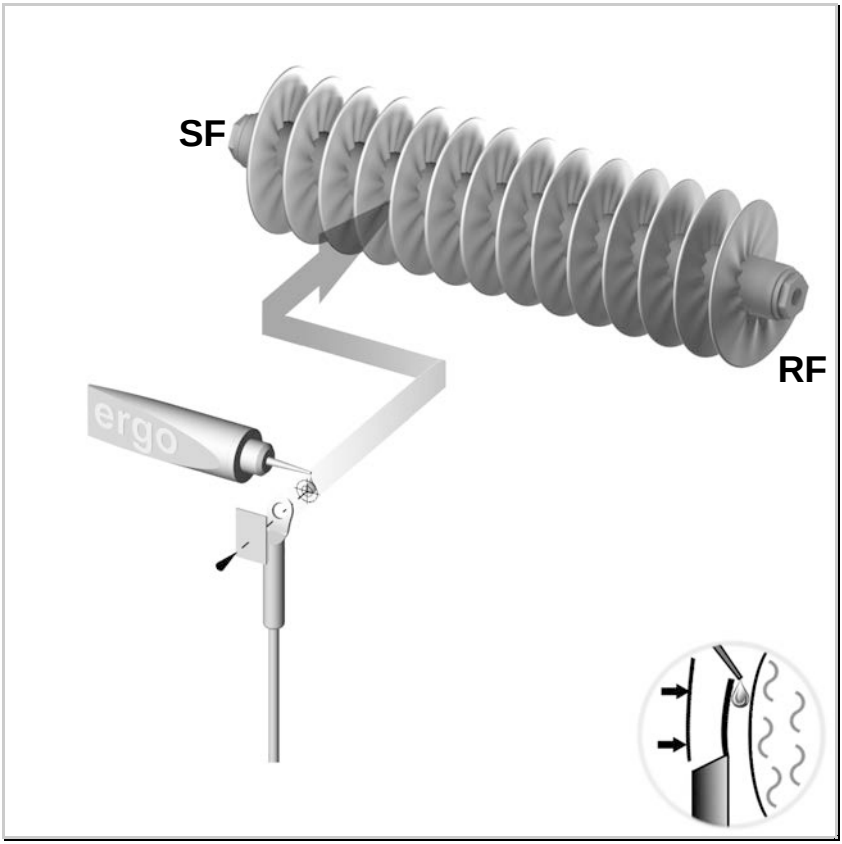
Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-23 Convector (typical Schmieg Thermitor 70)



Installation instructions
Installation of the remote sensor is on the supply pipe, 25% of the way away from the supply flow connection (50% design length).

CIT10-24 Individual pipes and tubular coils



Main installation

Installation parts	
1 x "ergo 5039 Gel" superglue	FSS0007
1 x seal film	Specialist retailer

Installation position	
Special installation	Please note the installation instructions on the next page.

Necessary accessories	
Remote sensor installation kit	Remote sensors and wall brackets can be found from page 3 in this chapter.

CIT10-24 Individual pipes and tubular coils

Installation procedure:

~ Installation of the remote sensor is on the supply pipe, 25% of the way away from the supply flow connection on the supply flow pipe carrying water between the round ribs.

~ The eyelet of the remote sensor must be adapted to interlock on the supply flow pipe.

~ The remote sensor is glued without sensor housing.

~ The adhesive spot must be secured with sealing film afterwards.