resideo

Electronic
heat cost allocator 205

205 System Manual

205 System Manual

Legal notice / Contents

Legal notice

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Contents

205 System Manual
Chapter A

General instructions and restrictions

Chapter A - General instructions and restrictions

Issue status: Chapter A - Version 2.00 / 24.05.12

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 into fire

~ Do not short-circuit

~ Do not open or damage

~ Do not charge

~ Do not store within the reach of children

Safety notes

Improper handling and incorrect assembly can result in leaks on the radiator. Heed the assembly instructions for the type of radiator being used.

Important information

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.

Transport in the original packaging

Metering devices should always be kept in their original packaging during transport. For this purpose the 50-unit outer box can be opened and closed several times with one flap.

Exclusion of liability

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

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

Electronic heat cost allocators are for the decentralised recording of the consumption of heat energy. Depending on the system type, they have 1 or 2 sensors. Electronic heat cost allocators must be used exclusively for this purpose.

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.

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 205 family and may only be used for these.

Housing opening contact

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

Wall bracket for metering devices

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 otherwise the housing contact will not be actuated.

Notes on patent law

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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.

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 fan 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.

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.

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 with the radio system rcu4

The 202R can NOT be replaced by the 205A since the radio transmitter fitted in the heat cost allocator is not compatible with the rcu4 system.

Compatibility with close-range interface IrDA

The electronic heat cost allocator 205 can be equipped with an IrDA close-range interface.

The previous close-range interface "opto-head" is no longer used with the 205. It is not possible to use the "opto-head" equipment to readout data or to set parameters

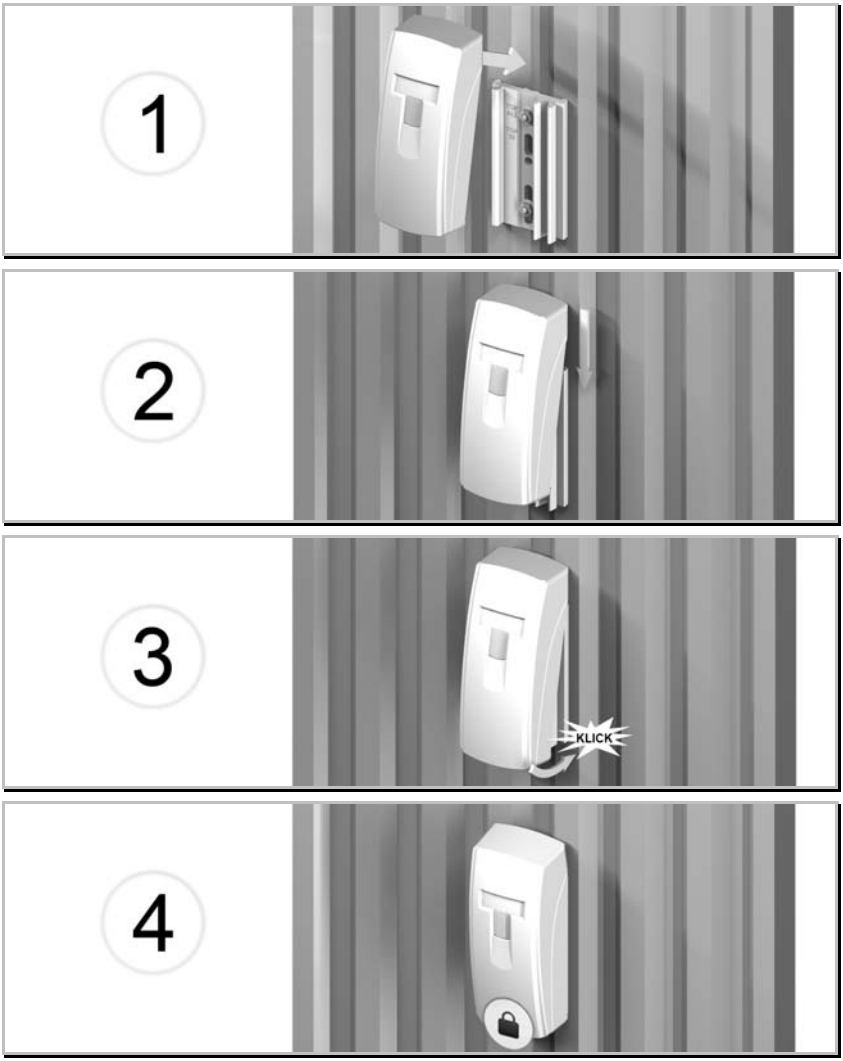
Re-programming

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

Tight fit of the metering device

Rattling test

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



When the heat cost allocators are mounted to existing installation plates (aluminium profiles), they may not clip into place 100% in some cases. This is due to the installation plate being undersize.

In these cases, please exchange the installation plates for parts from current production. Reset the opening detection before you re-mount the heat cost allocator. (For example by re-programming the due date using the programming adapter.)

205 System Manual
Chapter B

System description

Chapter B - System description

Issue status: Chapter B - Version 2.00 / 24.05.2012

Device views

Standard metering device 205S

Front view

Front view

Standard installation plate

Rear views

Rear view with installation plate

System description

Electronic heat cost allocator 205

The electronic heat cost allocators of the 205 family are replacing the heat cost allocators HKVE 202x.

~ Compatibility with installation plate (aluminium profile) for HKV 202
~ Compatibility with measuring algorithms in HKV 202
~ Housing with pre-mounted seal from the factory
~ Remote sensors can be retrofitted on site an 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)

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 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

205 Standard

205 Standard is a product that can be readout visually. The **205 Standard** system represents the entry level to reliable consumer data recording. They are especially suited to tasks or systems that do not require complex data evaluations or particularly fast readout processes.

How the 205 Standard works

When evaluating whether this system is suitable for your requirements, you must take the time needed for classical on-site meter-reading into account. The meter statuses are readout directly at the device, either visually on the display or electronically via the IrDA close-range interface.

205 walk-by

Devices in the **205 walk-by** system are readout supported by local radio signals. **205 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.

How 205 walk-by works

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.

205 AMR

Devices in the **205 AMR** system are readout supported by local radio signals. 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 – because of the 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.

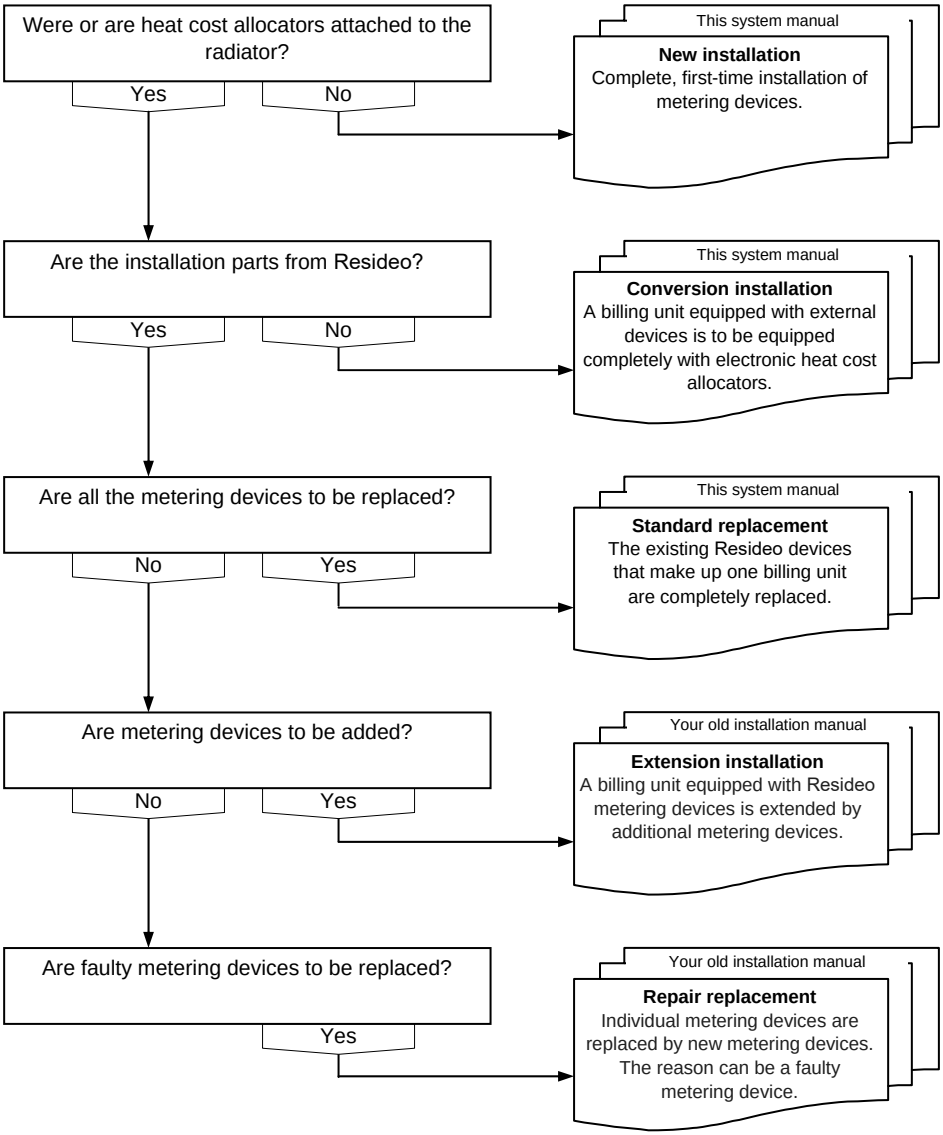
How 205 AMR works

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. **205 AMR** is compatible with the KNX European standard for home automation.

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 with 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 Resideo devices that make up one billing unit are completely replaced.

Special features

The radiators were fitted with old Resideo 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 Resideo 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

Radiator identification

Chapter C - Radiator identification

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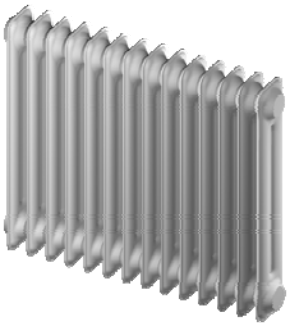
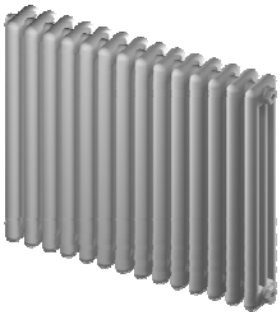
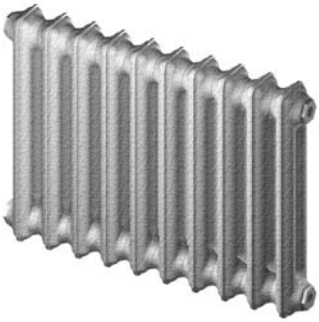
Ribbed radiators CIT01



Ribbed radiator, pitch greater than 40 mm
Compact installation: CIT01-01
Remote sensor installation: CIT10-01



Tubular radiator, pitch greater than 40 mm
Compact installation: CIT01-01
Remote sensor installation: CIT10-01



Cast iron radiator, pitch greater than 40 mm
Compact installation: CIT01-01
Remote sensor installation: CIT10-01

Ribbed radiator, pitch = < 40 mm
Compact installation: CIT01-02
Remote sensor installation: CIT10-02

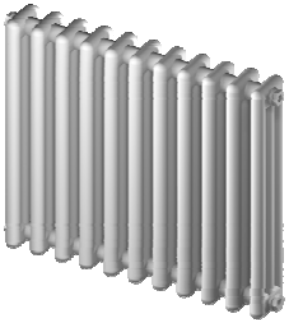
Radiator identification

	
Cast radiator, slender, division 20/40 mm Compact installation: CIT01-03 Remote sensor installation: not possible	**End faces cast radiator** Compact installation: CIT01-04 Remote sensor installation: not possible

Ribbed radiators CIT01

Cast ribbed radiator, type KR
Compact installation: CIT01-05
Remote sensor installation: CIT10-04

Ribbed radiator, clearance > 40 mm
Compact installation: CIT01-06
Remote sensor installation: not possible



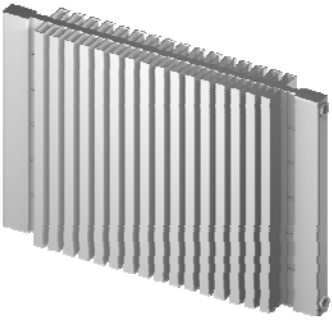
Hygiene radiator, welded installation
Compact installation: CIT01-07
Remote sensor installation: CIT10-15

Panel radiators CIT02

Panel radiator, vertically moulded
Compact installation: CIT02-01
Remote sensor installation: CIT10-05

Panel radiator, flat front
Compact installation: CIT02-02
Remote sensor installation: CIT10-05

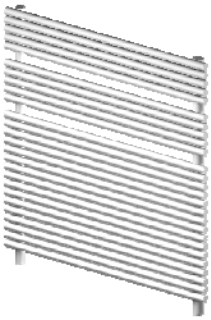
Panel radiator, flat front (loose)
Compact installation: CIT02-03
Remote sensor installation: not possible



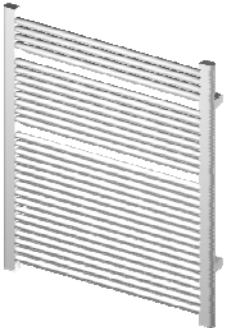
Panel radiator with convection panel at the front
Compact installation: CIT02-04
Remote sensor installation: CIT10-12

Panel radiator as bathroom radiator
Compact installation: CIT02-05
Remote sensor installation: CIT10-10

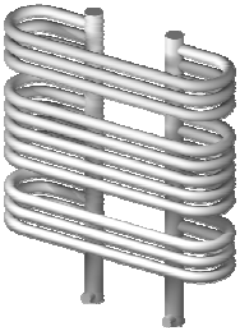
Bathroom radiators CIT03



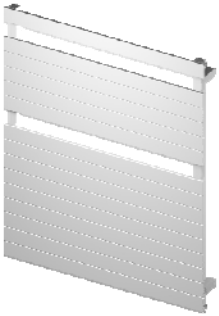
Bathroom radiator, horizontal rib installation
Compact installation: CIT03-01
Remote sensor installation: CIT10-06



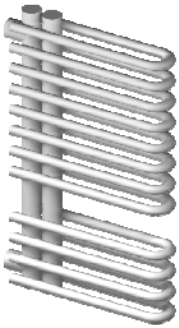
Bathroom radiator, welded installation
Compact installation: CIT03-02
Remote sensor installation: CIT10-06



Bathroom radiator, curved pipes
Compact installation: CIT03-03
Remote sensor installation: CIT10-09



Bathroom radiator, horizontal flat tubes
Compact installation: CIT03-04
Remote sensor installation: CIT10-06

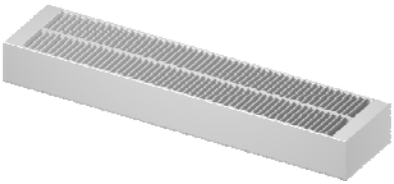


Bathroom radiator
curved pipes, collector on one side
Compact installation: CIT03-05
Remote sensor installation: CIT10-08

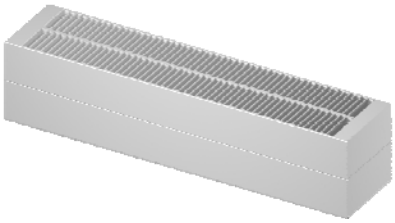
Aluminium radiator CIT04

Aluminium ribbed radiator
Compact installation: CIT04-01
Remote sensor installation: CIT10-11

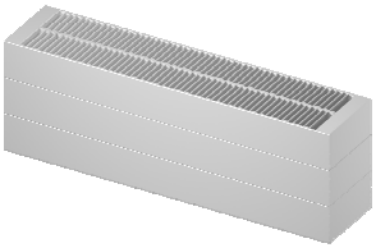
Heating walls CIT05



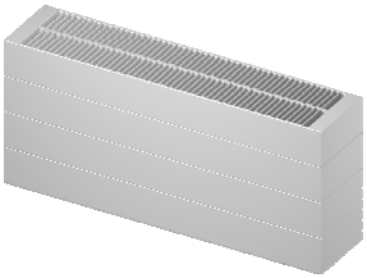
70 mm profiles, horizontal flow
Compact installation: CIT05-01
Remote sensor installation: CIT10-12



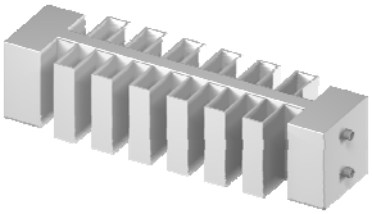
70 mm profiles, cross flow
Compact installation: CIT05-01
Remote sensor installation: CIT10-12



70 mm profiles, cross flow
Compact installation: CIT05-01
Remote sensor installation: CIT10-12



70 mm profiles, cross flow
Compact installation: CIT05-01
Remote sensor installation: CIT10-12



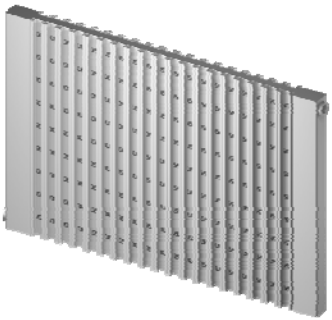
Flat tube radiator with front convection panel
Compact installation: CIT05-02
Remote sensor installation: not possible

Heating wall, horizontally moulded
Compact installation: CIT05-03
Remote sensor installation: CIT10-12

Radiators with internal tube registers CIT06

Radiator with internal tube register, flat water channel
Compact installation: CIT06-01
Remote sensor installation: CIT10-13

Radiator with internal tube register, deep water channel
Compact installation: CIT06-02
Remote sensor installation: CIT10-13



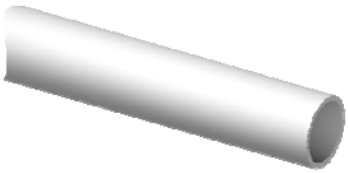
Radiator with internal tube register, horizontal water flow
Compact installation: CIT06-03
Remote sensor installation: CIT10-13

Radiator with internal tube register, Rotherm
Compact installation: CIT06-04
Remote sensor installation: CIT10-13

Special radiators CIT07

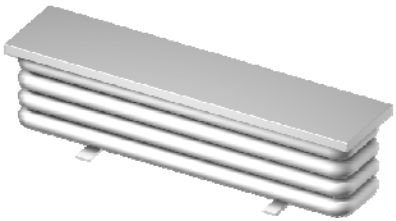
Lamella-type radiator
Compact installation: CIT07-01
Remote sensor installation: CIT10-14

Steel tube welded installation
Compact installation: CIT07-02
Remote sensor installation: CIT10-15



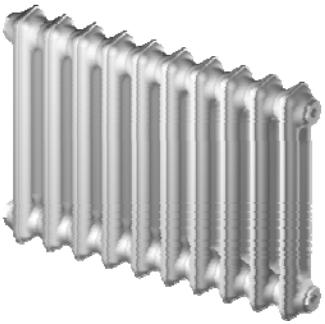
Steel tube welded installation
Compact installation: CIT07-02
Remote sensor installation: CIT10-15

Flat tube radiator
Compact installation: CIT07-03
Remote sensor installation: CIT10-16



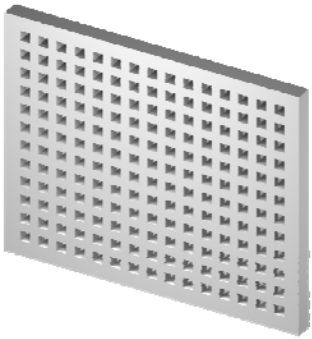
Window ledge radiator
Compact installation: CIT07-04
Remote sensor installation: CIT10-17

Remote sensor installation CIT10



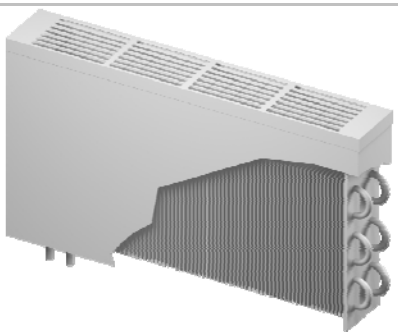
Cast radiators type SR
Remote sensor installation: CIT10-03

Panel radiator
vertical panel containing water
Remote sensor installation: CIT10-05

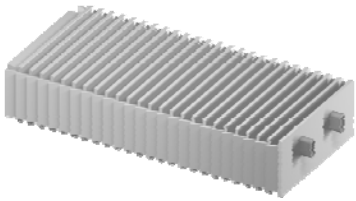


Bathroom radiators
Adhesive installation on return pipe
Remote sensor installation: CIT10-07

Bathroom radiators
Adhesive installation on return pipe
Remote sensor installation: CIT10-07

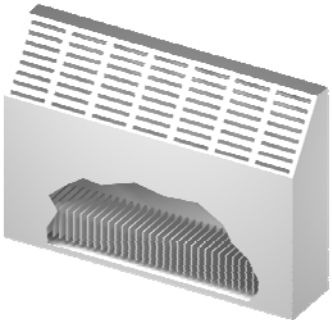


Ribbed convectors
remote sensor installation: CIT10-18

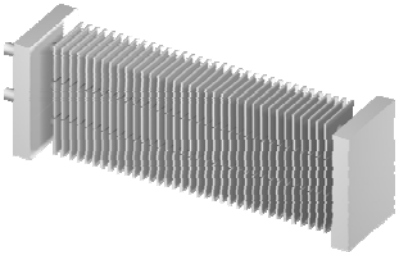


Ribbed convectors
remote sensor installation: CIT10-18

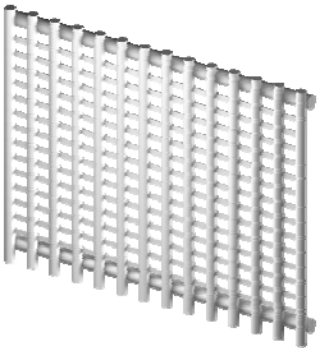
Remote sensor installation CIT10



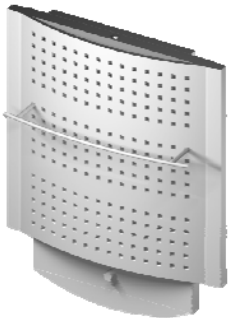
Ribbed convectors
box design
remote sensor installation: CIT10-18



Convectors with reversing chamber
remote sensor installation: CIT10-19



Grid radiator
Remote sensor installation: CIT10-20



Design radiator
(e.g. Kermi)
Remote sensor installation: CIT10-21

Radiator identification

205 System Manual
Chapter D

Measurement procedure and area of application

Chapter D - Measurement procedures and area of application

Issue status: Chapter D - Version 2.00 / 24.05.2012

Application

The electronic heat cost allocators of the 205 family have 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 a radiator is equipped 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 fan, 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 sensor algorithms in the 205 are backwards-compatible with the metering device families HKVE 202x.

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)

Heat cost allocator 205 (on the aluminium profile of the HKVE 202x)

~ Algorithm AL2 parameterised as 2-sensor

~ Algorithm AL2 parameterised as 1-sensor

All device types:

~ Version with/without radio transmitter (AMR)

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

Heat cost allocator 205S

The heat cost allocator **205S** is the standard metering device with which the consumption values are readout manually on site. The device is used in the system module **205 Standard**.

Heat cost allocator 205W

Heat cost allocators **205W** are readout supported by local radio signals. The **205W** is part of the system module **205 walk-by**. The meter-reader does not have to enter the user's flat or office.

Heat cost allocator 205A

Heat cost allocators **205A** are readout supported by radio signals. All the data recorded by the metering devices are transmitted wirelessly to the stationary network nodes. The battery-operated network nodes receive, check and save the data fully automatically. The device is used in the system module **205 AMR**.

Operation with standard scale

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

Standard is
Evaluation level K = 26
(standard for 1-sensor measuring system and for remote sensor metering devices)

Evaluation level K = 60
(standard for 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 recorded, depending on the circumstances.

The same characteristic applies to radiators with extremely high standard capacities which are greater than 10,000 Watt (10 kW) for 1-sensor measuring systems or 8000 Watt (8 kW) for 2-sensor measuring systems.

Two or more metering devices are installed on these radiators. The standard capacity of each radiator is divided by the number of metering devices installed on it.

Display correction with wrong K level and for wrong Ktotal
If the metering device has been operated at the wrong evaluation level K, the value displayed can be counted back to the correct value.

NOTE: The metering device should then be reprogrammed to the correct value.

Equation for calculating the correct display value:

(Display units metering device **x** correct evaluation level K**) ÷** wrong evaluation level

Area of application of an electronic heat cost allocator

The possibility of using the metering device depends on whether the design of the system is 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 for a mean design temperature < 55 °C have to be equipped with heat cost allocators with a 2-sensor measuring system.

Restriction 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.

Factors for the K level

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."

In the case of cased radiators, DIN 4703, part 3, section 7 must be applied for determining capacity (KQ). Please consult manufacturer information in this case.

KC

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

~ Radiator dimensions

~ Any deviations in installation

~ Form and pitch of the profile

~ Number of convection plates

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, KC, (KA, KT)

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, KC, (KA, KT)

Compact and remote sensor metering device

35 °C - 105 °C mean design temperature

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 internally to a special measuring mode.

KC values reference source

The KC values are available in the form of a KC database.

Evaluation 1-sensor measuring system

The overall evaluation factor KOverall must be determined for each radiator according to the following equation:

KQ: Radiator type, design, dimension, standard capacity in kW

KC: Radiator type, type of installation, radiator or wall installation, choice of 1 or 2-sensor measuring system

KT: Room temperature design(*), usually 1

KA: Radiator connection type(*), usually 1

(*) Use factors from the radiator manufacturer's documents if necessary.

The overall evaluation factor KOverall is calculated by multiplying the individual evaluation factors. The evaluation level K must be determined from the programming table with the aid of the KOverall value calculated.

Example:

QNom = 2500 W	KQ = 2.5
Radiator installation	KC = 1.12
Room temperature design	KT = 1.0
Radiator connection type	KA = 1.0

Calculation:

KQ	x	KC	x	KT	x	KA	= KOverall
2.5	x	1,12	x	1,0	x	1,0	= 2,8

Programming table:

According to the programming table, the overall evaluation factor KOverall is within a scatter range of 2.799 - 2.838. This results in an evaluation level (K level) of 72.

This means the metering device must be programmed with evaluation level 72 in 1-sensor measuring operation.

Alternatively:

When a laptop PC or netbook is used, KQ and KC can be entered directly as individual factors in the programming mask of the HMA suite software.

Calculating the consumption units (AL2)

$$\text{Consumption units} = \frac{\text{Display units} \times KQ \times KC}{1{,}00}$$

Programming table complete

The programming table with the KOverall evaluation factors and the respective evaluation level K can be found in chapter F.

Evaluation 2-sensor measuring system

The overall evaluation factor KOverall must be determined for each radiator according to the following equation:

KQ: Radiator type, design, dimension, standard capacity in kW

KC: Radiator type, type of installation, radiator or wall installation, choice of 1 or 2-sensor measuring system

KT: Room temperature design(*), usually 1

KA: Radiator connection type(*), usually 1

(*) Use factors from the radiator manufacturer's documents if necessary.

The overall evaluation factor KOverall is calculated by multiplying the individual evaluation factors. The evaluation level K must be determined from the programming table with the aid of the KOverall value calculated.

Example:

QNom = 1850 W	KQ = 1,85
Radiator installation	KC = 2,8
Room temperature design	KT = 1.0
Radiator connection type	KA = 1.0

Calculation:

KQ	x	KC	x	KT	x	KA	=KOverall
1,85	x	2,8	x	1,0	x	1,0	= 5,18

Programming table:
According to the programming table, the overall evaluation factor KOverall is within a scatter range of 5,148 - 5,186. This results in an evaluation level (K level) of 132.

This means the metering device must be programmed with evaluation level 132 in 2-sensor measuring operation.

Alternatively:
When a laptop PC or netbook is used, KQ and KC can be entered directly as individual factors in the programming mask of the HMA suite software.

Calculating the consumption units (AL2)

$$\text{Consumption units} = \frac{\text{Display units} \times KQ \times KC}{2{,}33}$$

Programming table complete
The programming table with the KOverall evaluation factors and the respective evaluation level K can be found in chapter F.

Measurement procedure sheet radiators - sheet 1

System no.: Flat no.: Floor:

User name: Postcode:

Street/no.: Town:

Remark:

Sheet no.: dated:

Impression of profile with needle gauge

Photo Radiator

Ser. no.							
Room name							
Type of radiator							
Design length in mm							
Design depth in mm							
Design height mm							
Centre-to-centre distance mm							
No. of ribs / no. of tubes							
Pitch / Profile dimension							
Radiator Manufacturer Type							
CIT Type of installation	-	-	-	-	-	-	-
Radiator capacity in watts							
KQ * KA							
KC							
KOverall							
K level							
HCA no.							
HCA type							
Meter status after initial startup							

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.

Measurement procedure sheet radiators - sheet 2

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

No.	Room name	Type of radiator	Design length in mm	Design depth in mm	Design height in mm	Centre-to-centre distance mm	No. of ribs / no. of tubes	Pitch / Profile dimension	Radiator Manufacturer Type	CIT Type of installation	Radiator capacity in watts	KQ * KA	KC	KOverall	K level	HCA no.	HCA type	Meter status after initial start-up
										-								
										-								
										-								
										-								

No.	Remarks about radiators

No.	Remarks about radiator locations/environments

Radiators measured up by: Date:

Evaluation carried out by: Date:

HCA installed by: Date:

205 System Manual
Chapter E

Attachment parts and accessories / installation matrix

Chapter E - Attachment parts and accessories

Issue status: Chapter E - Version 2.00 / 24.05.2012

Installation aids - name / sources

Stud welding machine with gun	Messrs. BTH HEBERLE GmbH D-85221 Dachau www.bth-heberle.de
Stud welding machine with gun	Messrs. Heinz Soyer D-82237 Wörthsee www.soyer.de
"Convector" installation aid	Order no. FKT0017
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 D-82041 Oberhaching www.buerklin.com
Bonding adhesive	Messrs. Bürklin D-82041 Oberhaching www.buerklin.com
Installation template	Order no. BBV4001

Installation matrix

The following pages contain a detailed overview of CIT installation and accessory parts.

Ribbed radiator

Group CIT01 Ribbed radiators		CIT 01-01 HCAI-K001 001	CIT 01-02 HCAI-K001 002	CIT 01-03 HCAI-K001 003
Article description	**Part number**	Ribbed radiator Pitch > 40 mm	Ribbed radiator Pitch =< 40 mm	Cast radiator, slender pitch 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			
Contact screw	FKA0010			
Contact screw long	FKA0011			
Installation plate P2 for flat tube radiator	FKA0007			
Installation plate P2 for front convection plate	FKA0006			
Installation plate P2 standard	FKA0005	1	1	1
Prism wide	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		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			
Countersunk self-tapping screw 2.9 x 13	FNR0009			
Self-locking nut with serrated bearing M3	FNM0005			
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Ribbed radiator

CIT 01-04 HCAI-K001 004	CIT 01-05 HCAI-K001 005	CIT 01-06 HCAI-K001 006	CIT 01-07 HCAI-K001 007	Group CIT01 Ribbed radiators
End faces Cast radiators	Cast ribbed radiator Type KR	Ribbed radiator clearance > 40 mm	Hygiene radiator Welded installation	**Part number**
				FKT0004
				FNM0002
				FNM0003
				FNM0001
				FKM0002
				FKT0015
				FKT0016
				FKT0009
				FKT0018
		1		FKT0019
				FKT0020
				FKA0004
1				BOZ4002
1	1			BOZ4003
				BOZ4004
				FKT0010
				FKA0013
				FKA0012
				FKA0010
				FKA0011
				FKA0007
				FKA0006
1	1	1	1	FKA0005
		1		FKA0001
				FNR0008
				FNR0003
				FNR0004
				FNR0005
		1		FNR0006
			2	FKT0013
				FKT0011
				FKT0012
				FNM0004
				FNR0009
1	1		2	FNM0005
				FNR0007
				FSS0007

Panel radiators

Group CIT02 Panel radiators		CIT 02-01 HCAI-K002 001	CIT 02-02 HCAI-K001 007	CIT 02-03 HCAI-K002 001
Article description	**Part number**	Panel radiators vert. moulding	Panel radiators smooth front	Panel radiators smooth front (loose)
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			
Contact screw	FKA0010			
Contact screw long	FKA0011			
Installation plate P2 for flat tube radiator	FKA0007			
Installation plate P2 for front convection plate	FKA0006			
Installation plate P2 standard	FKA0005	1	1	1
Prism wide	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		2	
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012	2		2
Hexagon nut M4	FNM0004			
Countersunk self-tapping screw 2.9 x 13	FNR0009			
Self-locking nut with serrated bearing M3	FNM0005	2	2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Panel radiators

CIT 02-04 HCAI-K002 004	CIT 02-05 HCAI-K002 001	Group CIT02 Panel radiators
Panel radiators with front con-vection plate	Panel radiator as Bathroom radiator	**Part number**
		FKT0004
		FNM0002
		FNM0003
		FNM0001
		FKM0002
		FKT0015
		FKT0016
		FKT0009
		FKT0018
		FKT0019
		FKT0020
		FKA0004
		BOZ4002
		BOZ4003
		BOZ4004
		FKT0010
		FKA0013
2		FKA0012
2		FKA0010
2		FKA0011
		FKA0007
1		FKA0006
	1	FKA0005
		FKA0001
		FNR0008
		FNR0003
		FNR0004
		FNR0005
		FNR0006
		FKT0013
		FKT0011
	2	FKT0012
		FNM0004
3		FNR0009
	2	FNM0005
		FNR0007
		FSS0007

Bathroom radiator

Group CIT03 Bathroom radiators		CIT 03-01 HCAI-K001 001	CIT 03-02 HCAI-K001 007	CIT 03-03 HCAI-K001 007
Article description	**Part number**	Bathroom radiator Horizontal rib installation	Bathroom radiator Welded installation	Bathroom radiator 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			
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			
Contact screw	FKA0010			
Contact screw long	FKA0011			
Installation plate P2 for flat tube radiator	FKA0007			
Installation plate P2 for front convection plate	FKA0006			
Installation plate P2 standard	FKA0005	1	1	1
Prism wide	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			
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013		2	2
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Countersunk self-tapping screw 2.9 x 13	FNR0009			
Self-locking nut with serrated bearing M3	FNM0005		2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Bathroom / Aluminium radiators

CIT 03-04 HCAI-K001 007	CIT 03-05 HCAI-K003 005		CIT 04-01 HCAI-K004 001	Group CIT03 / Bathroom radiators Group CIT04 / Aluminium radiators
Bathroom radiator horiz. flat tubes	Bathroom radiator curved pipes collector on one side		Aluminium Ribbed radiators	**Part number**
				FKT0004
				FNM0002
				FNM0003
				FNM0001
				FKM0002
				FKT0015
				FKT0016
				FKT0009
	1			FKT0018
				FKT0019
				FKT0020
				FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
				FKT0010
				FKA0013
				FKA0012
				FKA0010
				FKA0011
				FKA0007
				FKA0006
1	1		1	FKA0005
				FKA0001
			2	FNR0008
				FNR0003
				FNR0004
	1			FNR0005
				FNR0006
2				FKT0013
				FKT0011
				FKT0012
				FNM0004
				FNR0009
2				FNM0005
				FNR0007
				FSS0007

Heating walls

Group CIT05 Heating walls		CIT 05-01 HCAI-K001 007	CIT 05-02 HCAI-K001 007	CIT 05-03 HCAI-K001 007
Article description	**Part number**	70 mm mouldings horiz. flow	Flat tube radiator with front con-vection plate	Heating wall horiz. moulded
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			
Contact screw	FKA0010			
Contact screw long	FKA0011			
Installation plate P2 for flat tube radiator	FKA0007			
Installation plate P2 for front convection plate	FKA0006			
Installation plate P2 standard	FKA0005	1	1	1
Prism wide	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	2	2	2
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004			
Countersunk self-tapping screw 2.9 x 13	FNR0009			
Self-locking nut with serrated bearing M3	FNM0005	2	2	2
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Heating walls

CIT 06-01 HCAI-K001 007	CIT 06-02 HCAI-K006 002	CIT 06-03 HCAI-K006 003	CIT 06-04 HCAI-K001 007	Group CIT06 Radiators with internal tubed register
Radiator with internal tube register flat water channel	Radiator with internal tube register Deep water channel	Radiator with internal tube register horiz. water flow	Radiator with internal tube register Rotherm	**Part number**
				FKT0004
				FNM0002
				FNM0003
				FNM0001
				FKM0002
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
				FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
				FKT0010
	1			FKA0013
				FKA0012
				FKA0010
				FKA0011
				FKA0007
				FKA0006
1	1	1	1	FKA0005
				FKA0001
				FNR0008
				FNR0003
				FNR0004
				FNR0005
				FNR0006
2			2	FKT0013
				FKT0011
	2			FKT0012
				FNM0004
				FNR0009
2	2		2	FNM0005
		2		FNR0007
				FSS0007

Special installation

Group CIT07 Special installation		CIT 07-01 HCAI-K007 001	CIT 07-02 HCAI-K001 007	CIT 07-03 HCAI-K007 003
Article description	**Part number**	Lamella-type radiator	Steel pipe Welded installation	Flat tube radiator
Threaded bracket (pipe up to 17 mm)	FKT0004			2
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	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			
Threaded bushing	FKA0012			
Contact screw	FKA0010			
Contact screw long	FKA0011			
Installation plate P2 for flat tube radiator	FKA0007			1
Installation plate P2 for front convection plate	FKA0006			
Installation plate P2 standard	FKA0005	1	1	
Prism wide	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			
Cross-slot screw M4 x 70	FNR0006			
Welded stud M3 x 8	FKT0013		2	
Welded stud M3 x 12	FKT0011			
Welded stud M3 x 15	FKT0012			
Hexagon nut M4	FNM0004	1		
Countersunk self-tapping screw 2.9 x 13	FNR0009			
Self-locking nut with serrated bearing M3	FNM0005		2	4
Screw B 3.9 x 45	FNR0007			
ergo superglue	FSS0007			

Special installation

CIT 07-04 HCAI-K007 004	Group CIT07 Special installation
Window ledge radiator	**Part number**
	FKT0004
	FNM0002
	FNM0003
	FNM0001
	FKM0002
	FKT0015
1	FKT0016
	FKT0009
	FKT0018
	FKT0019
	FKT0020
	FKA0004
	BOZ4002
	BOZ4003
	BOZ4004
	FKT0010
	FKA0013
	FKA0012
	FKA0010
	FKA0011
	FKA0007
	FKA0006
1	FKA0005
	FKA0001
	FNR0008
	FNR0003
	FNR0004
1	FNR0005
	FNR0006
	FKT0013
	FKT0011
	FKT0012
	FNM0004
	FNR0009
	FNM0005
	FNR0007
	FSS0007

Remote sensor installation

Group CIT10 Remote sensors		CIT 10-01 HCAI-K010 001	CIT 10-02 HCAI-K010 002	CIT 10-03 HCAI-K010 003
Article description	**Part number**	Ribbed radiator Pitch > 40 mm	Ribbed radiator Pitch = < 40 mm	Cast radiators 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			
Safety cap for sensor housing	FKK0045			
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 wide	FKA0001		1	
Sensor housing	FKK0029			
Wall bracket P2	FKK0043			
Self-tapping screw B 2.9 x 13	FNR0008			
Screw B 3.9 x 45	FNR0007			
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			
Dowel 6 mm	FNU0001			
Remote sensor 1.5 m	BBV4003			
Remote sensor 2,5 m	BBV4004			
Remote sensor 5,0 m	BBV4005			
ergo superglue	FSS0007			

Remote sensor installation

CIT 10-04 HCAI-K010 004	CIT 10-05 HCAI-K010 005	CIT 10-06 HCAI-K010 005	CIT 10-07 --	Group CIT10 Remote sensors
Cast radiators Type KR	Panel radiators Welded installation	Bathroom radiator supply flow side Welded installation	Bathroom radiator Adhesive installation on return pipe	**Part number**
				FKT0014
				FKT0004
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
				FKA0004
1				BOZ4002
1				BOZ4003
				BOZ4004
				FKT0010
				FKK0045
				FKA0003
				FKA0008
1				FKA0009
				FKA0001
				FKK0029
				FKK0043
				FNR0008
				FNR0007
				FNR0003
				FNR0004
				FNR0005
				FNR0006
	2	2		FKT0013
1				FKT0011
				FKT0012
				FNM0004
1	1	1		FNM0005
				FNU0001
				BBV4003
				BBV4004
				BBV4005
			1	FSS0007

Remote sensor installation

Group CIT10 Remote sensors		CIT 10-08 HCAI-K010 003	CIT 10-09 HCAI-K010 005	CIT 10-10 HCAI-K010 005
Article description	**Part number**	Bathroom radiator collector on one side	Bathroom radiator Curved horizontal pipes Welded installation	Panel radiator used as 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			
Safety cap for sensor housing	FKK0045			
Clamping piece (threaded hoop 17 mm)	FKA0003			
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008			
Installation plate for remote sensor	FKA0009	1		
Prism wide	FKA0001			
Sensor housing	FKK0029			
Wall bracket P2	FKK0043			
Self-tapping screw B 2.9 x 13	FNR0008			
Screw B 3.9 x 45	FNR0007			
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
Dowel 6 mm	FNU0001			
Remote sensor 1.5 m	BBV4003			
Remote sensor 2,5 m	BBV4004			
Remote sensor 5,0 m	BBV4005			
ergo superglue	FSS0007			

Remote sensor installation

CIT 10-11 HCAI-K010 010	CIT 10-12 HCAI-K010 005	CIT 10-13 HCAI-K010 005	CIT 10-14 HCAI-K010 014	Group CIT10 Remote sensors
Aluminium Ribbed radiators	Panel radiators horiz. moulded	Radiator with internal tube register	Lamella-type radiator	**Part number**
				FKT0014
				FKT0004
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
			2	FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
			1	FKT0010
				FKK0045
				FKA0003
				FKA0008
			1	FKA0009
				FKA0001
				FKK0029
				FKK0043
2				FNR0008
				FNR0007
			1	FNR0003
				FNR0004
				FNR0005
				FNR0006
	2	2		FKT0013
			1	FKT0011
				FKT0012
			1	FNM0004
	1	1		FNM0005
				FNU0001
				BBV4003
				BBV4004
				BBV4005
				FSS0007

Remote sensor installation

Group CIT10 Remote sensors		CIT 10-15 HCAI-K010 005	CIT 10-16 HCAI-K010 005	CIT 10-17 HCAI-K010 013
Article description	**Part number**	Steel pipe Welded installation	Flat tube radiator	Window ledge radiators
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			
Safety cap for sensor housing	FKK0045			
Clamping piece (threaded hoop 17 mm)	FKA0003			
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008			
Installation plate for remote sensor	FKA0009			1
Prism wide	FKA0001			
Sensor housing	FKK0029			
Wall bracket P2	FKK0043			
Self-tapping screw B 2.9 x 13	FNR0008			
Screw B 3.9 x 45	FNR0007			
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	
Dowel 6 mm	FNU0001			
Remote sensor 1.5 m	BBV4003			
Remote sensor 2,5 m	BBV4004			
Remote sensor 5,0 m	BBV4005			
ergo superglue	FSS0007			

Remote sensor installation

CIT 10-18 HCAI-K010 012	CIT 10-19 HCAI-K010 005	CIT 10-20 HCAI-K010 005	CIT 10-21 HCAI-K010 005	Group CIT10 Remote sensors
Ribbed convectors	Convectors with reversing chambers Welded installation	Grid radiator	Design radiator (e.g. Kermi stainless steel)	**Part number**
				FKT0014
1				FKT0004
				FKT0015
				FKT0016
				FKT0009
				FKT0018
				FKT0019
				FKT0020
				FKA0004
				BOZ4002
				BOZ4003
				BOZ4004
				FKT0010
				FKK0045
1				FKA0003
				FKA0008
				FKA0009
				FKA0001
				FKK0029
				FKK0043
				FNR0008
				FNR0007
				FNR0003
				FNR0004
				FNR0005
				FNR0006
	2	2	2	FKT0013
				FKT0011
				FKT0012
				FNM0004
3	1	1	1	FNM0005
				FNU0001
				BBV4003
				BBV4004
				BBV4005
				FSS0007

Wall bracket sets

Group CIT10 Wall bracket sets		All CIT 10 HCAI-K010 0P2
Article description	**Part number**	Wall bracket Installation set
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	
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	
Safety cap for sensor housing	FKK0045	
Clamping piece (threaded hoop 17 mm)	FKA0003	
Clamping piece (threaded hoop 18 to 30 mm)	FKA0008	
Installation plate for remote sensor	FKA0009	
Prism wide	FKA0001	
Sensor housing	FKK0029	
Wall bracket P2	FKK0043	1
Self-tapping screw B 2.9 x 13	FNR0008	
Screw B 3.9 x 45	FNR0007	2
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	
Hexagon nut M4	FNM0004	
Self-locking nut with serrated bearing M3	FNM0005	
Dowel 6 mm	FNU0001	2
Remote sensor 1.5 m	BBV4003	
Remote sensor 2,5 m	BBV4004	
Remote sensor 5,0 m	BBV4005	
ergo superglue	FSS0007	

Remote sensor sets

All CIT 10 HCAI-K010 0S1	All CIT 10 HCAI-K010 0S2	All CIT 10 HCAI-K010 0S5	Group CIT10 Remote sensor sets
Remote sensor 1.5 m	Remote sensor 2,5 m	Remote sensor 5,0 m	**Part number**
			FKT0014
			FKT0004
			FKT0015
			FKT0016
			FKT0009
			FKT0018
			FKT0019
			FKT0020
			FKA0004
			BOZ4002
			BOZ4003
			BOZ4004
			FKT0010
1	1	1	FKK0045
			FKA0003
			FKA0008
			FKA0009
			FKA0001
			FKK0029
			FKK0043
			FNR0008
			FNR0007
			FNR0003
			FNR0004
			FNR0005
			FNR0006
			FKT0013
			FKT0011
			FKT0012
			FNM0004
			FNM0005
			FNU0001
1			BBV4003
	1		BBV4004
		1	BBV4005
			FSS0007

Attachment parts and accessories / installation matrix

205 System Manual
Chapter F

Programming

Chapter F - Programming

Issue status: Chapter F - Version 2.00 / 24.05.2012

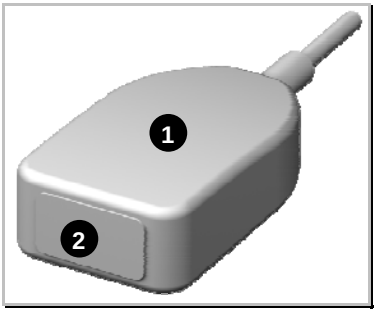
Programming

Programming adapter

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

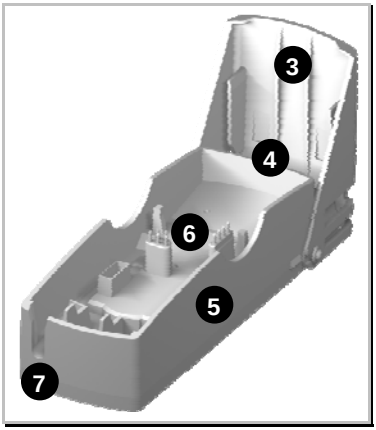
There is a movable protective cover on the head which can be hinged down to protect the contact pins during transport. When opened, the protective cover is used as a bracket base for the IrDA programming and readout head.

IrDA programming and readout head

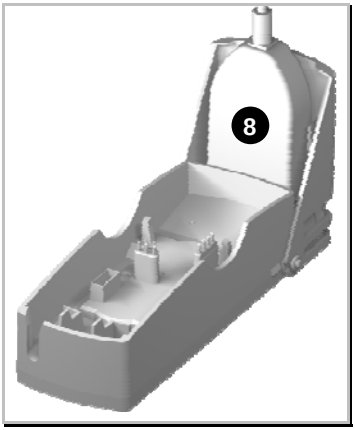


IrDA programming and readout head

Programming adapter and IrDA programming and readout head



Programming adapter

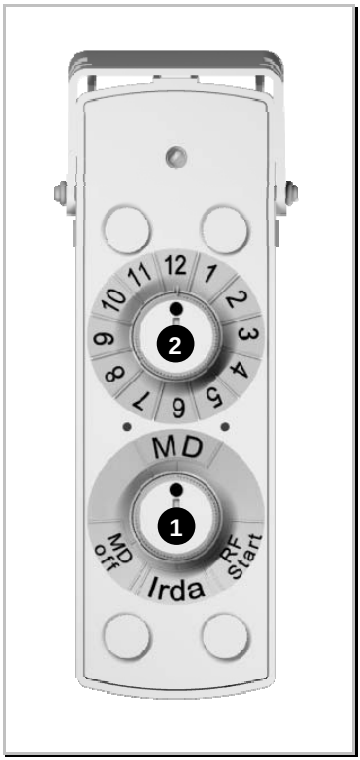


IrDA programming and readout head

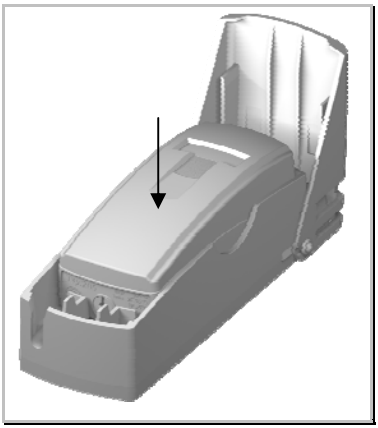
Functional elements

1 IrDA programming and readout head
2 Communication window
3 Protective cover
4 Adapter fitting
5 Meter 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 meter must be inserted flush at the top.

The meter 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 meter must be removed from the programming adapter for at least 1 second between successive function selection. The meter must not have any contact with 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.

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. 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. 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!

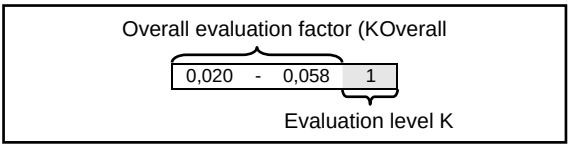
2. Rotary button for due date months

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

Note: Check programming in the display afterwards!

Programming table – evaluation levels 1 to 999

Evaluation levels for 1 and 2-sensor measuring system from 1 to 255



KOverall from 0.020 to 7.065 - evaluation levels 1 to 255

0.020	-	0.058	1	1.782	-	1.820	46	3.543	-	3.581	91	5.304	-	5.343	136
0.059	-	0.097	2	1.821	-	1.859	47	3.582	-	3.620	92	5.344	-	5.382	137
0.098	-	0.137	3	1.860	-	1.898	48	3.621	-	3.659	93	5.383	-	5.421	138
0.138	-	0.176	4	1.899	-	1.937	49	3.660	-	3.699	94	5.422	-	5.460	139
0.177	-	0.215	5	1.938	-	1.976	50	3.700	-	3.738	95	5.461	-	5.499	140
0.216	-	0.254	6	1.977	-	2.015	51	3.739	-	3.777	96	5.500	-	5.538	141
0.255	-	0.293	7	2.016	-	2.055	52	3.778	-	3.816	97	5.539	-	5.577	142
0.294	-	0.332	8	2.056	-	2.094	53	3.817	-	3.855	98	5.578	-	5.617	143
0.333	-	0.371	9	2.095	-	2.133	54	3.856	-	3.894	99	5.618	-	5.656	144
0.372	-	0.411	10	2.134	-	2.172	55	3.895	-	3.933	100	5.657	-	5.695	145
0.412	-	0.450	11	2.173	-	2.211	56	3.934	-	3.973	101	5.696	-	5.734	146
0.451	-	0.489	12	2.212	-	2.250	57	3.974	-	4.012	102	5.735	-	5.773	147
0.490	-	0.528	13	2.251	-	2.289	58	4.013	-	4.051	103	5.774	-	5.812	148
0.529	-	0.567	14	2.290	-	2.329	59	4.052	-	4.090	104	5.813	-	5.851	149
0.568	-	0.606	15	2.330	-	2.368	60	4.091	-	4.129	105	5.852	-	5.891	150
0.607	-	0.645	16	2.369	-	2.407	61	4.130	-	4.168	106	5.892	-	5.930	151
0.646	-	0.685	17	2.408	-	2.446	62	4.169	-	4.207	107	5.931	-	5.969	152
0.686	-	0.724	18	2.447	-	2.485	63	4.208	-	4.247	108	5.970	-	6.008	153
0.725	-	0.763	19	2.486	-	2.524	64	4.248	-	4.286	109	6.009	-	6.047	154
0.764	-	0.802	20	2.525	-	2.563	65	4.287	-	4.325	110	6.048	-	6.086	155
0.803	-	0.841	21	2.564	-	2.603	66	4.326	-	4.364	111	6.087	-	6.125	156
0.842	-	0.880	22	2.604	-	2.642	67	4.365	-	4.403	112	6.126	-	6.165	157
0.881	-	0.919	23	2.643	-	2.681	68	4.404	-	4.442	113	6.166	-	6.204	158
0.920	-	0.959	24	2.682	-	2.720	69	4.443	-	4.481	114	6.205	-	6.243	159
0.960	-	0.998	25	2.721	-	2.759	70	4.482	-	4.521	115	6.244	-	6.282	160
0.999	-	1.037	26	2.760	-	2.798	71	4.522	-	4.560	116	6.283	-	6.321	161
1.038	-	1.076	27	2.799	-	2.837	72	4.561	-	4.599	117	6.322	-	6.360	162
1.077	-	1.115	28	2.838	-	2.877	73	4.600	-	4.638	118	6.361	-	6.399	163
1.116	-	1.154	29	2.878	-	2.916	74	4.639	-	4.677	119	6.400	-	6.439	164
1.155	-	1.193	30	2.917	-	2.955	75	4.678	-	4.716	120	6.440	-	6.478	165
1.194	-	1.233	31	2.956	-	2.994	76	4.717	-	4.755	121	6.479	-	6.517	166
1.234	-	1.272	32	2.995	-	3.033	77	4.756	-	4.795	122	6.518	-	6.556	167
1.273	-	1.311	33	3.034	-	3.072	78	4.796	-	4.834	123	6.557	-	6.595	168
1.312	-	1.350	34	3.073	-	3.111	79	4.835	-	4.873	124	6.596	-	6.634	169
1.351	-	1.389	35	3.112	-	3.151	80	4.874	-	4.912	125	6.635	-	6.673	170
1.390	-	1.428	36	3.152	-	3.190	81	4.913	-	4.951	126	6.674	-	6.713	171
1.429	-	1.467	37	3.191	-	3.229	82	4.952	-	4.990	127	6.714	-	6.752	172
1.468	-	1.507	38	3.230	-	3.268	83	4.991	-	5.029	128	6.753	-	6.791	173
1.508	-	1.546	39	3.269	-	3.307	84	5.030	-	5.069	129	6.792	-	6.830	174
1.547	-	1.585	40	3.308	-	3.346	85	5.070	-	5.108	130	6.831	-	6.869	175
1.586	-	1.624	41	3.347	-	3.385	86	5.109	-	5.147	131	6.870	-	6.908	176
1.625	-	1.663	42	3.386	-	3.425	87	5.148	-	5.186	132	6.909	-	6.947	177
1.664	-	1.702	43	3.426	-	3.464	88	5.187	-	5.225	133	6.948	-	6.987	178
1.703	-	1.741	44	3.465	-	3.503	89	5.226	-	5.264	134	6.988	-	7.026	179
1.742	-	1.781	45	3.504	-	3.542	90	5.265	-	5.303	135	7.027	-	7.065	180

KOverall from 7.066 to 10.001 - evaluation levels 181 to 255

7.066	7.104	181	
7.105	7.143	182	
7.144	7.182	183	
7.183	7.221	184	
7.222	7.261	185	
7.262	7.300	186	
7.301	7.339	187	
7.340	7.378	188	
7.379	7.417	189	
7.418	7.456	190	
7.457	7.495	191	
7.496	7.535	192	
7.536	7.574	193	
7.575	7.613	194	
7.614	7.652	195	
7.653	7.691	196	
7.692	7.730	197	
7.731	7.769	198	
7.770	7.809	199	
7.810	7.848	200	
7.849	7.887	201	
7.888	7.926	202	
7.927	7.965	203	
7.966	8.004	204	
8.005	8.043	205	
8.044	8.083	206	
8.084	8.122	207	
8.123	8.161	208	
8.162	8.200	209	
8.201	8.239	210	
8.240	8.278	211	
8.279	8.318	212	
8.319	8.357	213	
8.358	8.396	214	
8.397	8.435	215	
8.436	8.474	216	
8.475	8.513	217	
8.514	8.552	218	
8.553	8.592	219	
8.593	8.631	220	
8.632	8.670	221	
8.671	8.709	222	
8.710	8.748	223	
8.749	8.787	224	
8.788	8.826	225	
8.827	8.866	226	
8.867	8.905	227	
8.906	8.944	228	
8.945	8.983	229	
8.984	9.022	230	
9.023	9.061	231	
9.062	9.100	232	
9.101	9.140	233	
9.141	9.179	234	
9.180	9.218	235	
9.219	9.257	236	
9.258	9.296	237	
9.297	9.335	238	
9.336	9.374	239	
9.375	9.414	240	
9.415	9.453	241	
9.454	9.492	242	
9.493	9.531	243	
9.532	9.570	244	
9.571	9.609	245	
9.610	9.648	246	
9.649	9.688	247	
9.689	9.727	248	
9.728	9.766	249	
9.767	9.805	250	
9.806	9.844	251	
9.845	9.883	252	
9.884	9.922	253	
9.923	9.962	254	
9.963	10.001	255	

x.xxx - x.xxx	Overall evaluation factor (KOverall)

xxx	Evaluation level K

KOverall from 10.002 to 17.829 - evaluation levels 256 to 455

10.002 - 10.040	256	11.959 - 11.997	306
10.041 - 10.079	257	11.998 - 12.036	307
10.080 - 10.118	258	12.037 - 12.075	308
10.119 - 10.157	259	12.076 - 12.114	309
10.158 - 10.196	260	12.115 - 12.154	310
10.197 - 10.236	261	12.155 - 12.193	311
10.237 - 10.275	262	12.194 - 12.232	312
10.276 - 10.314	263	12.233 - 12.271	313
10.315 - 10.353	264	12.272 - 12.310	314
10.354 - 10.392	265	12.311 - 12.349	315
10.393 - 10.431	266	12.350 - 12.388	316
10.432 - 10.470	267	12.389 - 12.428	317
10.471 - 10.510	268	12.429 - 12.467	318
10.511 - 10.549	269	12.468 - 12.506	319
10.550 - 10.588	270	12.507 - 12.545	320
10.589 - 10.627	271	12.546 - 12.584	321
10.628 - 10.666	272	12.585 - 12.623	322
10.667 - 10.705	273	12.624 - 12.662	323
10.706 - 10.744	274	12.663 - 12.702	324
10.745 - 10.784	275	12.703 - 12.741	325
10.785 - 10.823	276	12.742 - 12.780	326
10.824 - 10.862	277	12.781 - 12.819	327
10.863 - 10.901	278	12.820 - 12.858	328
10.902 - 10.940	279	12.859 - 12.897	329
10.941 - 10.979	280	12.898 - 12.936	330
10.980 - 11.018	281	12.937 - 12.976	331
11.019 - 11.058	282	12.977 - 13.015	332
11.059 - 11.097	283	13.016 - 13.054	333
11.098 - 11.136	284	13.055 - 13.093	334
11.137 - 11.175	285	13.094 - 13.132	335
11.176 - 11.214	286	13.133 - 13.171	336
11.215 - 11.253	287	13.172 - 13.210	337
11.254 - 11.292	288	13.211 - 13.250	338
11.293 - 11.332	289	13.251 - 13.289	339
11.333 - 11.371	290	13.290 - 13.328	340
11.372 - 11.410	291	13.329 - 13.367	341
11.411 - 11.449	292	13.368 - 13.406	342
11.450 - 11.488	293	13.407 - 13.445	343
11.489 - 11.527	294	13.446 - 13.484	344
11.528 - 11.566	295	13.485 - 13.524	345
11.567 - 11.606	296	13.525 - 13.563	346
11.607 - 11.645	297	13.564 - 13.602	347
11.646 - 11.684	298	13.603 - 13.641	348
11.685 - 11.723	299	13.642 - 13.680	349
11.724 - 11.762	300	13.681 - 13.719	350
11.763 - 11.801	301	13.720 - 13.758	351
11.802 - 11.840	302	13.759 - 13.798	352
11.841 - 11.880	303	13.799 - 13.837	353
11.881 - 11.919	304	13.838 - 13.876	354
11.920 - 11.958	305	13.877 - 13.915	355

13.916 - 13.954	356	15.873 - 15.911	406
13.955 - 13.993	357	15.912 - 15.950	407
13.994 - 14.032	358	15.951 - 15.990	408
14.033 - 14.072	359	15.991 - 16.029	409
14.073 - 14.111	360	16.030 - 16.068	410
14.112 - 14.150	361	16.069 - 16.107	411
14.151 - 14.189	362	16.108 - 16.146	412
14.190 - 14.228	363	16.147 - 16.185	413
14.229 - 14.267	364	16.186 - 16.224	414
14.268 - 14.306	365	16.225 - 16.264	415
14.307 - 14.346	366	16.265 - 16.303	416
14.347 - 14.385	367	16.304 - 16.342	417
14.386 - 14.424	368	16.343 - 16.381	418
14.425 - 14.463	369	16.382 - 16.420	419
14.464 - 14.502	370	16.421 - 16.459	420
14.503 - 14.541	371	16.460 - 16.499	421
14.542 - 14.580	372	16.500 - 16.538	422
14.581 - 14.620	373	16.539 - 16.577	423
14.621 - 14.659	374	16.578 - 16.616	424
14.660 - 14.698	375	16.617 - 16.655	425
14.699 - 14.737	376	16.656 - 16.694	426
14.738 - 14.776	377	16.695 - 16.733	427
14.777 - 14.815	378	16.734 - 16.773	428
14.816 - 14.854	379	16.774 - 16.812	429
14.855 - 14.894	380	16.813 - 16.851	430
14.895 - 14.933	381	16.852 - 16.890	431
14.934 - 14.972	382	16.891 - 16.929	432
14.973 - 15.011	383	16.930 - 16.968	433
15.012 - 15.050	384	16.969 - 17.007	434
15.051 - 15.089	385	17.008 - 17.047	435
15.090 - 15.128	386	17.048 - 17.086	436
15.129 - 15.168	387	17.087 - 17.125	437
15.169 - 15.207	388	17.126 - 17.164	438
15.208 - 15.246	389	17.165 - 17.203	439
15.247 - 15.285	390	17.204 - 17.242	440
15.286 - 15.324	391	17.243 - 17.281	441
15.325 - 15.363	392	17.282 - 17.321	442
15.364 - 15.402	393	17.322 - 17.360	443
15.403 - 15.442	394	17.361 - 17.399	444
15.443 - 15.481	395	17.400 - 17.438	445
15.482 - 15.520	396	17.439 - 17.477	446
15.521 - 15.559	397	17.478 - 17.516	447
15.560 - 15.598	398	17.517 - 17.555	448
15.599 - 15.637	399	17.556 - 17.595	449
15.638 - 15.676	400	17.596 - 17.634	450
15.677 - 15.716	401	17.635 - 17.673	451
15.717 - 15.755	402	17.674 - 17.712	452
15.756 - 15.794	403	17.713 - 17.751	453
15.795 - 15.833	404	17.752 - 17.790	454
15.834 - 15.872	405	17.791 - 17.829	455

x.xxx - x.xxx	Overall evaluation factor (KOverall)

xxx	Evaluation level K

KOverall from 17.830 to 25.658 - evaluation levels 456 - 655

17.830 - 17.869	456	19.788 - 19.826	506
17.870 - 17.908	457	19.827 - 19.865	507
17.909 - 17.947	458	19.866 - 19.904	508
17.948 - 17.986	459	19.905 - 19.943	509
17.987 - 18.025	460	19.944 - 19.982	510
18.026 - 18.064	461	19.983 - 20.021	511
18.065 - 18.103	462	20.022 - 20.061	512
18.104 - 18.143	463	20.062 - 20.100	513
18.144 - 18.182	464	20.101 - 20.139	514
18.183 - 18.221	465	20.140 - 20.178	515
18.222 - 18.260	466	20.179 - 20.217	516
18.261 - 18.299	467	20.218 - 20.256	517
18.300 - 18.338	468	20.257 - 20.295	518
18.339 - 18.377	469	20.296 - 20.335	519
18.378 - 18.417	470	20.336 - 20.374	520
18.418 - 18.456	471	20.375 - 20.413	521
18.457 - 18.495	472	20.414 - 20.452	522
18.496 - 18.534	473	20.453 - 20.491	523
18.535 - 18.573	474	20.492 - 20.530	524
18.574 - 18.612	475	20.531 - 20.569	525
18.613 - 18.651	476	20.570 - 20.609	526
18.652 - 18.691	477	20.610 - 20.648	527
18.692 - 18.730	478	20.649 - 20.687	528
18.731 - 18.769	479	20.688 - 20.726	529
18.770 - 18.808	480	20.727 - 20.765	530
18.809 - 18.847	481	20.766 - 20.804	531
18.848 - 18.886	482	20.805 - 20.843	532
18.887 - 18.925	483	20.844 - 20.883	533
18.926 - 18.965	484	20.884 - 20.922	534
18.966 - 19.004	485	20.923 - 20.961	535
19.005 - 19.043	486	20.962 - 21.000	536
19.044 - 19.082	487	21.001 - 21.039	537
19.083 - 19.121	488	21.040 - 21.078	538
19.122 - 19.160	489	21.079 - 21.117	539
19.161 - 19.199	490	21.118 - 21.157	540
19.200 - 19.239	491	21.158 - 21.196	541
19.240 - 19.278	492	21.197 - 21.235	542
19.279 - 19.317	493	21.236 - 21.274	543
19.318 - 19.356	494	21.275 - 21.313	544
19.357 - 19.395	495	21.314 - 21.352	545
19.396 - 19.434	496	21.353 - 21.391	546
19.435 - 19.473	497	21.392 - 21.431	547
19.474 - 19.513	498	21.432 - 21.470	548
19.514 - 19.552	499	21.471 - 21.509	549
19.553 - 19.591	500	21.510 - 21.548	550
19.592 - 19.630	501	21.549 - 21.587	551
19.631 - 19.669	502	21.588 - 21.626	552
19.670 - 19.708	503	21.627 - 21.665	553
19.709 - 19.747	504	21.666 - 21.705	554
19.748 - 19.787	505	21.706 - 21.744	555

21.745 - 21.783	556	23.702 - 23.740	606
21.784 - 21.822	557	23.741 - 23.779	607
21.823 - 21.861	558	23.780 - 23.818	608
21.862 - 21.900	559	23.819 - 23.857	609
21.901 - 21.939	560	23.858 - 23.897	610
21.940 - 21.979	561	23.898 - 23.936	611
21.980 - 22.018	562	23.937 - 23.975	612
22.019 - 22.057	563	23.976 - 24.014	613
22.058 - 22.096	564	24.015 - 24.053	614
22.097 - 22.135	565	24.054 - 24.092	615
22.136 - 22.174	566	24.093 - 24.131	616
22.175 - 22.213	567	24.132 - 24.171	617
22.214 - 22.253	568	24.172 - 24.210	618
22.254 - 22.292	569	24.211 - 24.249	619
22.293 - 22.331	570	24.250 - 24.288	620
22.332 - 22.370	571	24.289 - 24.327	621
22.371 - 22.409	572	24.328 - 24.366	622
22.410 - 22.448	573	24.367 - 24.405	623
22.449 - 22.487	574	24.406 - 24.445	624
22.488 - 22.527	575	24.446 - 24.484	625
22.528 - 22.566	576	24.485 - 24.523	626
22.567 - 22.605	577	24.524 - 24.562	627
22.606 - 22.644	578	24.563 - 24.601	628
22.645 - 22.683	579	24.602 - 24.640	629
22.684 - 22.722	580	24.641 - 24.680	630
22.723 - 22.761	581	24.681 - 24.719	631
22.762 - 22.801	582	24.720 - 24.758	632
22.802 - 22.840	583	24.759 - 24.797	633
22.841 - 22.879	584	24.798 - 24.836	634
22.880 - 22.918	585	24.837 - 24.875	635
22.919 - 22.957	586	24.876 - 24.914	636
22.958 - 22.996	587	24.915 - 24.954	637
22.997 - 23.035	588	24.955 - 24.993	638
23.036 - 23.075	589	24.994 - 25.032	639
23.076 - 23.114	590	25.033 - 25.071	640
23.115 - 23.153	591	25.072 - 25.110	641
23.154 - 23.192	592	25.111 - 25.149	642
23.193 - 23.231	593	25.150 - 25.188	643
23.232 - 23.270	594	25.189 - 25.228	644
23.271 - 23.309	595	25.229 - 25.267	645
23.310 - 23.349	596	25.268 - 25.306	646
23.350 - 23.388	597	25.307 - 25.345	647
23.389 - 23.427	598	25.346 - 25.384	648
23.428 - 23.466	599	25.385 - 25.423	649
23.467 - 23.505	600	25.424 - 25.462	650
23.506 - 23.544	601	25.463 - 25.502	651
23.545 - 23.583	602	25.503 - 25.541	652
23.584 - 23.623	603	25.542 - 25.580	653
23.624 - 23.662	604	25.581 - 25.619	654
23.663 - 23.701	605	25.620 - 25.658	655

x.xxx - x.xxx	Overall evaluation factor (KOverall)

xxx	Evaluation level K

KOverall from 25.659 to 33.487 - evaluation levels 656 to 855

25.659	-	25.697	656	27.616	-	27.654	706	29.573	-	29.612	756	31.531	-	31.569	806
25.698	-	25.736	657	27.655	-	27.694	707	29.613	-	29.651	757	31.570	-	31.608	807
25.737	-	25.776	658	27.695	-	27.733	708	29.652	-	29.690	758	31.609	-	31.647	808
25.777	-	25.815	659	27.734	-	27.772	709	29.691	-	29.729	759	31.648	-	31.686	809
25.816	-	25.854	660	27.773	-	27.811	710	29.730	-	29.768	760	31.687	-	31.725	810
25.855	-	25.893	661	27.812	-	27.850	711	29.769	-	29.807	761	31.726	-	31.764	811
25.894	-	25.932	662	27.851	-	27.889	712	29.808	-	29.846	762	31.765	-	31.804	812
25.933	-	25.971	663	27.890	-	27.928	713	29.847	-	29.886	763	31.805	-	31.843	813
25.972	-	26.010	664	27.929	-	27.968	714	29.887	-	29.925	764	31.844	-	31.882	814
26.011	-	26.050	665	27.969	-	28.007	715	29.926	-	29.964	765	31.883	-	31.921	815
26.051	-	26.089	666	28.008	-	28.046	716	29.965	-	30.003	766	31.922	-	31.960	816
26.090	-	26.128	667	28.047	-	28.085	717	30.004	-	30.042	767	31.961	-	31.999	817
26.129	-	26.167	668	28.086	-	28.124	718	30.043	-	30.081	768	32.000	-	32.038	818
26.168	-	26.206	669	28.125	-	28.163	719	30.082	-	30.120	769	32.039	-	32.078	819
26.207	-	26.245	670	28.164	-	28.202	720	30.121	-	30.160	770	32.079	-	32.117	820
26.246	-	26.284	671	28.203	-	28.242	721	30.161	-	30.199	771	32.118	-	32.156	821
26.285	-	26.324	672	28.243	-	28.281	722	30.200	-	30.238	772	32.157	-	32.195	822
26.325	-	26.363	673	28.282	-	28.320	723	30.239	-	30.277	773	32.196	-	32.234	823
26.364	-	26.402	674	28.321	-	28.359	724	30.278	-	30.316	774	32.235	-	32.273	824
26.403	-	26.441	675	28.360	-	28.398	725	30.317	-	30.355	775	32.274	-	32.312	825
26.442	-	26.480	676	28.399	-	28.437	726	30.356	-	30.394	776	32.313	-	32.352	826
26.481	-	26.519	677	28.438	-	28.476	727	30.395	-	30.434	777	32.353	-	32.391	827
26.520	-	26.558	678	28.477	-	28.516	728	30.435	-	30.473	778	32.392	-	32.430	828
26.559	-	26.598	679	28.517	-	28.555	729	30.474	-	30.512	779	32.431	-	32.469	829
26.599	-	26.637	680	28.556	-	28.594	730	30.513	-	30.551	780	32.470	-	32.508	830
26.638	-	26.676	681	28.595	-	28.633	731	30.552	-	30.590	781	32.509	-	32.547	831
26.677	-	26.715	682	28.634	-	28.672	732	30.591	-	30.629	782	32.548	-	32.586	832
26.716	-	26.754	683	28.673	-	28.711	733	30.630	-	30.668	783	32.587	-	32.626	833
26.755	-	26.793	684	28.712	-	28.750	734	30.669	-	30.708	784	32.627	-	32.665	834
26.794	-	26.832	685	28.751	-	28.790	735	30.709	-	30.747	785	32.666	-	32.704	835
26.833	-	26.872	686	28.791	-	28.829	736	30.748	-	30.786	786	32.705	-	32.743	836
26.873	-	26.911	687	28.830	-	28.868	737	30.787	-	30.825	787	32.744	-	32.782	837
26.912	-	26.950	688	28.869	-	28.907	738	30.826	-	30.864	788	32.783	-	32.821	838
26.951	-	26.989	689	28.908	-	28.946	739	30.865	-	30.903	789	32.822	-	32.861	839
26.990	-	27.028	690	28.947	-	28.985	740	30.904	-	30.942	790	32.862	-	32.900	840
27.029	-	27.067	691	28.986	-	29.024	741	30.943	-	30.982	791	32.901	-	32.939	841
27.068	-	27.106	692	29.025	-	29.064	742	30.983	-	31.021	792	32.940	-	32.978	842
27.107	-	27.146	693	29.065	-	29.103	743	31.022	-	31.060	793	32.979	-	33.017	843
27.147	-	27.185	694	29.104	-	29.142	744	31.061	-	31.099	794	33.018	-	33.056	844
27.186	-	27.224	695	29.143	-	29.181	745	31.100	-	31.138	795	33.057	-	33.095	845
27.225	-	27.263	696	29.182	-	29.220	746	31.139	-	31.177	796	33.096	-	33.135	846
27.264	-	27.302	697	29.221	-	29.259	747	31.178	-	31.216	797	33.136	-	33.174	847
27.303	-	27.341	698	29.260	-	29.298	748	31.217	-	31.256	798	33.175	-	33.213	848
27.342	-	27.380	699	29.299	-	29.338	749	31.257	-	31.295	799	33.214	-	33.252	849
27.381	-	27.420	700	29.339	-	29.377	750	31.296	-	31.334	800	33.253	-	33.291	850
27.421	-	27.459	701	29.378	-	29.416	751	31.335	-	31.373	801	33.292	-	33.330	851
27.460	-	27.498	702	29.417	-	29.455	752	31.374	-	31.412	802	33.331	-	33.369	852
27.499	-	27.537	703	29.456	-	29.494	753	31.413	-	31.451	803	33.370	-	33.409	853
27.538	-	27.576	704	29.495	-	29.533	754	31.452	-	31.490	804	33.410	-	33.448	854
27.577	-	27.615	705	29.534	-	29.572	755	31.491	-	31.530	805	33.449	-	33.487	855

x.xxx - x.xxx	Overall evaluation factor (KOverall)

xxx	Evaluation level K

KOverall from 33.488 to 39.123 - evaluation levels 856 to 999

33.488 - 33.526	856	34.897 - 34.935	892
33.527 - 33.565	857	34.936 - 34.974	893
33.566 - 33.604	858	34.975 - 35.013	894
33.605 - 33.643	859	35.014 - 35.053	895
33.644 - 33.683	860	35.054 - 35.092	896
33.684 - 33.722	861	35.093 - 35.131	897
33.723 - 33.761	862	35.132 - 35.170	898
33.762 - 33.800	863	35.171 - 35.209	899
33.801 - 33.839	864	35.210 - 35.248	900
33.840 - 33.878	865	35.249 - 35.287	901
33.879 - 33.917	866	35.288 - 35.327	902
33.918 - 33.957	867	35.328 - 35.366	903
33.958 - 33.996	868	35.367 - 35.405	904
33.997 - 34.035	869	35.406 - 35.444	905
34.036 - 34.074	870	35.445 - 35.483	906
34.075 - 34.113	871	35.484 - 35.522	907
34.114 - 34.152	872	35.523 - 35.561	908
34.153 - 34.191	873	35.562 - 35.601	909
34.192 - 34.231	874	35.602 - 35.640	910
34.232 - 34.270	875	35.641 - 35.679	911
34.271 - 34.309	876	35.680 - 35.718	912
34.310 - 34.348	877	35.719 - 35.757	913
34.349 - 34.387	878	35.758 - 35.796	914
34.388 - 34.426	879	35.797 - 35.835	915
34.427 - 34.465	880	35.836 - 35.875	916
34.466 - 34.505	881	35.876 - 35.914	917
34.506 - 34.544	882	35.915 - 35.953	918
34.545 - 34.583	883	35.954 - 35.992	919
34.584 - 34.622	884	35.993 - 36.031	920
34.623 - 34.661	885	36.032 - 36.070	921
34.662 - 34.700	886	36.071 - 36.109	922
34.701 - 34.739	887	36.110 - 36.149	923
34.740 - 34.779	888	36.150 - 36.188	924
34.780 - 34.818	889	36.189 - 36.227	925
34.819 - 34.857	890	36.228 - 36.266	926
34.858 - 34.896	891	36.267 - 36.305	927

36.306 - 36.344	928	37.715 - 37.753	964
36.345 - 36.383	929	37.754 - 37.793	965
36.384 - 36.423	930	37.794 - 37.832	966
36.424 - 36.462	931	37.833 - 37.871	967
36.463 - 36.501	932	37.872 - 37.910	968
36.502 - 36.540	933	37.911 - 37.949	969
36.541 - 36.579	934	37.950 - 37.988	970
36.580 - 36.618	935	37.989 - 38.027	971
36.619 - 36.657	936	38.028 - 38.067	972
36.658 - 36.697	937	38.068 - 38.106	973
36.698 - 36.736	938	38.107 - 38.145	974
36.737 - 36.775	939	38.146 - 38.184	975
36.776 - 36.814	940	38.185 - 38.223	976
36.815 - 36.853	941	38.224 - 38.262	977
36.854 - 36.892	942	38.263 - 38.301	978
36.893 - 36.931	943	38.302 - 38.341	979
36.932 - 36.971	944	38.342 - 38.380	980
36.972 - 37.010	945	38.381 - 38.419	981
37.011 - 37.049	946	38.420 - 38.458	982
37.050 - 37.088	947	38.459 - 38.497	983
37.089 - 37.127	948	38.498 - 38.536	984
37.128 - 37.166	949	38.537 - 38.575	985
37.167 - 37.205	950	38.576 - 38.615	986
37.206 - 37.245	951	38.616 - 38.654	987
37.246 - 37.284	952	38.655 - 38.693	988
37.285 - 37.323	953	38.694 - 38.732	989
37.324 - 37.362	954	38.733 - 38.771	990
37.363 - 37.401	955	38.772 - 38.810	991
37.402 - 37.440	956	38.811 - 38.849	992
37.441 - 37.479	957	38.850 - 38.889	993
37.480 - 37.519	958	38.890 - 38.928	994
37.520 - 37.558	959	38.929 - 38.967	995
37.559 - 37.597	960	38.968 - 39.006	996
37.598 - 37.636	961	39.007 - 39.045	997
37.637 - 37.675	962	39.046 - 39.084	998
37.676 - 37.714	963	39.085 - 39.123	999

x.xxx - x.xxx	Overall evaluation factor (KOverall)

xxx	Evaluation level K

205 System Manual
Chapter G

Device description

Chapter G - Device description

Issue status: Chapter G - Version 2.00 / 24.05.2012

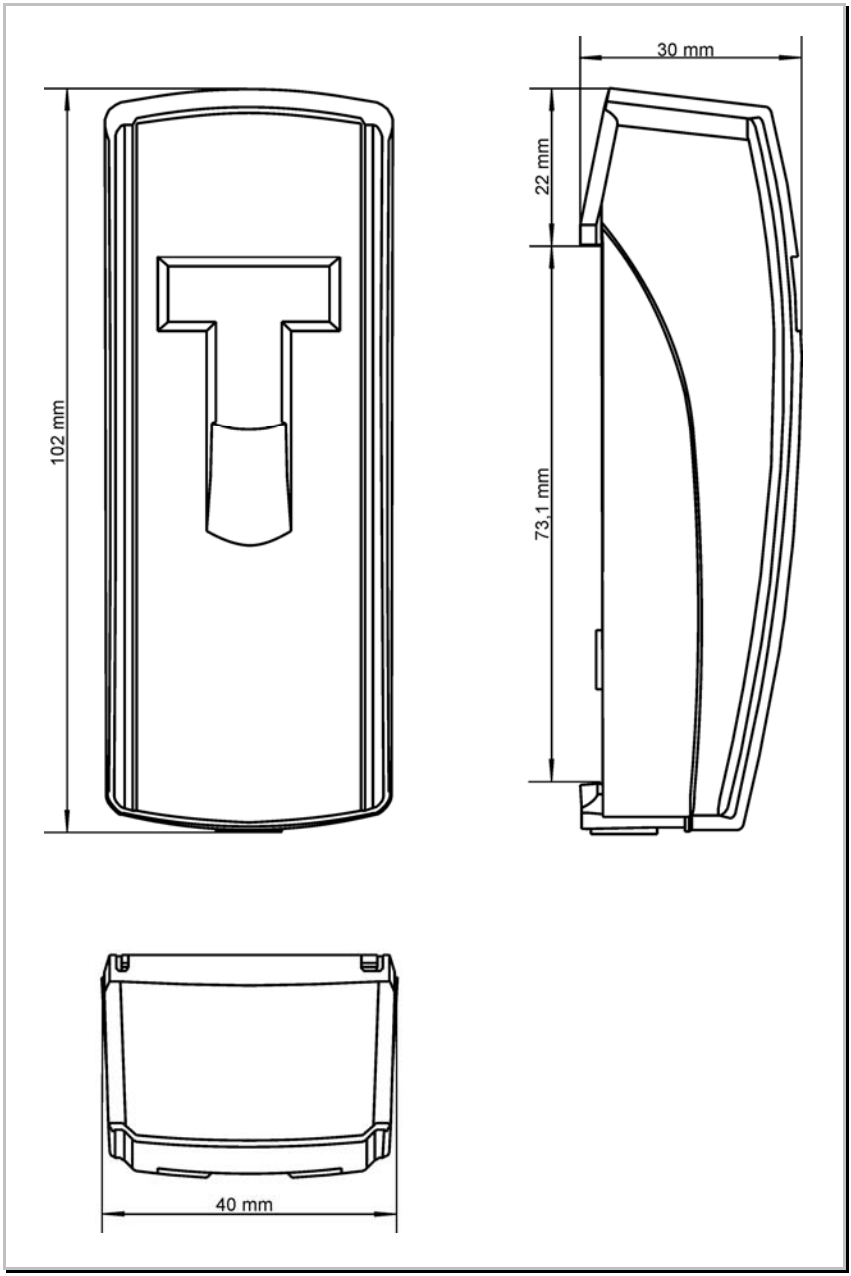
Electronic heat cost allocator

The metering devices of the 205 family are replacing the heat cost allocators HKVE 202x.

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

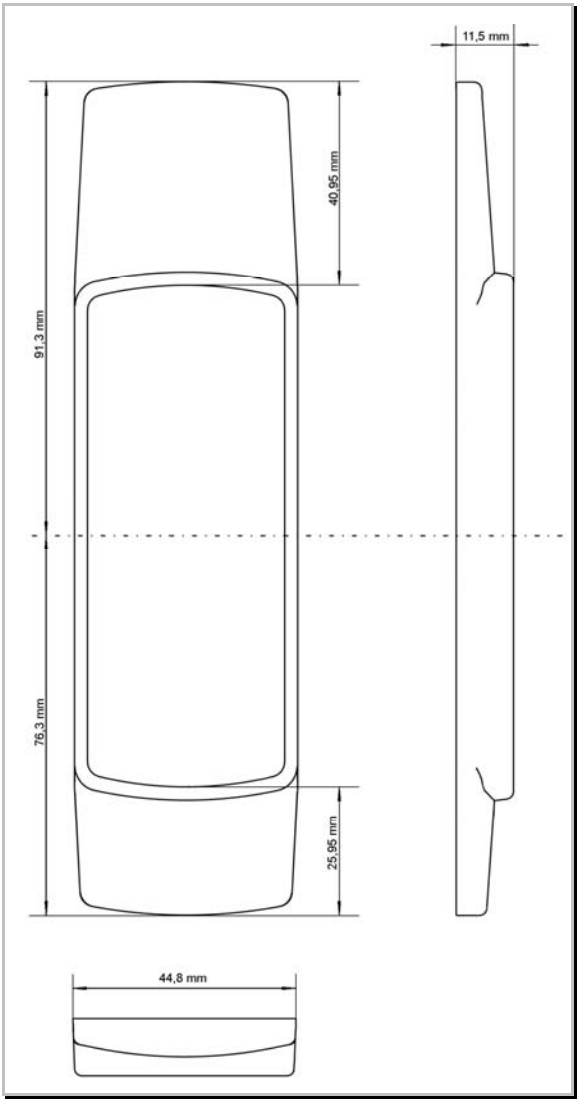
- ~ Different measuring and evaluation algorithms: AL2 (202x-compatible)
- ~ Housing with pre-mounted seal from the factory (own colour)
- ~ Optional remote sensor (can be retrofitted)
- ~ Automatic detection of "remote sensor operation"
- ~ Device optionally with radio support as AMR or walk-by version
- ~ Device optionally with IrDA close-range interface)
- ~ Standard version with manipulation detection (e.g. unauthorised opening of device)
- ~ Metering devices can be used within the system modules **205 Standard**, **205 walk-by** and **205 AMR**
- ~ 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

Measuring system	as 1-sensor measuring system: with dynamic heating operating detection as 2-sensor measuring system: 1 sensor each for radiator and room air temperature
Device type	For new installation and conversion, standard replacement, repair and extension installation
Power supply	3V - lithium battery
Service life	typ. 10 years
Display	Liquid crystal display (LCD)
Scope of display	5 digits (00000 ... 99999)
Evaluation P2:	K level, 1-sensor measuring system 255 levels 2-sensor measuring system 999 levels
Radiator power range	21 Watt ... 9.999 Watt ...
Sensor temperature range	0 °C ... 105 °C
tm-max	105 °C (compact device), 105 °C (remote sensor device)
tm-min(*)	35 °C (2-sensor system), 55 °C (1-sensor system)
	(*) mean design temperature
Temperature sensor	NTC, prematurely aged
Device versions	Compact device Remote sensor device (compact device with inserted remote sensor)
Remote sensor cable lengths	1.5 m, 2.5 m and 5.0 m
Installation material	New installation and conversion: 205 with new installation material Standard replacement: 205 with installation material following the HKVE 202x families Repair and extension installation: Information / specifications from the documents valid at the time of installation (see "old" manual)

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

The metering device housing and installation plate P2 are used on the standard meter.

Front view

Front view

Standard installation plate

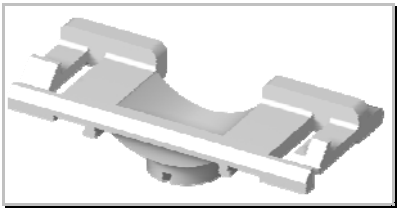
Rear view

Rear view with installation plate

Device views

Seals

The meters are delivered with a seal in place.



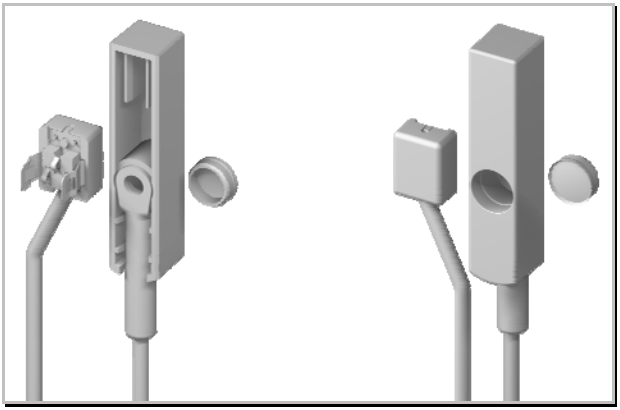
Lead seal

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 meter. This procedure cannot be reversed.

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



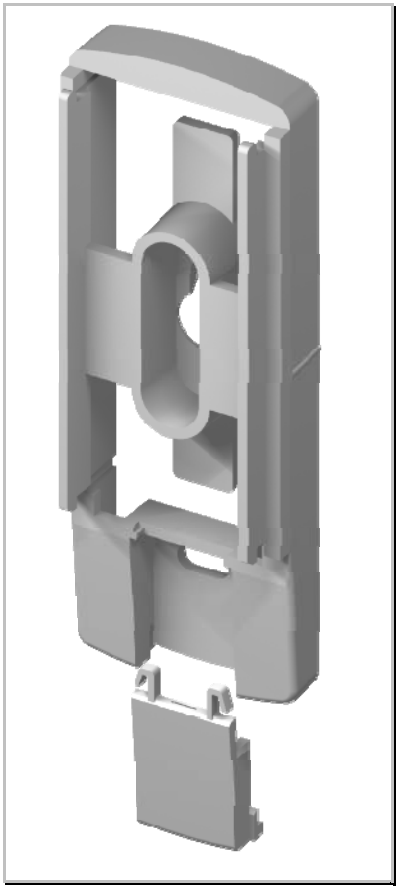
Remote sensor rear and front view

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.



Wall bracket

Device views

Cover plate

You can fit a cover plate to the metering unit 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 sensor algorithms in the 205 are backwards-compatible with the metering device families HKVE 202x.

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)

Heat cost allocator 205 (on the aluminium profile of the HKVE 202x)

~ Algorithm AL2 parameterised as 2-sensor

~ Algorithm AL2 parameterised as 1-sensor

All device types:

~ Version with/without radio transmitter (AMR)

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

Heat cost allocator 205S

The heat cost allocator **205S** is the standard metering device with which the consumption values are readout manually on site. The device is used in the system module **205 Standard**.

Heat cost allocator 205W

Heat cost allocators **205W** are readout supported by local radio signals. The **205W** is part of the system module **205 walk-by**. The meter-reader does not have to enter the user's flat or office.

Heat cost allocator 205A

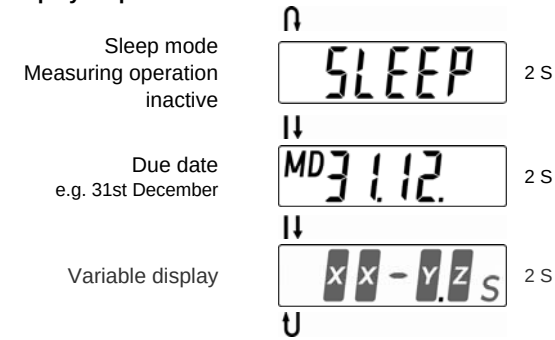
Heat cost allocators **205A** are readout supported by radio signals. All the data recorded by the metering devices are transmitted wirelessly to the stationary network nodes. The battery-operated network nodes receive, check and save the data fully automatically. The device is used in the system module **205 AMR**.

Display loops

Sleep mode display

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

Display loops



XX variable on the display:

"**FA**" Code for the AMR radio system
" **A**" Code for an active AMR radio system
" **Fb**" Code for the walk-by radio system
" **b**" Code for an active walk-by radio system
" **AL**" Algorithm, no radio system available

Y variable on the display:

"**2**" Code for the 20x algorithm

Z variable on the display:

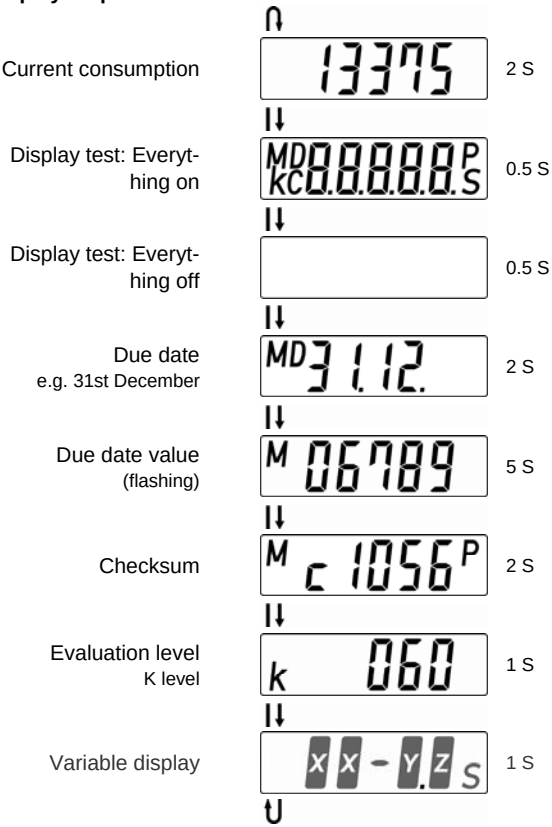
"**1**" Code for 1-sensor measuring system
"**2**" Code for 2-sensor measuring system
"***S***" Sensor

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



XX variable on the display:
"**FA**" Code for the AMR radio system
" **Fb**" Code for the walk-by radio system
" **AL**" Algorithm, no radio system available

Y variable on the display:
"**2**" Code for the 20x algorithm

Z variable on the display:
"**1**" Code for 1-sensor measuring system
"**2**" Code for 2-sensor measuring system
"***S***" Sensor

Special displays

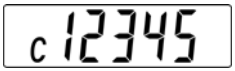
Depending on the type of operation, different special displays are shown, which map certain device statuses.

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

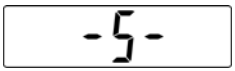


discreet

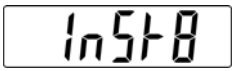
Manipulation or housing opening (0.5 second)

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.

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



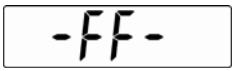
Date interface (10 seconds)
This display signalises an active close-range interface.



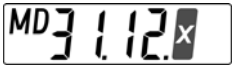
Radio system activated (AMR / walk-by) (30 seconds)
The transmission of installation telegrams is indicated in this display.

Display sequence: INST8, INST7, ... INST1

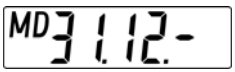
Start-up (3 seconds)
This display appears following clipping to the installation plate. Then the display changes to the normal mode display loop.



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 match, but the next due date is on another date because a new due date has been programmed.

Error messages on display

The meter 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

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.

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 been changed (special point: 28.02 is also valid in leap years).

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.

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).

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 location (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).

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 a visual 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 heat cost allocator 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.

Tips

Switching the radio transmitter off on 205W devices

If you want to stop "wakened" walk-by devices from transmitting signals (e.g. when they are in the warehouse), you can achieve this by means of this simple trick:

If the heat cost allocator is set to annual readout, all you need to do is deactivate the due date (e.g. using the "MD off" function on the programming adapter). The devices then no longer transmit any signals.

Reason:

The radio signal remains inactive since the triggering event "Due date reached" does not occur.

Please do not forget to reset the due date to the required value when installing the device.

This method does not work with walk-by devices with monthly radio transmission, of course, because in this case the event triggering the radio signal is not the due date being reached but rather the end of the month. The situation is the same with AMR devices. The radio transmitter cannot be deactivated this way in this case either.

Test readout after re-installation

Do you want to install an already "wakened" walk-by device again and check the radio signal readout? Then proceed as follows:

Before installation, reset the devices with the aid of HMA suite and the "Configure default parameters" function. After installation, the heat cost allocators will transmit the data telegrams for two days again.

PLEASE NOTE:

This function deletes all the consumption values in the device.

Deleting messages and faults with programming adapter

If necessary, you can reset a device fault (Err x) or an activated housing opening (C open) without using HMA suite.

The messages listed are always reset when the due date is programmed.

If the due date is not to be changed, you simply have to reprogram the due date already set in the device. The meter statuses already in the device are retained.

PLEASE NOTE:
In the case of permanent faults the fault message reappears after about 20 minutes. For this reason, only use this function when you are sure that the fault (e.g. temperature too low "Err 2") has been eliminated.

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.

205 System Manual
Chapter H

Installation positions

Chapter H - Installation positions

Issue status: Chapter H - Version 2.00 / 24.05.2012

Reference and installation positions

General features

- ~ The reference point calculated 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 need the following information.

~ Radiator design height

~ Radiator design length

~ Calculation factor installation height (usually 75% of the radiator design height)

~ Calculation factor horizontal installation position (usually 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%

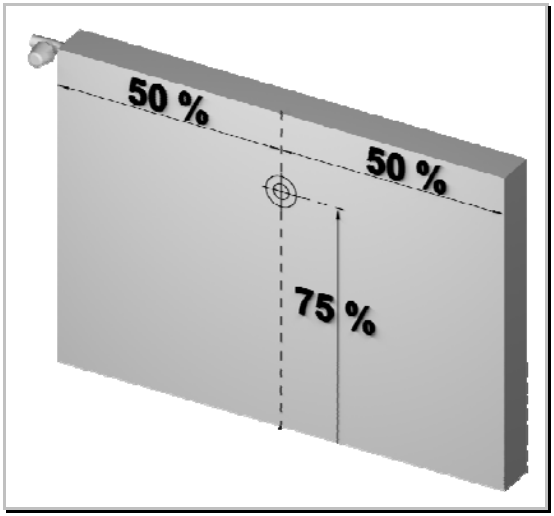
Calculation

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

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

Result

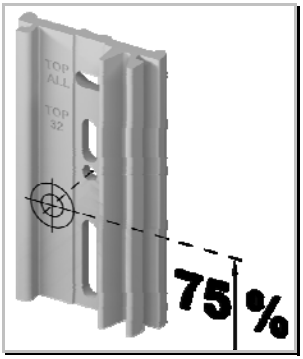
The metering device is attached at a height of 750 mm and in the centre of the radiator at 700 mm. The thus calculated reference point must be brought into line with the reference points of the installation plates or the remote sensor.



Calculation factors 75% design height and 50% design length

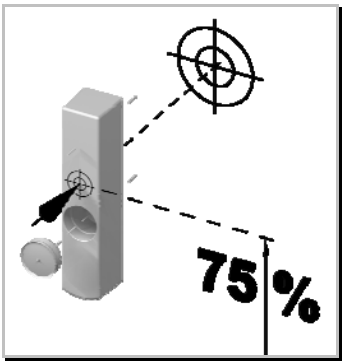
Standard installation

Reference points installation plate

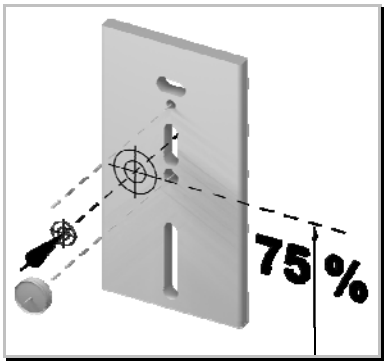


Reference point installation plate

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 hole 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 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 kit according to CIT installation for attachment to the radiator

Standard installation

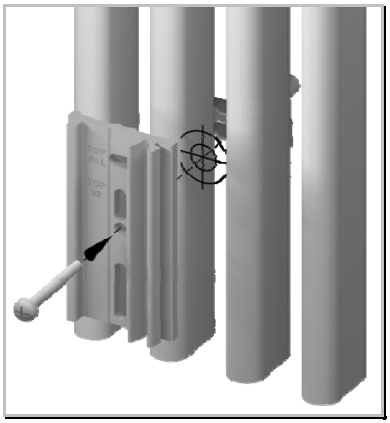
Even and odd number of ribs

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.

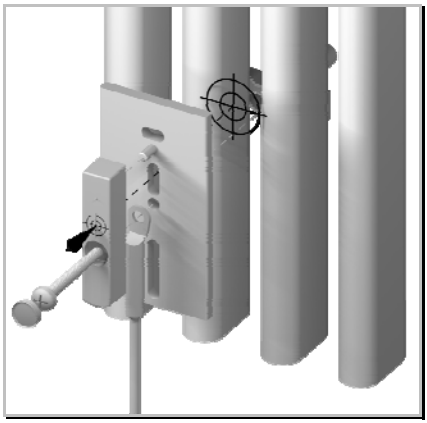
If the installation prescribes attachment to a radiator rib, you must choose the next available radiator rib **towards the supply flow** for installation in this case.

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



Standard installation plate on the ribbed radiator



Remote sensor installation plate on the ribbed radiator

Standard installation

Correcting the standard installation position

You may have to slightly adapt the calculated installation position to the radiator design for the 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 205 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 register

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 a 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.

Preparing welding positions

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.

Standard installation

Welded 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

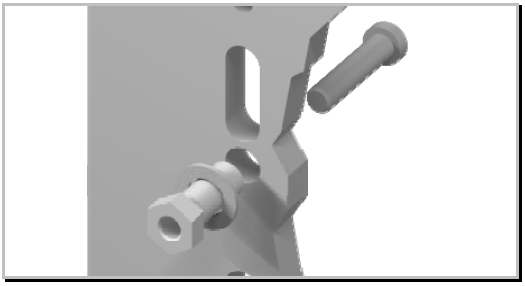
Welding position installation plate

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 FF installation plate

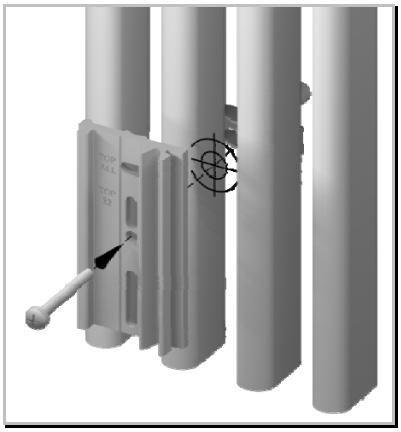
Reference points standard installation

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

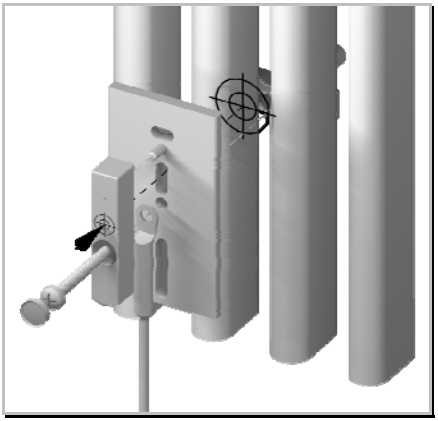
Reference points standard installation

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

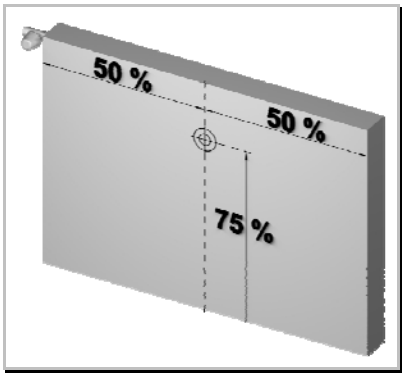
Type of attachment:	Rib attachment matched to the radiator
Rib attachment:	Bolt fitting
Reference point:	**Centre between stud anti-twist protection and stud opening**
Bolt length:	30 mm, 40 mm, 50 mm and 70 mm

Special designs - determining positions

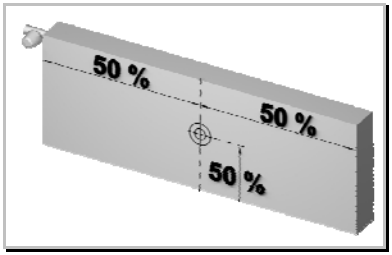
Design lengths up to 3000 mm: 1 metering device in the centre of the radiator design length

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

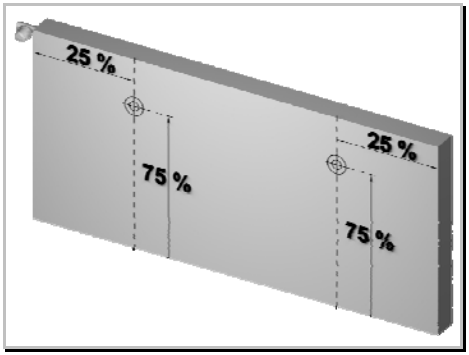


Determining the position for design height smaller than

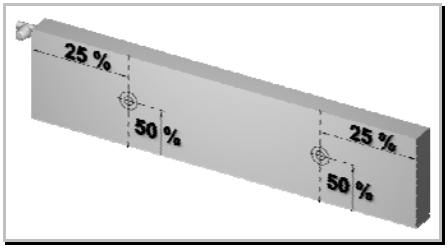
Design lengths over 3000 mm: 2 metering devices each 25% away from the edge

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

Place of installation

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.

Visual 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.

Wall position 1-sensor measuring system

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.

Wall position 2-sensor measuring system

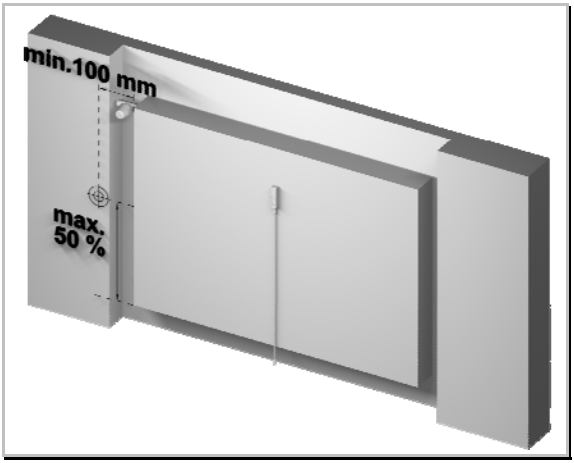
In the case of remote sensor installation with 2-sensor metering devices, the position of the metering device on the wall **must be located according to the rules in this book**.

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.

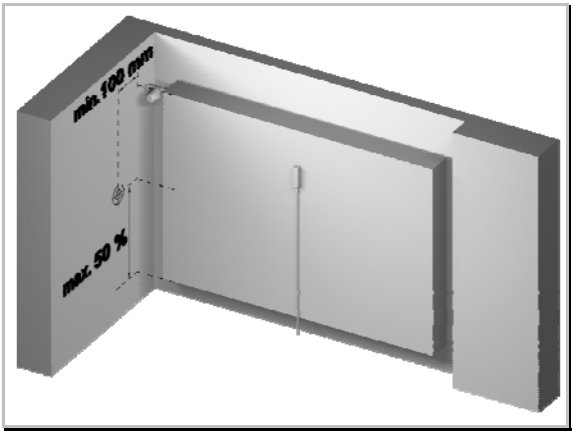
To guarantee standard measurement, **the metering device must** be mounted in a specific position next to the radiator. The metering device must not be exposed to the radiator's heat flow.

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

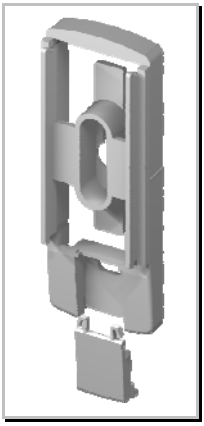
The metering device must be attached to the wall next to the radiator at a distance of at least **100 mm** to the radiator at **max. 50% of the radiator design height**.

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 where 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 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 kit according to CIT installation for attachment to the radiator

Remote sensor installation kits

	1.5 m remote sensor:	**HCAI-K010 0S1 (for all CIT10)**
1	Remote sensor with 1.5 m cable	BBV4003
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045
	2,5 m remote sensor:	**HCAI-K010 0S2 (for all CIT10)**
1	Remote sensor with 2,5 m cable	BBV4004
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045
	5.0 m remote sensor:	**HCAI-K010 0S5 (for all CIT10)**
1	Remote sensor with 5.0 m cable	BBV4005
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045

Wall bracket 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.

	P2 wall bracket installation kit, complete:	**HCAI-K010 0P2 (for all CIT10)**
1	Wall bracket P2	FKK0043
2	Dowel 6 mm	FNU0001
2	Screw B 3.9 x 45	FNR0007

Installing wall bracket with remote sensor metering device

Special points related to the installation position on the radiator and on the wall.

Install the remote sensor on the radiator.
Please note the specifications in the CIT installation instructions. Route the remote sensor cable to the installation location for the wall bracket.

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.

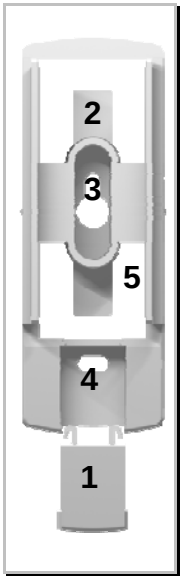
To guarantee standard measurement, **the metering device must** be mounted in a specific position next to the radiator. The metering device must not be exposed to the radiator's heat flow.

Attaching the wall bracket

- ~ Remote the protective cap/covering from the wall bracket. (1)
- ~ Determine the installation position for the wall bracket.
- ~ Drill the holes and insert the dowels. (Gap between bore holes 50 mm)
- ~ Screw the upper screw into the dowel in the wall at least so far that the wall bracket can be pushed in place with the upper screw attachment (3).
- ~ Route the connector from the remote sensor from behind through the lower cable duct (5) of the wall bracket.
- ~ Insert the connector from the remote sensor into the metering device until you clearly hear it "click" into place (see next page).
- ~ Clip the metering device onto the wall bracket.
- ~ Position the wall bracket at the installation spot.
- ~ Wind the remaining cable length around the cable spike. (2)
- ~ Fit the wall bracket with the metering device onto the upper screw.
- ~ Screw the wall bracket tight through the lower screw attachment (4).
- ~ Insert the protective cap/covering under the metering device into the wall bracket to complete installation.

Installing wall bracket with remote sensor metering device

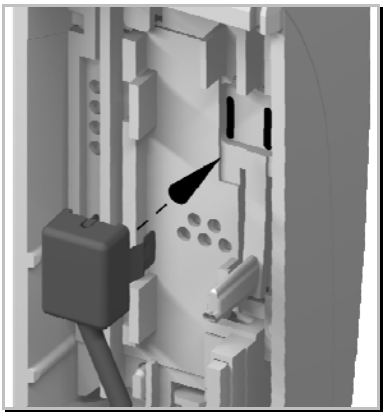
Front view wall brackets



Front view wall bracket P2

1. Protective cap/covering
2. Cable spike
3. Upper screw attachment
4. Lower screw attachment
5. Lower cable duct

Connect remote sensor and metering device



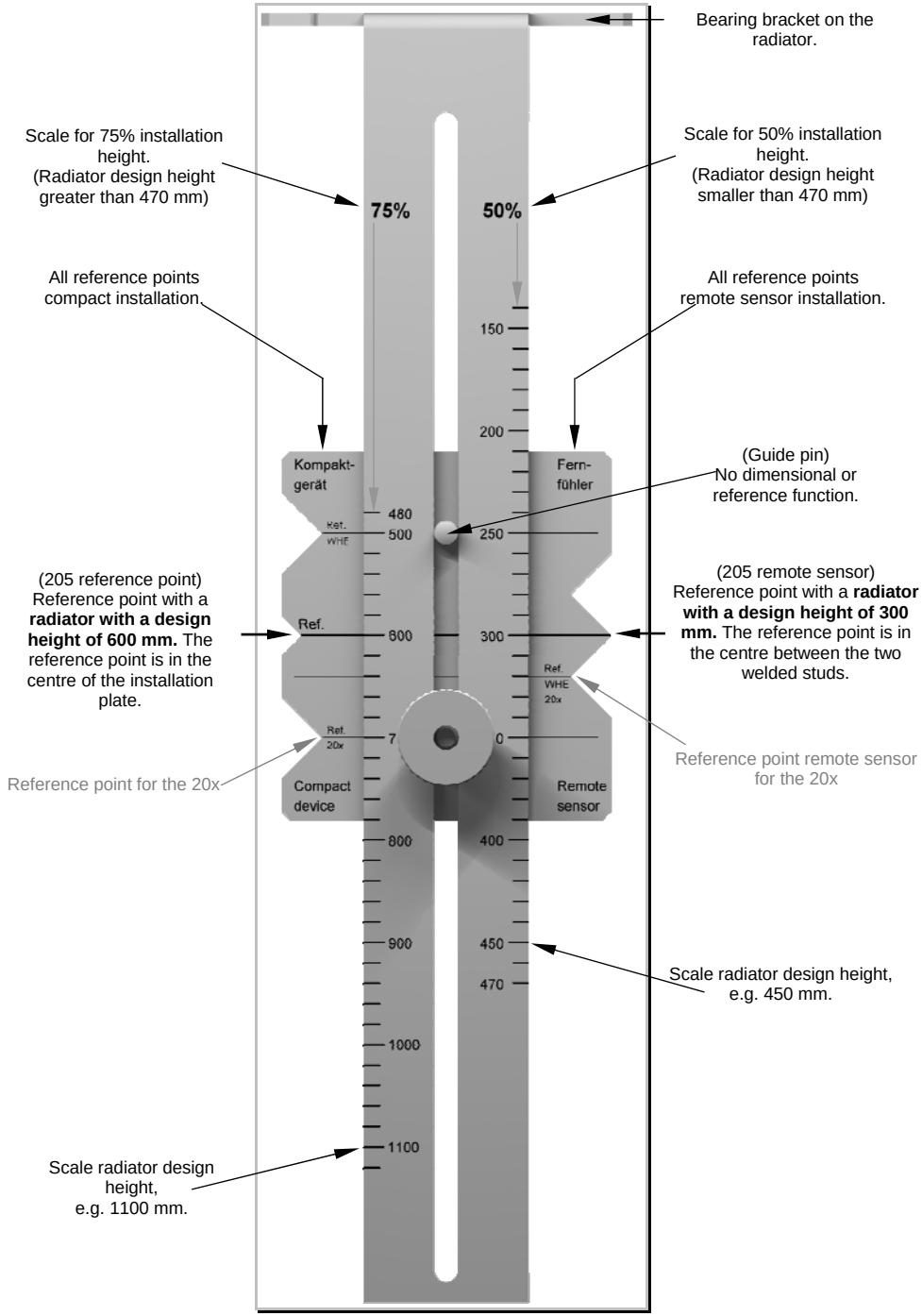
Insert remote sensor

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.

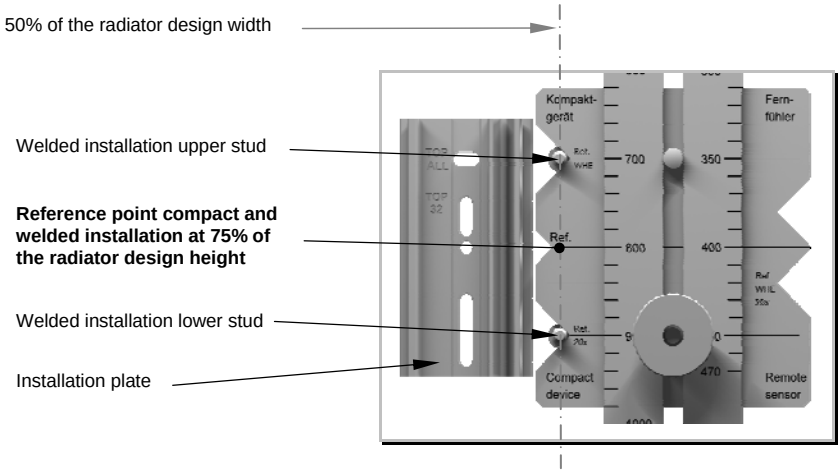
Mounting gauge



Mounting gauge

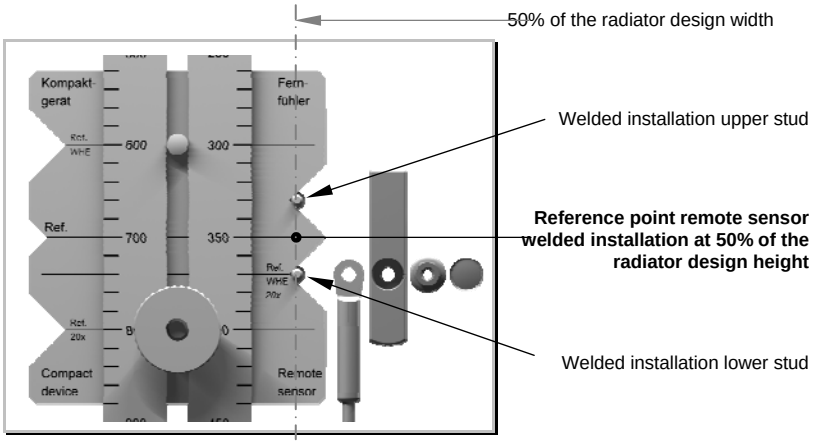
Installation aid for compact device

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



Installation aid for remote sensor

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

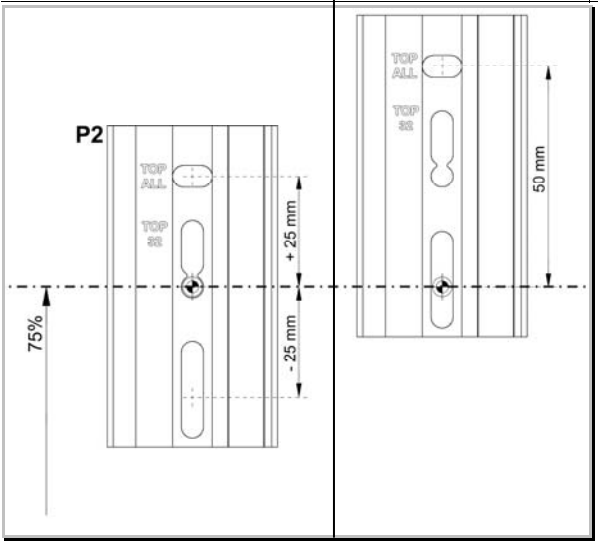


History of installation plates / reference points

Comparative diagram for installation plates and reference points.

Installation plate comparison/reference point history 202x and 205 family

205 family	202x



Comparative diagram 1

205 System Manual
Chapter J

Notes

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Chapter J - Notes

Chapter J - Notes

205 System Manual
Chapter CIT01

Ribbed radiators

Chapter CIT01 – Ribbed radiators

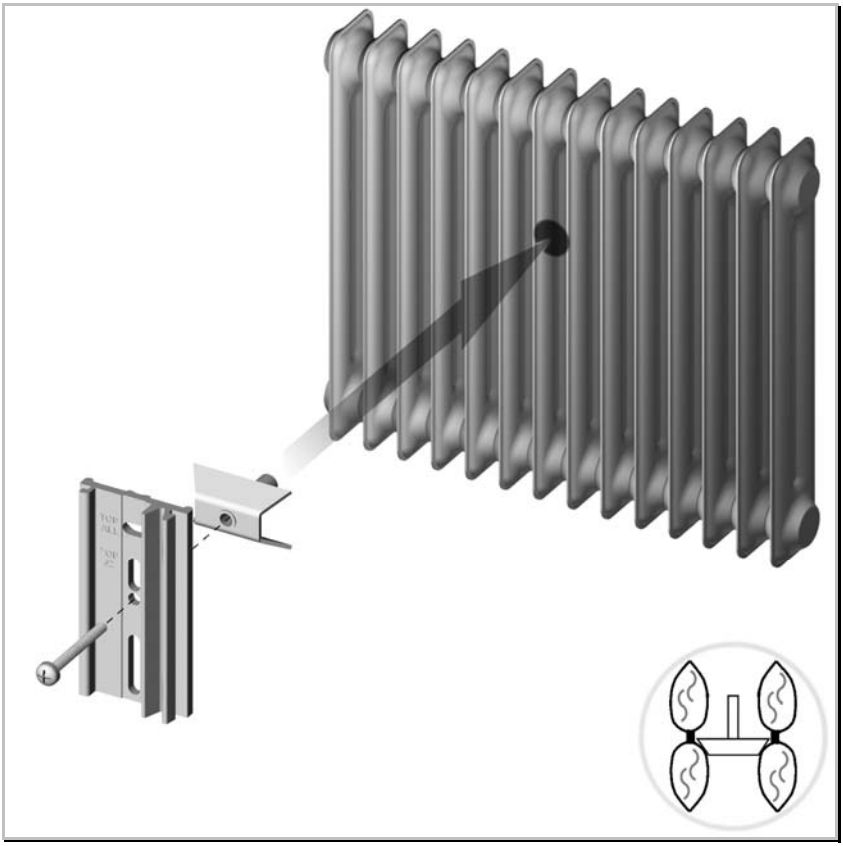
Issue status: Chapter CIT01 - Version 2.00 / 24.05.2012

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.
- In the case of radiators made of cast iron, we recommend standard heat conduction paste, which improves heat transfer to the contact points between the installation plate and the radiator.
- Above a certain pitch (distance between individual ribs and the resulting space), modified installation attachments must be used for the installation plate.

CIT01-01 Ribbed radiators, pitch greater than 40 mm



Main installation	
Complete installation kit:	HCAI-K001 001

Comprising:	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x standard installation plate	FKA0005
1 x cross-slot screw 4 x 40 mm	FNR0004

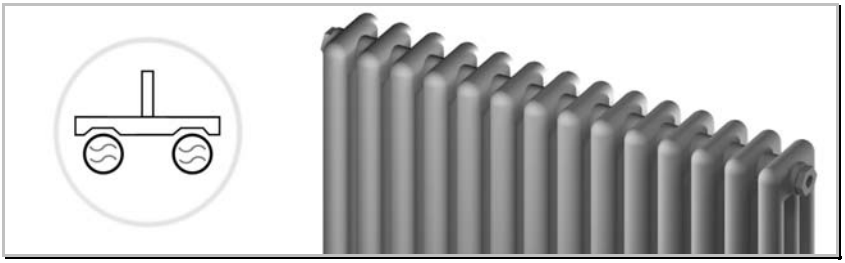
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".
Alternatively, clamping bracket 50 mm or 65 mm can be used for larger rib gaps for trapezoidal clamping bracket 35 mm.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal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

Remote sensor installation:	
Chapter	CIT10-01

CIT01-01 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.

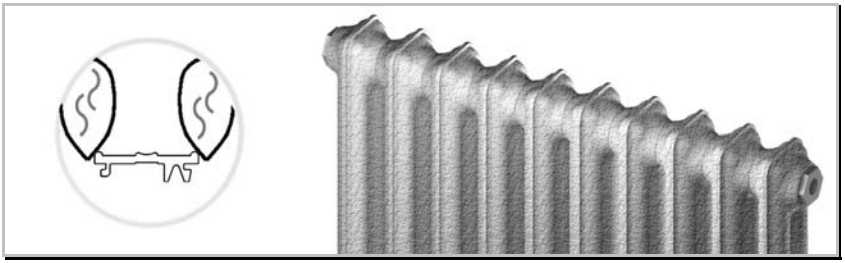


See main installation for installation position

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

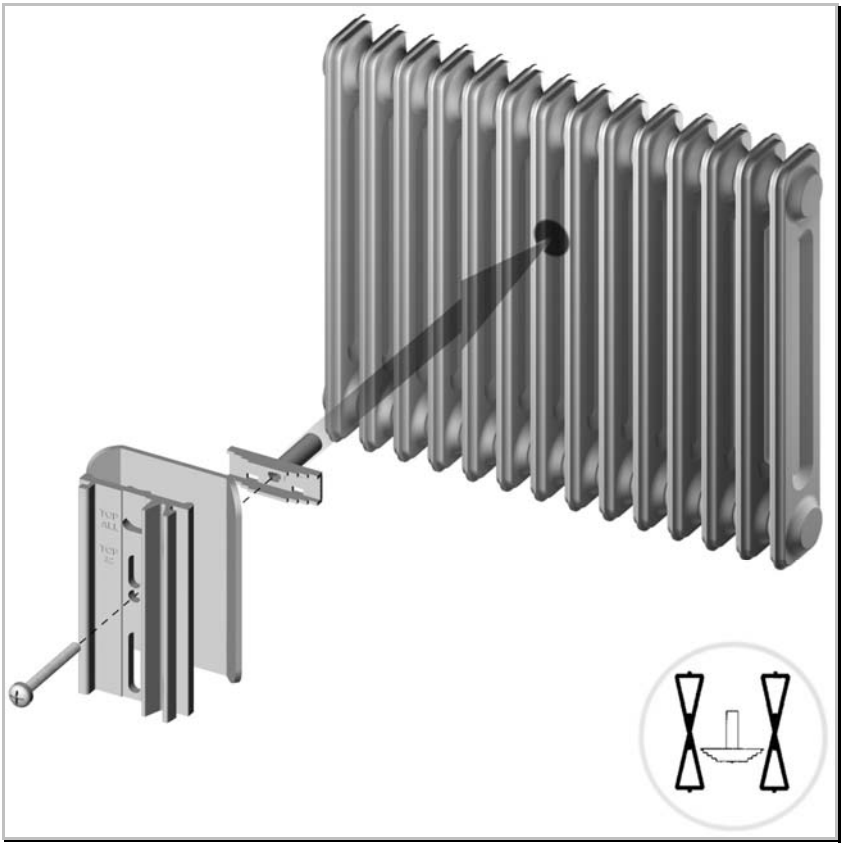
Cast iron radiators



See main installation for installation position

Remote sensor installation:	
Chapter	CIT10-01

CIT01-02 Ribbed radiators, pitch equal to or smaller than 40 mm



Main installation

Complete installation kit:	HCAI-K001 002

Comprising:	
1 x shortened clamping angle	FKT0009
1 x wide prism	FKA0001
1 x standard installation plate	FKA0005
1 x cross-slot screw M4 x 50	FNR0005

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

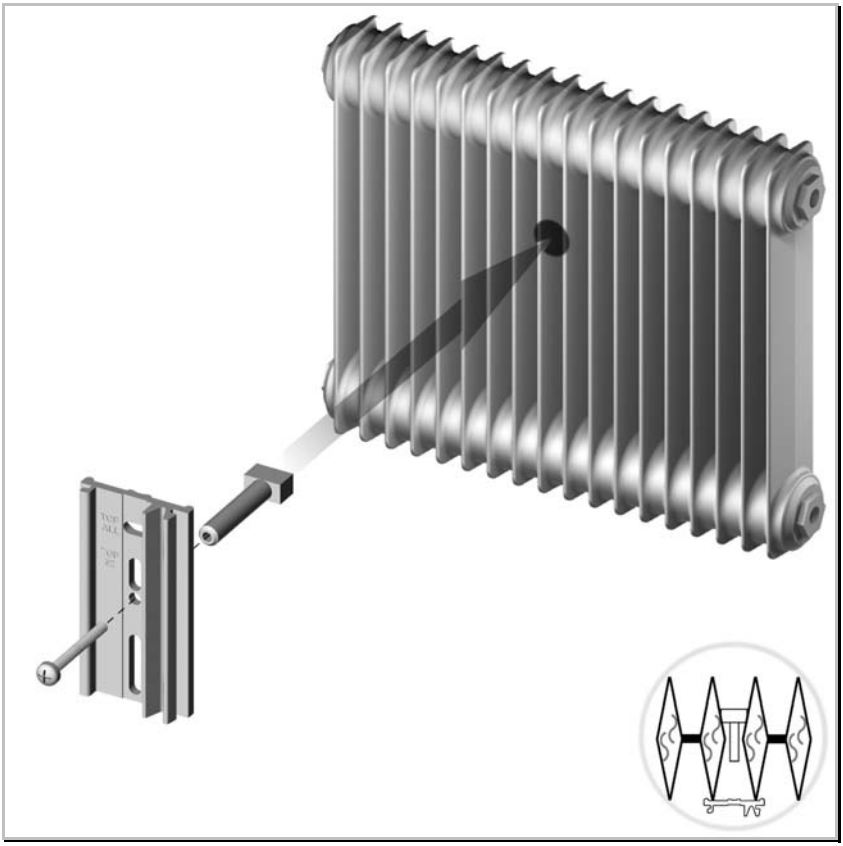
Remote sensor installation:	
Chapter	CIT10-02

CIT01-02 Ribbed radiators, pitch equal to or smaller than 40 mm

Installation procedure:
Standard installation with wide prism.

Installation instructions:	
Alternatively, trapezoidal clamping bracket 35 mm can be used for the shortened trapezoidal clamping bracket.	
1 x trapezoidal clamping bracket 35 mm	FKT0018

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



Main installation

Complete installation kit:	HCAI-K001 003

Comprising:	
1 x clamping sleeve	FKM0002
1 x standard installation plate	FKA0005
1 x cross-slot screw M4 x 40	FNR0004

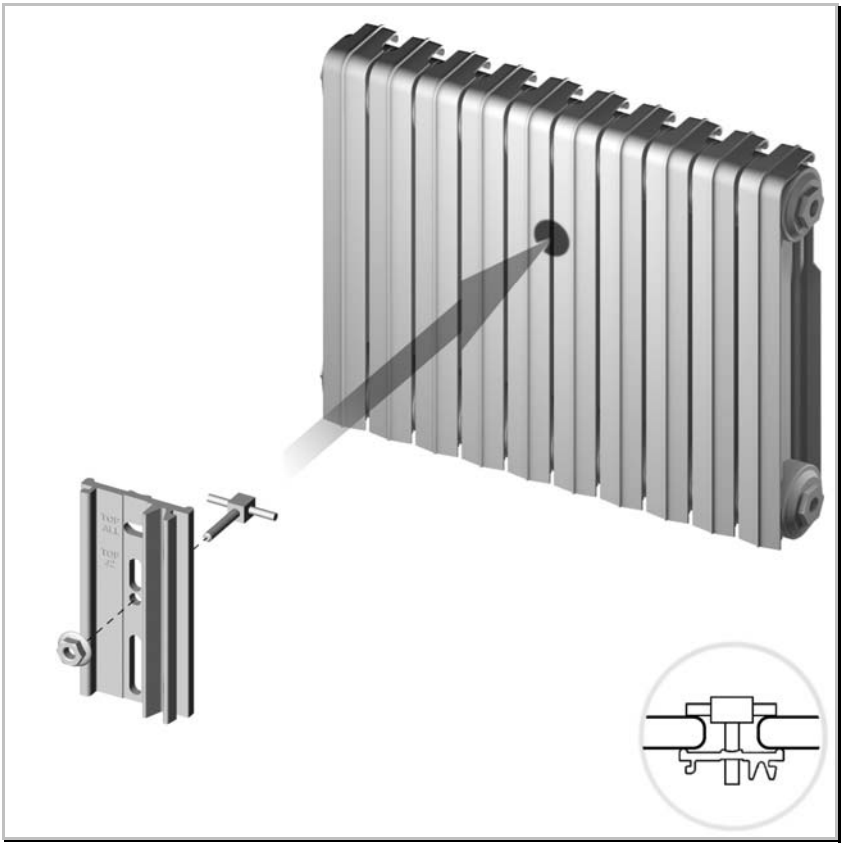
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

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 location and then turned through 90° to be fixed in place.

CIT01-04 End faces cast radiators



Main installation

Complete installation kit:	HCAI-K001 004

Comprising:	
1 x square bolt 4.5 mm with cross pin	BOZ4002 (groove width 4.5 - 6 mm)
1 x square bolt 6,0 mm with cross pin	BOZ4003 (groove width 6 - 8 mm)
1 x standard installation plate	FKA0005
1 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 -	

CIT01-04 End faces cast radiators

Special features:

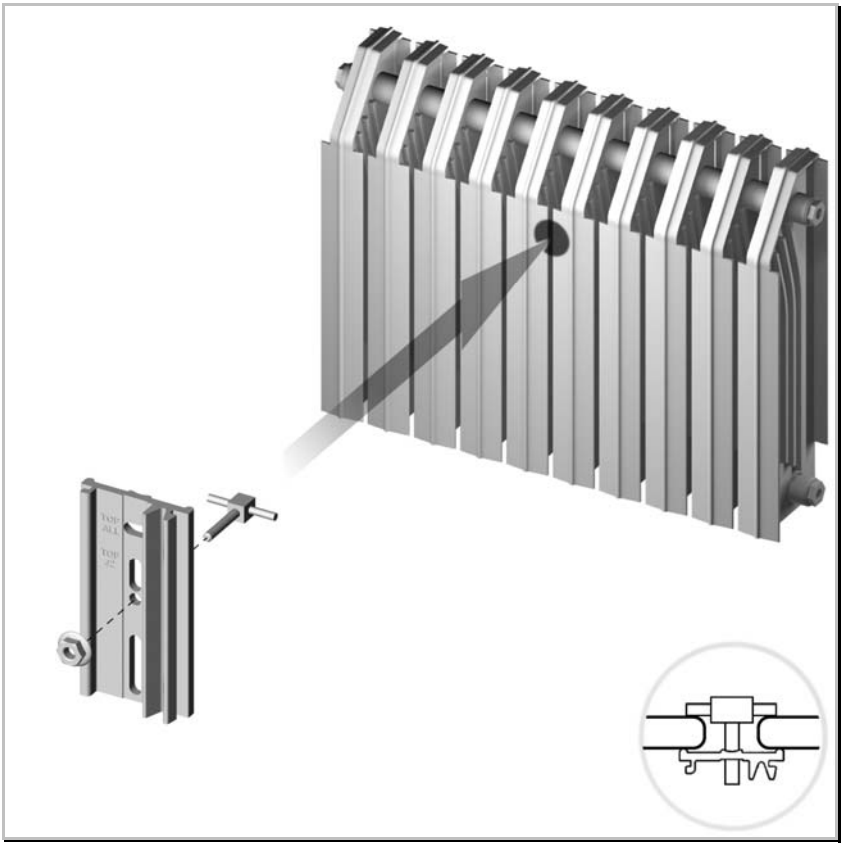
Installation instructions:	
The square bolt 12 mm can be used for groove widths larger than 12 mm. These can be ordered separately as an option.	
1 x square bolt 12,0 mm with cross pin	BOZ4004

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. Please note the dimensional specifications for the main installation.

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

CIT01-05 Cast radiators type KR



Main installation

Complete installation kit:	HCAI-K001 005

Comprising:	
1 x square bolt 6.0 mm	BOZ4003
1 x standard installation plate	FKA0005
1 x self-locking nut M3	FNM0005

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

Remote sensor installation:	
Chapter	CIT10-04

CIT01-05 Cast radiators, type KR

Special features:

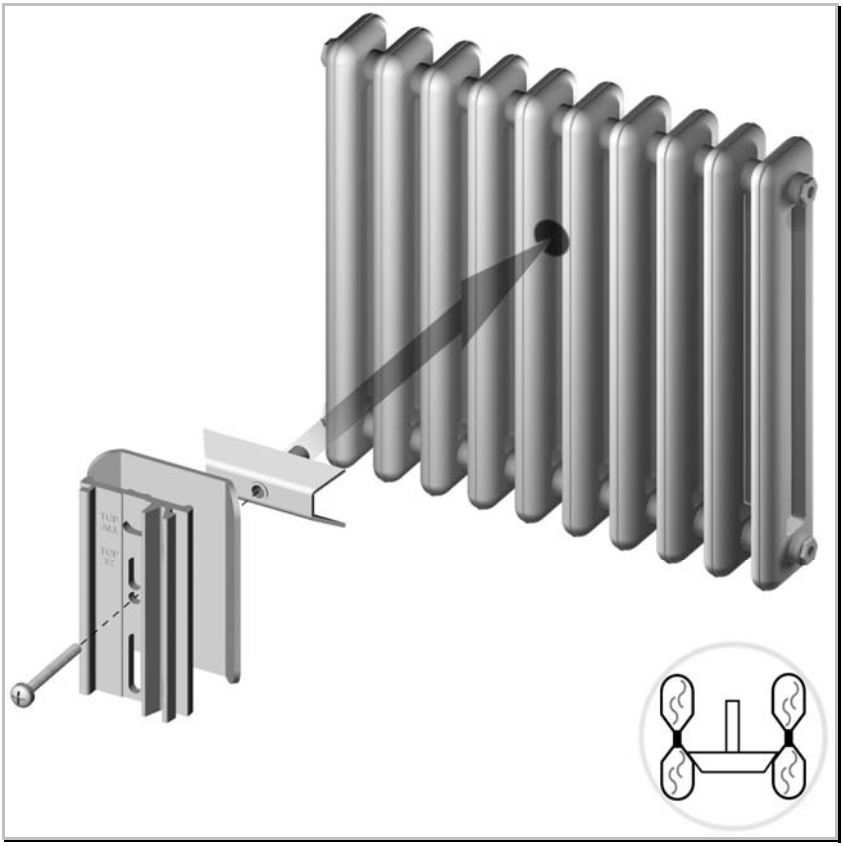
Installation instructions:	
The square bolt 12 mm can be used for groove widths larger than 12 mm. These can be ordered separately as an option.	
1 x square bolt 12,0 mm with cross pin	BOZ4004

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. Please note the dimensional specifications for the main installation.

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

CIT01-06 Ribbed radiators, clearance > 40 mm



Main installation

Complete installation kit:	HCAI-K001 006

Comprising:	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x wide prism	FKA0001
1 x standard installation plate	FKA0005
1 x cross-slot screw M4 x 70	FNR0006

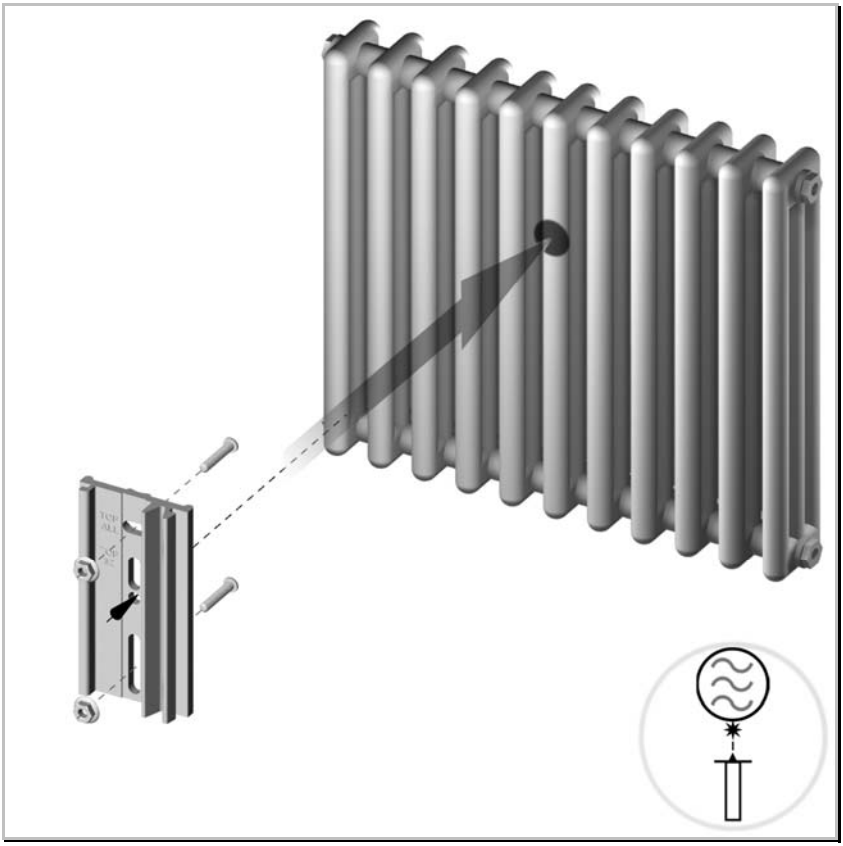
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation:	
- not possible -	

CIT01-06 Ribbed radiators, clearance > 40 mm

Installation procedure:
Standard installation with wide prism.

CIT01-07 Hygiene radiators, welded installation



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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 radiator, welded installation

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

Ribbed radiators

205 System Manual
Chapter CIT02

Panel radiators

Chapter CIT02 - Panel radiators

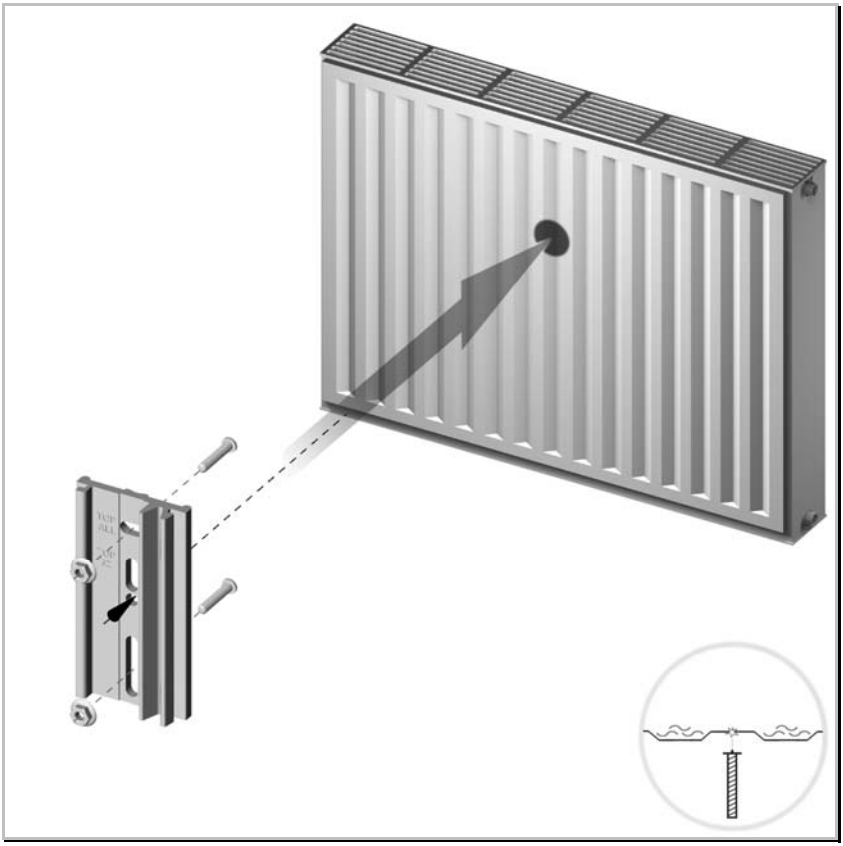
Issue status: Chapter CIT02 - Version 2.00 / 24.02.2012

Properties

Panel radiators

- With panel radiators, channels carrying water are usually behind a smooth or profiled radiator front. The installation plate is always set 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. These parts must be nipped, sawn or cut off and the spot then sanded down smoothly.

CIT02-01 Panel radiators, vertically moulded



Main installation

Complete installation kit:	HCAI-K002 001

Comprising:	
2 x welded studs M3 x 15	FKT0012
1 x standard installation plate	FKA0005
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	Installation at 50% of the radiator design height for serial flow.

Remote sensor installation:	
Chapter	CIT10-05

CIT02-01 Panel radiators, vertically moulded

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

Installation procedure:

NOTE
Changed installation positions with serial-flow panel radiators!

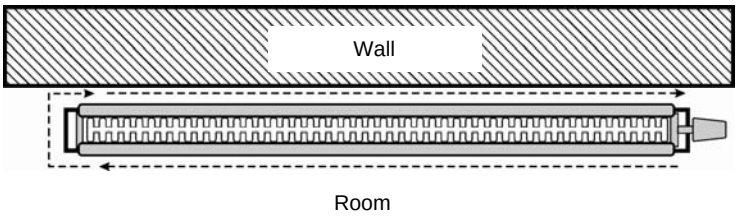
Parallel flow (standard)

With parallel flow through the panels:
Installation at 75 % of the radiator design height
Characteristic: Even flow through several panels.

Serial flow (special installation)

With serial flow through the panels:
Installation at 50% of the radiator design height

Characteristic: No typical heat/water distribution. 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.

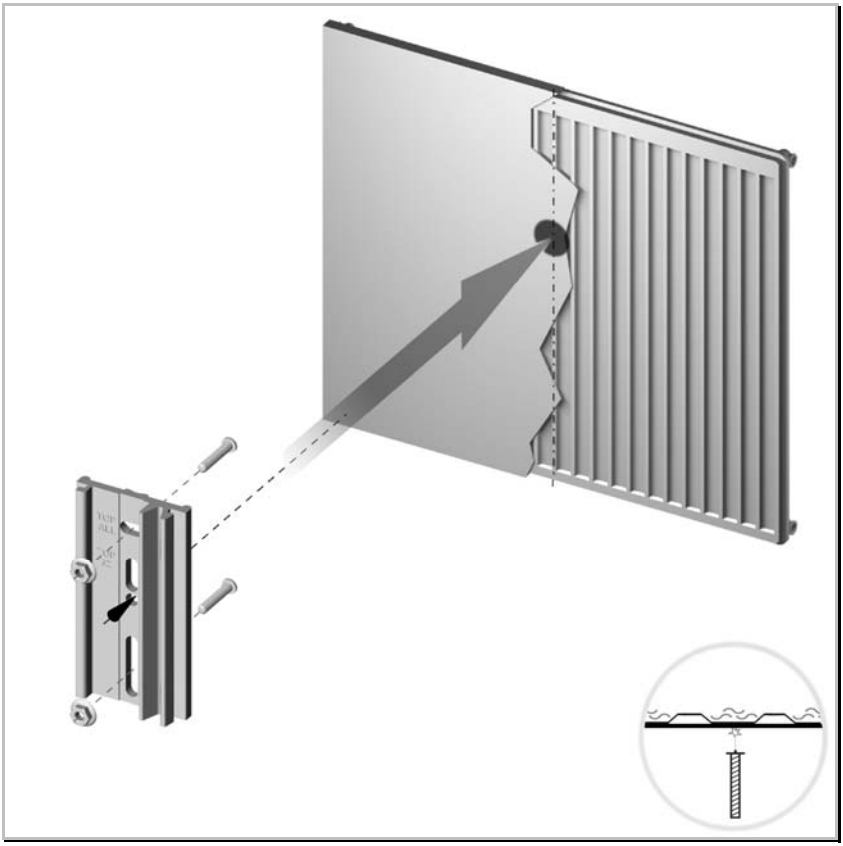


The serial flow through the radiator causes a change in temperature distribution compared with standard flow on the panel facing the room.

In this case, the metering device should be installed at 50 % of the radiator design height.

Other KC values are used.

CIT02-02 Panel radiators, smooth front



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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	CIT10-05

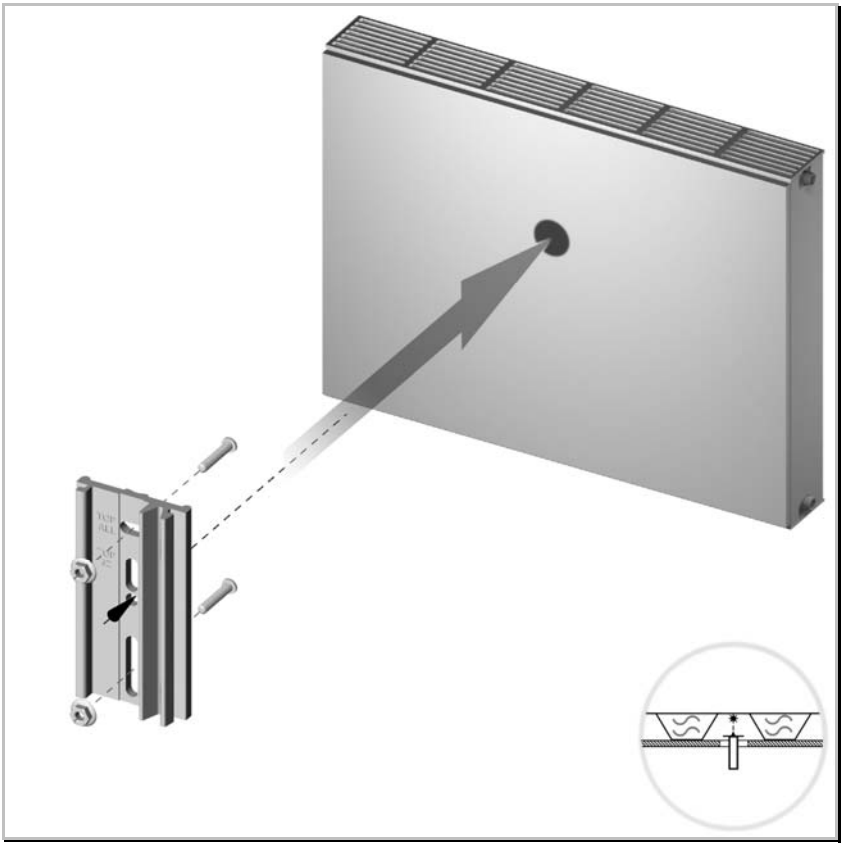
CIT02-02 Panel radiators, smooth front

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

Installation procedure:
This type of installation is only used when the smooth panel is firmly connected to the radiator (welded or glued)

Note:
Use installation type **CIT02-03** for radiators with loose panels which are not firmly connected.

CIT02-03 Panel radiators, smooth front (loose)



Main installation

Complete installation kit:	HCAI-K002 001

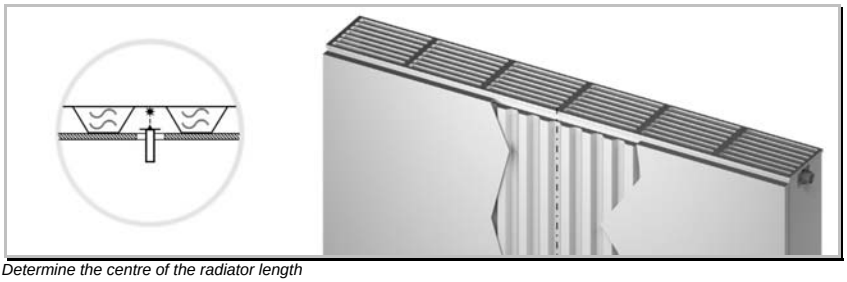
Comprising:	
2 x welded studs M3 x 15	FKT0012
1 x standard installation plate	FKA0005
2 x self-locking nut M3	FNM0005

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

Remote sensor installation:	
- not possible -	

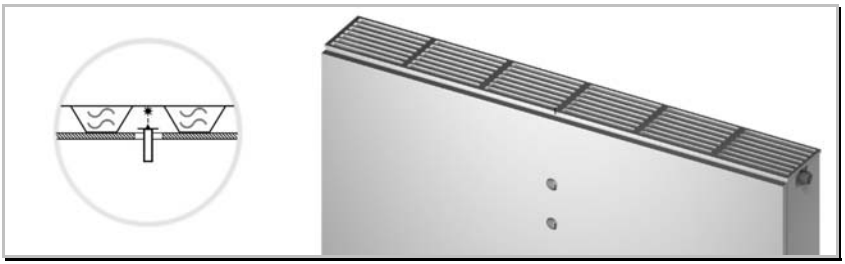
CIT02-03 Panel radiators, smooth front (loose)

Special features:
The installation position of the welded studs must be between two channels carrying water. Remove the upper grid or the loose panelling to determine where the channels carrying water and the recess are.



Determine the centre of the radiator length

Installation procedure:
Take the position between the channels carrying water and mark it on the covering panel of the radiator.



Drill holes

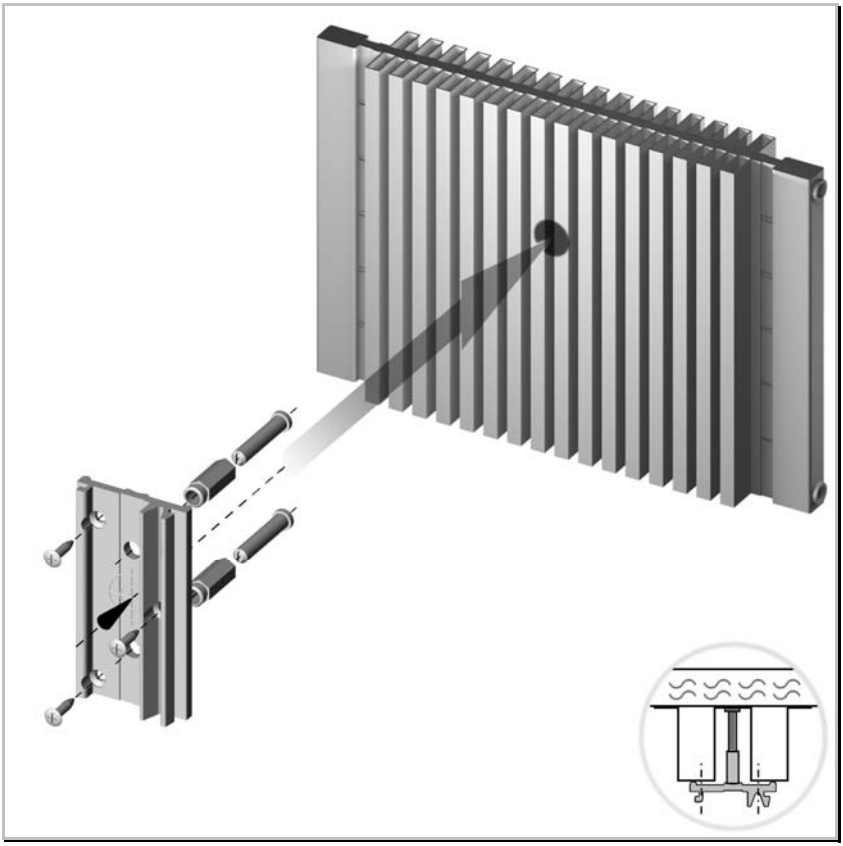
PLEASE NOTE: Risk of injury
If the drill is not positioned properly or excessive drilling speed is used, injuries may occur.

Drilling:
These holes are used to free up for the bolt adapter of the welding device. Drill a 4 or 5mm pilot hole before opening it out to 13mm using an appropriate hole saw or counterbore.

Fitting:
When the installation plate is screwed in place, the radiator covering plate is pressed firmly against the channels carrying water.

Auxiliary material:
Drill
Metal drill 4 - 5 mm
Counterbore or hole cutter

CIT02-04 Panel radiators with front convection plate



Main installation

Complete installation kit:	HCAI-K002 004

Comprising:	
2 x threaded bushing	FKA0012
2 x contact screw	FKA0010
or 2 x contact screw long	FKA0011
1 x installation plate, front convection plate	FKA0006
3 x tapping screw 2.9 x 13	FNR0009

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

Remote sensor installation:	
Chapter	CIT10-12

CIT02-04 Panel radiators with front convection plate

Special features:
Since the heat intake point is in a different position than the installation or attachment points (self-tapping screws) of the installation plate, the positions of the heat intake points have to be determined first.

Installation procedure:

(1) Determine heat intake points

1. Screw the threaded bushings tightly into the installation plate.
2. Screw the contact screws into the threaded bushings.
3. Position this unit at the reference point determined.
4. Transfer the positions of the 3 bore holes for the self-tapping screws.
5. Drill the 3 holes for the self-tapping screws (2.5 mm)
6. Use the self-tapping screws to fix the installation plate in this position.
7. Screw the contact screws as far as they will go (through the hollow thread).
8. Secure the position of the contact screw using bonding adhesive.

Note:
The long contact screws must be used in the case of especially deep front convection plates.

Auxiliary material:
Bonding adhesive, e.g. Loctite 648

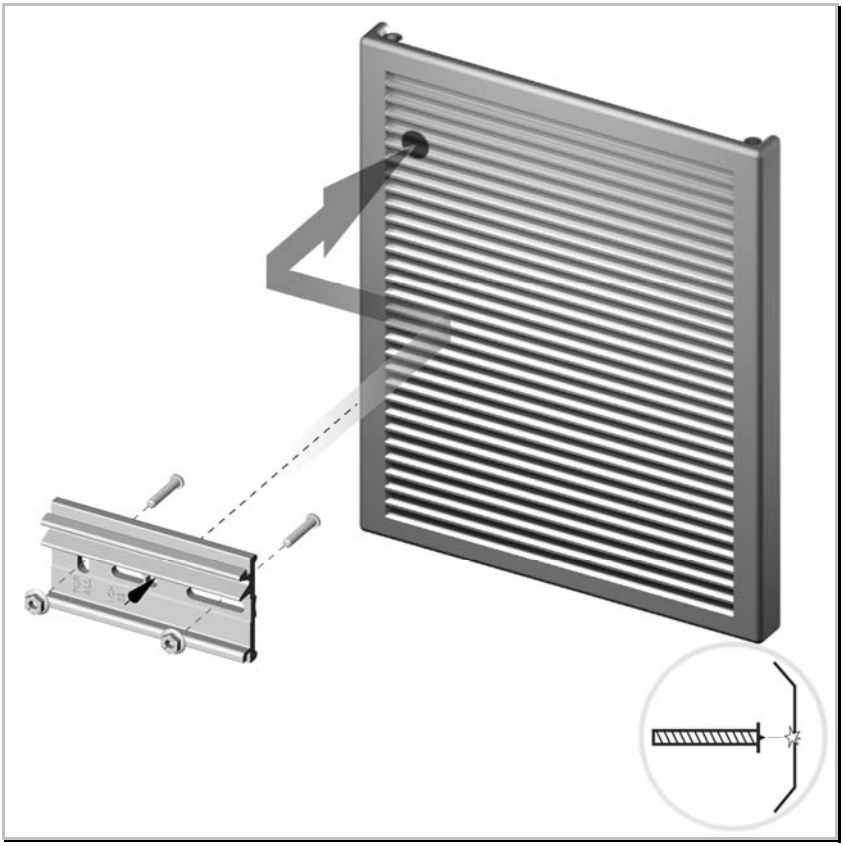
DiaTherm S

See main installation for installation position

Supplements / additional information:
First, the heat absorption points are determined for the contact screws. Then the two bore holes with a diameter of 9 mm are drilled for the contact screws (35 mm apart).
The reference point is in the centre between the two contact screw threads.
PLEASE NOTE the procedure for drilling in thin-walled metal sheets.
(1) The further procedure of attaching the installation plate or screwing out and fixing the contact screws is carried out analogue to the procedure described above.

Remote sensor installation:	
- not possible -	

CIT02-05 Panel radiators as bathroom radiators



Main installation

Complete installation kit:	HCAI-K002 001

Comprising:	
2 x welded studs M3 x 15	FKT0012
1 x standard installation plate	FKA0005
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 The V-shaped groove on the installation plate must be positioned at the top.

Remote sensor installation:	
Chapter	CIT10-10

CIT02-05 Panel radiators as bathroom radiators

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.

205 System Manual
Chapter CIT03

Bathroom radiators

Chapter CIT03 - Bathroom radiators

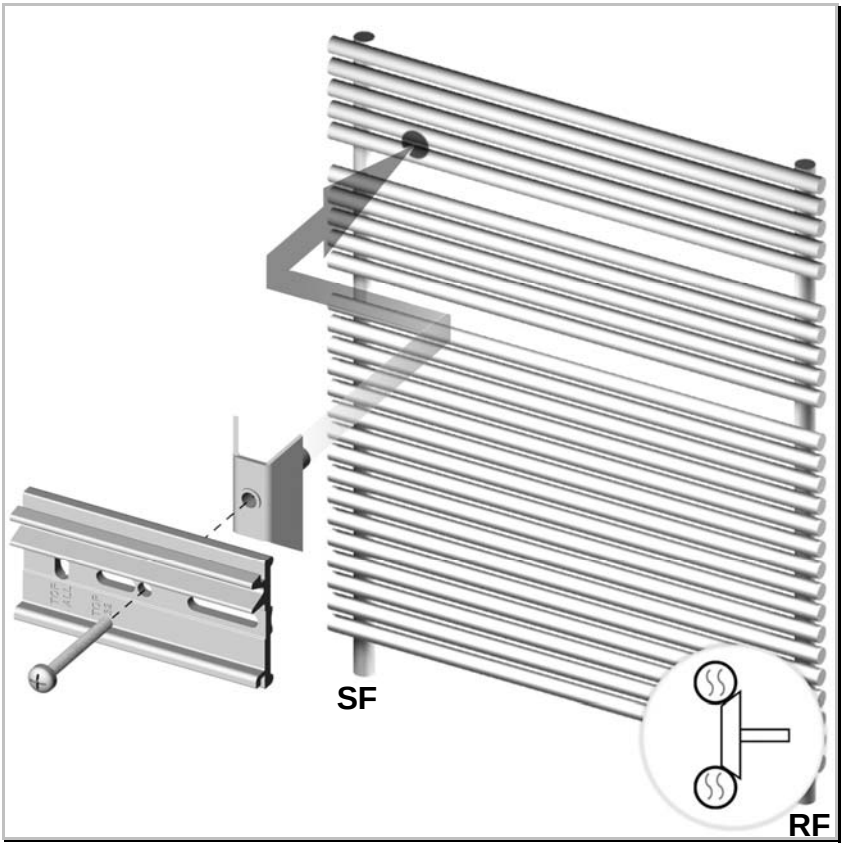
Issue status: Chapter CIT03 - Version 2.00 / 24.05.2012

Properties

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 Bathroom radiators, horizontal rib installation



Main installation

Complete installation kit:	HCAI-K001 001

Comprising:	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x standard installation plate	FKA0005
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 Bathroom radiators, horizontal rib installation

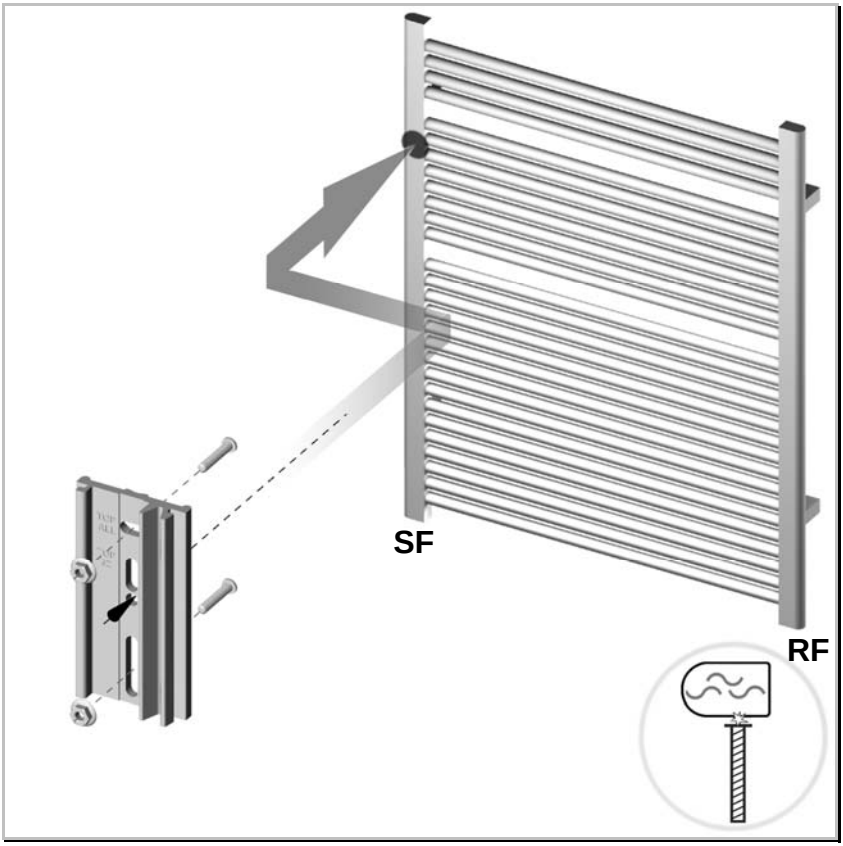
Special features:
If the metering device is installed near splash water (shower), a device with remote sensor must be used.

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.

The groove must be at the top, as seen from the front.

CIT03-02 Bathroom radiators, welded installation



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
2 x self-locking nut M3	FNM0005

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

Remote sensor installation:	
Chapter	CIT10-06

CIT03-02 Bathroom radiators, welded installation

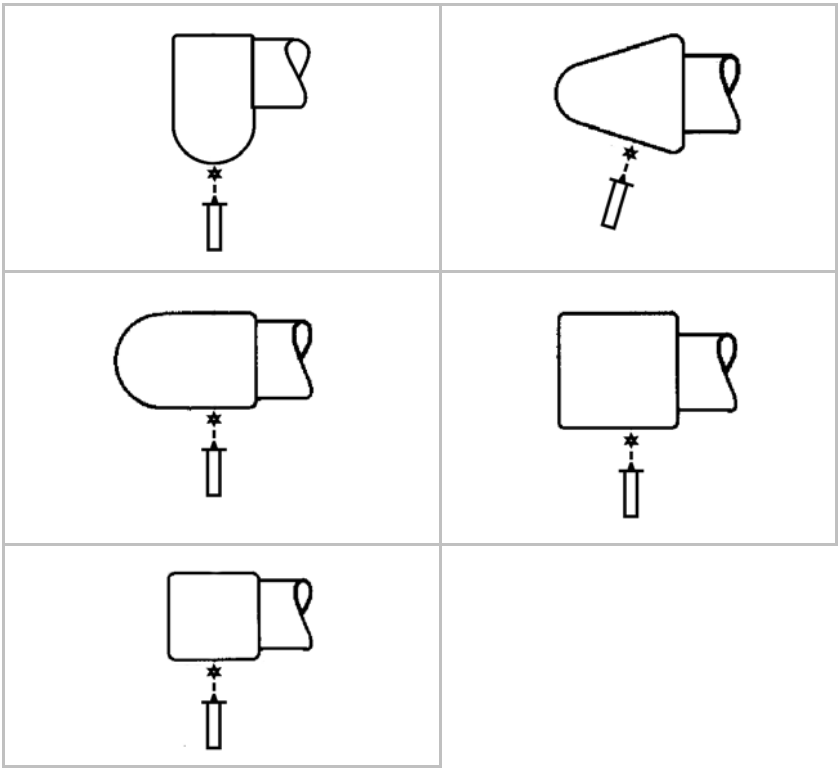
Special features:
If the metering device is installed near splash water (shower), a device with remote sensor must be used.

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.

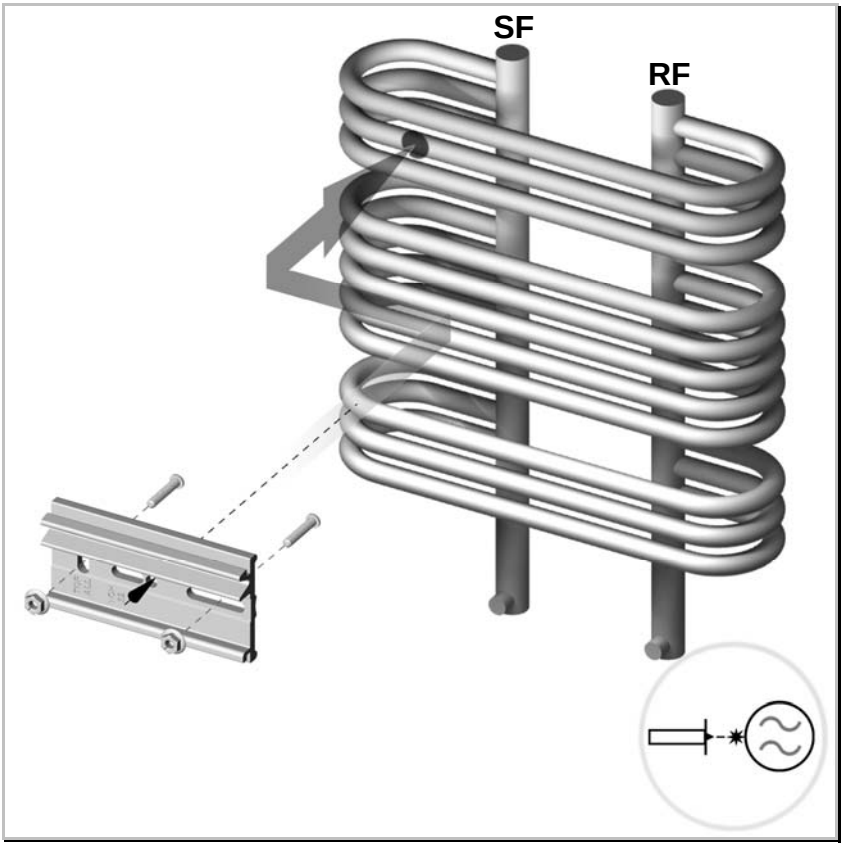
Installation procedure:
The metering device may also be installed mid-side or mid-rear on the supply flow collector.

Installation variants:



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

CIT03-03 Bathroom radiators, curved pipes



Main installation

Complete installation kit:	HCAI-K001 007

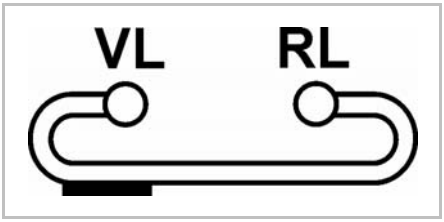
Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
2 x self-locking nut M3	FNM0005

Installation position:	
Special installation	Horizontal installation plate 2nd pipe from the top 25% of the radiator design width away from the bent edge on the supply flow side

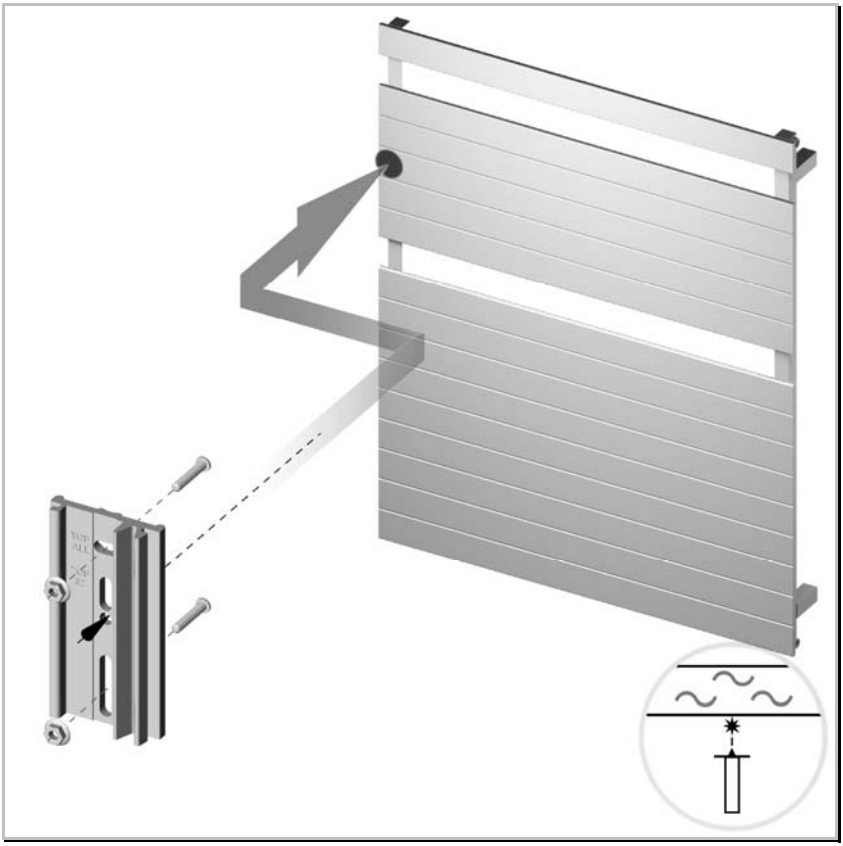
Remote sensor installation:	
Chapter	CIT10-09

CIT03-03 Bathroom radiators, curved pipes

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



CIT03-04 Bathroom radiators, horizontal flat tubes



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
2 x self-locking nut M3	FNM0005

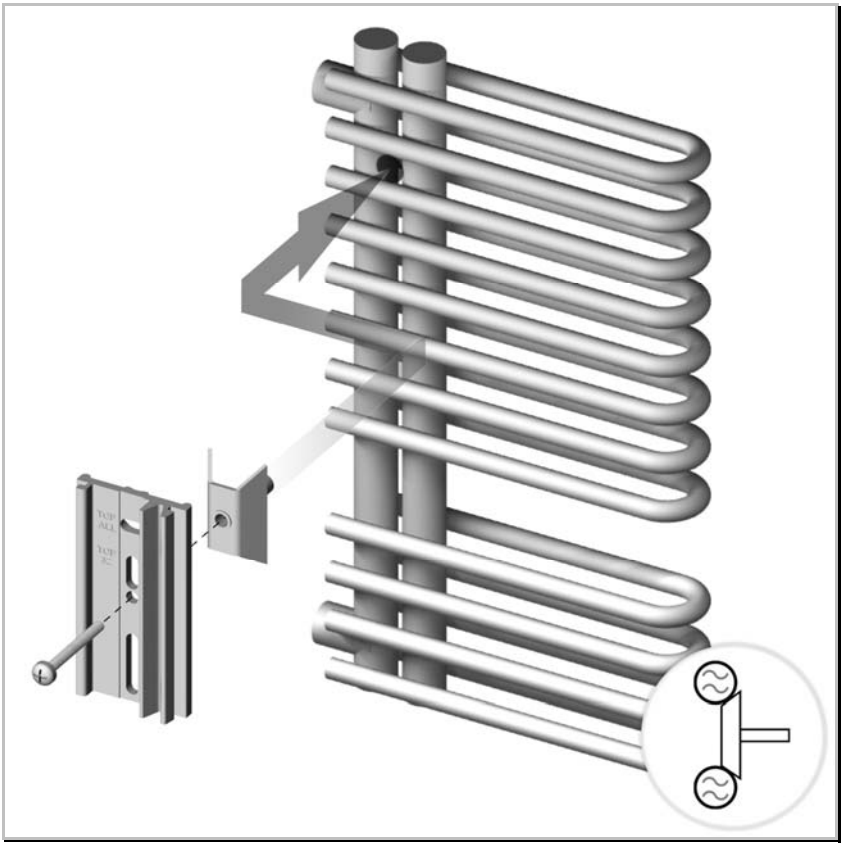
Installation position:	
Special installation	At 75% of the radiator design height Installation on horizontal panel above supply flow pipe

Remote sensor installation:	
Chapter	CIT10-06

CIT03-04 Bathroom radiators, horizontal flat tubes

Special features:
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 Bathroom radiators, curved pipes, collector at one side



Main installation

Complete installation kit:	HCAI-K003 005

Comprising:	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x standard installation plate	FKA0005
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 Bathroom radiators, curved pipes, collector at one side

Special features:
Depending on the bathroom variant, the two collectors can be connected differently.

Bathroom radiators

205 System Manual
Chapter CIT04

Aluminium radiators

Chapter CIT04 - Aluminium radiators

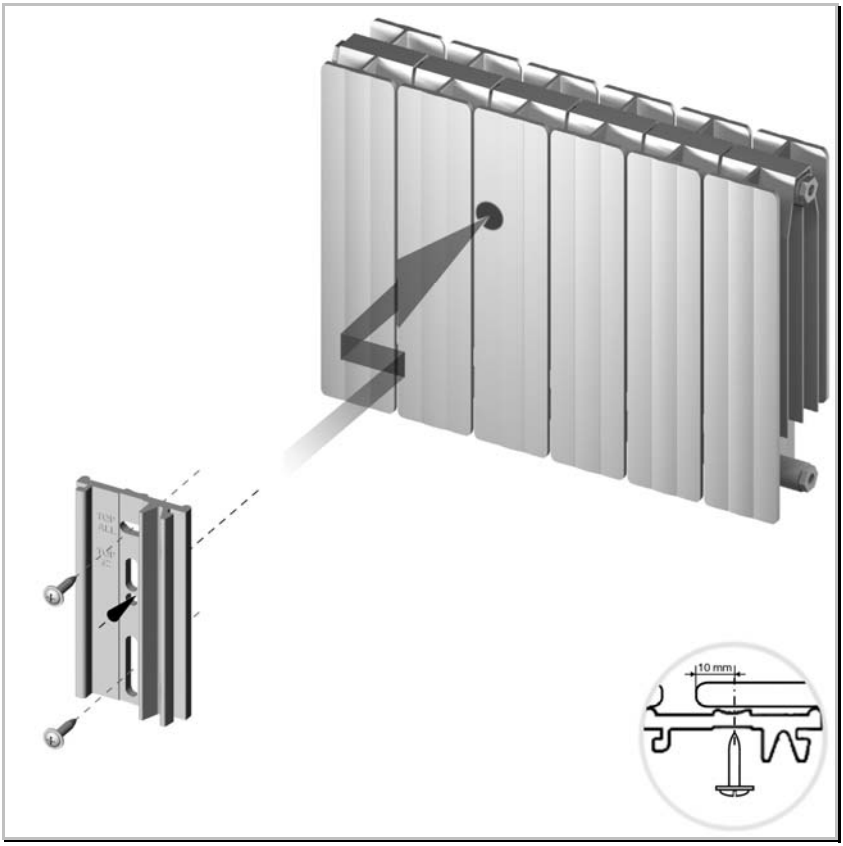
Issue status: Chapter CIT04 - Version 2.00 / 24.05.2012

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

Complete installation kit:	HCAI-K004 001

Comprising:	
1 x standard installation plate	FKA0005
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.

Aluminium radiators

205 System Manual
Chapter CIT05

Heating walls

Chapter CIT05 - Heating walls

Issue status: Chapter CIT05 - Version 2.00 / 24.05.2012

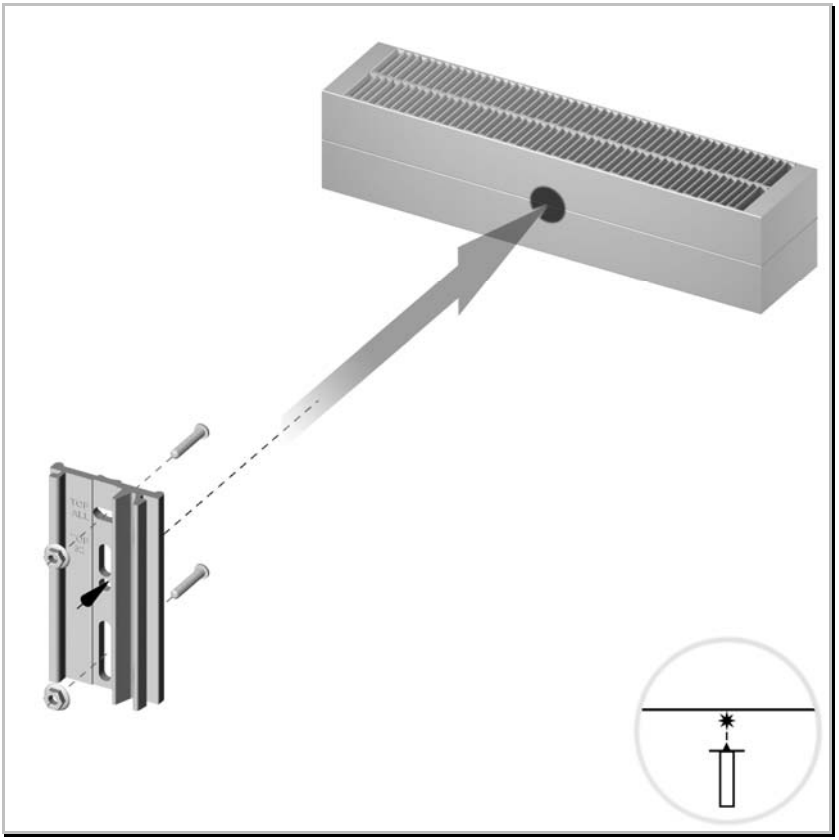
Properties

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

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
2 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	CIT10-12

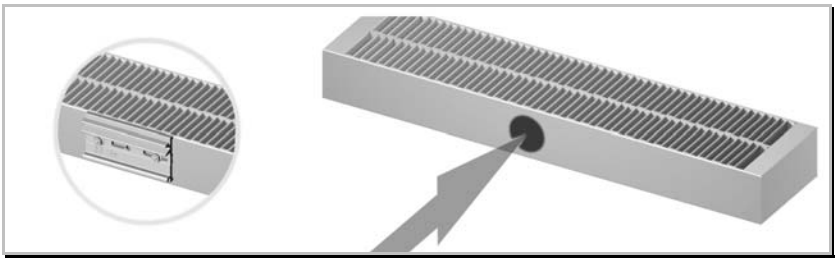
CIT05-01 70 mm profiles, horizontal flow

Special features:

Different KC values
Different KC values are used for **"same side"** or **"alternate side"** connections.

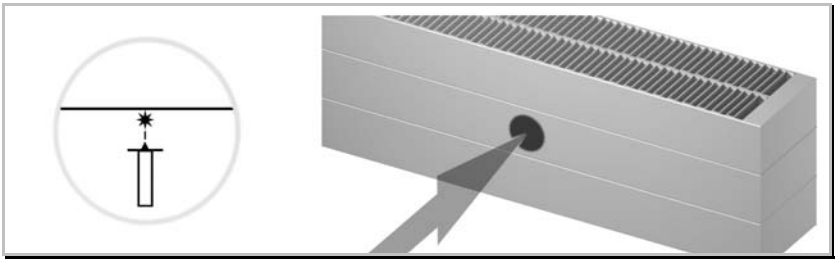
Installation procedure:
Only 1-row radiator profile
installation plate fitted horizontally

1-row radiator profile - special case

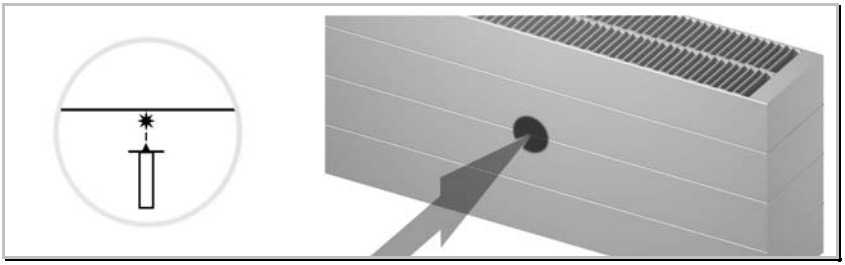


2 to 4-row radiator profiles
The installation plate is fitted vertically (standard) with the V-shaped groove on the right.

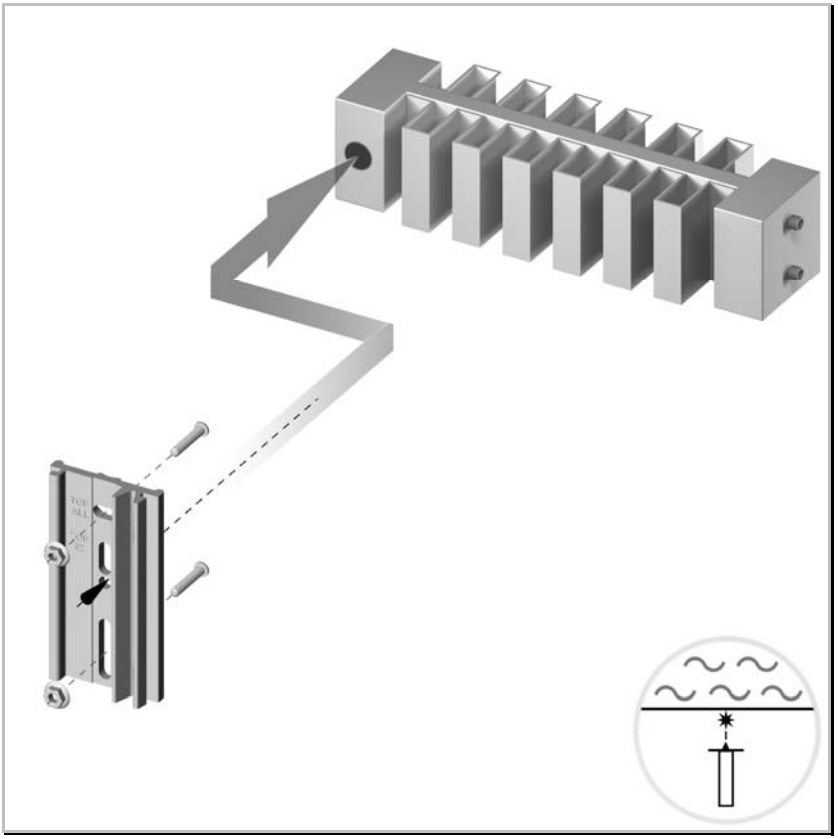
3-row radiator profile



4-row radiator profile



CIT05-02 Flat tube radiators with front convection plate



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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 radiators with front convection plate (P2/P3)

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

The radiator is connected at the same side.

CIT05-03 Heating wall, horizontally moulded

Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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	CIT10-12

CIT05-03 Heating wall, horizontally moulded (P2/P3)

Special features:
The metering device is fixed to the centre of a horizontal, water-carrying 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 12	FKT0011 for slightly moulded panel
Welded stud M3 x 15	FKT0012 for heavily moulded panel

Heating walls

205 System Manual
Chapter CIT06

Radiators with internal tube register

Chapter CIT06 - Radiators with internal tube register

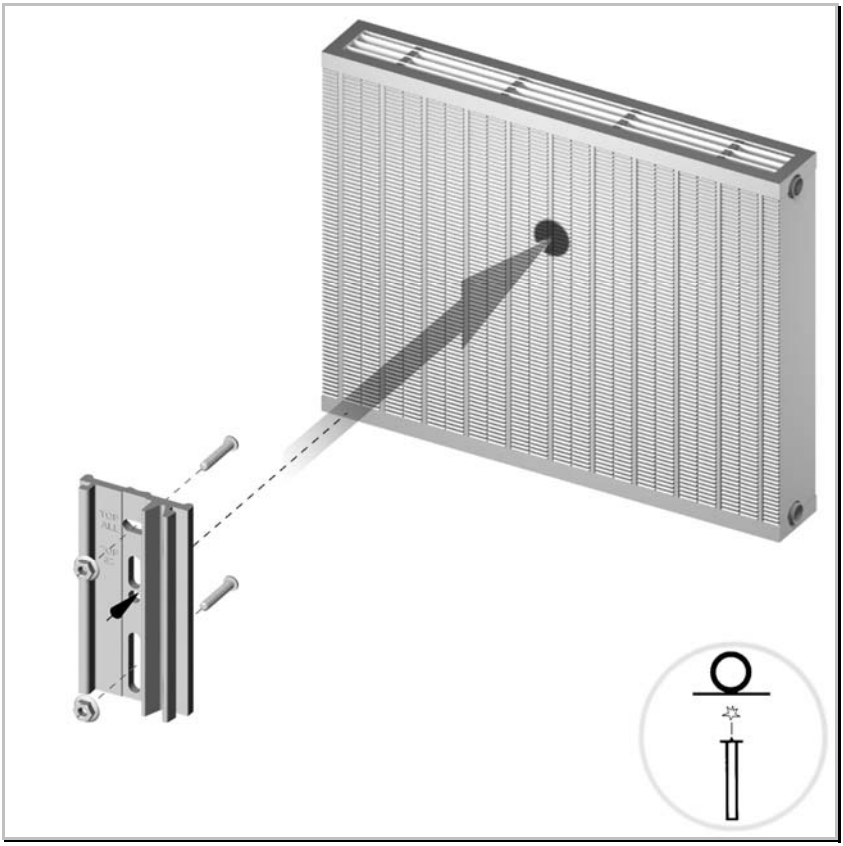
Issue status: Chapter CIT06 - Version 2.00 / 24.05.2012

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 Radiators with internal tube register, flat water channel



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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 Radiators with internal tube register, flat water channel

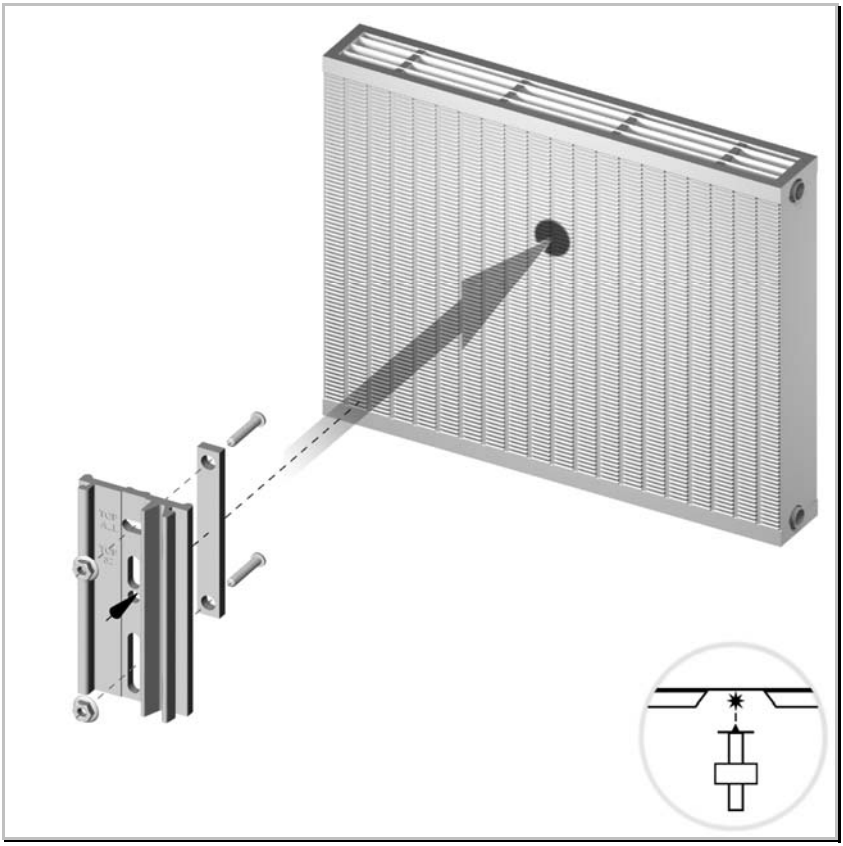
Installation procedure:
Installation between the ribs on the groove over a tube carrying water.

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.

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



Main installation

Complete installation kit:	HCAI-K006 002

Comprising:	
2 x welded studs M3 x 15	FKT0012
1 x spacer	FKA0013
1 x standard installation plate	FKA0005
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

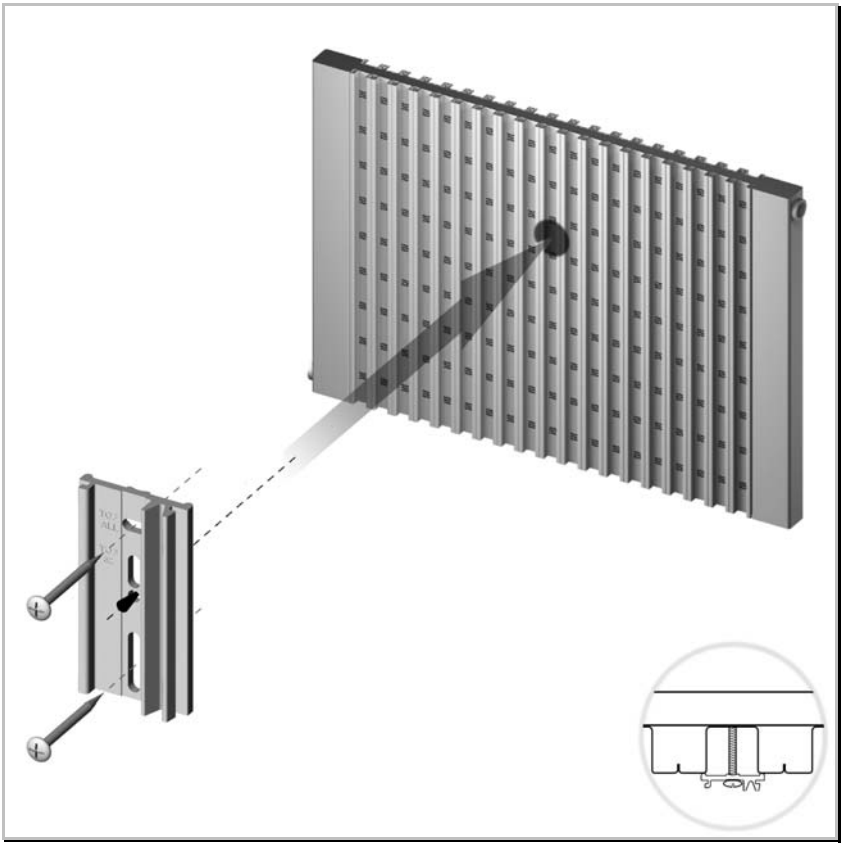
CIT06-02 Radiators with internal tube register, deep water channel

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 Radiators with internal tube register, horizontal water flow



Main installation

Complete installation kit:	HCAI-K006 003

Comprising:	
1 x standard installation plate	FKA0005
2 x screw B 3.9 x 45	FNR0007

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

CIT06-03 Radiators with internal tube register, horizontal water flow

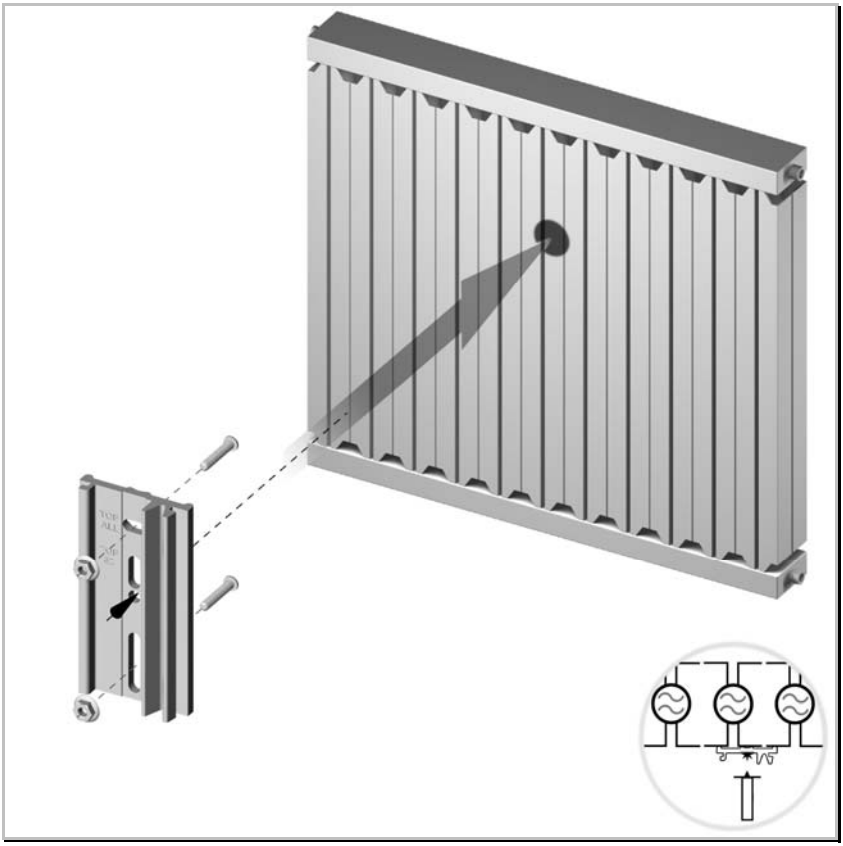
Special features:
Installation with two long self-tapping screws.

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

See main installation for installation position

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

CIT06-04 Radiators with internal tube register Rotherm



Main installation

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
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 Radiators with internal tube register Rotherm

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

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

Radiators with internal tube register

205 System Manual
Chapter CIT07

Special installation cases

Chapter CIT07 - Special installation cases

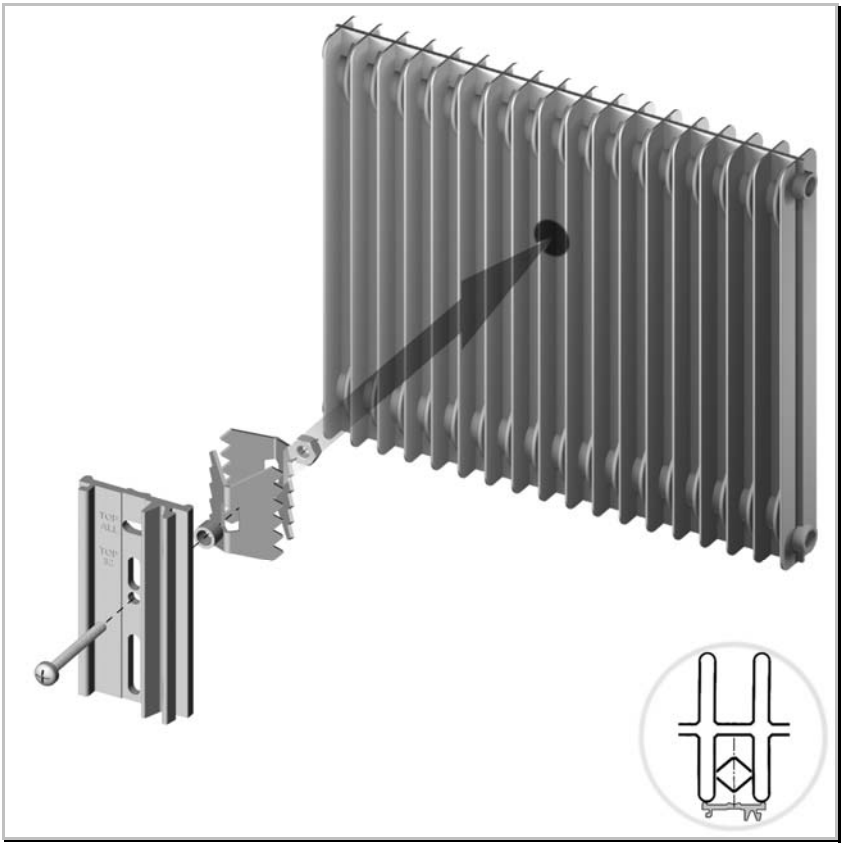
Issue status: Chapter CIT07 - Version 2.00 / 24.05.2012

Properties

Special installation cases

- "Special installation cases" includes unusual design radiators.
- Installation deviating from standard is usually necessary. Please refer to any specific installation instructions.

CIT07-01 Lamella-type radiators



Main installation

Complete installation kit:	HCAI-K007 001

Comprising:	
1 x hexagon nut M4	FNM0004
2 x expanding bracket for lamella-type radiator	FKA0004
1 x spacer sleeve	FKT0010
1 x standard installation plate	FKA0005
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

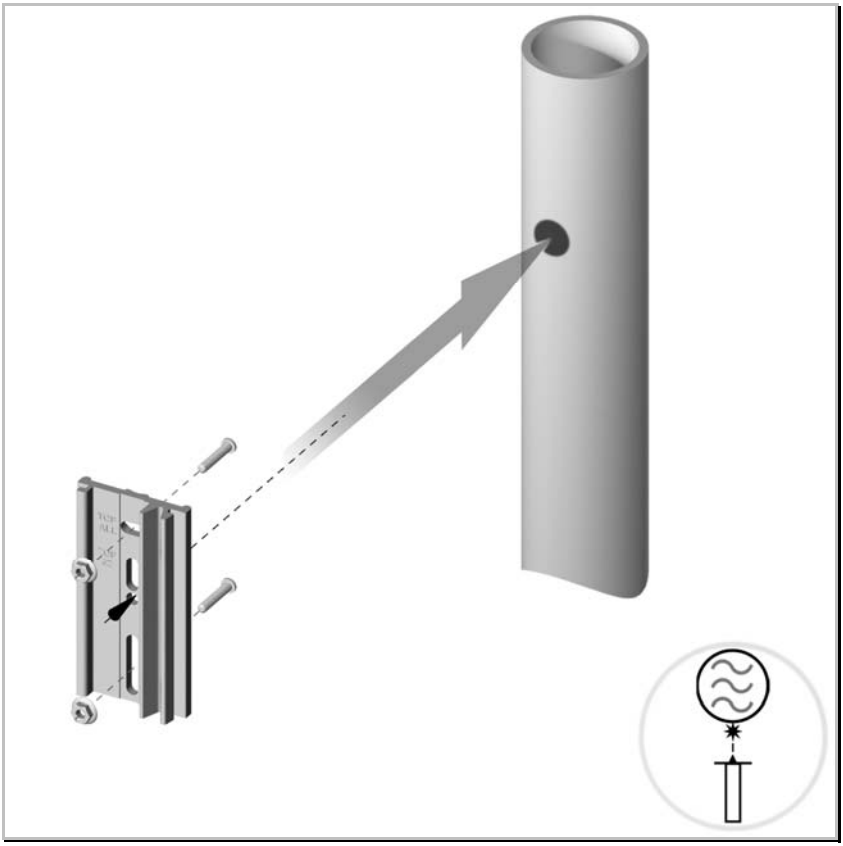
CIT07-01 Lamella-type radiator

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

Complete installation kit:	HCAI-K001 007

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x standard installation plate	FKA0005
2 x self-locking nut M3	FNM0005

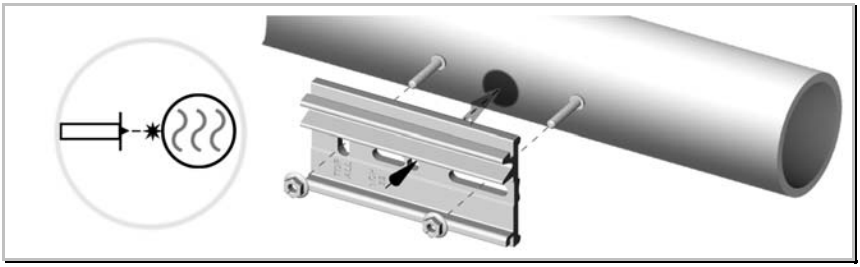
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation".

Remote sensor installation:	
Chapter	CIT10-15

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.

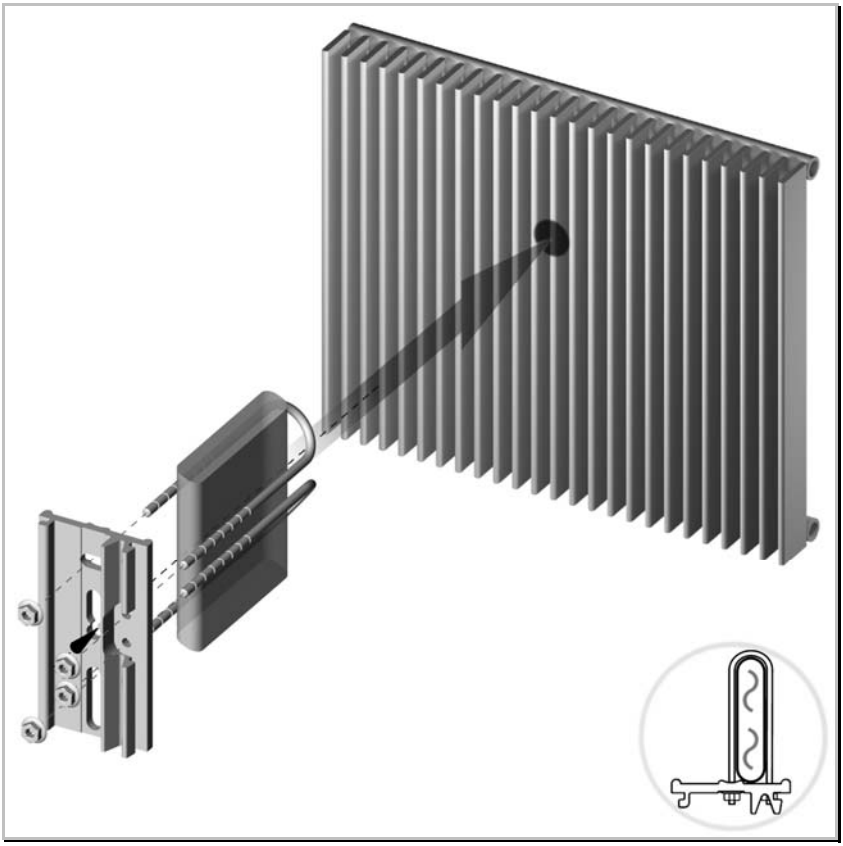


See main installation for installation position

Supplements / additional information:
The V-shaped groove on the installation plate must be positioned at the top.

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

CIT07-03 Flat tube radiators



Main installation

Complete installation kit:	HCAI-K007 003

Comprising:	
2 x threaded hoop	FKT0004
1 x installation plate for flat tube radiator	FKA0007
4 x self-locking nut M3	FNM0005

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

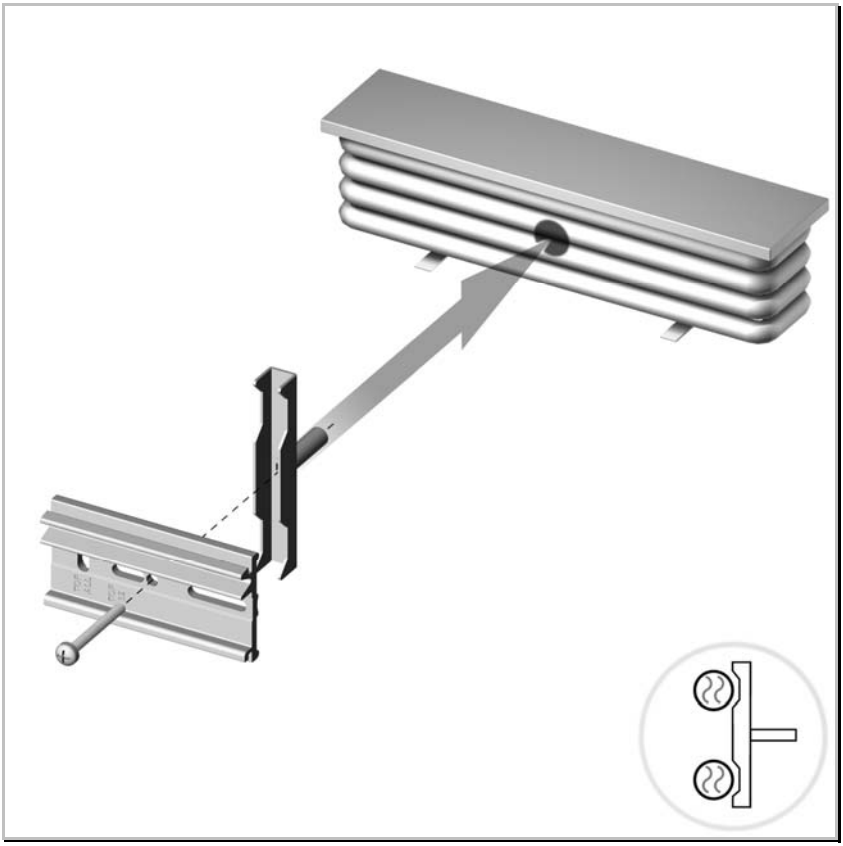
Remote sensor installation:	
Chapter	CIT10-16

CIT07-03 Flat tube radiator

Special features:
Flat-tube radiators less than 300 mm high where the metering devices project beyond the radiator when this type of installation is used can only be equipped with remote sensor devices (welded installation).

Installation procedure:
Projecting ends of the threads must be shortened at the rated break point after installation.

CIT07-04 Window ledge radiators



Main installation

Complete installation kit:	HCAI-K007 004

Comprising:	
1 x clamping bracket for tubes TE 46 mm	FKT0016
1 x standard installation plate	FKA0005
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 pipes from the top horizontal installation plate

Remote sensor installation:	
Chapter	CIT10-17

CIT07-04 Window ledge radiator

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

205 System Manual
Chapter CIT10

Remote sensor installation

Chapter CIT10 - Remote sensor installation

Issue status: Chapter CIT10 - Version 2.00 / 24.05.2012

Properties

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.

This installation can be carried out in three different ways:

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

The heat radiated by the radiator is transmitted directly to the metering device via the remote sensor cable. 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 kit according to CIT installation for attachment to the radiator

Remote sensor installation kits

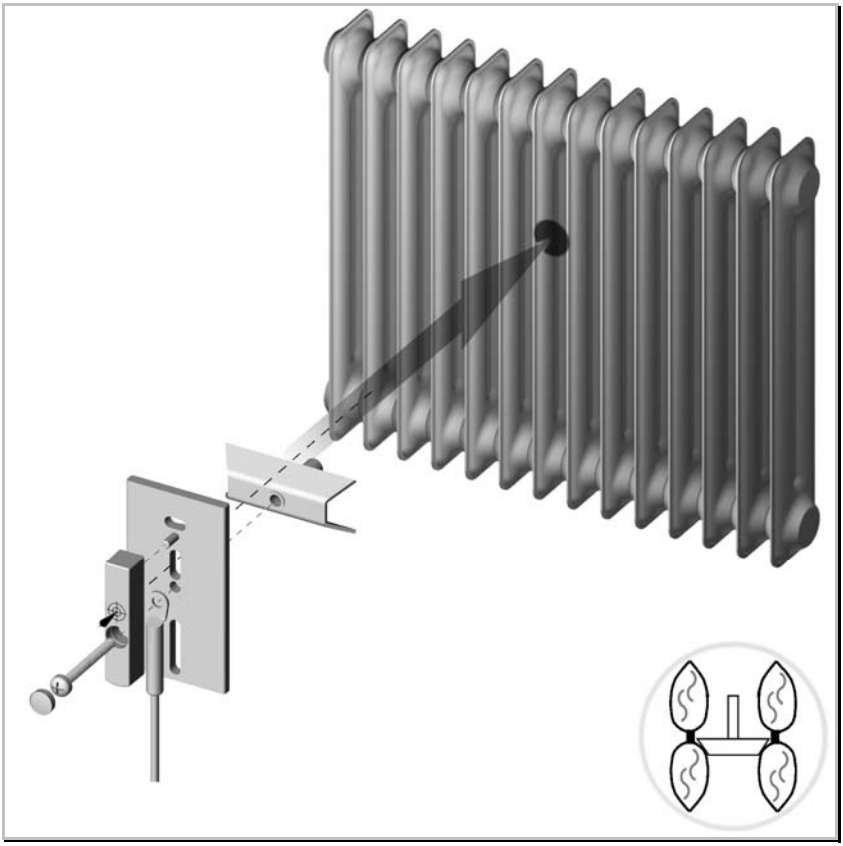
	1.5 m remote sensor:	**HCAI-K010 0S1 (for all CIT10)**
1	Remote sensor with 1.5 m cable	BBV4003
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045
	2,5 m remote sensor:	**HCAI-K010 0S2 (for all CIT10)**
1	Remote sensor with 2,5 m cable	BBV4004
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045
	5,0 m remote sensor:	**HCAI-K010 0S5 (for all CIT10)**
1	Remote sensor with 5,0 m cable	BBV4005
1	Sensor housing	FKK0029
1	Safety cap for sensor housing	FKK0045

Wall bracket 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 since otherwise the housing contact will not be actuated.

	P2 wall bracket installation kit, complete:	**HCAI-K010 0P2 (for all CIT10)**
1	Wall bracket P2	FKK0043
2	Dowel 6 mm	FNU0001
2	Screw B 3.9 x 45	FNR0007

CIT10-01 Ribbed radiators, pitch greater than 40 mm



Main installation

Complete installation kit:	HCAI-K010 001

Comprising:	
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

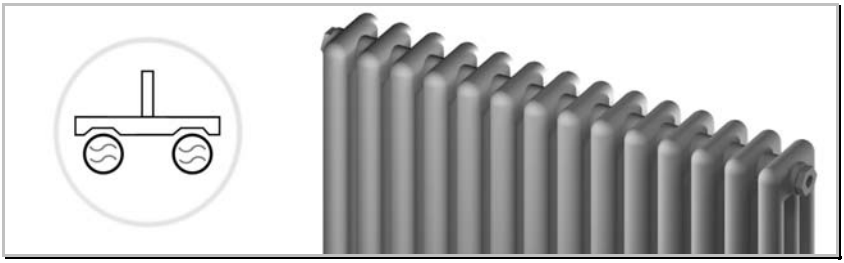
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation"
Alternatively, clamping bracket 50 mm or 65 mm can be used for larger rib gaps for trapezoidal clamping bracket 35 mm.	
1 x trapezoidal clamping bracket 50 mm	FKT0019
1 x trapezoidal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

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

CIT10-01 Ribbed radiators, pitch greater than 40 mm

Tubular radiators

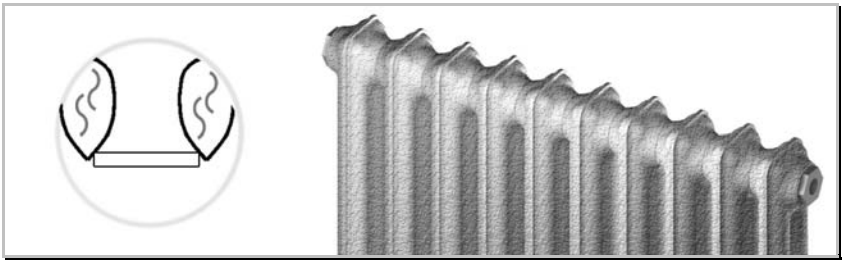
Special features:
Special clamping brackets are required for installation heights greater than 900 mm. This prevents the heating tubes being pushed apart by the trapezoidal clamping bracket.



See main installation for installation position

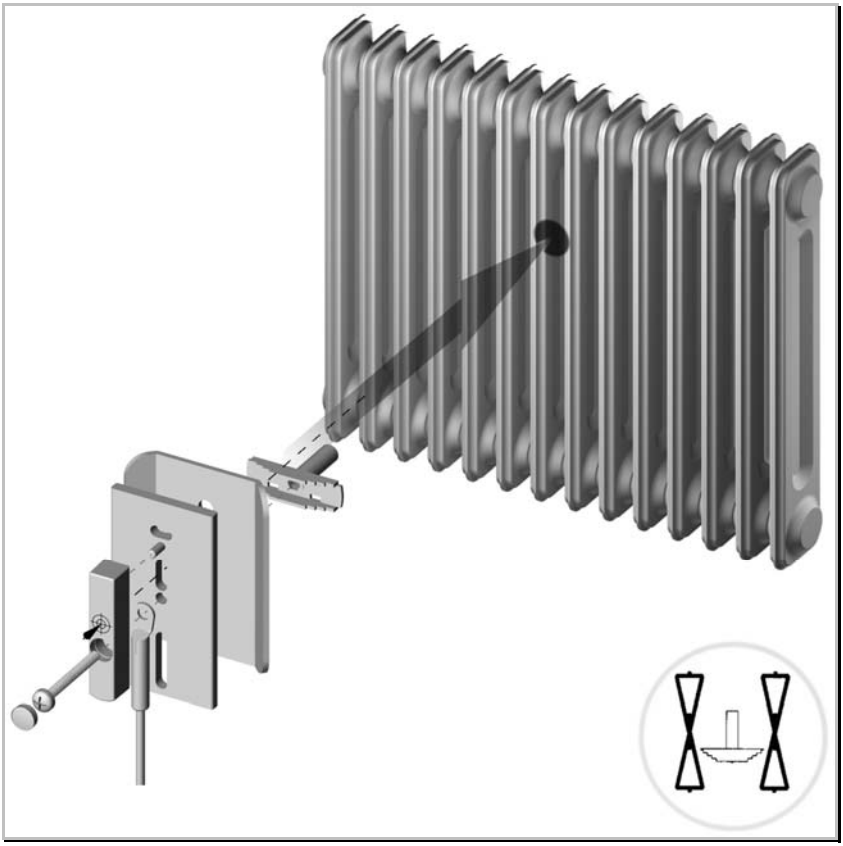
Supplements / additional information:	
Clamping bracket tubes TE 46 mm	FKT0016
or 1 x clamping bracket for tubes TE 36 mm	FKT0015

Cast iron radiators



See main installation for installation position

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



Main installation

Complete installation kit:	HCAI-K010 002

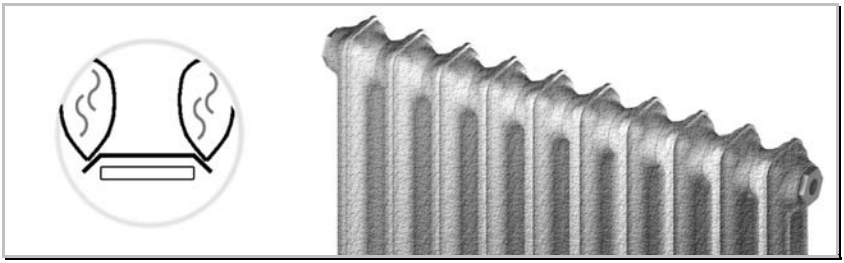
Comprising:	
1 x shortened clamping angle	FKT0009
1 x wide prism	FKA0001
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 50	FNR0005

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

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

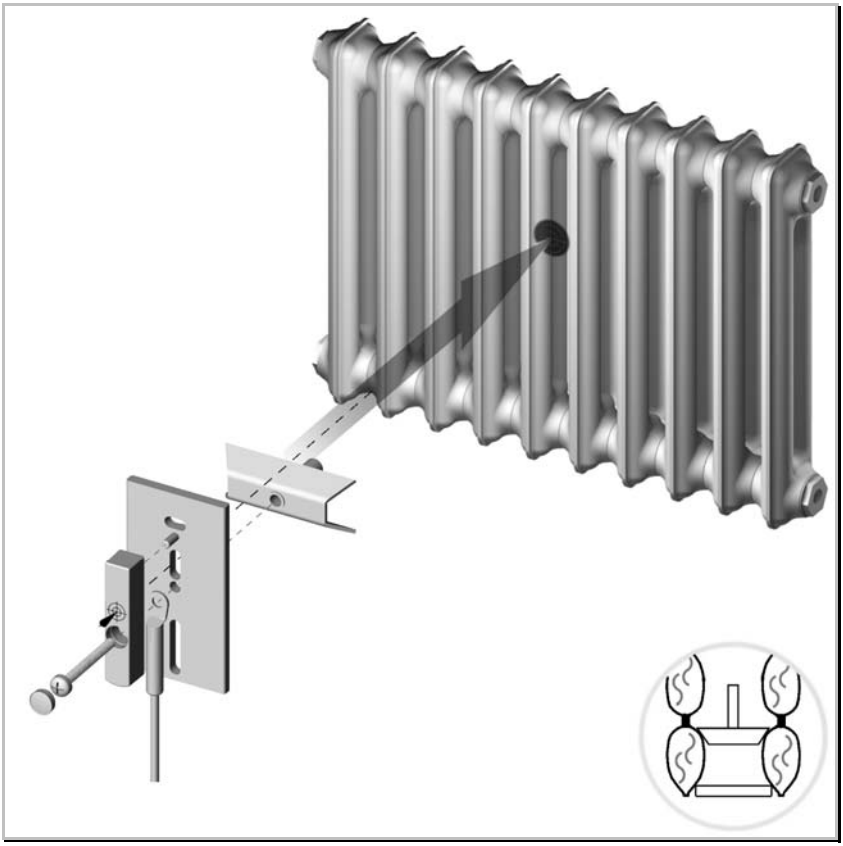
CIT10-02 Ribbed radiators, pitch equal to and smaller than 40 mm

Cast iron radiators



See main installation for installation position

CIT10-03 Cast radiators type SR



Main installation

Complete installation kit:	HCAI-K010 003

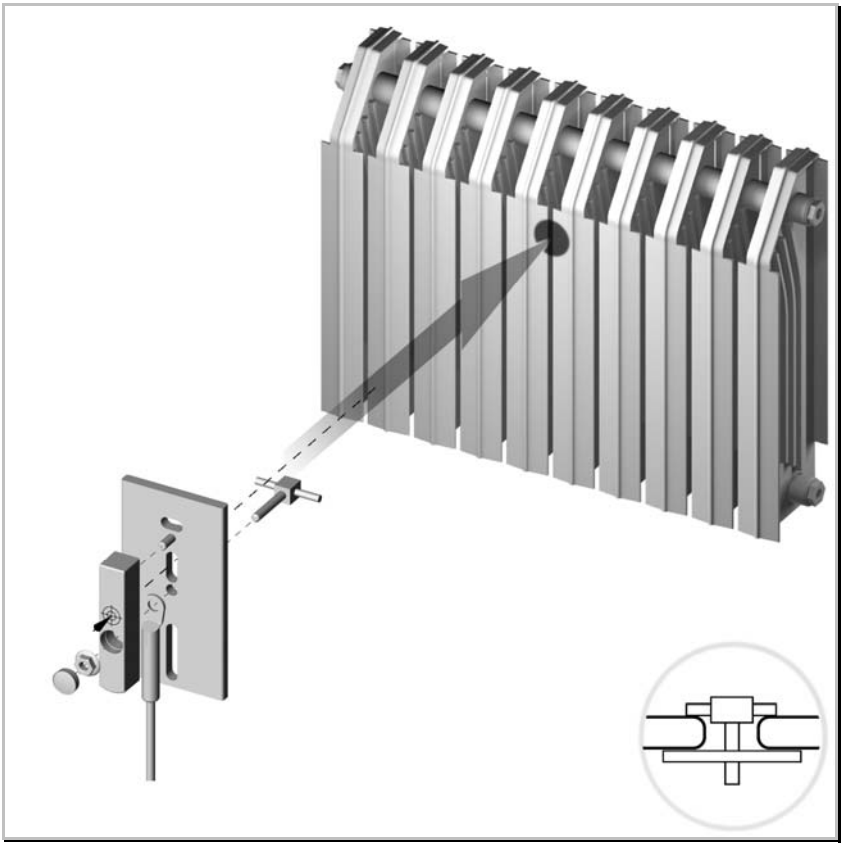
Comprising:	
1 x trapezoidal clamping bracket 35 mm	FKT0018
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x cross-slot screw M4 x 50	FNR0005

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

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

CIT10-03 Cast radiators type SR

CIT10-04 Cast radiators type KR



Main installation

Complete installation kit:	HCAI-K010 004

Comprising:	
1 x square bolt 4,5 mm	BOZ4002
1 x square bolt 6.0 mm	BOZ4003
1 x remote sensor installation plate	FKA0009
1 x welded studs M3 x 12	FKT0011
1 x self-locking nut M3	FNM0005

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

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

CIT10-04 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°.

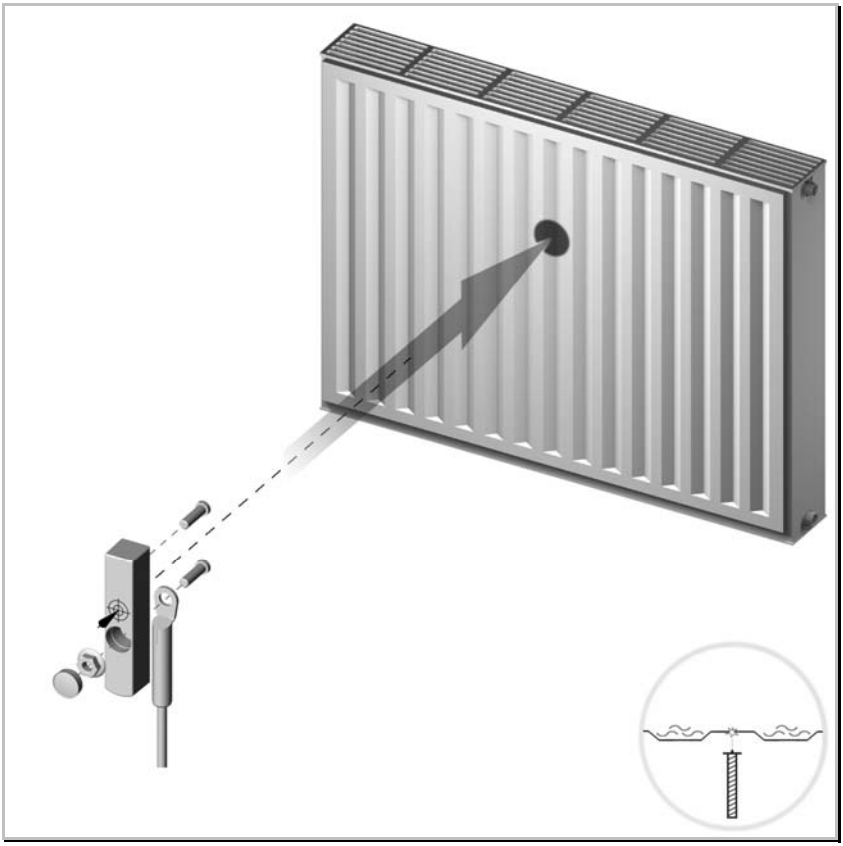
You need different square bolts for different groove widths. Please note the dimensional specifications for the main installation.

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

Special features:

Installation instructions:	
The square bolt 12 mm can be used for groove widths larger than 12 mm. These can be ordered separately as an option.	
1 x square bolt 12,0 mm with cross pin	BOZ4004

CIT10-05 Panel radiators welded installation



Main installation

Complete installation kit:	HCAI-K010 005

Comprising:	
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".

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

CIT10-05 Panel radiators welded installation

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

Installation procedure:

NOTE
Changed installation positions with serial-flow panel radiators!

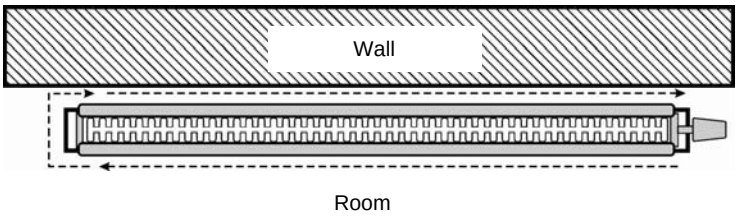
Parallel flow (standard)

With parallel flow through the panels:
Installation at 75 % of the radiator design height
Characteristic: Even flow through several panels.

Serial flow (special installation)

With serial flow through the panels:
Installation at 50% of the radiator design height

Characteristic: No typical heat/water distribution. 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 serial flow through the radiator causes a change in temperature distribution compared with standard flow on the panel facing the room.

In this case, the remote sensor should be installed at 50 % of the radiator design height.

Other KC values are used.

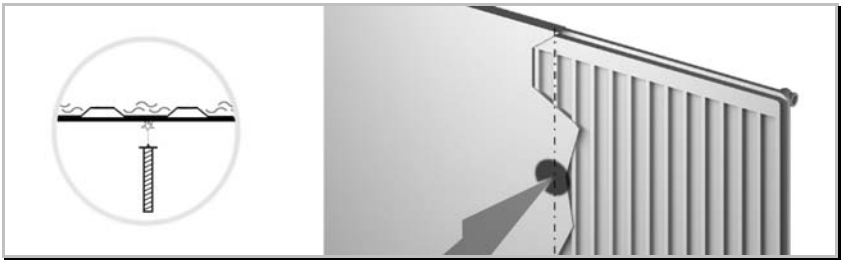
Further details about this CIT no. can be found on the following pages.

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.



See main installation for installation

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

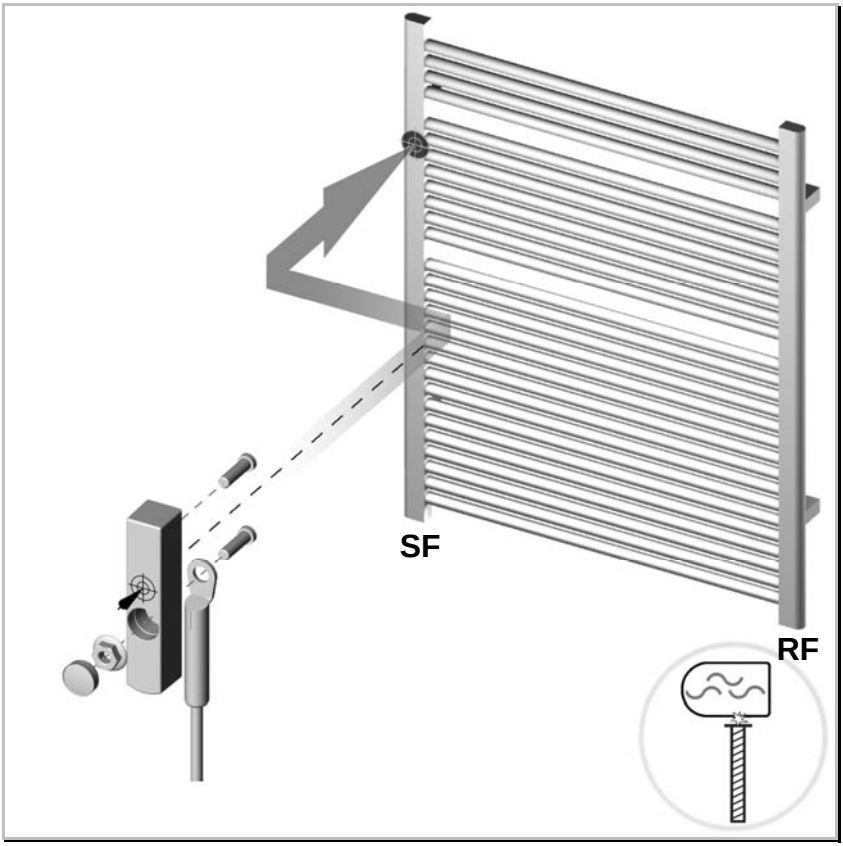
Special features:

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

See main installation for installation

CIT10-05 Panel radiators welded installation

CIT10-06 Bathroom radiators, welded installation on the supply side



Main installation

Complete installation kit:	HCAI-K010 005

Comprising:	
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

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

CIT10-06 Bathroom radiators, welded installation on the supply side

Special features:
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 70% of the radiator design height.

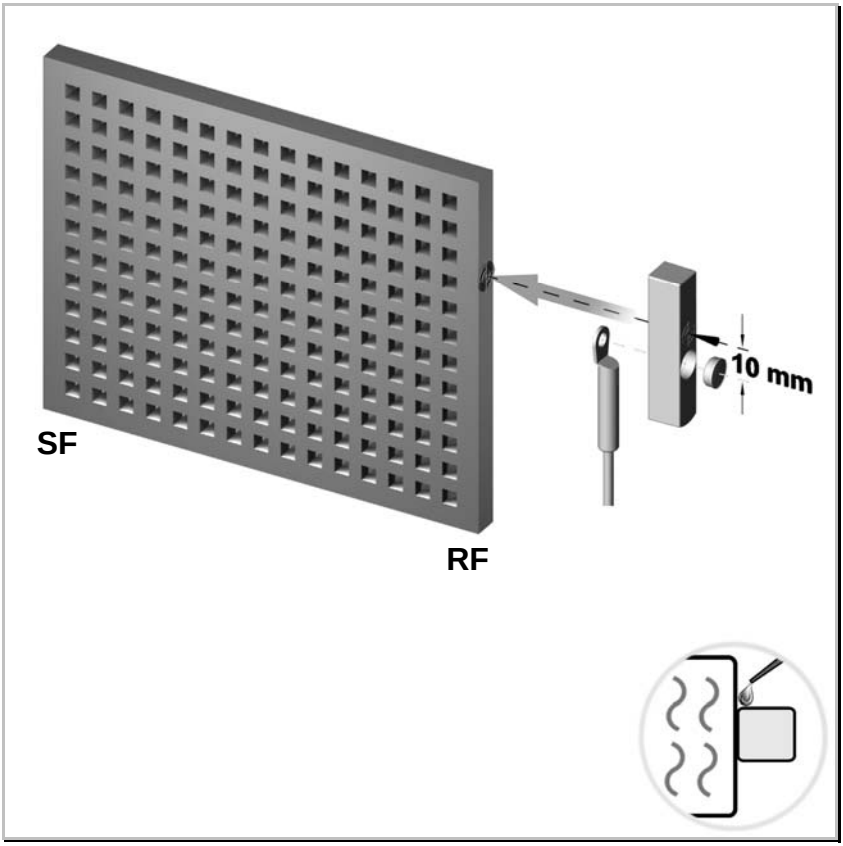
Horizontal flat tubes

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

CIT10-07 Bathroom radiators, adhesive installation on return pipe



Main installation

Complete installation kit, type Karotherm:	---

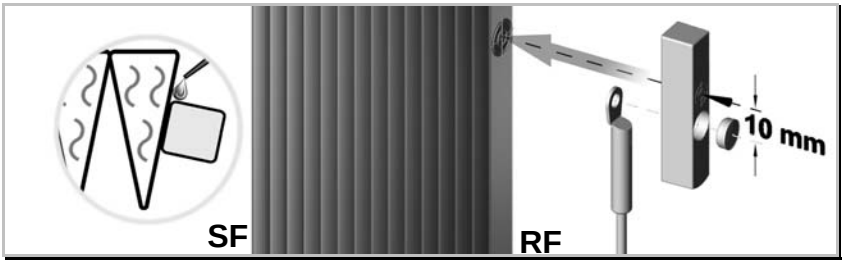
Installation accessories:	
1 x ergo superglue	FSS0007

Installation position:	
Special installation	At 75% of the radiator design height Different designs are possible (slim, upright, cross, ...) Adhesive installation on return pipe

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

CIT10-07 Bathroom radiators, adhesive installation on return pipe

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



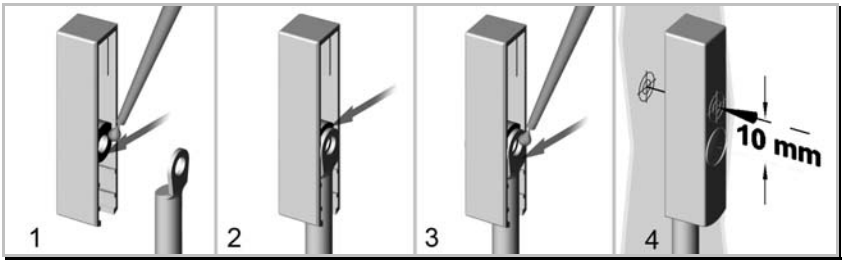
Complete installation kit, radiator type Iguana:	---

Installation accessories:	
1 x ergo superglue	FSS0007

Installation position:	
Special installation	At 75% of the radiator design height Different designs are possible (semi-circular, circular, ...) Adhesive installation on return pipe

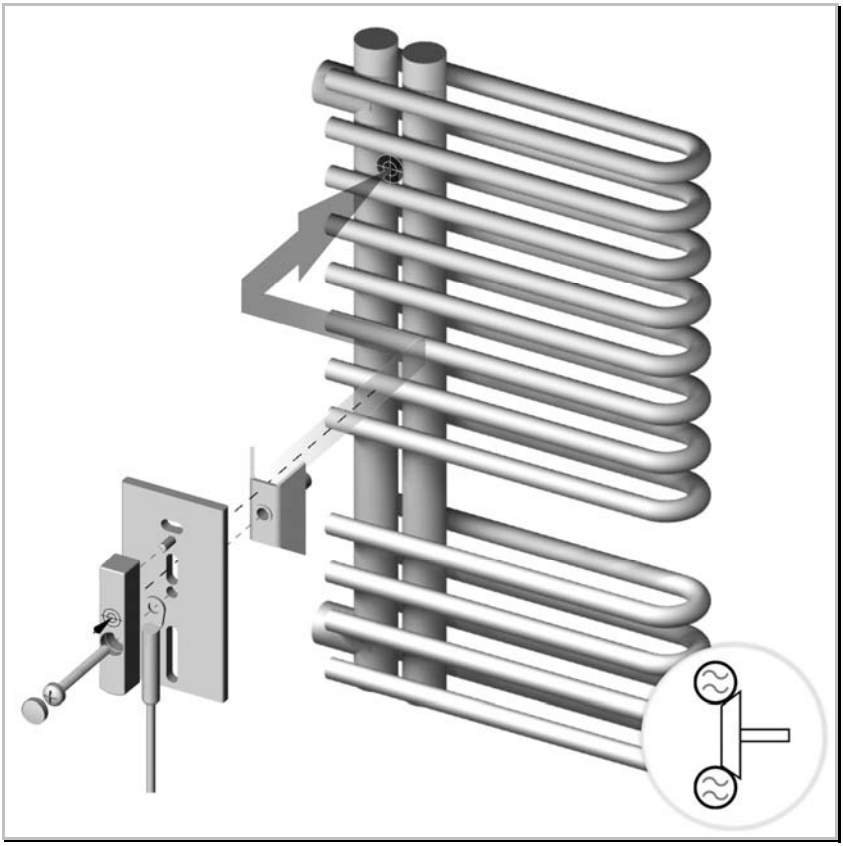
Remote sensor installation:	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of this chapter.

Preparing for adhesion:
Clean the radiator paint 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, collector at one side



Main installation

Complete installation kit:	HCAI-K010 003

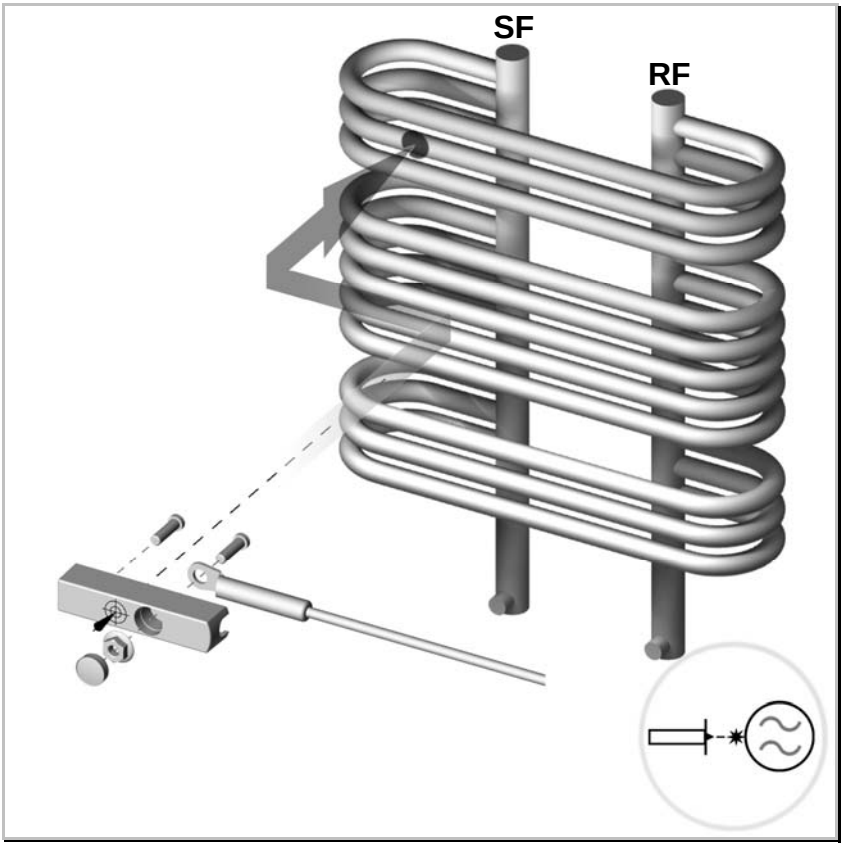
Comprising:	
1 x trapezoidal clamping bracket	FKT0018
1 x remote sensor installation plate	FKA0009
1 x cross-slot screw M4 x 50	FNR0005
1 x welded studs M3 x 12	FKT0011

Installation position:	
Special installation	At 75 % of the radiator design height Installation on 2 supply flow horizontal pipes Between both collectors

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

CIT10-08 Bathroom radiators, collector at one side

CIT10-09 Bathroom radiators, curved horizontal pipes welded installation



Main installation

Complete installation kit:	HCAI-K010 005

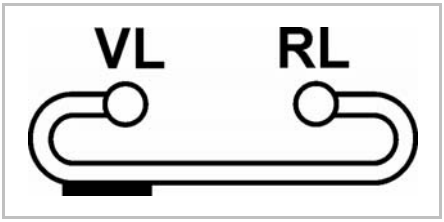
Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

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

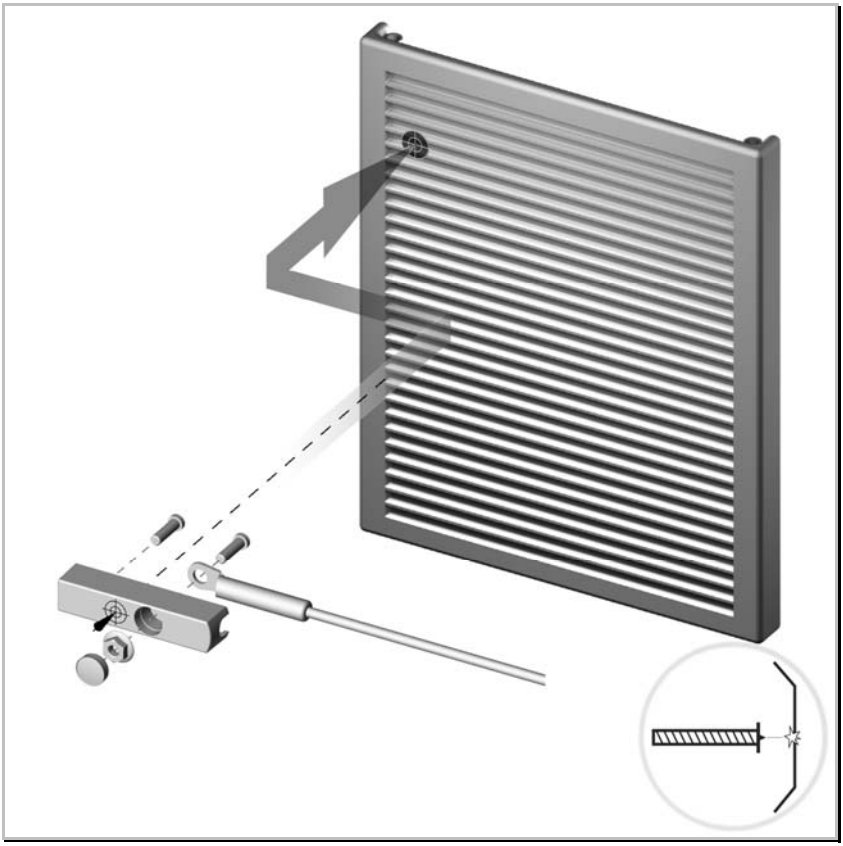
Remote sensor installation:	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of this chapter.

CIT10-09 Bathroom radiators, curved horizontal pipes welded installation

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



CIT10-10 Panel radiators as bathroom radiators, welded installation



Main installation

Complete installation kit:	HCAI-K010 005

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

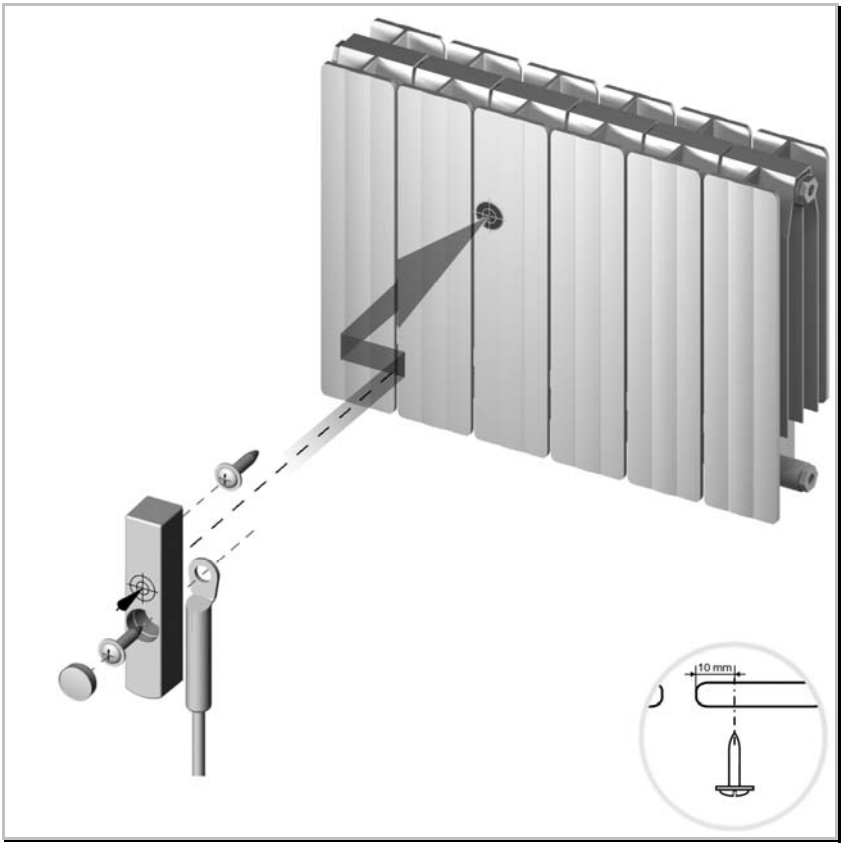
Installation position:	
Special installation:	Remote sensor mounted horizontally at 75 % of the radiator height on the supply side, as near as possible to the collector

Remote sensor installation:	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of 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

Complete installation kit:	HCAI-K010 010

Comprising:	
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

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

CIT10-11 Aluminium ribbed radiators

Special features:
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

Complete installation kit:	HCAI-K010 005

Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

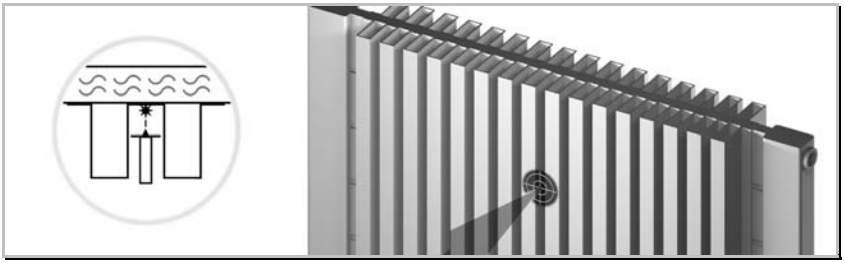
Installation position:	
Standard installation	See Chapter H for basic installation requirements for "standard installation"

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

CIT10-12 Panel radiators, horizontally moulded

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

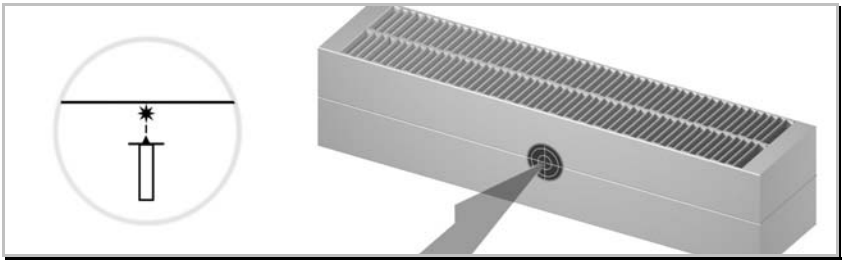
front convection plate



See main installation for installation position

Supplements / additional information:
The remote sensor is attached in the centre between the front convection plates.

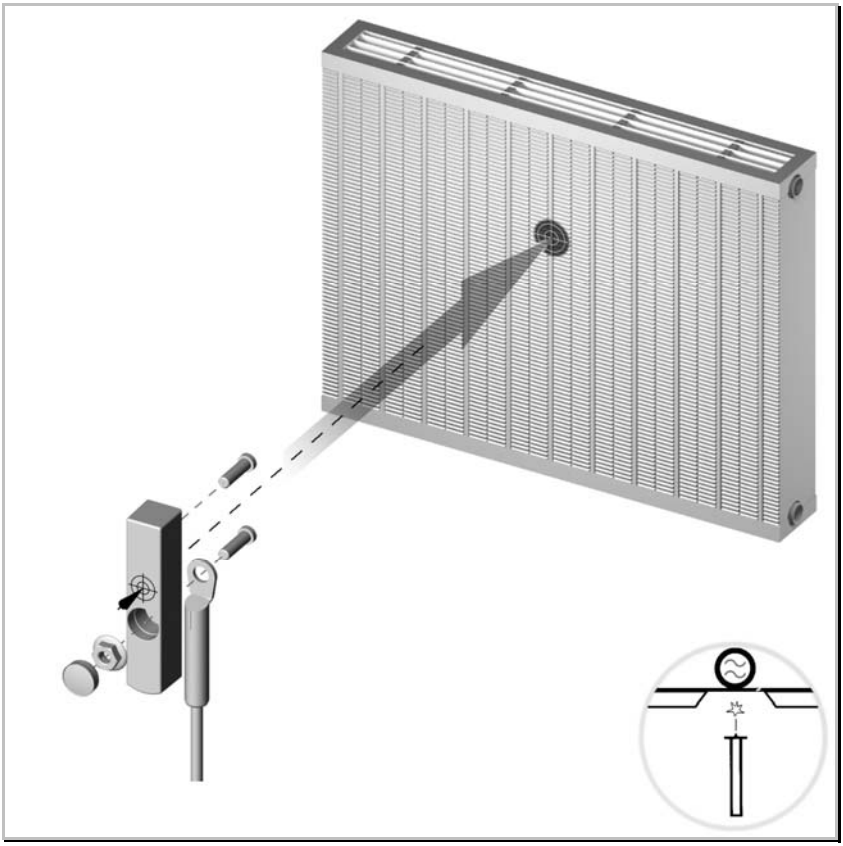
70 mm profiles, horizontal flow 1 to 4 layers



See main installation for installation position

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

Complete installation kit:	HCAI-K010 005

Comprising:	
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"

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

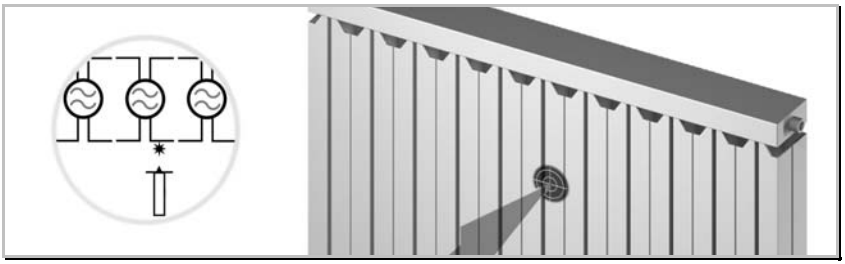
CIT10-13 Radiators with internal tube register

Special features:
Installation between the ribs on a tube carrying water.

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.

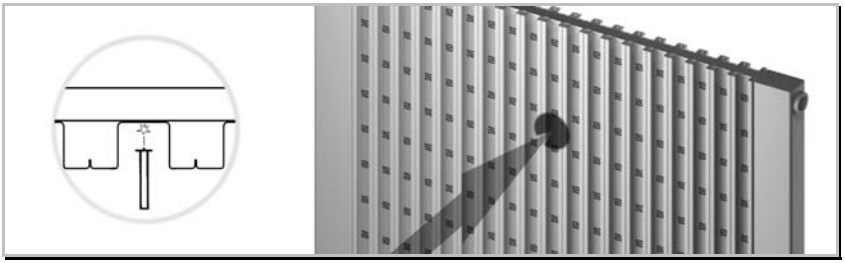
Rotherm



See main installation for installation position

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

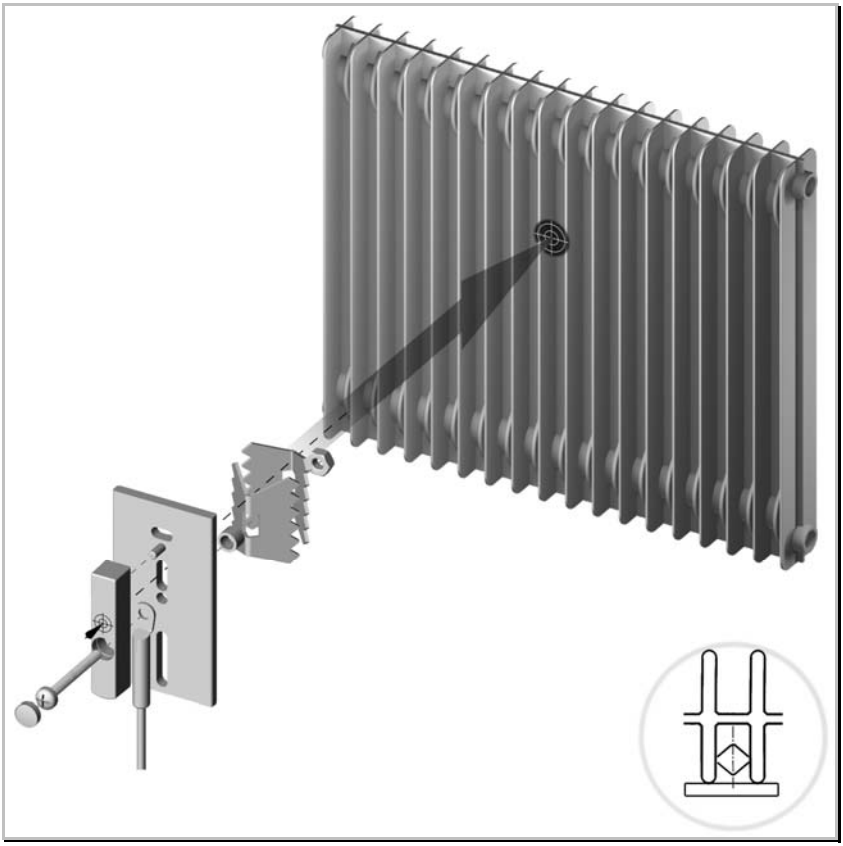
Horizontal water flow



See main installation for installation position

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

CIT10-14 Lamella-type radiators



Main installation

Complete installation kit:	HCAI-K010 014

Comprising:	
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"

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

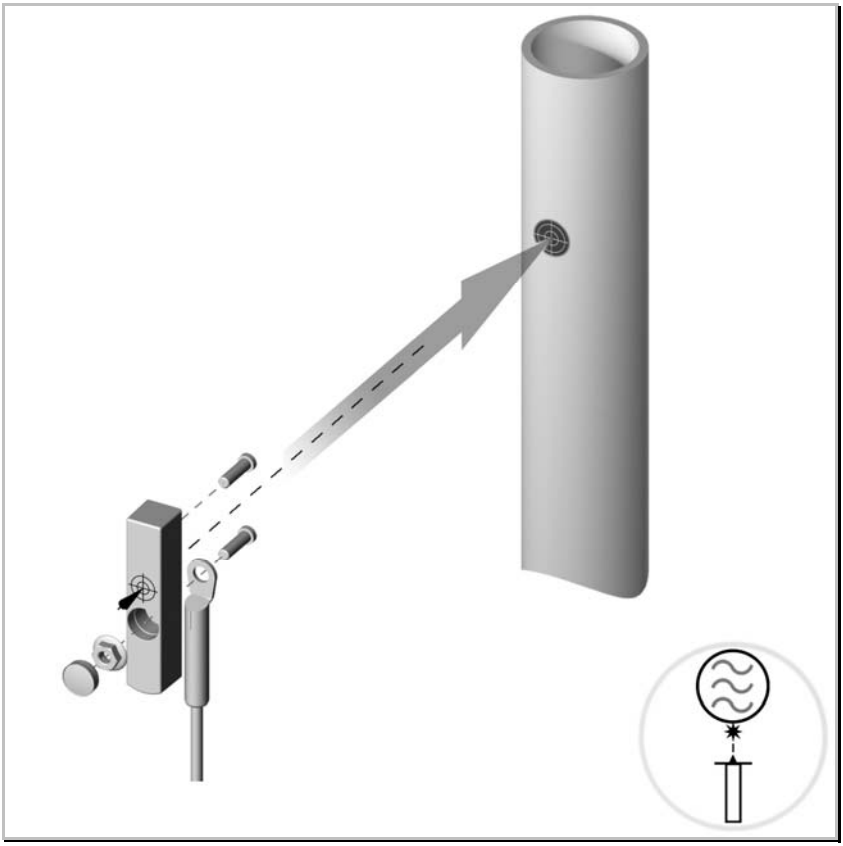
CIT10-14 Lamella-type radiators

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

Complete installation kit:	HCAI-K010 005

Comprising:	
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

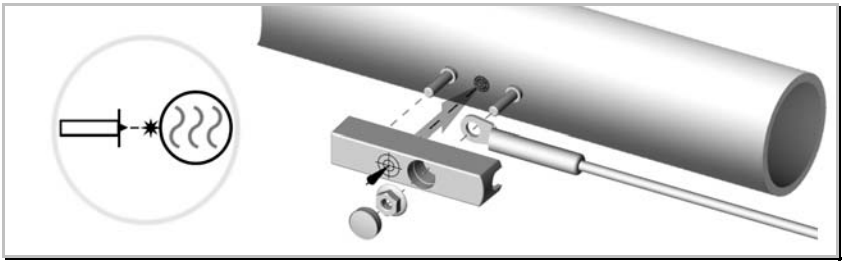
Remote sensor installation:	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of this chapter.

CIT10-15 Steel tube, welded installation

Special features:
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.

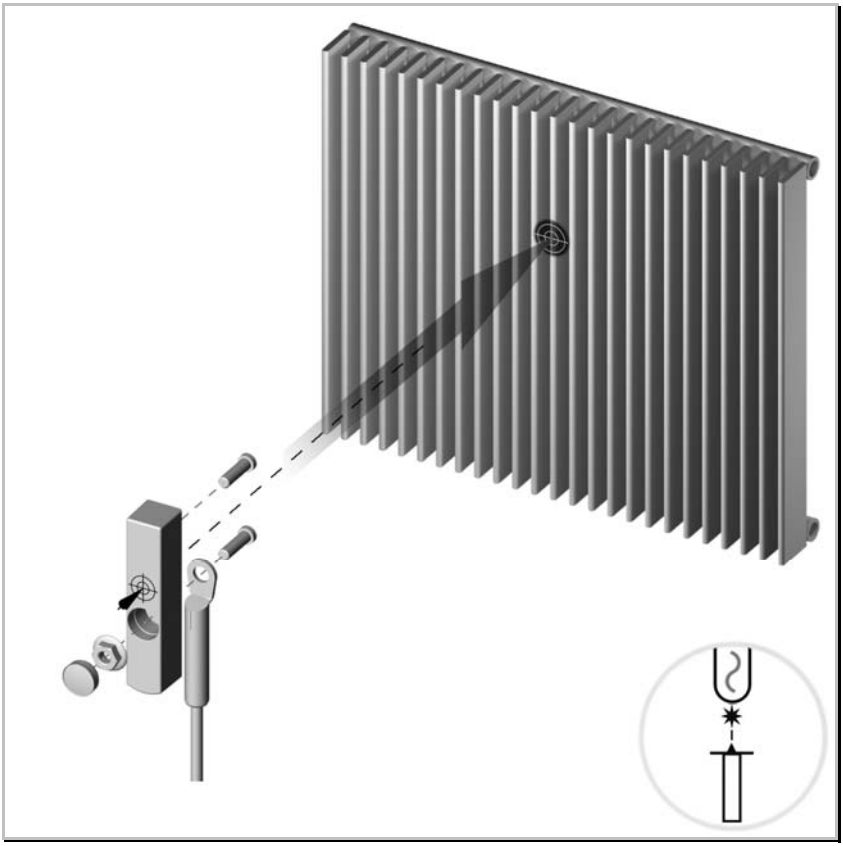
Installation procedure:



See main installation for installation position

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

Complete installation kit:	HCAI-K010 005

Comprising:	
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"

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

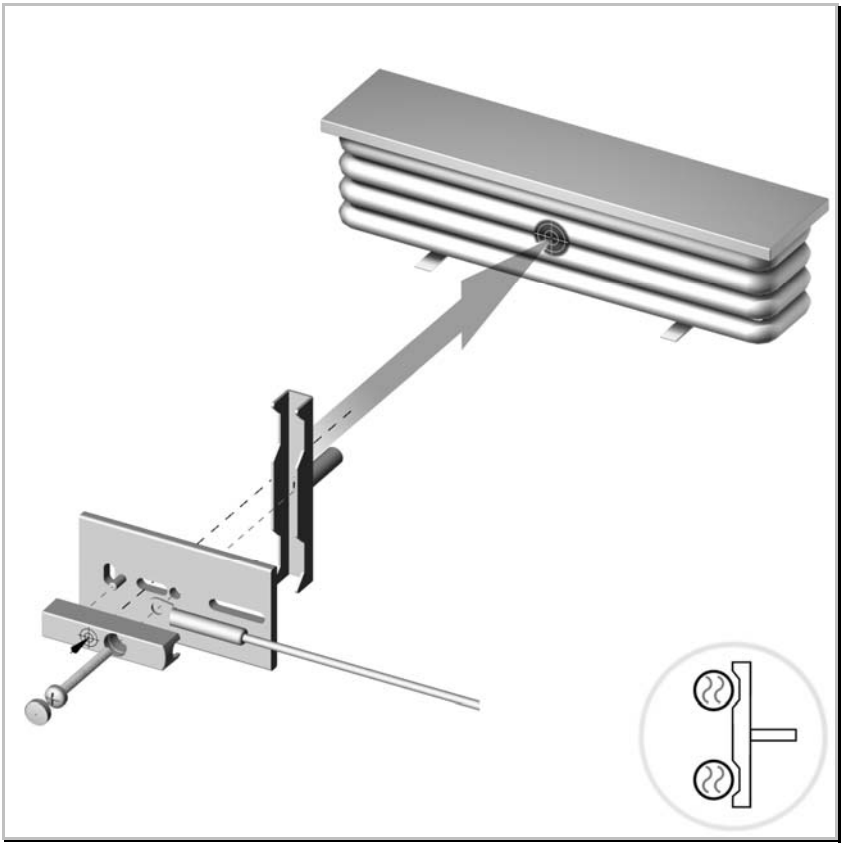
CIT10-16 Flat tube radiators

Installation procedure:
The welded studs of the remote sensor are welded to a flat tube carrying water.

Note:
The head area of the flat tube made have to be flattened off, depending on the circumstances.

Please note:
The material can have thin walls!

CIT10-17 Window ledge radiators



Main installation

Complete installation kit:	HCAI-K010 013

Comprising:	
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

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

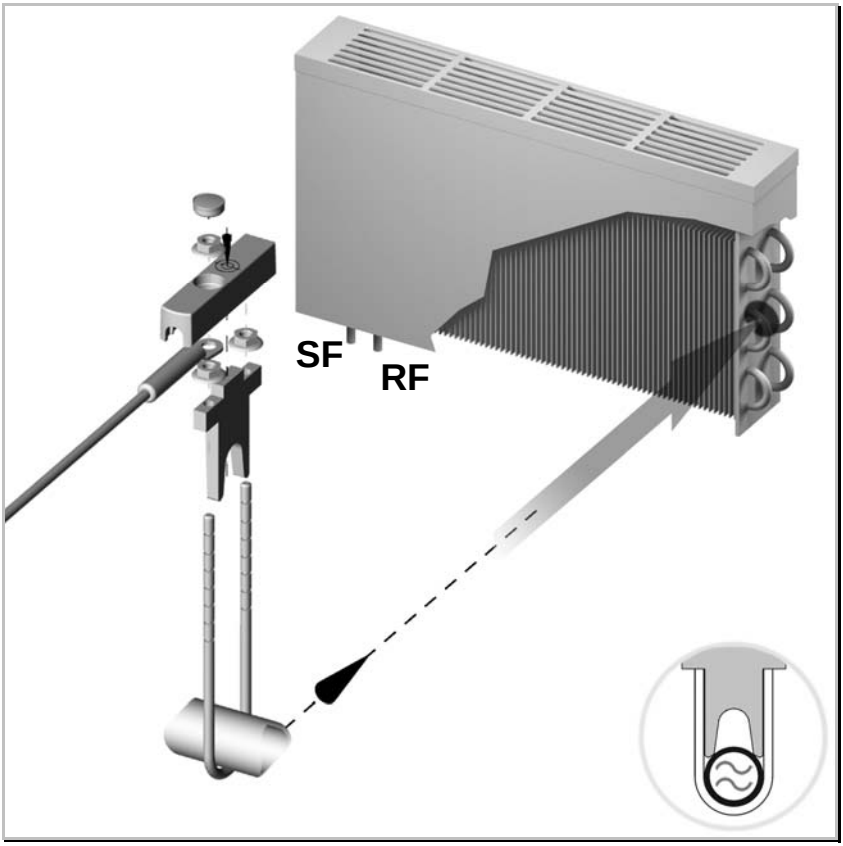
CIT10-17 Window ledge radiators

Special features:

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

Complete installation kit:	HCAI-K010 012

Comprising:	
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 in the **centre** of the tube length flown through.
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)

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

CIT10-18 Ribbed convectors

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

Installation aid convector (optional):
Use the installation aid convector for installation (page after next)

Odd number of tubes

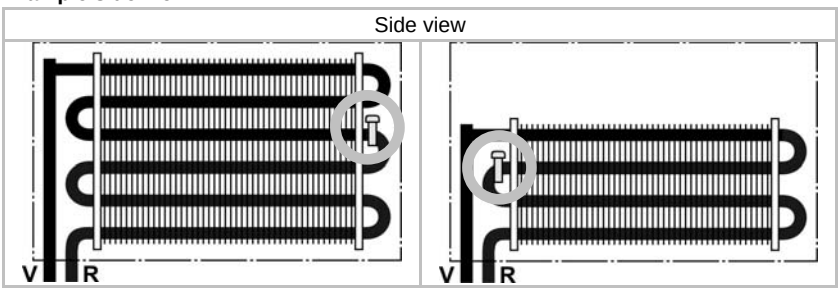
If there are several tubes, the remote sensor must be attached to the central tube

Even number of tubes

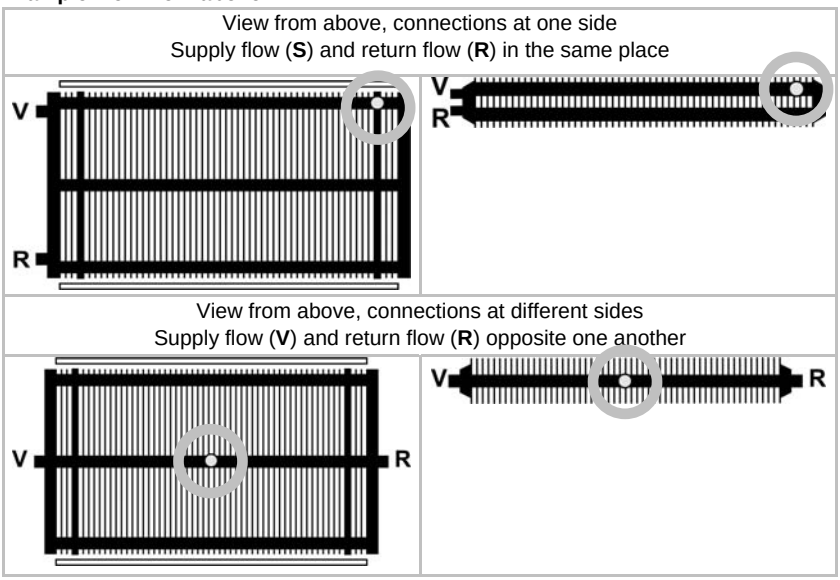
If there are several tubes, the remote sensor must be attached to one of the tubes nearest the centre.

Installation position of the remote sensor:

Example side view:

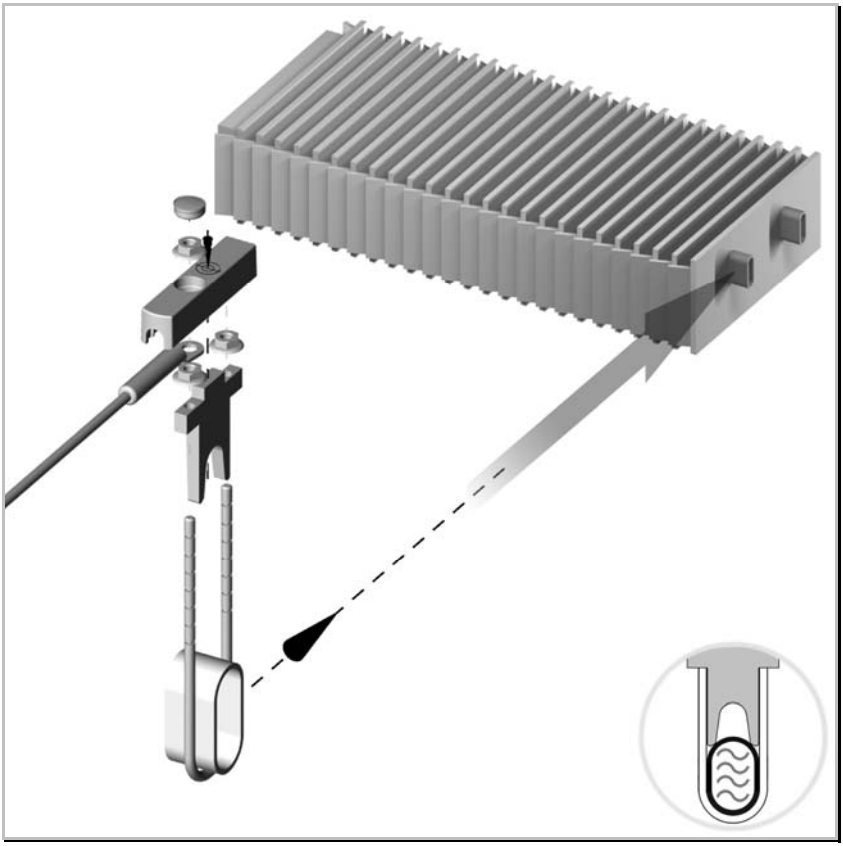


Example view from above:



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

CIT10-18 Ribbed convectors



Main installation

Complete installation kit:	HCAI-K010 012

Comprising:	
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

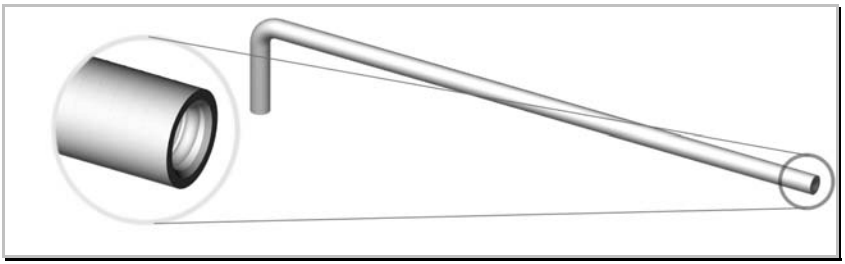
Installation position:	
Special installation	The remote sensor must be installed in the **centre** of the tube length flown through.

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

CIT10-18 Ribbed convectors

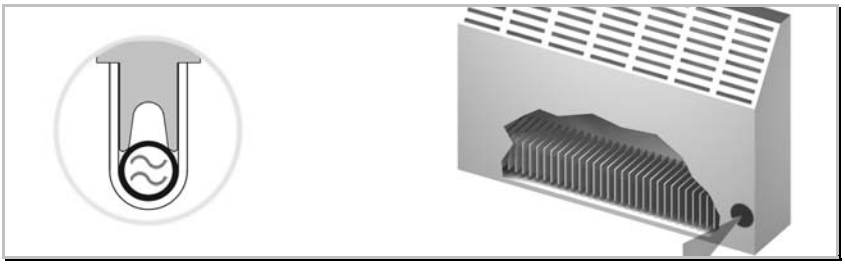
Special features:
The remote sensor must be installed in the **centre** of the tube length flown through.

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.

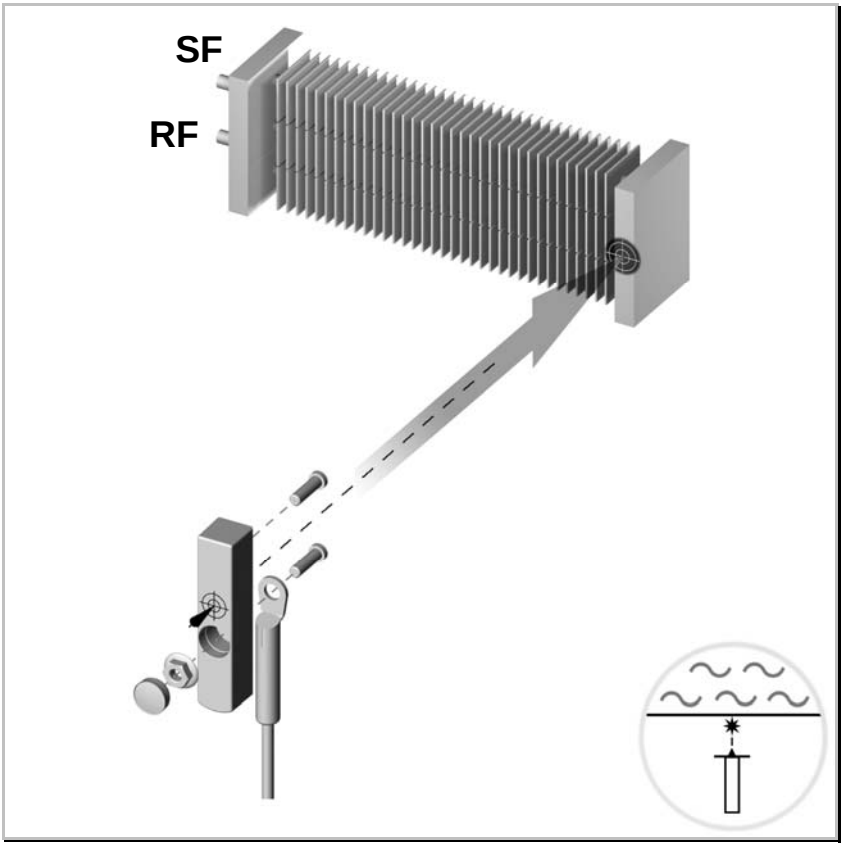
Box design



See main installation for installation position

Supplements / additional information:	
The remote sensor must be installed in the **centre** of the tube length flown through.	
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

Complete installation kit:	HCAI-K010 005

Comprising:	
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

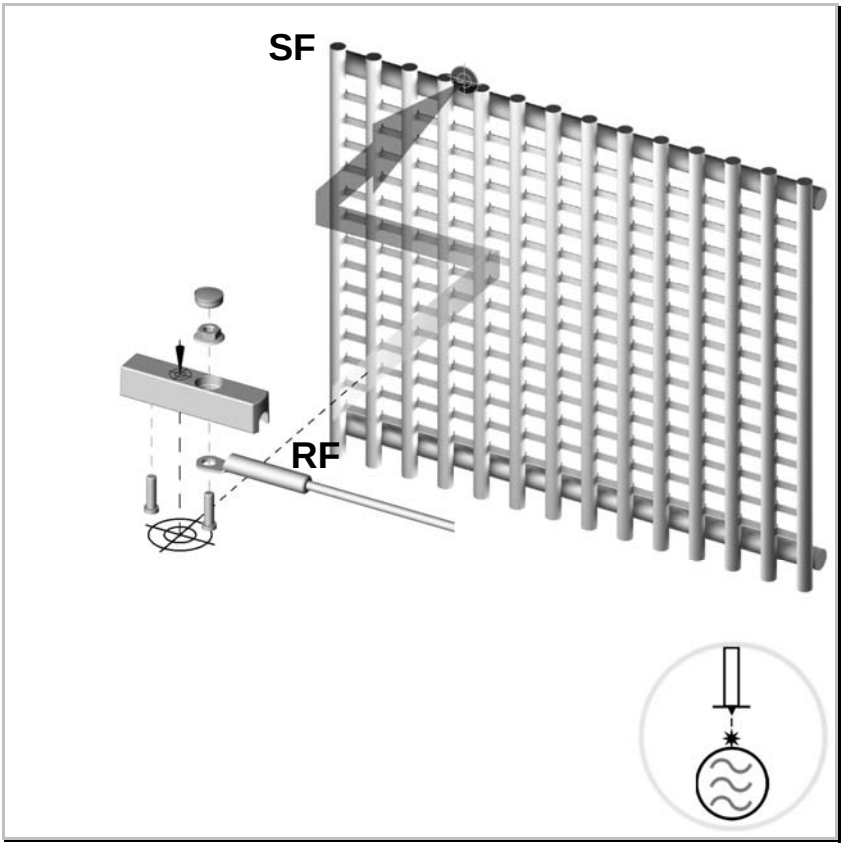
Remote sensor installation:	
Remote sensor installation kit	Remote sensors and wall brackets can be found on page 3 of this chapter.

CIT10-19 Convectors with reversing chamber, welded installation

Note:
The radiator design is typically termed bath convector.

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

CIT10-20 Grid radiators



Main installation

Complete installation kit:	HCAI-K010 005

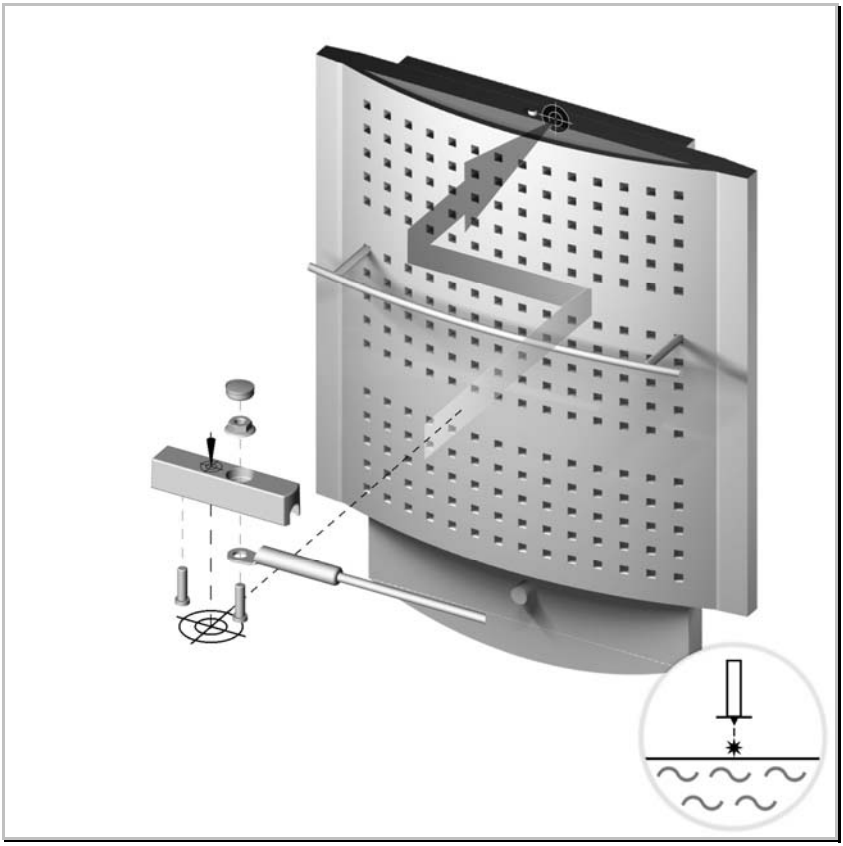
Comprising:	
2 x welded studs M3 x 8	FKT0013
1 x self-locking nut M3	FNM0005

Installation position:	
Special installation	At 25% of the radiator design width (supply side) On the upper horizontal tube

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

CIT10-20 Grid radiators

CIT10-21 Design radiators (e.g. Kermi stainless steel)



Main installation

Complete installation kit:	HCAI-K010 005

Comprising:	
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)

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

CIT10-21 Design radiators (e.g. Kermi stainless steel)

Remote sensor installation

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