Engelmann Heat Cost Allocator

Mounting Guide HCA e2

Version 2.0

Status 2025/09/10 Subject to technical change! Engelmann Sensor GmbH I Rudolf-Diesel-Straße 24 - 28 I 69168 Wiesloch, Germany

Contents

1. Instructions for installing the electronic heat cost allocator HCA e2

Proper installation of the heat cost allocator is a basic prerequisite for correct detection of the temperature readings on the radiator. Accurate installation therefore ensures the legal certainty of the heating cost bill based on the measured values. For this reason, the following general information on the requirements of DIN EN 834, the general instructions for installation and the heat cost allocator itself, as well as the mounting types shown on the mounting sheets must be observed (see Chapter 6 onwards).

1.1. Requirements from DIN EN 834 (extract)

According to DIN EN 834, heat cost allocators are:[1]
"Recording measuring devices for the temperature integrated over time. The temperature is used to determine the heat emission of the room heating surfaces on which the heat cost allocators or their sensors are installed".
"The unweighted display value is the approximate value of the time integral of the measured characteristic temperature of the room heating surface or temperature difference between the room heating surface and the room".

"The weighted display value with the designation consumption value (*see EN 834:2017 3.24*) is obtained from the unweighted display value (*see EN 834:2017 3.23*) by multiplication with rating factors, in particular for the reference thermal output of the room heating surface (Kq, *see EN 834:2017 3.37*) and for the thermal contact between the sensors and the temperatures to be detected (Kc, *see EN 834:2017 3.38*) (*see EN 834:2017 5.3*)".
"The consumption value is an approximate value for the heat emitted by the heating surface and consumed by the user in the time integral. The consumption value is either read directly from the heat cost allocator (product-scaled operating mode) or formed by subsequent conversion of the unweighted display value (unit-scaled operating mode)".

"The consumption value is therefore a measurement result that contains the properties of the measuring device, the room heating surface, other boundary conditions and additional uncertainties of the rating factors and the installation. Measurement deviations (measurement errors) of the recorded heat are therefore not solely dependent on the measuring device. This means that heat cost allocators cannot be calibrated in the same way as heat meters" (*see EN 834:2017 4*).

In order to adapt the heat cost allocator to the different radiators (radiator standard output, installation type and position), so-called rating factors are used. The rating factors are determined at great expense in special test cabins. The DIN EN 834 standard describes the rating as follows:

Rating factor Kq (*5.3.1*)
"The rating factor (Kq) is the (dimensionless) numerical value of the standard output of the radiator".
The standard power is specified in watts and is determined at the following temperatures:

tV = 90 °C; tR = 70 °C; tL = 20 °C (reference system (Q (60K)) → DIN 4704 (1971)

This definition originates from DIN 4704. In the meantime (1997), the new standard DIN EN 442 came into force, replacing the old standard. There is now a significant change in DIN EN 442, in which lower temperatures have been specified:

tV = 75 °C; tR = 65 °C; tL = 20 °C (reference system (Q(50K))

[1] Extract from EN 834:2017.

This requires additional expenses for determining the Kq rating factor on a case-by-case basis.
According to DIN EN 834, the "old" standard output (90° / 70° / 20°) [Q(60K)] is still decisive for the rating factor Kq (*5.3.1*).

New radiator types are often only measured according to DIN EN 442 [Q(50k)]. For this reason, performance tables according to 90° / 70° / 20° are often not available. In this case, Kq must be converted to the temperatures of DIN 4704 [Q(60K)].

$$Q(60K) = Q(50K) * \left(\frac{60}{50}\right)^{n}$$

n *is the radiator exponent determined during the radiator test, this varies depending on the radiator type. If the true radiator exponent is not available, the exponent* $n = 1.3$ *can be used.*

Rating factor Kc (*3.3.8*)
"The Kc rating factor takes into account the different thermal coupling of the temperature sensors to the temperatures to be measured for different types of heating surfaces".
As the coupling of the temperature sensors to the heating medium water in the radiator is strongly influenced by the design of the radiator, there are also different Kc values for different radiators.

Use of the unit scale
All heat cost allocators of a billing unit (total of the usage units) are programmed with the same K values. The readings taken from the heat cost allocators fitted to the radiators are converted into consumption values for billing purposes using the specific rating factors.

Using the product scale
All heat cost allocators in a billing unit are programmed with the radiator-specific K values. The read display values therefore represent the consumption value (see also Chapter 3).

1.2. Further requirements from DIN EN 834 (extract)

On the underside of the HCA e2, in addition to the temperature application limits, the approval mark with the approval number is also listed. They confirm the conformity of the appliance with DIN EN834. In addition to the requirements for the device, the DIN also specifies requirements for proper installation. Requirements from the standard

1. Basic conditions for the use of electronic heat cost allocators:
   - the temperature application limits must not be exceeded
   - the heating surface must be accessible

   It is therefore not suitable for use with:

• underfloor heating	• radiant ceiling heaters
• damper-controlled radiators	• radiators with fan
• warm air heaters	• heating systems that are operated with steam as a medium

The heating system must be operated according to the state of the art:

It is recommended according to DIN,

• that radiators are equipped with a control device for the room temperature
• that the flow temperature is controlled via the outside temperature
• that the heating medium flows correspond to the design state

2. The average heating medium design temperature of the heating system must be within the temperature operating limits of the heat cost allocator. For the HCA e2, these are

• compact unit tmin = 55 °C, tmax = 95 °C for single-sensor operation
• compact unit tmin = 35 °C, tmax = 95 °C for two-sensor operation
• remote sensor device tmin = 55 °C, tmax = 105 °C for single-sensor operation
• remote sensor device tmin = 35 °C, tmax = 105 °C for two-sensor operation

3. The installation must be carried out in such a way that the devices are permanently fixed and protected against tampering.

4. The HCA e2 is usually installed at 75 % of the radiator height; the specifications in the installation guidelines must be observed.

5. It is not permitted to use heat cost allocators of different types or makes within a billing unit (*7.5*).

6. For the rating of the units, the factor Kq is to be applied in any case, the factors Kc and Kt on a case-by-case basis.
   The user must be able to verify the overall assessment factor either by viewing it on the device or by printing it on the documents provided.
   The overall assessment factor must include the radiator output in increments of max. 60 watts or 5 % for a radiator output up to and including 3000 watts and 3 % for a radiator output above 3000 watts (*8.4*).

7. The rating factor Kq must be determined on the basis of the radiator on which the heat cost allocator is installed (*8.1*).

8. The rating factor Kt is only to be used for heat cost allocators according to the single-sensor measuring method and for design internal temperatures below 16 °C (*8.3*).

1.3. Rating factors

A billable value is determined from the values read out or read off using the K rating factors. These factors depend on the type of radiator. Only the application of the correct Kc values and a correct Kq value guarantees correct billing. A Kc value table is available on request. The Kq value can be obtained from the radiator manufacturer, corresponding data sources (data sheets) or external service providers with radiator databases (see also Chapter 3).

1.4. Determining equations

The determining equation is used to determine a billable value from the read or read-off values (units). Multiplying the unweighted display value by the rating factors produces a weighted display value or consumption value. The consumption value is either read directly from the heat cost allocator (product scaling) or formed by subsequent conversion of the unweighted display value (unit scaling).

1.4.1. The determining equation for operation in product scale mode

Operation with product scale:[2]

$$\boldsymbol{Consumption\ value = Display\ value}$$

1.4.2. The determining equation for operation in unit scale mode

Operation with unit scale:

1-sensor mode:

$$\boldsymbol{Consumption\ value = Display\ value * \frac{Kc1\ *\ Kq}{1.181}}$$

2-sensor mode:

$$\boldsymbol{Consumption\ value = Display\ value * \frac{Kc2\ *\ Kq}{2.288}}$$

Remote sensor (RS) mode:[3]

$$\boldsymbol{Consumption\ value = Display\ value * \frac{KcRS\ *\ Kq}{1.097}}$$

[2] Depending on the operating mode (1-sensor, 2-sensor, remote sensor), the corresponding K values (Kc1, Kc2, KcRS, Kq) must be written to the heat cost allocator before or shortly after installation. This overwrites the default values in the input mask. The Kc values and the Kq value are entered using the Engelmann parameterization software "Device Monitor" (see also Chapter 2.1).

[3] Applies for the 1-sensor as well as for the 2-sensor mode. Kc1 = Kc2 applies here.

As the listed units are already pre-rated in the calculation algorithm with internal Engelmann factors when operating with a unit scale in the various modes (1-sensor, 2-sensor, remote sensor (RS)), these must be removed again in the final rating with the radiator-specific Kc values. This is done by dividing the internal factors in the calculation formulas of the determining equation shown above.

1.5. Basic sensitivity of the Engelmann heat cost allocator

For estates where the pipe heat share must be determined according to the Supplement "Method for the consideration of heat loss through pipes" to Guideline VDI 2077, the basic sensitivity of the heat cost allocator used is required. The basic sensitivity reflects the ratio of the display progress of the heat cost allocator (CU) and the heat output of the radiator with a standard heat output of 1000 W:

The basic sensitivity of the Engelmann heat cost allocator HCA e2 is:[4]

1.07

1.6. Intrayear consumption information (ICI) and conversion of consumption units into kilowatt hours (kWh)

The obligation to provide the intrayear consumption information (ICI) is laid down in Section 6a Billing and Consumption Information of the Heating Costs Ordinance. With the amendment of the Heating Costs Ordinance, the requirements of the EU Energy Efficiency Directive (EED) were transposed into German law. Among other things, it stipulates that the user's consumption in the previous month must be stated in kilowatt hours. However, since heat cost allocators do not measure energy, but only approximately record the amount of heat (Q) emitted into the room with units proportional to consumption via a temperature-time integral, the indication of consumption required by the Heating Cost Ordinance in Section 6a is calculated using the basic sensitivity (see Chapter 1.5).
Consumption units are converted into kilowatt hours using the following formula:

$$\textbf{\textit{Consumption in kWh}} = \frac{\textbf{\textit{Consumption units}}}{\textbf{\textit{Basic sensitivity}}}$$

2. Procedure for operating the heat cost allocator with product scale

Operating the heat cost allocator with product-scaled rating means that the display progress (accumulated units) corresponds to the actual consumption value in relation to the radiators equipped in the estate, as the radiator-dependent parameters (radiator-specific Kc value and Kq value) are already stored in the device itself. A subsequent rating is therefore not necessary (display value = consumption value).

[4] The basic sensitivity applies to all operating modes, i.e. 1-sensor mode, 2-sensor mode and remote sensor mode.

2.1. Parameterization of the Kc values and the Kq value in product-scaled operating mode using of the Engelmann "Device Monitor" software

If the Engelmann heat cost allocator HCA e2 is to be used with product scaling, the corresponding K values (Kc and Kq) must be entered using the Engelmann *"Device Monitor*" software. To do this, the *"Heat cost allocator HCA e2"* must be selected in the *"Device Monitor*" during device selection (*see Figure 1 – Marking A*).
Next, select the *"Parameterization"* subsection in the *"Setup*" menu (*see Figure 1 – Marking B*). This usually appears automatically after the *"Heat cost allocator HCA e2*" has been selected in the device selection.
The input area for switching (parameterization) from the standard setting unit scale (*"U-scale"*) to product scale (*"P-scale"*), as well as the corresponding input fields for the Kc values and the Kq value, are located in the bottom right-hand area (*see Figure 1 – Marking C*).

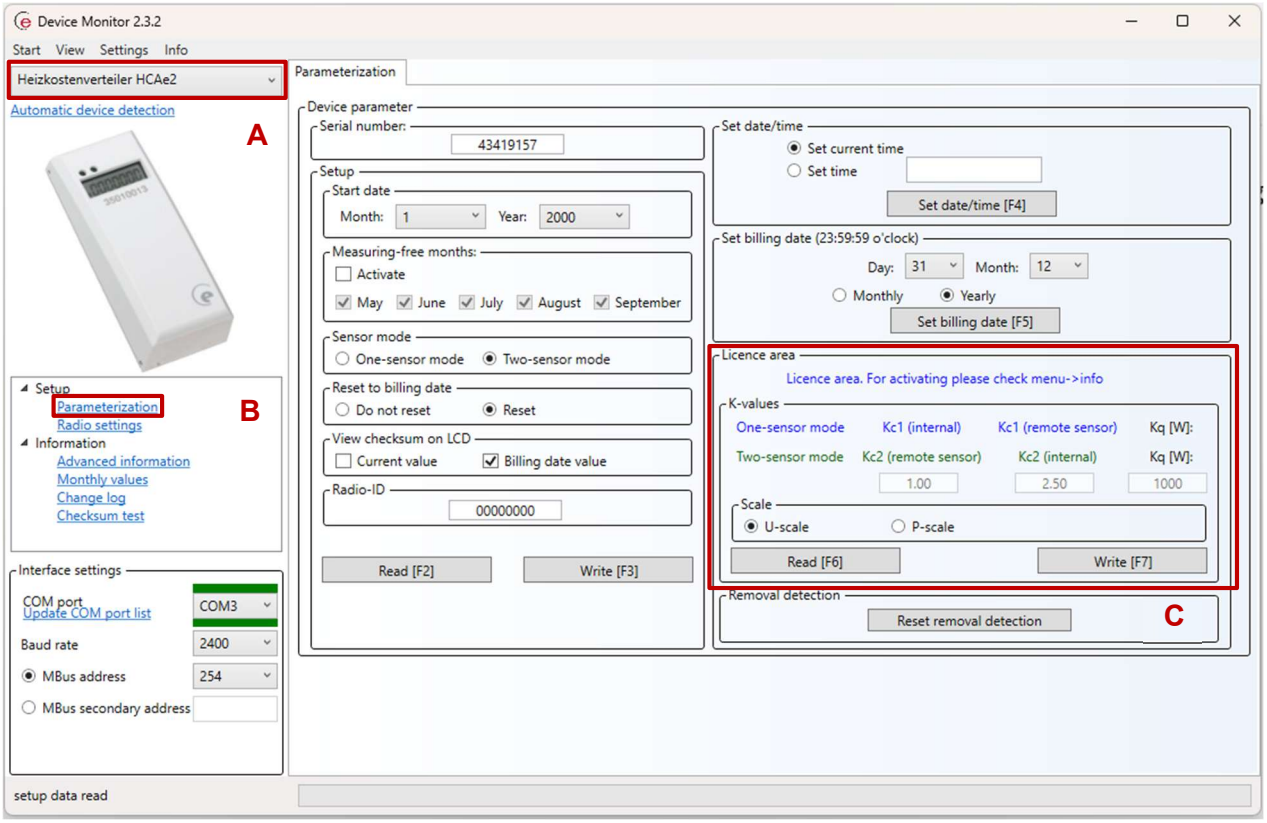


Figure 1: Device Monitor – Selection window heat cost allocator HCA e2 / Setup / Parameterization

For a better overview, the area for reparameterization from unit scale (*"U-scale"*) to product scale (*"P-scale"*) is shown enlarged below.

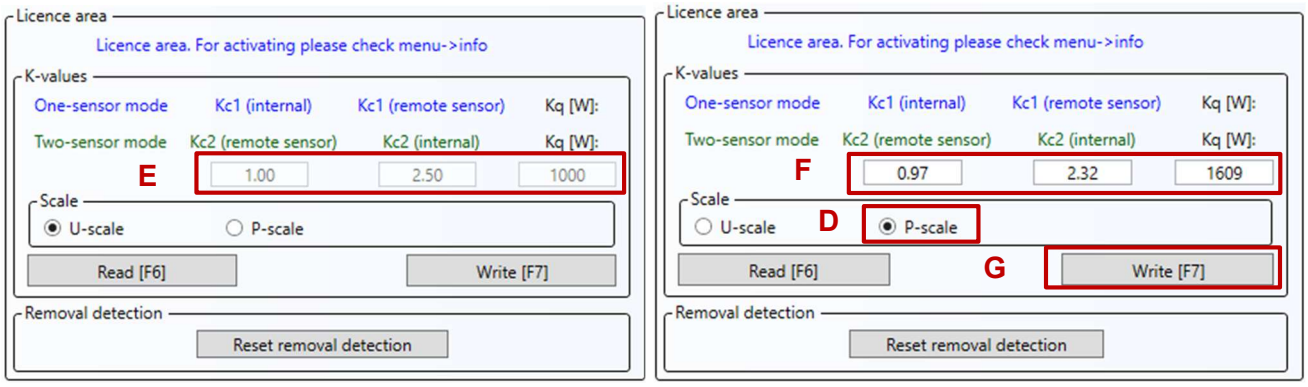


Figure 2: Area for selecting product scale / Entering K values

After activating the product scaling (*"P-scale"*, *see Figure 2 – Marking D*), the inactive, grayed-out input fields (*see Figure 2 – Marking E*) are activated and can be overwritten with the radiator-specific Kc values and the Kq value (*see Figure 2 – Marking F*).[5] Once the radiator-specific values have been entered, they can now be confirmed by clicking the *"Write"* button (*see Figure 2 – Marking G*) in the heat cost allocator.

3. Provision and selection of the necessary K values

Regardless of whether the Engelmann heat cost allocator is used on a standard scale (E-scale, as delivered) or on a product scale (P-scale, parameterization by the customer), the Kq and Kc rating factors are always required to determine consumption.
In the unit-scaled operating mode, the enumerated units of the heat cost allocator are subsequently corrected by the K-factors (usually as part of the annual heating cost bill) in order to arrive at the consumption value relevant for billing from the meter reading. This subsequent correction is no longer necessary with product-scaled operating mode, as the corresponding K values are already entered before the heat cost allocator starts counting (usually before or during commissioning) and the units then listed therefore already correspond to the consumption value.

There is no subsequent correction of units already listed in unit-scale operation by reparameterization from unit scale to product scale!

3.1. Provision of the Kq value

The Kq rating factor, which reflects the standard performance of the radiator, can be found in the radiator manufacturer's documentation (data sheets, brochures, etc.). However, the company *Thermosoft2000* in Magdeburg offers the possibility of providing Kq values with the help of the radiator measurement (identification of the radiator) via the "*Visual Therm"* software. The company *WeBeS* in Berlin also specializes in radiator identification with the software application *"DataSet – System WIB-HIP".*

3.2. Provision of the Kc value

The Kc rating factors for the various radiator designs and types are available on request from Engelmann Sensor in the form of an Excel list *"Engelmann Kc value table*" (this list contains more than 2000 Kc values). Furthermore, the Engelmann Kc values are available in the *"Visual Therm*" radiator database from

[5] Note: The area for reparameterization from unit scale to product scale is only possible with a valid license key. This serves to protect against misuse of the K values relevant for billing when operating the heat cost allocator with product scale. A license key will be provided by the Technical Service after legitimation as an Engelmann customer.

Thermosoft2000, as well as in a reduced number in the *"DataSet – System WIB-HIP"* software application from *WeBeS*.
If the Engelmann heat cost allocator is used with product scaling, the correct K values (Kq and Kc) must be entered into the device before or during installation of the heat cost allocator. Please refer to the explanations in Chapter 3.2.1.
In Chapter 2.1 shows by way of example which Kc values are to be selected and where they are to be entered in the *"Device Monitor"*.

3.2.1. Provision of Kc values in various applications: Engelmann Kc value table, Thermosoft2000 (Visual Therm) and WeBeS (DataSet – System WIP-HIP)

It should be noted at this point that the representation (values) of the Kc values in the various (software) applications is different and must be taken into account in the rating (calculation of the consumption value from the display value).
Whereas when using the *"Engelmann Kc value table*" and the *"Visual Therm"* application from *Thermosoft2000,* the consumption value is calculated according to the method described in Chapter 1.4.2 it should be noted that when using the *"DataSet – WIP-HIP*" software from *WeBeS*, the values listed already contain the specific Kc values corrected by the internal factor. The following example illustrates this:

Example consumption display units of the HCA e2 = **90**	Example power output of the radiator = 1200 W (Kq = **1.2**)	Internal Engelmann Kc value factor (Kc2) = **2.288**

Table 1: Given example data

Application	Engelmann Kc value table	Thermosoft2000 VisualTherm	WeBeS DataSet – WIP-HIP
Kc2 of the application	Kc2 – 75 %	Kc2 – 75 %	Kc2 – 75 %
Radiator model: Ferolli – XIAN Kc value	2.64	2.64	1.15
Calculation of consumption units	$CU = 90 * \frac{1.2 * 2.64}{2.288}$	$CU = 90 * \frac{1.2 * 2.64}{2.288}$	$CU = 90 * 1.2 * 1.15$
	= 124.62	**= 124.62**	**= 124.62**

Table 2: Calculation of the consumption units from the display value

The result of the above calculation of the consumption value from the display value (Engelmann Kc value table / Thermosoft *"VisualTherm"* compared to WeBeS *"DataSet – WIP-HIP"*) is identical because, as already explained, the value displayed by the *"DataSet – WIP-HIP"* software corresponds to the quotient of the originally determined specific Kc value and the internal Engelmann factor (determined Kc value / internal Engelmann Kc factor).[6]

[6] The original Kc values and the internal Engelmann Kc values depend on the operating mode of the heat cost allocator (1-sensor mode, 2-sensor mode, remote sensor mode).

3.2.2. Selection of the radiator to be equipped in the Engelmann Kc value table and selection of the corresponding Kc values

Example:
Entry of the K values for product-scaled operating mode using Engelmann "Device Monitor" for a Kermi NT 2000, pitch 33: IH 600 mm / IL 900 mm / standard heat output 1609 W (example from data sheet), operating mode – 2-sensor mode.

First, filter the radiator to be equipped in the Engelmann Kc value table using the criteria radiator type, manufacturer, model and possibly pitch: here "Kermi NT 2000, pitch 33".
Further additional information on the mounting point can be found in the "Model" and "Mounting compact unit" or "Mounting remote sensor" columns *(see markings in Figure 3)*.

Manufac-turer	Model	Pitch	Kc1 75 %	Kc1 50 %	Kc2 75 %	Kc2 50 %	KcRS 75 %	KcRS 50 %	Profile	Base no.	Protocol no. 75 %	Protocol no. 50 %
Kermi	NT 2000 [33] 1	33	1.18	1.24	2.32	2.50	0.97	1.08	trapezoid	55	ES004	ES062 / ES063FF

Mounting	Mounting compact unit	Mounting remote sensor
101 4	in 50 % installation length, center of the back in 75 % or 50 % installation height with two welding studs 2	in 50 % installation length, center of the back in 75 % or 50 % installation height with two welding studs 3

Figure 3: Extract from the Engelmann Kc value table

The above extract from the Engelmann Kc value table shows that a total of six Kc values are available for the selected radiator type "Kermi NT2000, pitch 33".

3.2.3. Selection of the Kc values based on the mounting point

As the example radiator to be equipped has an installation height (IH) of 600 mm, the Kc values for the mounting point (MP) 75 % are decisive here (see also Chapters 4 and 6).
This leaves three Kc values for the specified mounting point of 75 % in the example given here, which are relevant depending on the operating mode. Similarly, with an installation height (IH) of less than 410 mm for the identical radiator model, the Kc values for the mounting point (MP) of 50 % would be relevant.
It should be mentioned here that not all radiator types and radiator models must have both Kc values (for MP 75 % and 50 %). Whether Kc values are available for both mounting points (MP) or only for one mounting point (MP) depends heavily on the type and design of the radiator, as well as the common application and equipment practice. This also applies to the operation of the heat cost allocator with remote sensor. In this case, various radiators can be fitted with remote sensors if required, while other radiators can only be fitted with remote sensors.

3.2.4. Selection of the Kc values based on the operating mode

The second selection criterion for the correct Kc value is the operating mode of the heat cost allocator. In the majority of applications, this is the 2-sensor mode. This is also the delivery standard of the Engelmann heat cost allocator.
However, the Engelmann HCA e2 heat cost allocator also offers the option of operating the device in permanent 1-sensor mode (however, the application limits must be observed here, see Chapter 1.2, Point 2). This mode can be selected in the menu *"Setup: Parameterization"* of the *"Device Monitor"*.
Depending on the operating mode, the relevant Kc values can now be entered in the fields provided in the *"Device Monitor"*.

In the example selected here, the Engelmann heat cost allocator is to be operated in 2-sensor mode. This determines which Kc value is to be selected and entered.
From the table above (see Figure 3) it can be seen that this is the value for the mounting point (MP) 75 % and the 2-sensor (operating) mode. → ***Kc2 75 %*** → ***2.32***
As a Kc value for the remote sensor is also available for the selected radiator, this can also be entered.
→ ***KcFF 75 %*** → ***0.97***
This has the advantage, even if no remote sensor operation is planned at the time of installation, that the remote sensor Kc value is already stored in the device, so that there is no need to parameterize the device again if the radiator subsequently has to be converted to remote sensor operation (for example, if a cover is subsequently fitted in front of the radiator). If no remote sensor Kc value is available, the preset value in the *"Device Monitor*" can be retained (this also applies in the opposite case, of course, if no Kc value is available for compact mode).
Together with the Kq value, all K values (Kc + Kq) are now available and can be entered in the fields provided in the *"Device Monitor"* according to the operating mode (only applies to the Kc values, as the Kq value remains the same regardless of the operating mode).
The color coding for the operating mode (One-sensor mode or Two-sensor mode) in the *"Device Monitor"* indicates in which field the Kc values to be used are entered.

- The Kc value for the 2-sensor mode (Kc2 internal, **2.32** in the example shown) is entered in field 2 (see Figure 4).
- The Kc value for the remote sensor (Kc2 remote sensor, **0.97** in the example shown) is entered in field 1 (see Figure 4).
- The Kq value (**1609** watts in the example shown) is entered in field 3 (see Figure 4).

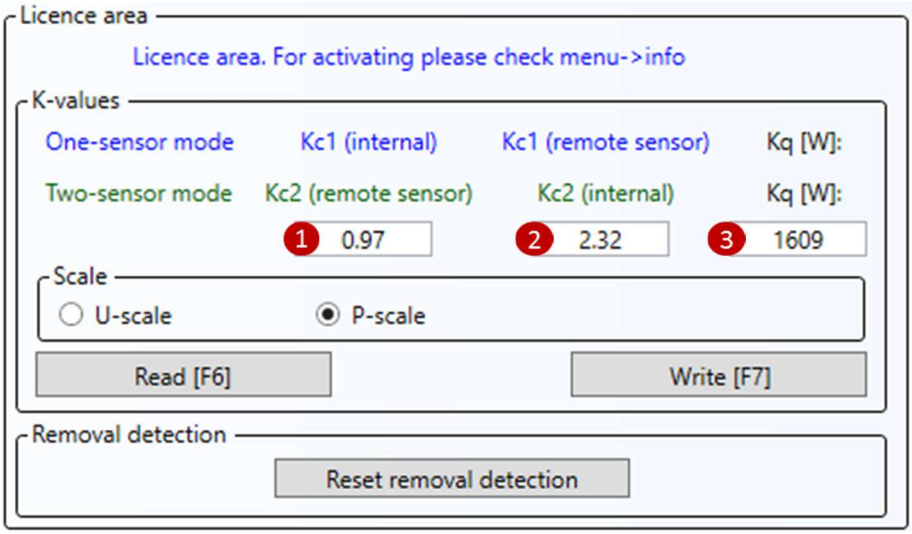


Figure 4: Input mask for K value parameterization in the "Device Monitor"

Once all relevant K values have been entered in the corresponding fields of the *"Device Monitor"*, the values can be transferred to the heat cost allocator using the *"Write"* button (see Chapter 2.1).

The following overview shows an example of where the K values must be entered in the *"Device Monitor*", depending on the operating mode (1-sensor, 2-sensor, remote sensor), in order to ensure correct rating in the heat cost allocator with product-scaled operating mode.

- In permanent 1-sensor operating mode, the Kc1 value is entered in field 1, the remote sensor value in field 2
- In 2-sensor operating mode, the Kc2 value is entered in field 2, the remote sensor value in field 1

- The Kq value is independent of the operating mode and is always entered in field 3

If there is only one Kc value per installation height and operating mode (either Kc value for compact unit or remote sensor Kc value), this Kc value is also entered according to the logic described above or shown in Figure 4. Input fields for which no Kc value is available do not need to be overwritten and retain the preset value.

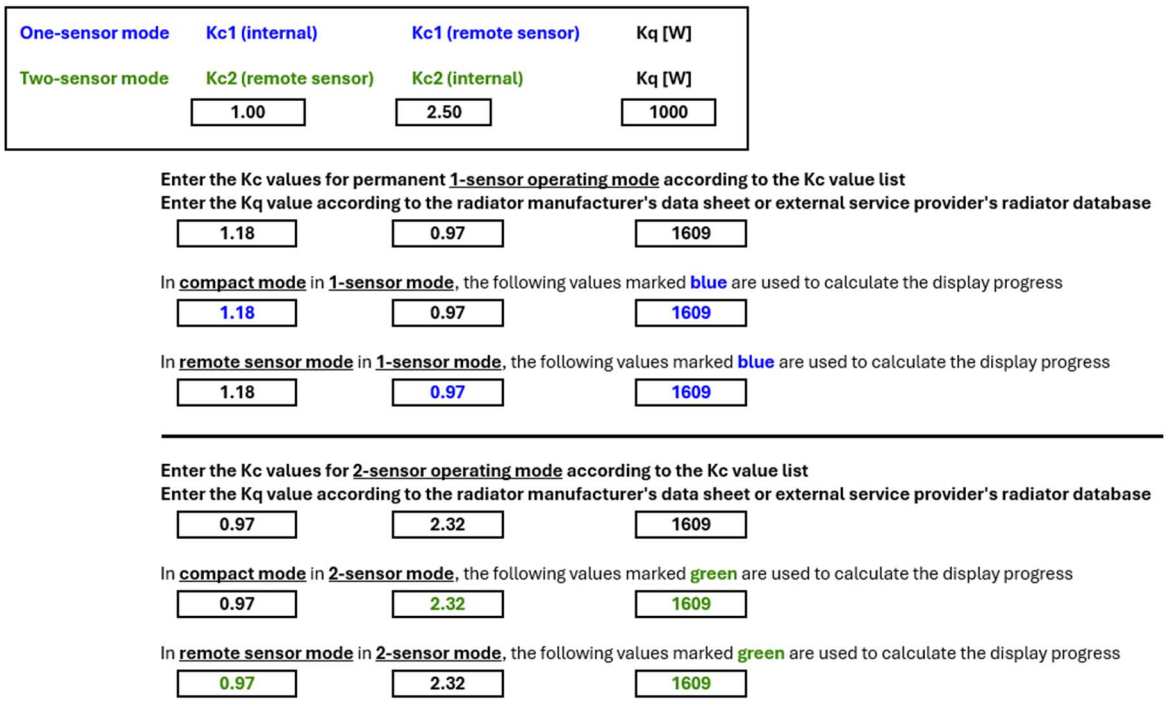


Figure 5: Entry of the K values as a function of the operating mode in product-scaled operating mode

4. General mounting instructions

4.1. Standard mounting points (MP)

The Engelmann heat cost allocator HCA e2 is always mounted in the middle of the installation length (0.5 x IL) of the radiator at a distance of ¾ of the installation height (0.75 x IH) measured from below for radiators with flow from top to bottom. These dimensions refer to the middle (central round hole) of the aluminum heat conductor (see also Figure 6). **Radiators with an installation height of less than (<) 410 mm are installed at 50 % IH.**

If central mounting is not possible due to a different number of links, bead pitch or number of lamellas, it is recommended that mounting is carried out in the closest possible position towards the radiator valve.
From an installation length (IL) of 2000 mm, a second HCA can be fitted (this is recommended for accuracy reasons) and from an installation length (IL) of 3000 mm, a second HCA must be fitted (see Figure 7). These radiators are therefore considered as two individual radiators connected in series, but are rated individually.

Figure 6: Aluminum heat conductor with central round hole and upper and lower slotted holes

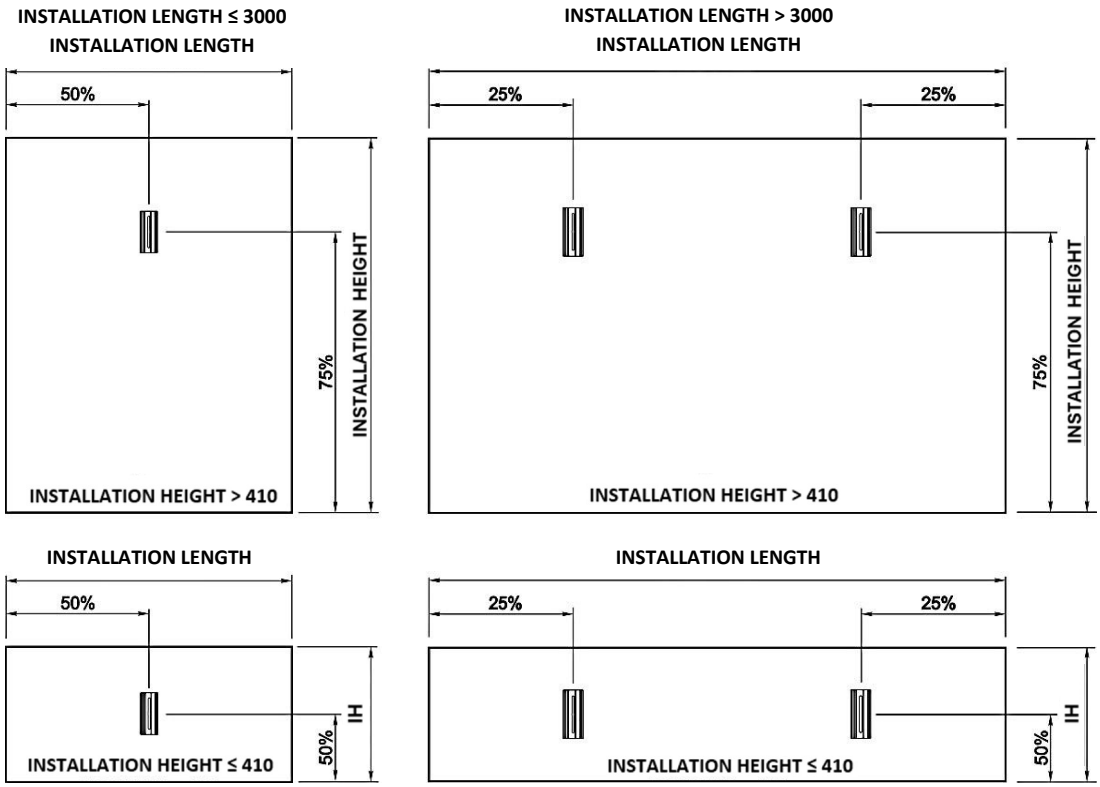


Figure 7: Standard mounting points

Specific mounting points (MP) for certain radiator types that deviate from the standard are described in the corresponding mounting sheets (from Chapter 7) separately.

4.2. Recommended positioning of the welding studs for new assembly

4.2.1. Mounting of the welding studs for the compact unit

In order to ensure the correct mounting position before the final fixing of the aluminum heat conductor, we recommend fixing the upper threaded bolt at a height of **0.75 x installation height (IH) radiator + 35 mm** or at a height of **0.50 x installation height (IH) radiator + 35 mm** if the installation height is less than (<) 410 mm. This allows the aluminum heat conductor to be placed on the upper welding stud (no slipping!) and is therefore already in the correct position before the final fastening with the locking nut or shank nut (see Figure 9). The stud spacing between the upper and lower welding studs is **50 mm**. This means that the lower welding stud has a distance of **-15 mm** in relation to the middle centering mark (see Figure 8).

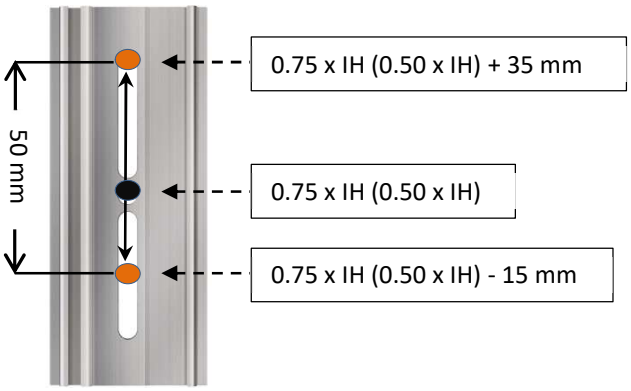


Figure 8: Welding stud spacing

It is recommended to use the Engelmann mounting gauge to mark the welding stud position. This is designed for the procedure described above and is available as an optional accessory.

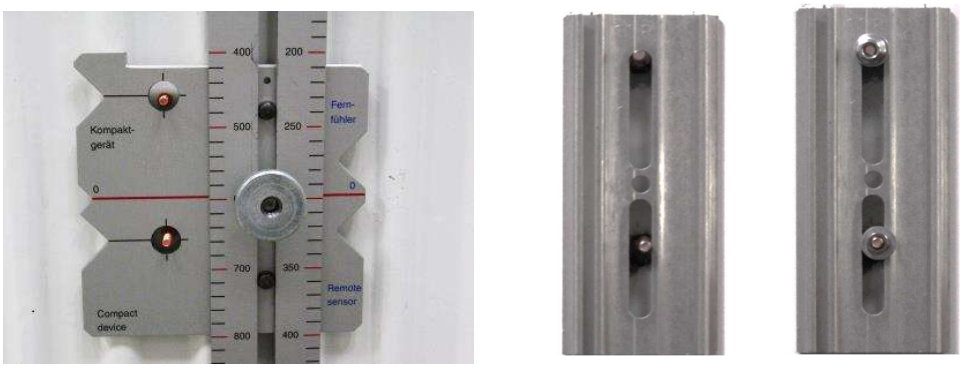


Figure 9: Distance between welding studs with mounting gauge and fastening of the aluminum heat conductor

Different distances are possible with existing welding studs. -> Please note the installation height!

Attention! After attaching the heat conductor, the protruding welding studs must always be cut to length so that they do not protrude into the appliance and cause damage. Existing welding studs must also always be shortened accordingly!

The tightening torques of the heat conductor must also be observed when mounting on the radiators (see Figure 10). These must not be exceeded under any circumstances, as failure to do so will compromise the proper mounting and function of the HCA e2.

Mounting type:	Welding assembly	Screw mounting
Tightening torque:	50 cNm	100 cNm

Figure 10: Tightening torques for mounting the aluminum heat conductor

The aluminum heat conductor must be checked for tight fit and contact with the radiator after it has been attached!

4.2.2. Mounting of the welding studs for the remote sensor

For many types of radiators, it is also possible to install a remote sensor. Engelmann offers the remote sensor as a complete kit (see Chapter 5.8.5). The following describes the welding assembly of the remote sensor. Other types of mounting (screw mounting, cable tie mounting) are described in mounting sheets 99-01-FF and the following.

The stud spacing for the remote sensor is **25 mm (!)** for welding assembly (see Figure 11 B).
The lower welding stud (in the direction of the cable cut-out on the remote sensor housing) is used to fasten the remote sensor using the M3 lock nut supplied. The upper welding stud is used to position and protect the remote sensor or the remote sensor housing against twisting and is inserted into the middle tab of the upper section of the remote sensor housing (see Figure 12 above). The Engelmann mounting gauge is also designed for marking the welding stud spacing when mounting remote sensors (see Figure 11 A).

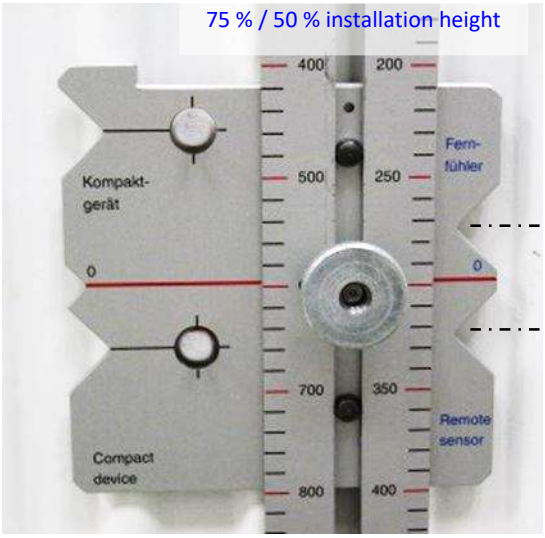


Figure 11 A: Engelmann mounting gauge

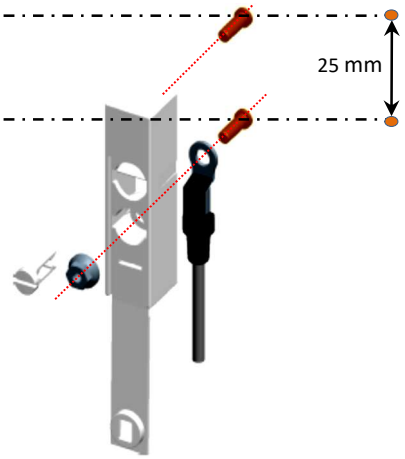


Figure 11 B: Welding stud spacing for remote sensor mounting

Figure 12: Remote sensor fastening with welding studs

Figure 13: Sealed remote sensor housing

The length of the welding studs must be selected (new assembly) or shortened (for existing welding studs) so that the closing flap of the remote sensor housing can be closed and sealed properly and the housing lies flat on the radiator surface (see Figure 13).

If it is not possible to mount the remote sensor together with the housing during welding assembly, for example because the distance between the lamellae is too narrow or due to other structural conditions, the remote sensor must be mounted without the housing and with only one welding stud. The M3 locking nut provided for fastening must be coated with sealing wax so that any tampering (loosening or disassembly) is visible and can be verified (see Figure 14).

The standard mounting point (MP) for the remote sensor is shown in Figure 15. It does not differ from the standard mounting point for the compact device.

Figure 14: Remote sensor protection with sealing wax when mounted with a welding stud

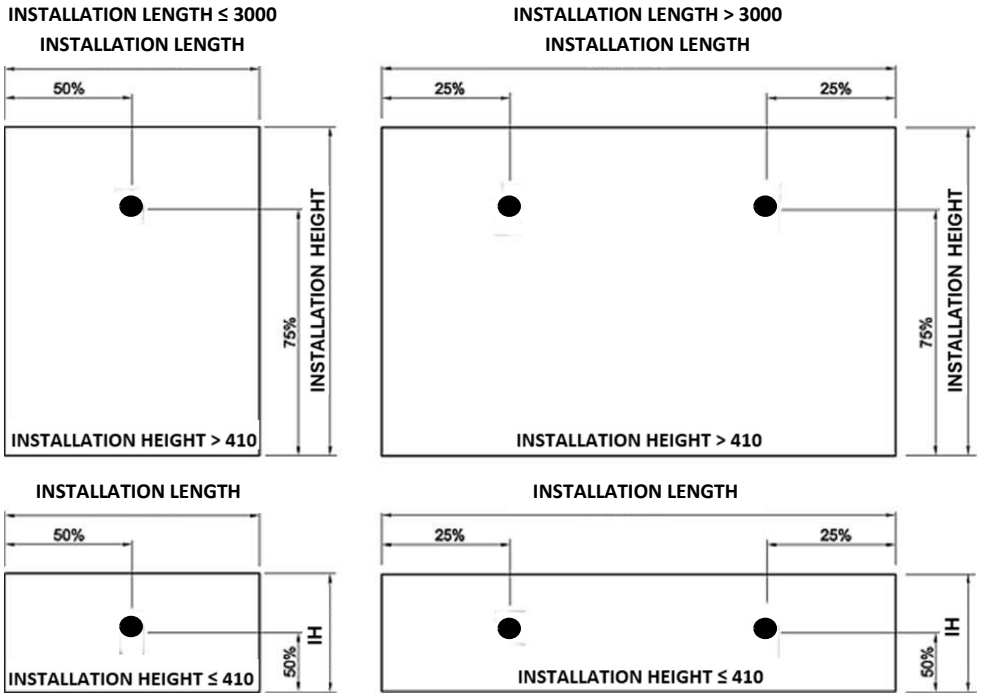


Figure 15: Standard mounting points (MP) for remote sensors

Specific mounting points (MP) for remote sensor use for certain radiator types that deviate from the standard are described in the corresponding mounting sheets (from Chapter 7) separately.

5. Mounting material

The mounting material is used to properly attach the heat cost allocator to the various radiator types. The following mounting material is available:

5.1. Standard parts

Designation	Article number
Flat head screw M4x80 DIN 7985	0051200008
Flat head screw M4x60 DIN 7985	0051200007
Flat head screw M4x40 DIN 7985	0051200006
Flat head screw M3x25 DIN7985	0051200017
Self-tapping screw 4.2x25	0051200013
Threaded bolt M3x15 DIN32501	0051200016
Threaded bolt M3x12 DIN32501	0051200015
Threaded bolt M3x10 DIN32501	0051200014
Locking nut M3	0051200033

5.2. Mounting parts: Panel radiators and special radiators

Designation	Article number
Threaded bolt M3x15 DIN32501	0051200016
Threaded bolt M3x12 DIN32501	0051200015
Threaded bolt M3x10 DIN32501	0051200014
Shank nut M3x8.5	0051200002
Locking nut M3	0051200033

5.3. Mounting parts: Sectional radiators

Designation	Article number
Spread angle (clamping angle) M4 53/65	0051200031
Spread angle (clamping angle) M4 33/48	0051200004
Spread angle (clamping angle) M4 23/35	0051200027

5.4. Mounting parts: Tube radiators

Designation	Article number
Sliding nut tube (36 mm)	0051200009
Sliding nut tube (45 mm)	0051200010

5.5. Mounting parts: Accordion radiators / fin radiators

Designation	Article number
Spreader bracket complete	0251200003

5.6. Mounting parts: Aluminum radiators

Designation	Article number
Aluminum radiator mounting kit	0251200004
Self-tapping screw 4.2 x 25	0051200013

5.7. Mounting parts: Convectors

Designation	Article number
Convector bracket complete	0051200011

5.8. Other mounting parts and mounting accessories

5.8.1. Aluminum heat conductor HCA e2

Designation	Article number
Aluminum heat conductor for HCA e2	0051200030

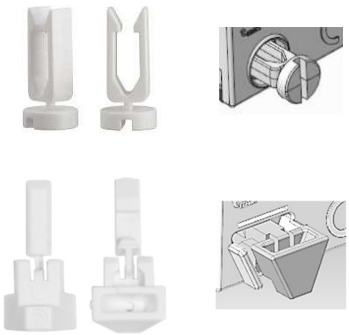
The standard aluminum heat conductor must be ordered separately for each electronic heat cost allocator!

5.8.2. Heat conductor adapter HCA e2, wide

Designation	Article number
Heat conductor adapter for HCA e2, wide	0051200035

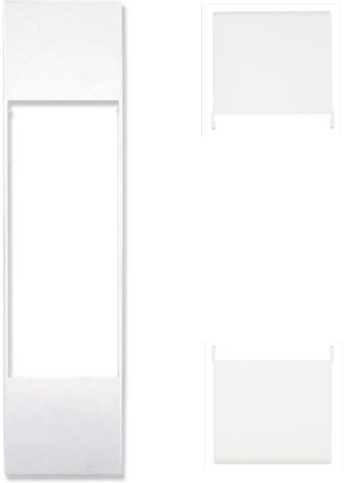
This adapter is also required for special radiator types with special designs or large section spacings.
This is attached behind the standard heat conductor when the compact unit is mounted.
Dimensions in mm: 90.7 X 60 X 4 (H x W x D).

5.8.3. Security seal HCA e2



Designation	Article number
Mounting accessory pack security seal for HCA e2 housing without integrated seal	0500000061
Mounting accessory pack security seal for HCA e2 housing with integrated seal	0500000087
PU 050000061 40 pcs. PU 050000087 50 pcs.	

5.8.4. Optical extension HCA e2



Designation	Article number
Optical extension for HCA e2 (one-piece)	0030000088
Optical extension for HCA e2 (two-piece)	0030000049
Optical extensions to cover any paint damage after converting evaporator tubes or heat cost allocators from other manufacturers to the HCA e2.	

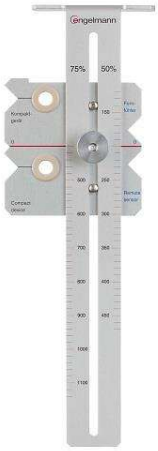
5.8.5. Plug-in remote sensor HCA e2

Designation	Article number
Plug-in remote sensor for HCA e2, 2 m Plug-in remote sensor for HCA e2, 5 m	0251200006 0251200011
This remote sensor set includes: • Remote sensor 2 m or 5 m • Remote sensor cover • Security seal • Adhesive seal “e“ • Locking nut M3	

5.8.6. Holder for the optical readout head (optocoupler holder)

Designation	Article number
Optocoupler holder for HCA e2	0051200044
Holder for the optical readout head. With this holder, it is possible to quickly and easily attach the optocoupler to the mounted heat cost allocator.	

5.8.7. Mounting gauge



Designation	Article number
Mounting gauge for HCA e2	0151200000
Mounting gauge for marking the welding position for the threaded bolts or as a positioning aid for direct welding with the stud welder.	

6. Mounting types

The various mounting types are listed below in separate mounting sheets. These provide information on the mounting points (MP) to which the Engelmann heat cost allocator is to be attached for different radiator groups, radiator types and radiator designs. Furthermore, it can be seen which mounting material must be used to attach the compact unit and/or the remote sensor. The required fixing material is listed with designation, article number, quantity and information on alternative mounting materials.

6.1. Layout and structure of the mounting sheets

For a better overview, the mounting types shown below in the mounting sheets have a designation structure. The leading first digit always indicates the radiator group (e.g. "panel radiator"), the following first index (second digit) indicates the possible variants (subgroup), type or type design (e.g. "vertically profiled"). A possible second index (third digit) further specifies the radiator (e.g. special type designation or special design features, such as section spacing or similar). The designation structure is always completed by specifying the type of fastening: welding assembly, screw mounting or adhesive mounting (only for remote sensor mounting).

If required, further features are listed below the radiator designation, which contain references to the radiator or connection types or mounting instructions.
The entire radiator designation, including the corresponding description of features, is shown in red.

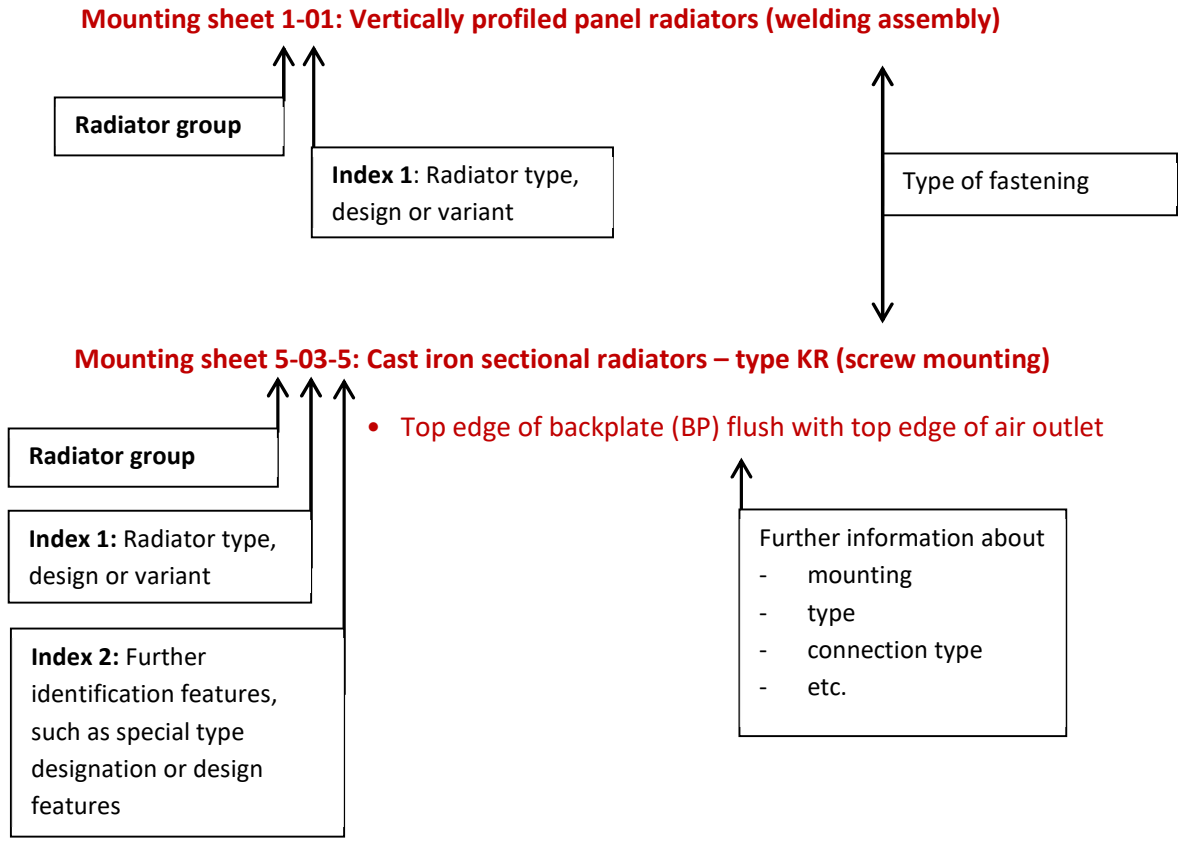


Figure 16: Structure of the mounting sheet designation

If required, the individual mounting sheets contain further information on the mounting point and/or illustrations, connection type and type designations of reference radiators to make it easier to determine the radiator to be fitted.

There are different mounting points for some radiators (especially in radiator group 02 – bathroom radiators). This is based on the existence of corresponding Kc values for these mounting points. Here we would like to offer the measuring service commissioned with the installation the opportunity to act flexibly, especially if installations of heat cost allocators from other manufacturers were already present. Separate mounting sheets or alternative drawings within an mounting sheet exist for these different mounting positions (MP).

In the Kc value table for the Engelmann heat cost allocator HCA e2 (the Kc value table is available on request), the original mounting points are described for the radiators listed therein. These result from the mounting points documented in the test reports. The Kc value table also contains a reference to the corresponding mounting sheets (see also Chapter 3.2.2, Figure 3, Marking 4).

However, the mounting sheets always indicate which mounting point (MP) is to be preferred from the point of view of thermal coupling.

If separate mounting sheets are available, this is done with the note: **Recommended mounting type or alternative mounting type or special mounting** on the respective mounting sheet.

Preferred or alternative mounting points (MP) within a mounting sheet are indicated by means of illustrations and/or comments.

Different mounting points (MP), e.g. due to different profile versions, are documented on the mounting sheet itself in the form of a red reference mark (●) labeled with consecutive numbering.

Likewise, within a radiator group, some radiators that are shown on separate mounting sheets can be marked with the above-mentioned red, numerically consecutive marking for better identification and differentiation (e.g. different material versions and/or designs that may also require different mounting). In these cases, the numbering of the marking always goes with the index extension (second index, see also Figure 16) of the mounting sheet designation, which contains the identical numbering.

Notes and information on the mounting sheets that have an influence on the mounting or are used for mounting are documented in blue and must be observed.

Note / abbreviation	Color	Meaning
MP		mounting point
IF		inlet flow
OF		outlet flow
BP		back plate (aluminum heat conductor)
R		radiator
RS		remote sensor
IH		installation height
IL		installation length
ID		installation depth
A	blue	marking of required mounting material (available as accessories)

A	orange	marking of required mounting material (external procurement)
1	red	note on the mounting point or marking
1	black	note on alternative fixing material for a mounting type at RS

Figure 17: Legend

6.2. Radiator groups

The structure of the mouting sheets is based on the following radiator groups (R-gr.).

Radiator groups:

R-gr.	R-type	Mounting sheet
1	Vertically profiled panel radiators	1-XX(-X)
1	Panel radiators with convection plates at the front	1-XX(-X)
1	Panel radiators with flat front plate	1-XX(-X)
1	Panel radiators with front convection plates and flat front plate	1-XX(-X)
1	Horizontally profiled panel radiators	1-XX(-X)
1	Panel radiators with flat water-bearing front	1-XX(-X)
1	Horizontally profiled panel radiators with convection plates at the front	1-XX(-X)
1	Panel radiators with front convection plates and flat front plate	1-XX(-X)
1	Panel radiators with other profiling	1-XX(-X)
1	Panel radiators with other profiling with convection fins at the front	1-XX(-X)
2	Bathroom radiators	2-XX(-X)
3	Flat profile tubes vertical	3-XX(-X)
3	Flat profile tubes horizontal	3-XX(-X)
3	Horizontal flat profile tubes with front fins	3-XX(-X)
3	Flat profile tubes horizontal, convector with fixed cover	3-XX(-X)
4	Steel tube registers	4-XX(-X)
4	Aluminum tube registers	4-XX(-X)
4	Convector with fixed cover	4-XX(-X)
4	Convector without cover	4-XX(-X)
5	Steel sectional radiators	5-XX(-X)
5	Cast steel sectional radiators	5-XX(-X)
5	Cast steel sectional radiators (vintage)	5-XX(-X)
5	Sectional radiators made of steel tubes	5-XX(-X)
5	Aluminum sectional radiators	5-XX(-X)
5	Accordion radiators	5-XX(-X)
6	Radiators with vertical tubes	6-XX(-X)
6	Louver radiators	6-XX(-X)
7	Tubes	7-XX(-X)

8	Free	
9	Free	
99	Remote sensor mounting	99-XX-FF

7. Mounting sheets

The following mounting sheets show the mounting of the compact unit on the various radiators. If certain radiators are only to be fitted with remote sensors, these are also shown in the following mounting sheets. If a remote sensor mounting is to be carried out as an alternative to the mountings shown in the mounting sheets with a compact unit, proceed in the same way for the mounting point shown. Explicit reference is made to any differences in the type of fastening or the mounting point (MP) itself.
The various remote sensor types of fastening are shown on separate mounting sheets for remote sensor mounting (mounting sheet 99-X-FF). These mounting sheets can be found at the end of the mounting sheets for compact unit mounting. Special features of remote sensor mounting are indicated there.
The welding stud spacing for fastening the remote sensor or the remote sensor housing is described in Chapter 4.2.2.

7.1. Remote sensor mounting

The Engelmann heat cost allocator can be equipped with a remote sensor cable (see Chapter 5.8.5). The internal logic of the heat cost allocator recognizes when a remote sensor is connected. This deactivates the device's internal radiator sensor and activates the remote sensor. It is also possible to convert a "remote sensor unit" back into a "compact unit" by removing the remote sensor.
It is important to note that different Kc values are to be used for the rating depending on the application mode (compact unit or remote sensor unit). The procedure for product-scaled use is described in Chapter 2. Detailed instructions for mounting and disassembly the remote sensor are provided in the user manual for the heat cost allocator.

7.2. Wall mounting of the heat cost allocator for remote sensor mode

The heat cost allocator must be mounted on the wall in such a way that the room temperature is recorded as accurately and representatively as possible. A lateral distance of at least 0.5 m from the radiators and an installation height of 0.5 to 1 m from the floor must be maintained (see Figure 18).
Care must be taken to ensure that the wall-mounted heat cost allocator is not affected by external heat sources such as sunlight, fireplaces or electrical appliances.

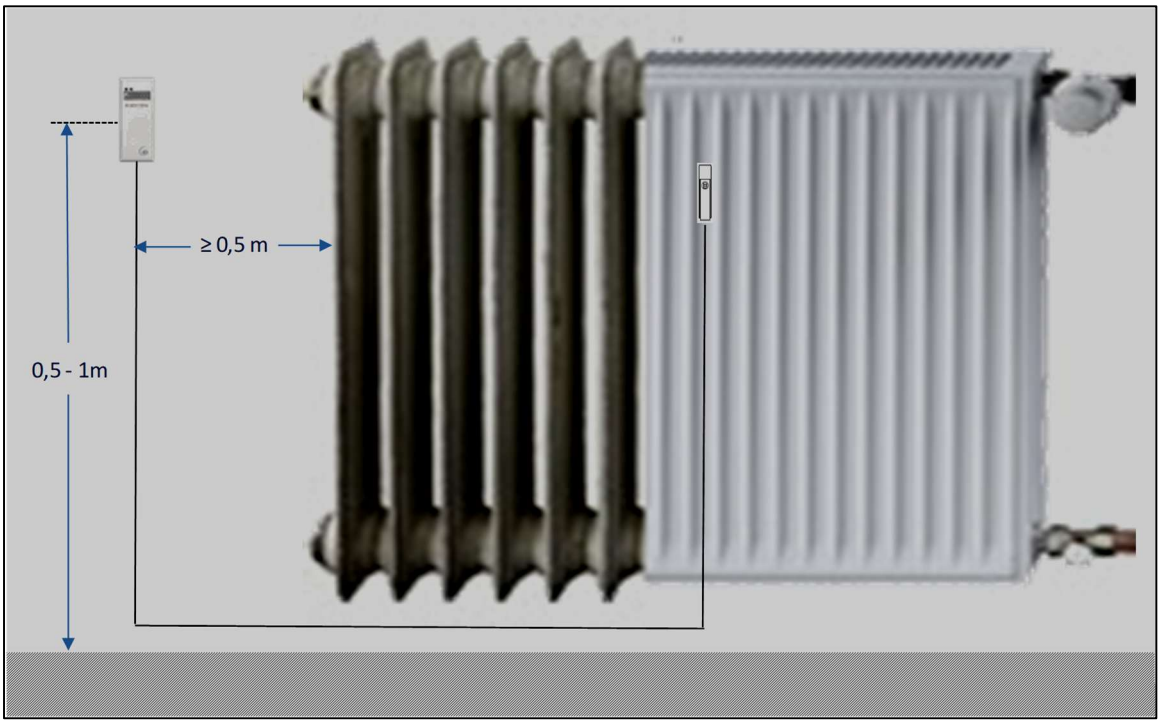


Figure 18: Distances to be maintained when using remote sensors and wall mounting the heat cost allocator

7.3. Tamper protection for the remote sensor housing

If it is not possible to fasten the remote sensor or the remote sensor housing with two welding studs as standard (see Chapter 4.2.2), for example in the case of different types of screw mounting, the remote sensor housing must also be secured with the Engelmann adhesive seal. This serves as a tamper indicator in the event of attempted disassembly or twisting of the remote sensor housing.
The Engelmann adhesive seal is supplied with every remote sensor set. The adhesive seal is temperature-resistant up to 120 °C.

Figure 19: Engelmann adhesive seal

8. Manufacturer

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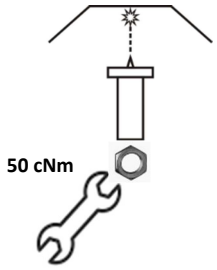
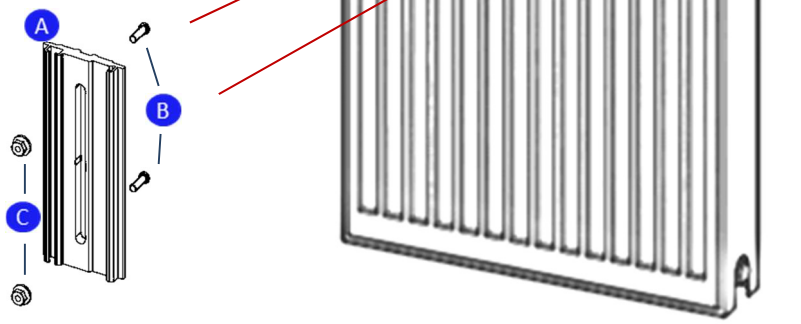
69168 Wiesloch-Baiertal
Germany

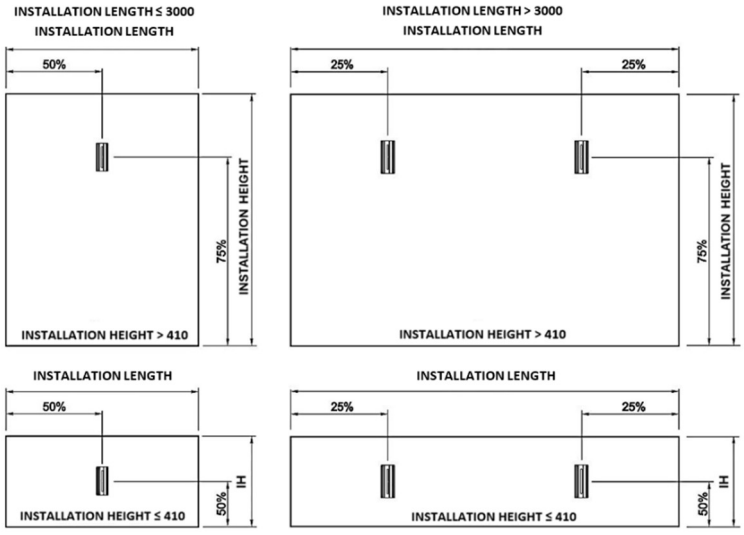
Tel: +49 (0)6222-9800-0
Fax:+49 (0)6222-9800-50
E-mail: info@engelmann.de
www.engelmann.de

Mounting sheet 1-01: Vertically profiled panel radiators (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)







Note:

For radiators with serial flow (first front panel, then rear panel – for example with the Kermi Therm X2), the mounting point (MP) of 50 % is recommended regardless of the installation height (IH).

Note:

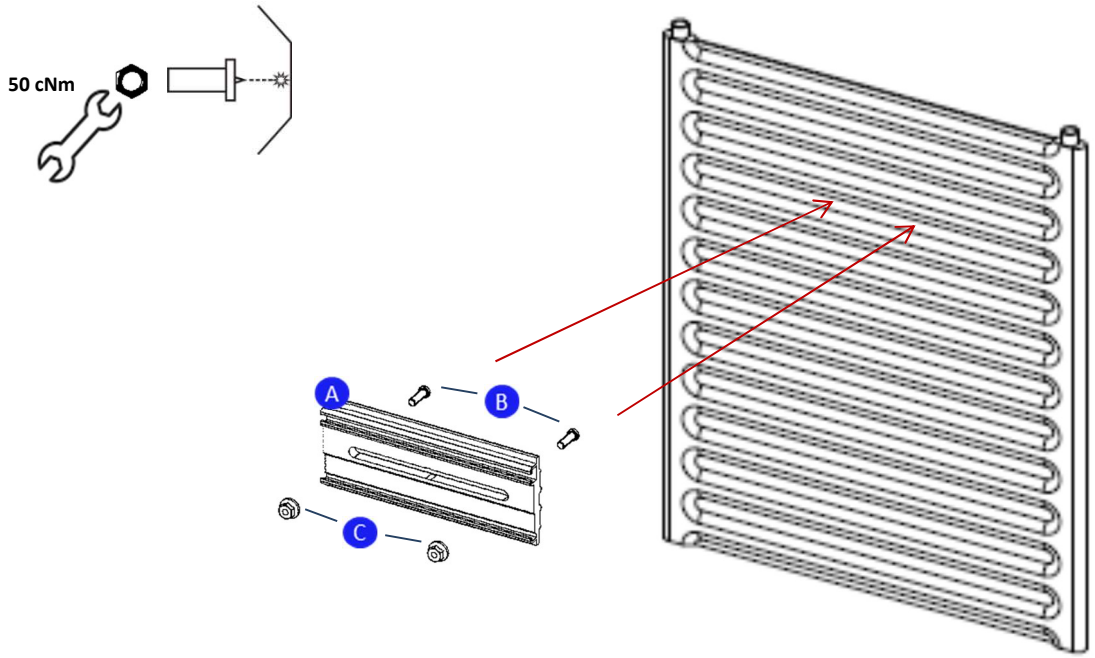
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

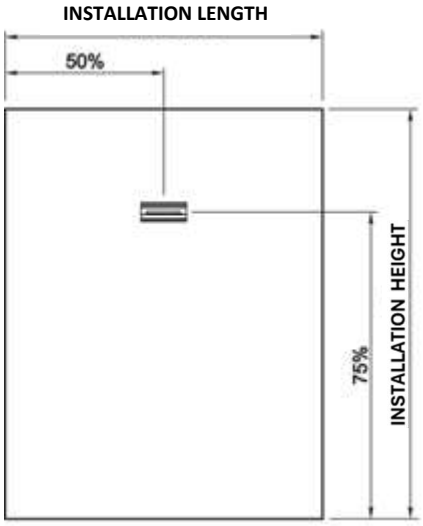
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-02: Vertically profiled panel radiators, rotated by 90° (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)





Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Note:

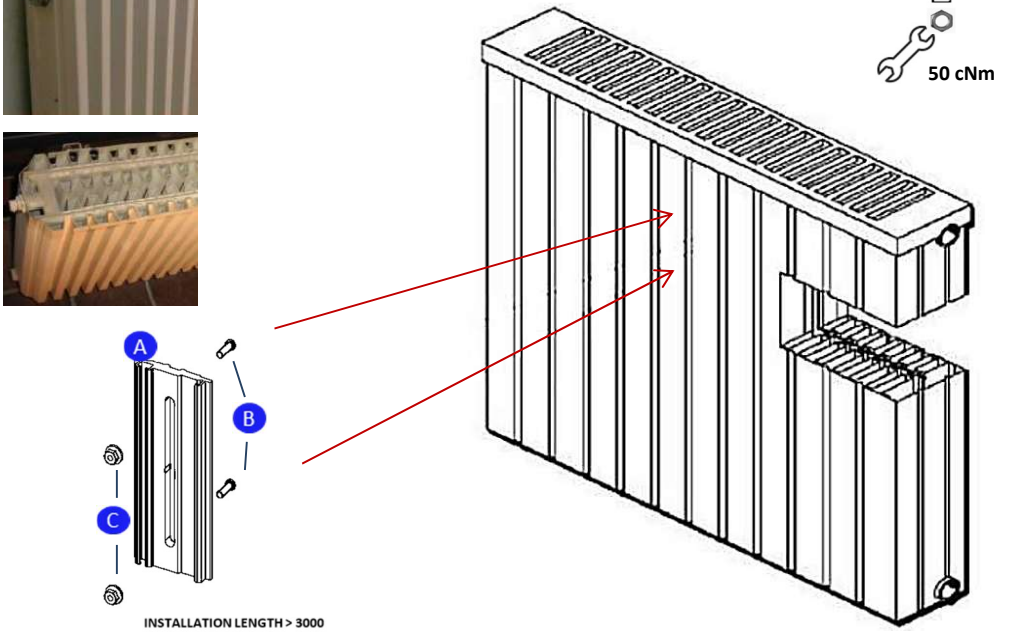
If it is not possible to mount the device at the exact height shown in the dimension sketch, the mounting should be carried out in the next higher position.

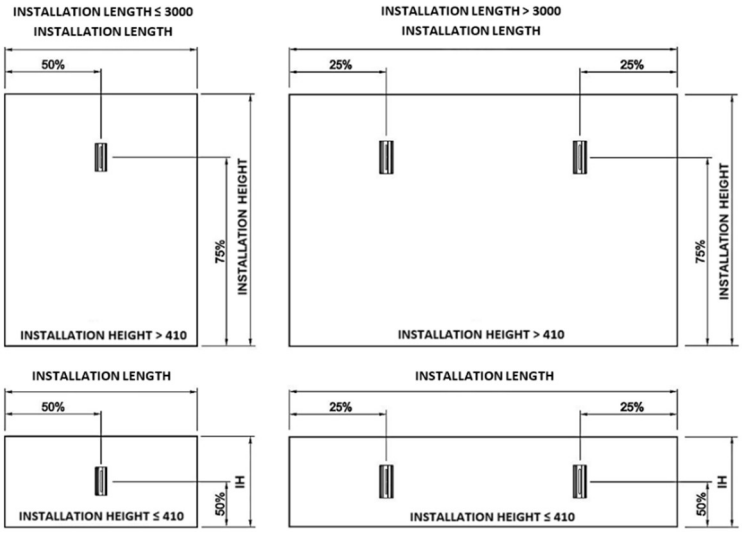
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-03: Vertically profiled panel radiators with convection plates/fins on the front (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)





Note:

If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections or fins), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

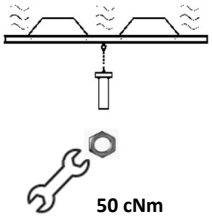
Whether the welding studs are placed on or between the fins / convection plates depends on the manufacturer and model. Information on this can be found in the "Mounting compact unit" or "Mounting remote sensor" column in our Kc value table.

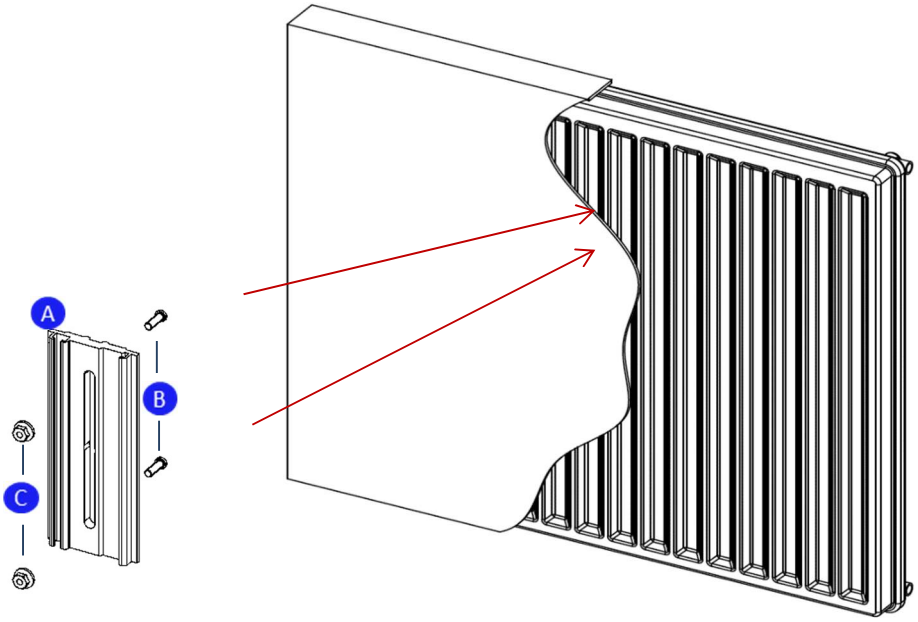
Mounting material required:

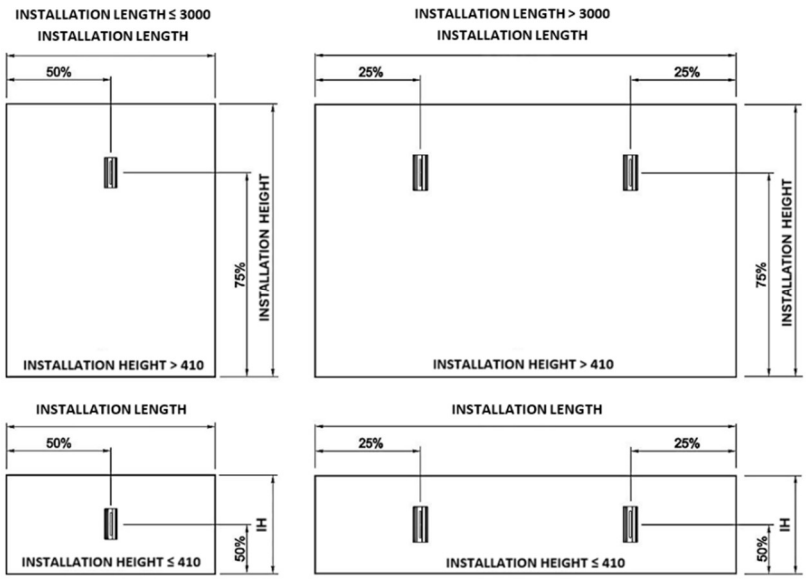
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-04: Vertically profiled panel radiators with front cover plate (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)





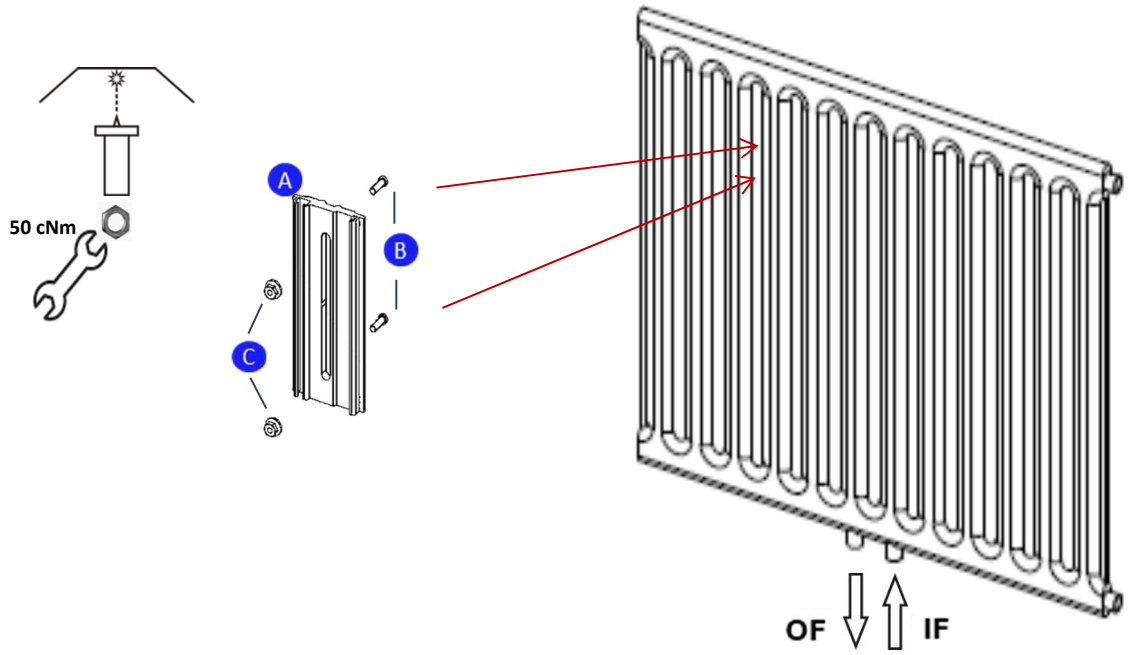


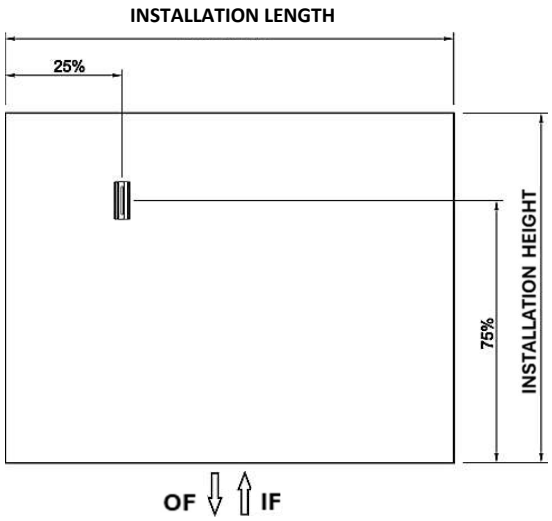
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

Mounting sheet 1-05: Vertically profiled panel radiators with middle connection: inlet flow is guided upwards in the front panel (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)





Note:

This mounting point (MP) does not apply to radiators with serial flow and middle connection such as Kermi Therm X2.
See Mounting sheet 1-01 for this.

Note:

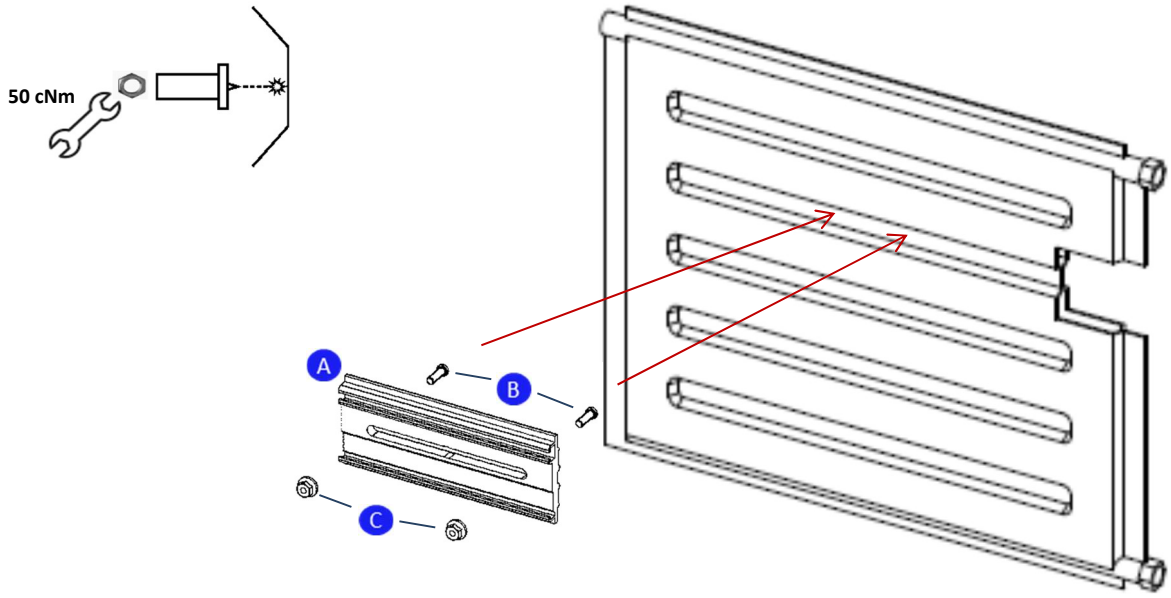
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

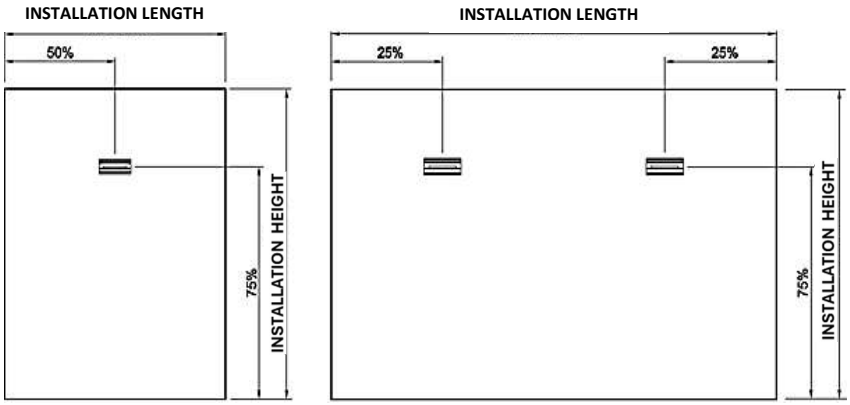
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-06: Horizontally profiled panel radiators (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)



Applies to all installation heights



Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Note:

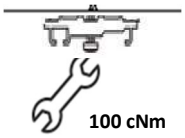
If it is not possible to mount the device at the exact height shown in the dimension sketch, the mounting should be carried out in the next higher position.

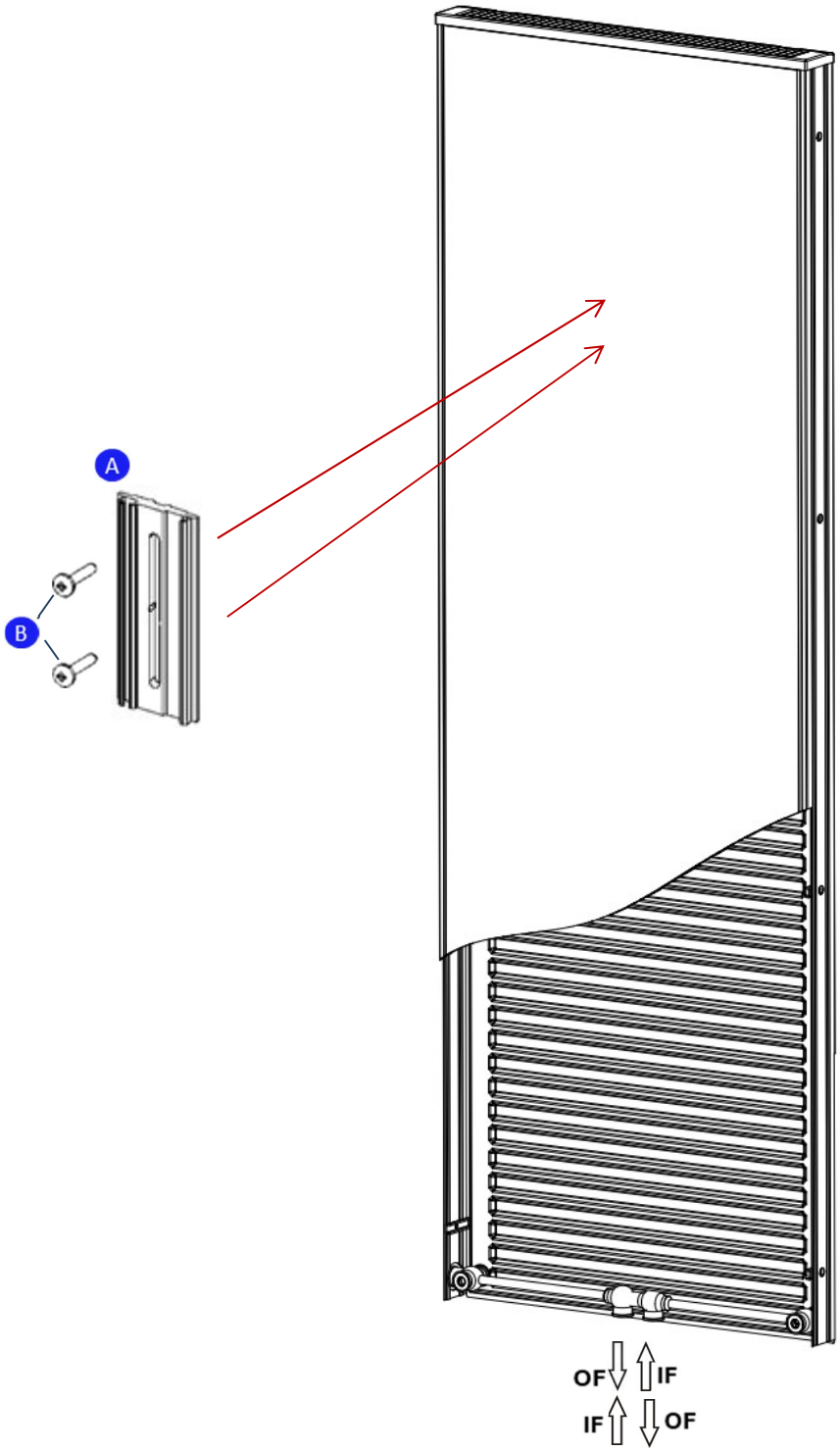
Mounting material required:

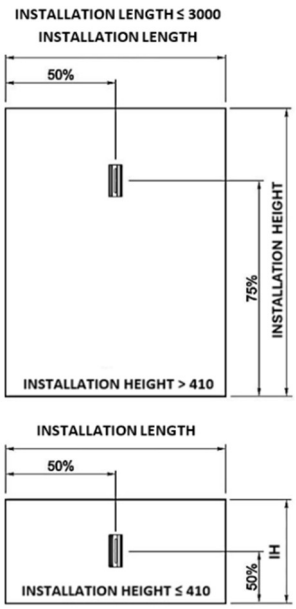
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut		**2**	
Locking nut M3 (C)	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-06a: Horizontally profiled panel radiators with aluminum front cover plate (screw mounting)

- HM Thema flat vertical
- Riding connection





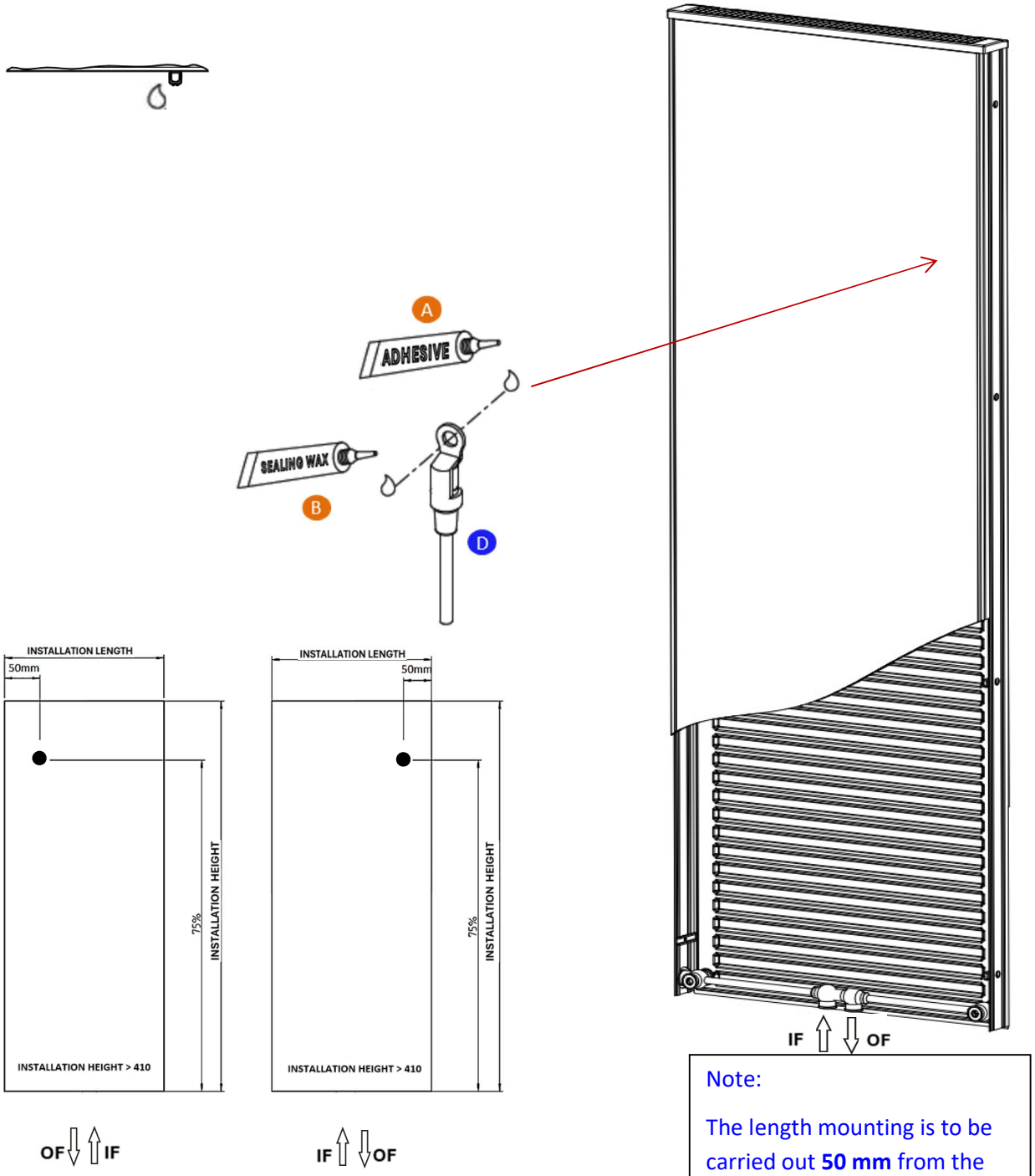


Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Self-tapping screw 4.2x25 B	0051200013	2	

Mounting sheet 1-06b: Horizontally profiled panel radiators with aluminum front cover plate (remote sensor adhesive mounting)

- HM Thema flat vertical
- Remote sensor mounting (50 mm distance from the outlet flow side of the edge)
- Riding connection



Note:

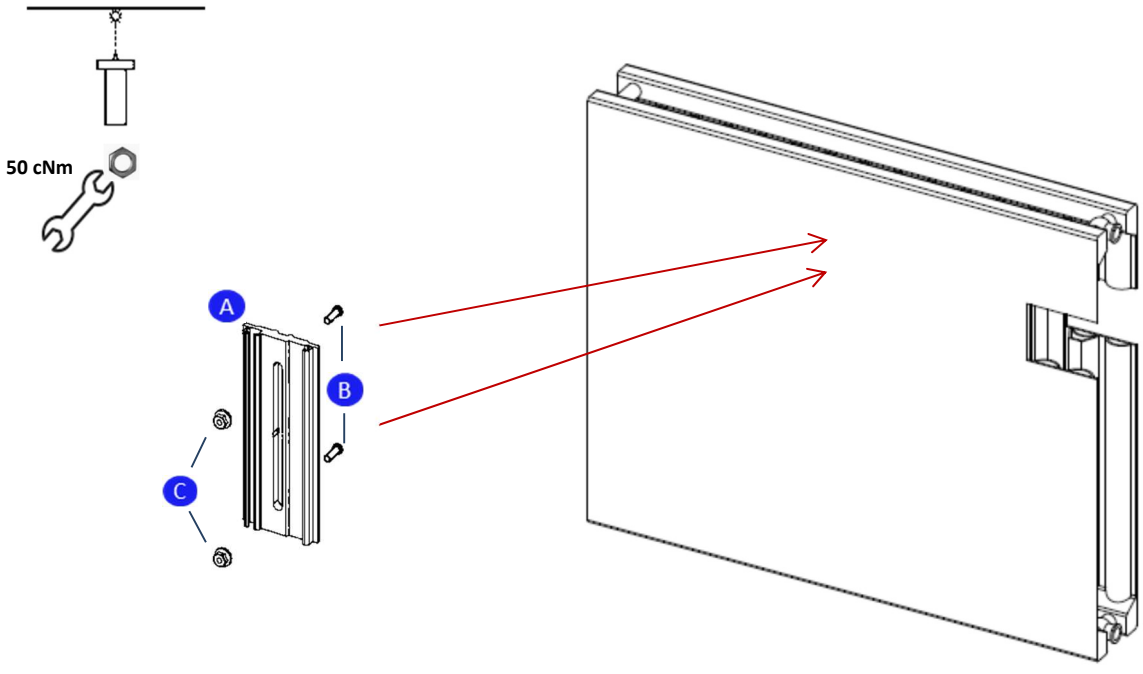
The length mounting is to be carried out **50 mm** from the OF side of radiator edge.

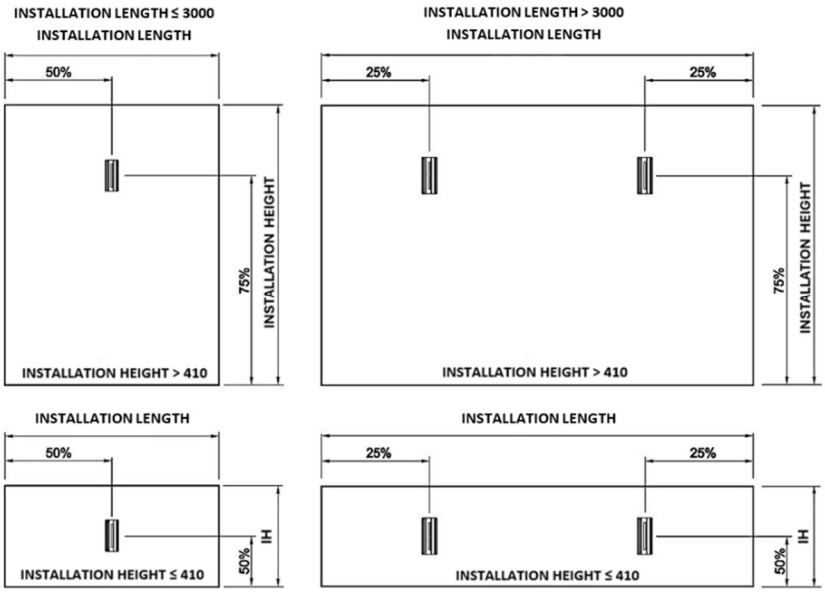
Mounting material required:

Article designation	Article number	Quantity	Note
Remote sensor complete D			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Adhesive A		1	External procurement
Sealing wax B		1	External procurement

Mounting sheet 1-07: Flat panel radiators with water-bearing front (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)



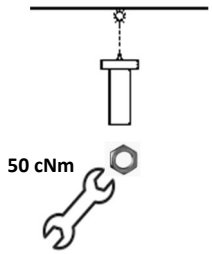


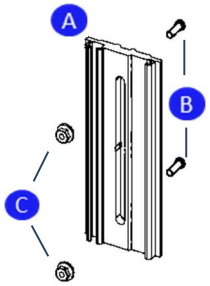
Mounting material required:

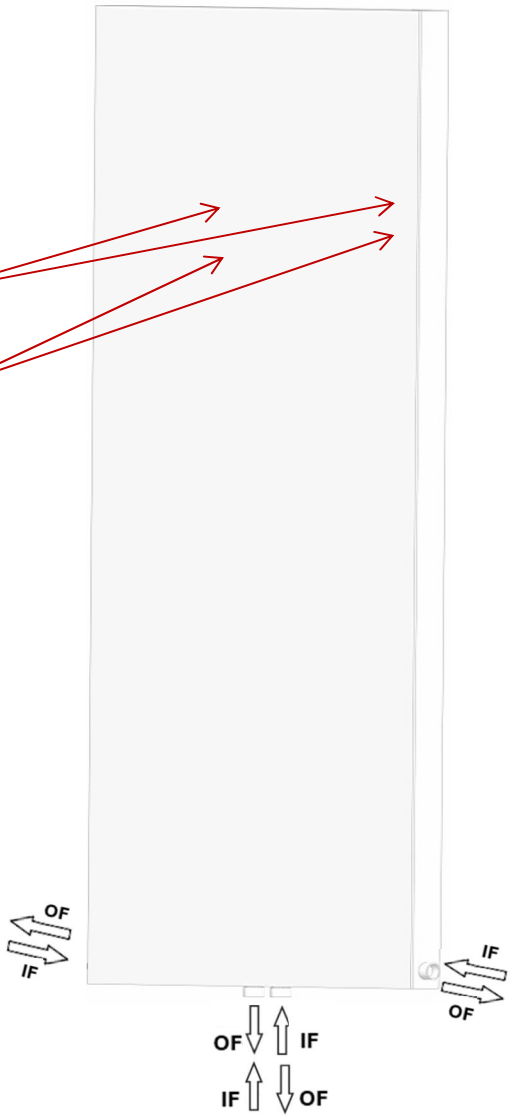
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

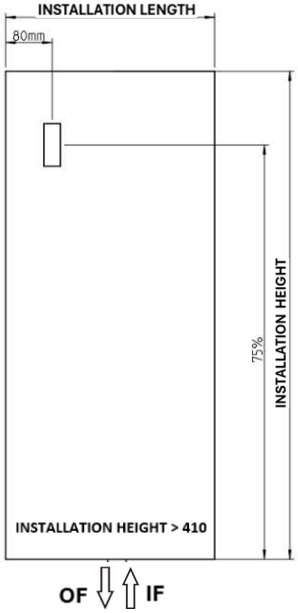
Mounting sheet 1-07a: Flat panel radiators with water-bearing front (welding assembly)

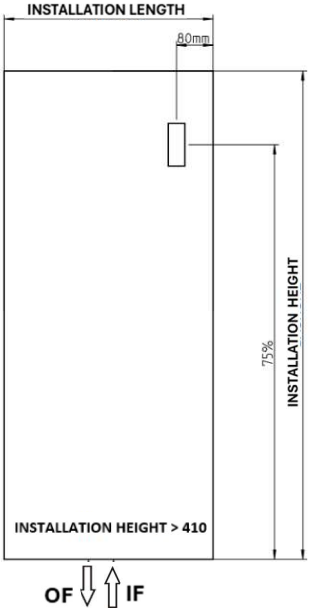
- Typical: Zehnder Plano vertical (also for Zehnder Sculptur)
- Connection riding and centered at the bottom











Note:

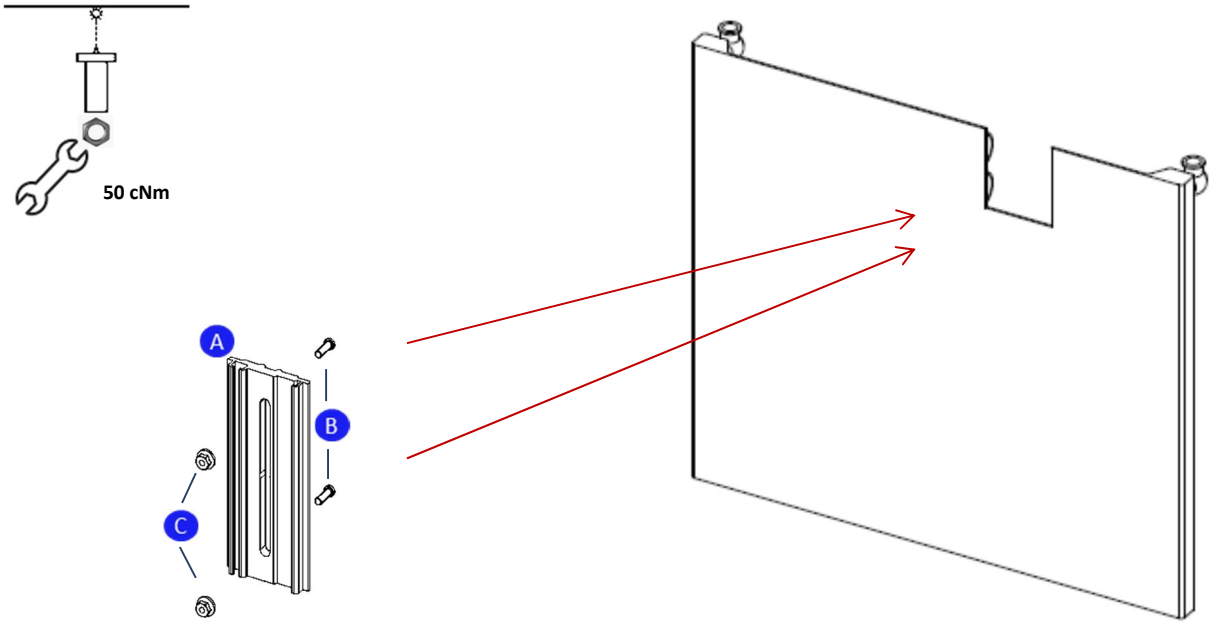
The length mounting is to be carried out **80 mm** from the OF side or IF side of radiator edge. The corresponding Kc value must be selected depending on the mounting point (OF side or IF side).

Mounting material required:

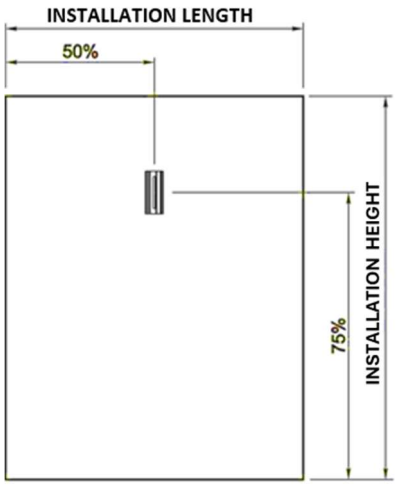
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

Mounting sheet 1-08: Flat panel radiators with water-bearing front, rotated by 90° (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)



Applies to all installation heights

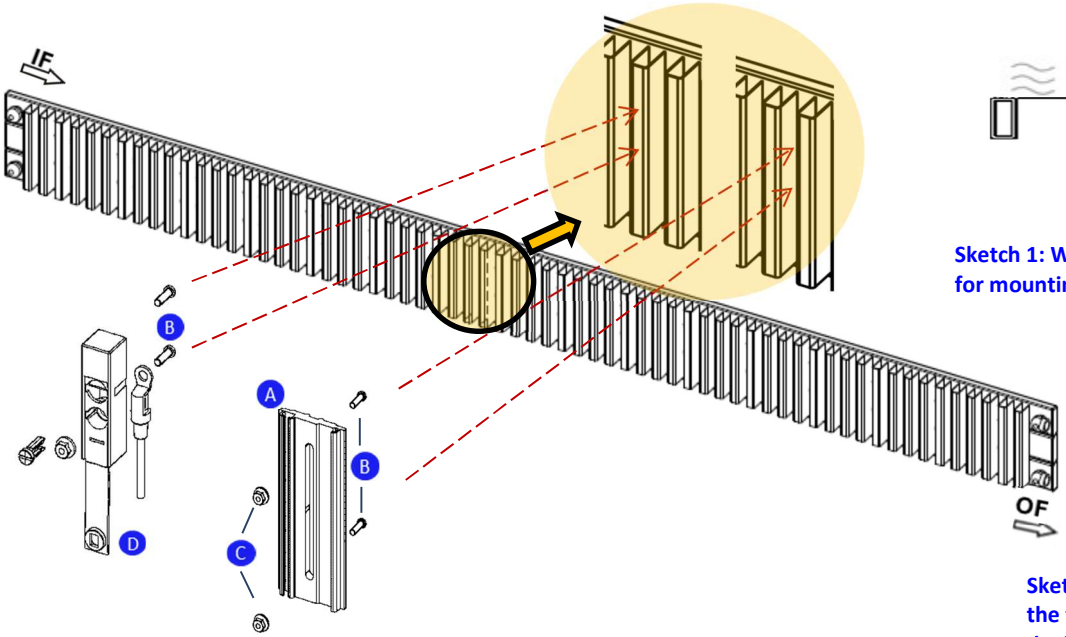


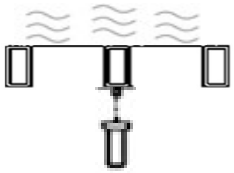
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

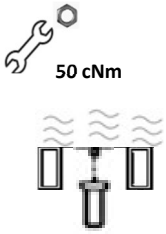
Mounting sheet 1-09: Horizontally profiled panel radiators with fins on the front (welding assembly)

- Alternating connection
- Mounting remote sensor unit: welding stud on the fin (see Sketch 1): MP at 50 % or 75 % of the IH
- Mounting compact unit: welding studs between the fins (see Sketch 2): MP at 50 % of the IH

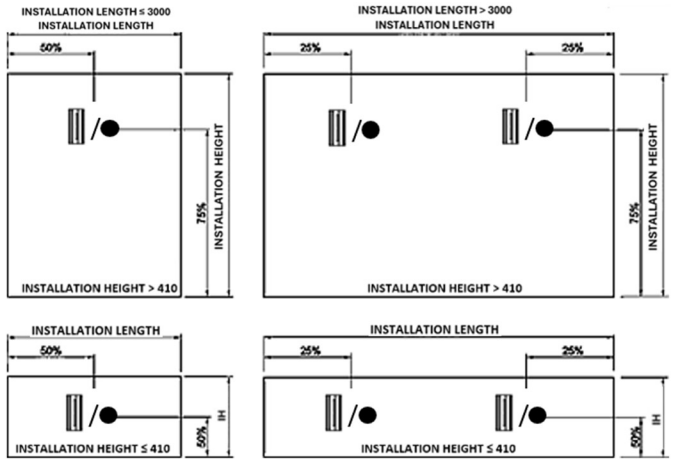




Sketch 1: Welding studs on the fin for mounting the remote sensor



Sketch 2: Welding studs between the fins for mounting the compact device



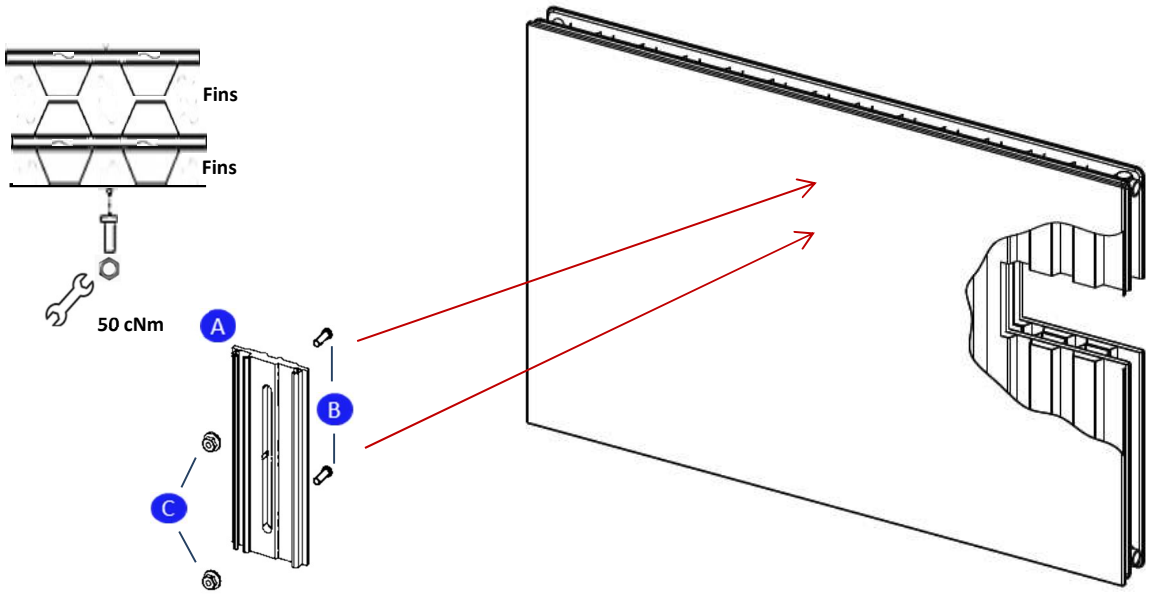
Note:

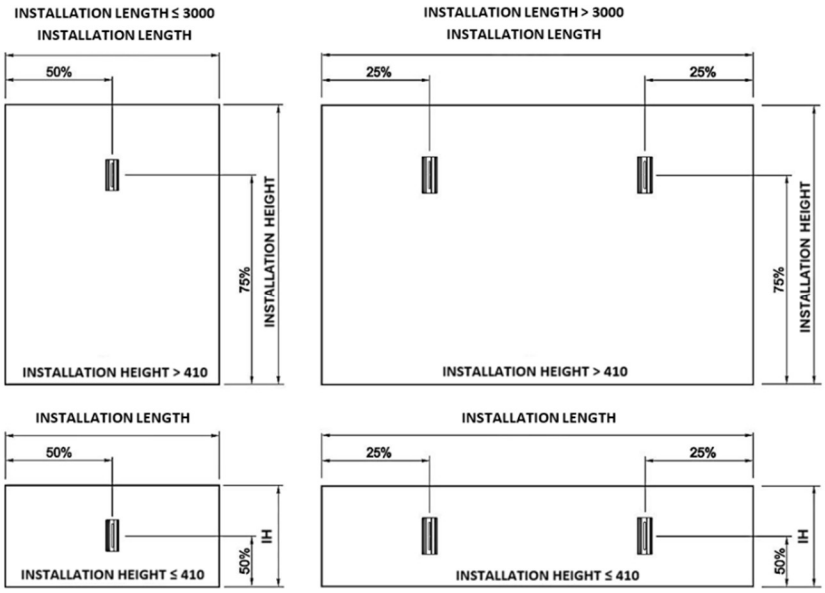
If it is not possible to mount the device at the exact length shown in the dimension sketches (uneven number of fins for compact unit mounting or even number of fins for remote sensor mounting), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)			
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut	0051200033	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 1-10: Horizontally profiled panel radiators with front fins and cover plate (welding assembly)





Note:

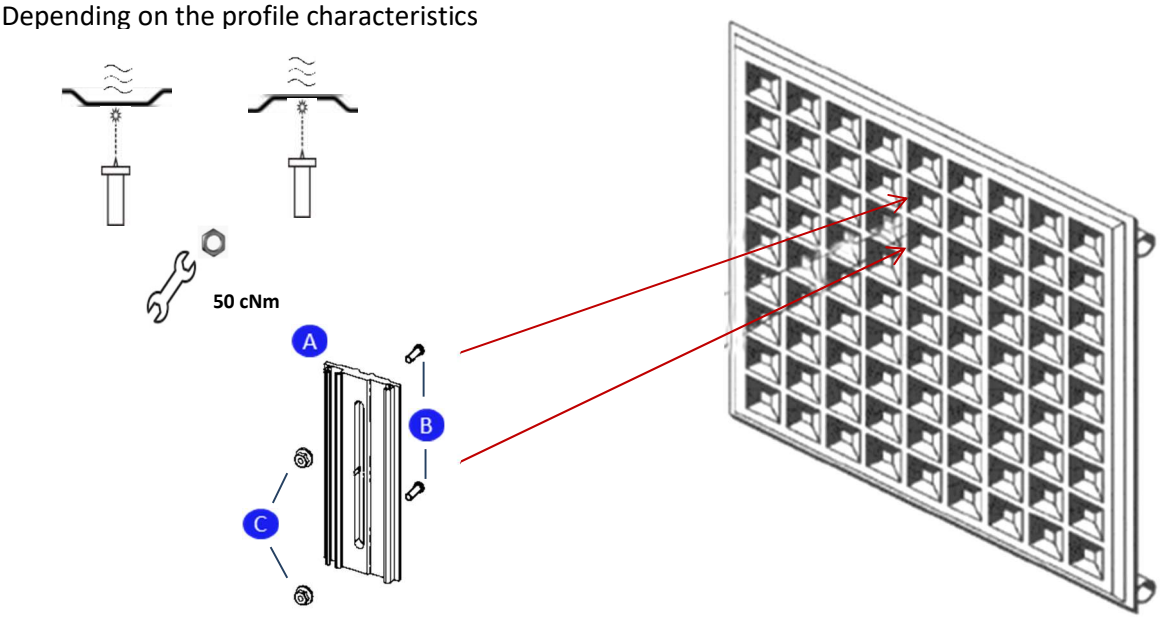
For radiators of this design, it should be clarified in advance whether a sufficiently good Kc value is available, as sufficient heat contact from the heating medium to the aluminum heat conductor of the heat cost allocator is not always given.

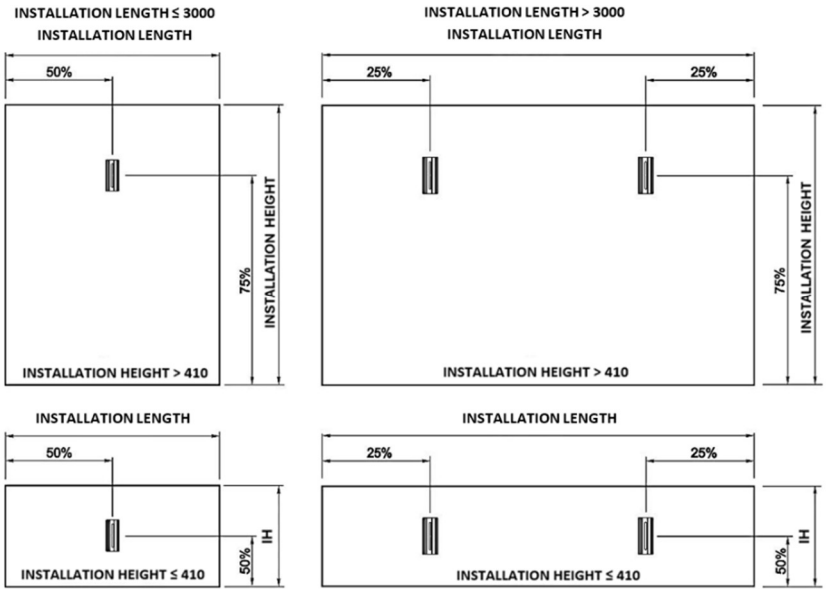
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

Mounting sheet 1-11: Panel radiators with other profiling (welding assembly)

Depending on the profile characteristics





Note:

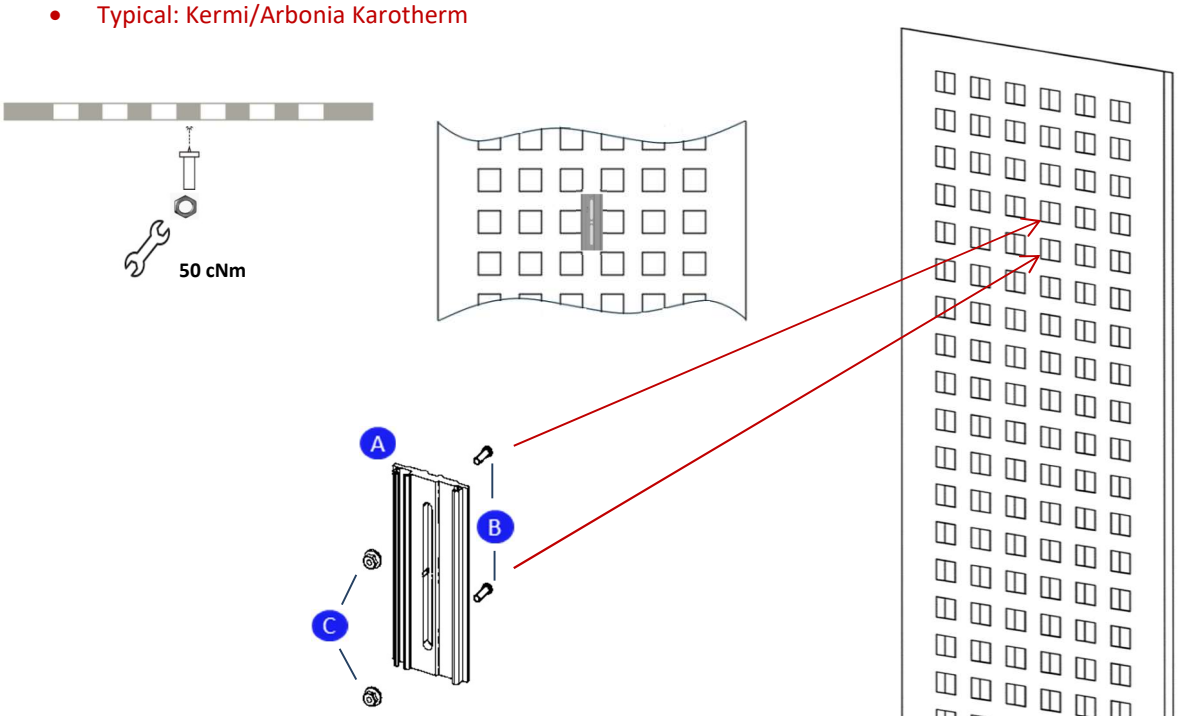
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

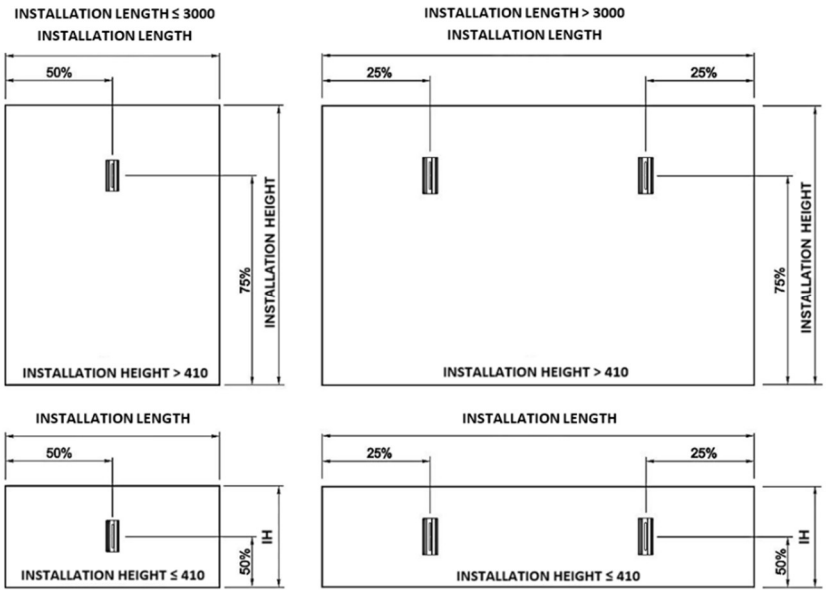
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-11a: Panel radiators with other profiling (welding assembly)

- Typical: Kermi/Arbonia Karotherm





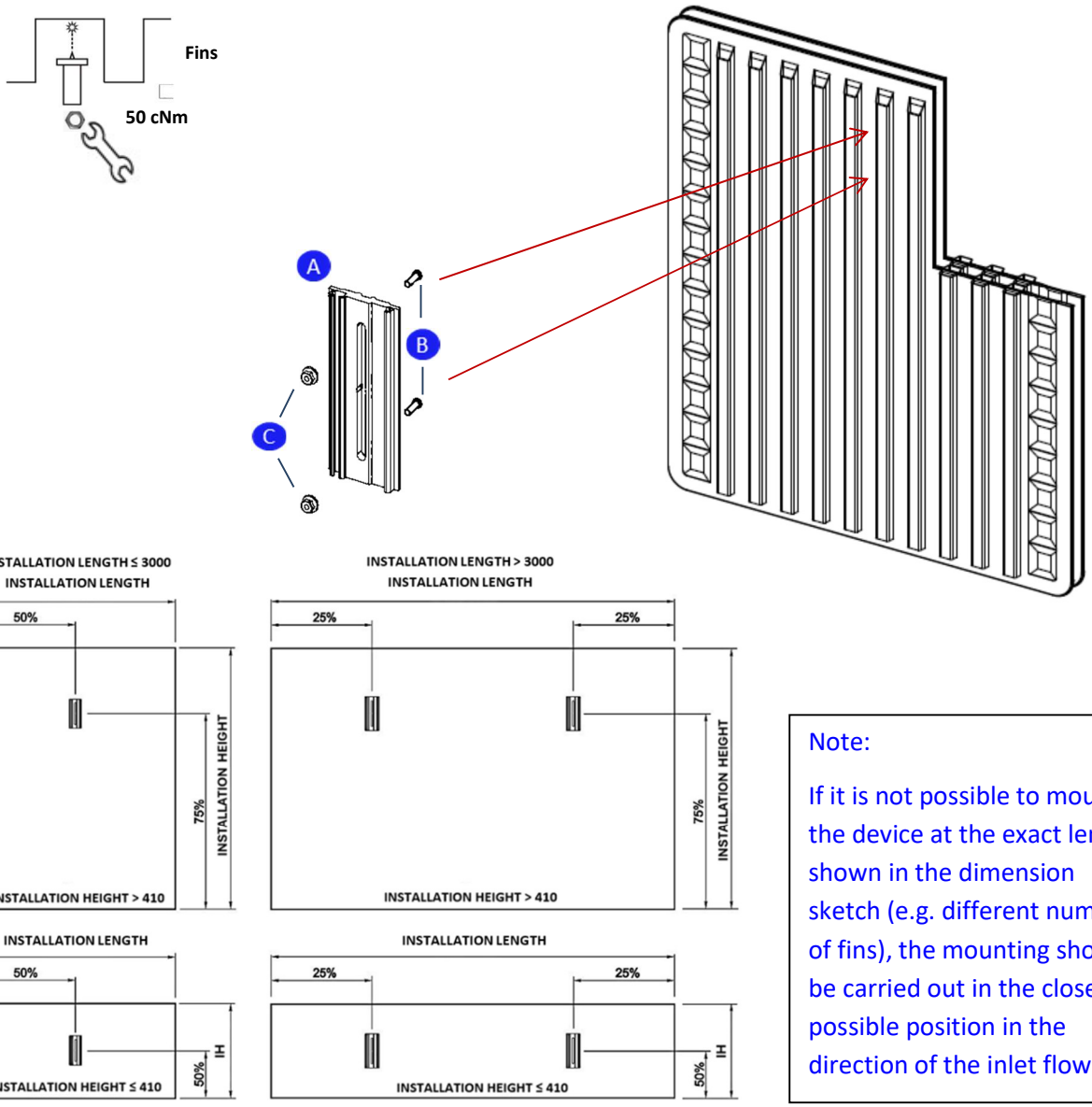
Note:

Electronic heat cost allocator centered on a vertical water channel. If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 1-12: Panel radiators with other profiling with convection fins on the front (welding assembly)



Note:

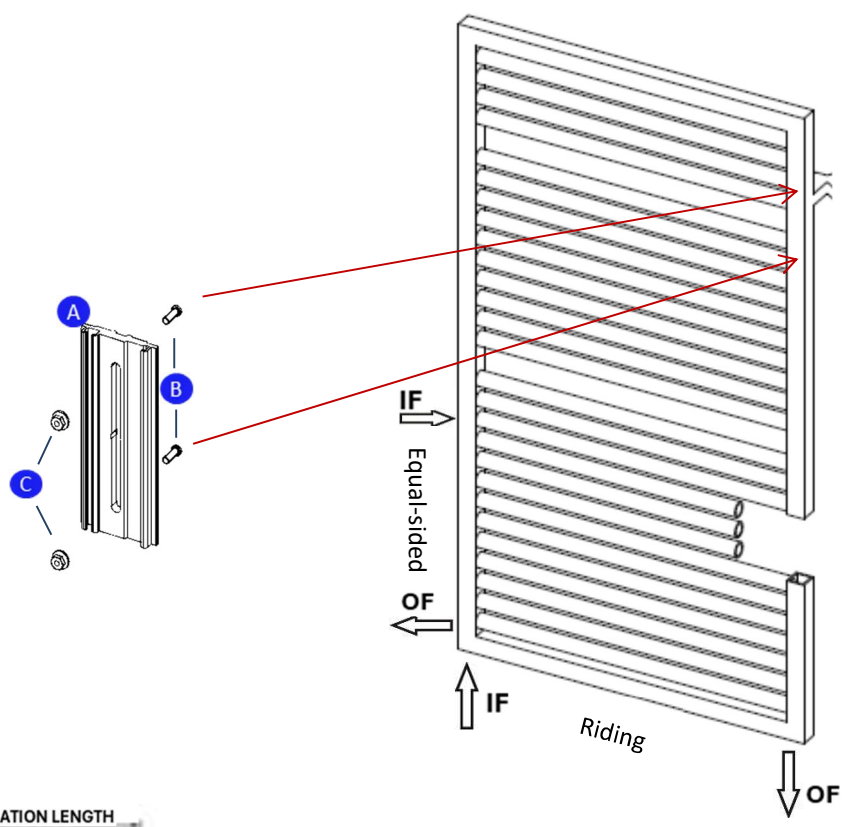
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of fins), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

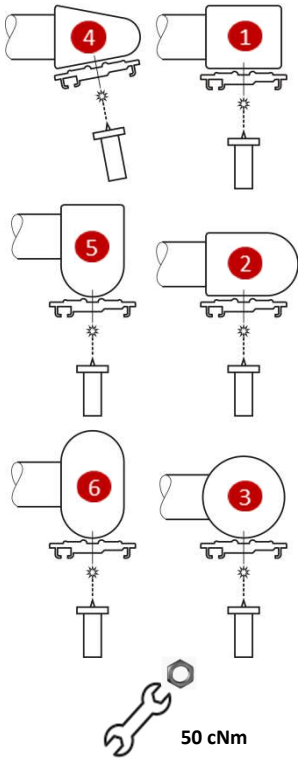
Mounting material required:

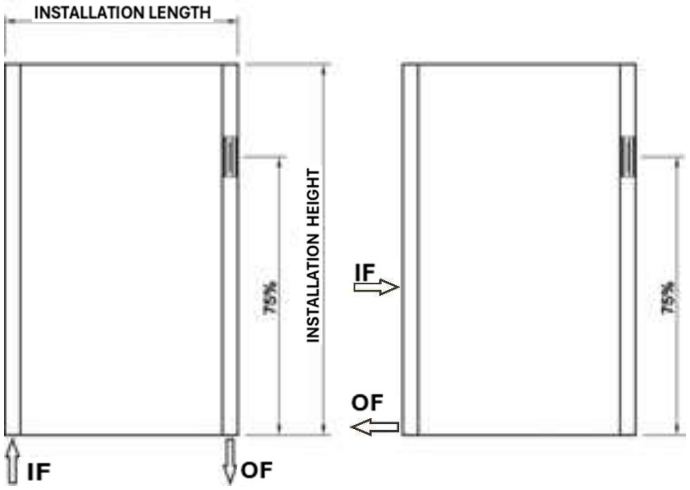
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)		**2**	
Threaded bolt M3x12 DIN32501	0051200015	2	Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Alternatively, depending on tread depth
Threaded bolt M3x10 DIN32501	0051200014	2	Alternatively, depending on tread depth
Fastening nut (C)		**2**	
Locking nut M3	0051200033	2	Standard
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 2-01: Bathroom radiators (towel rails): mounting on OF-collector (welding assembly)

- Recommended mounting type
- Mounting point (MP) at 75 % of the installation height (IH)
- Connection riding and equal-sided (also in ladder design)
- Mounting point (MP) according to the profile shape 1-6







Note:

For individual radiators measured by Engelmann, side mounting (outside of the profile) on the OF-collector is also permitted if the front of the profile cannot be used for welding assembly at 75 % of the installation height (IH). However, this requires a corresponding Kc value measured at the mounting point (MP) (e.g. Vogel & Noot / Cosmo Standard). The notes on the mounting point (MP) in the Kc value table must be observed.

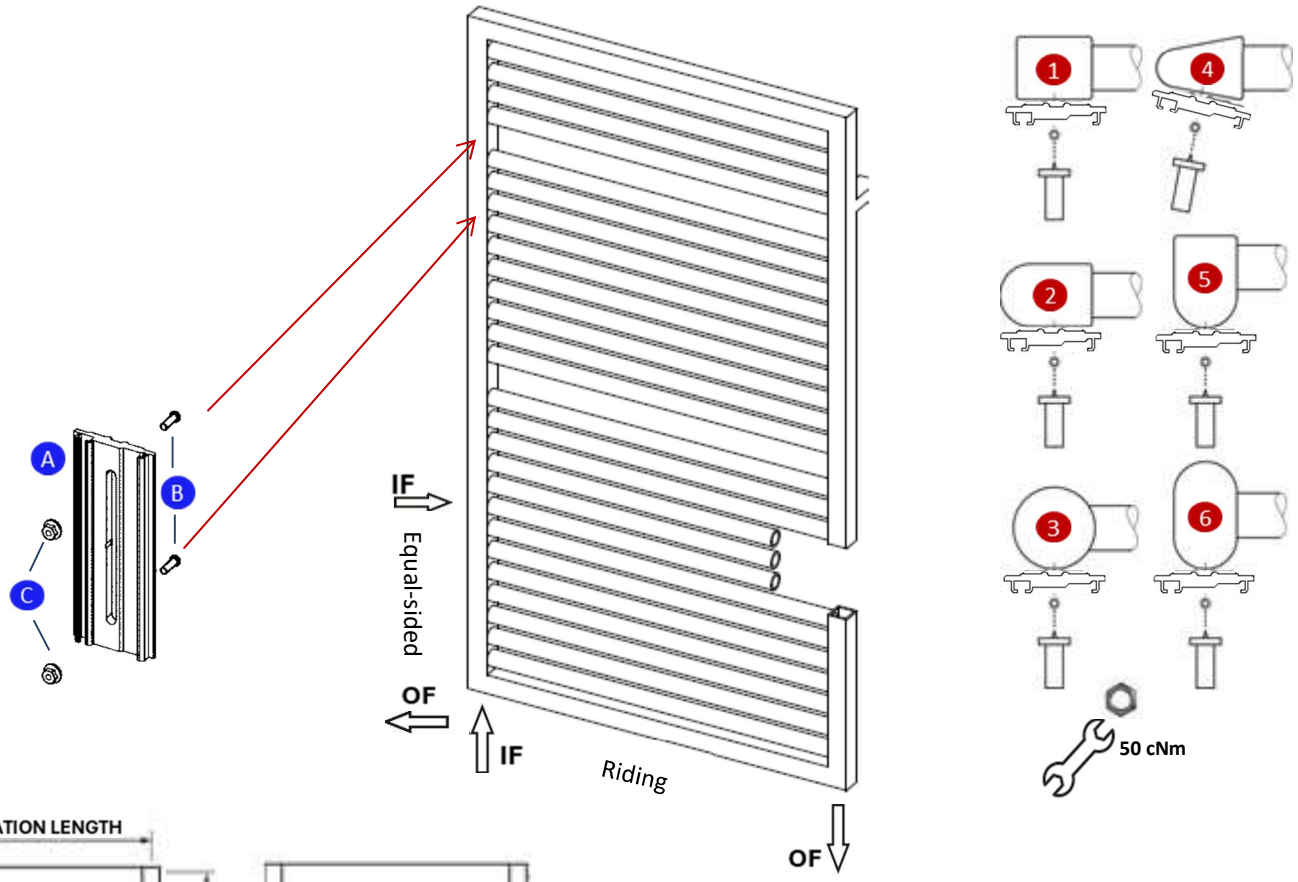
If possible, welding assembly should be avoided for chrome-plated radiators or radiators made of stainless steel. In this case, screw mounting (2-03) or (2-08) should be selected if the corresponding Kc values are available.

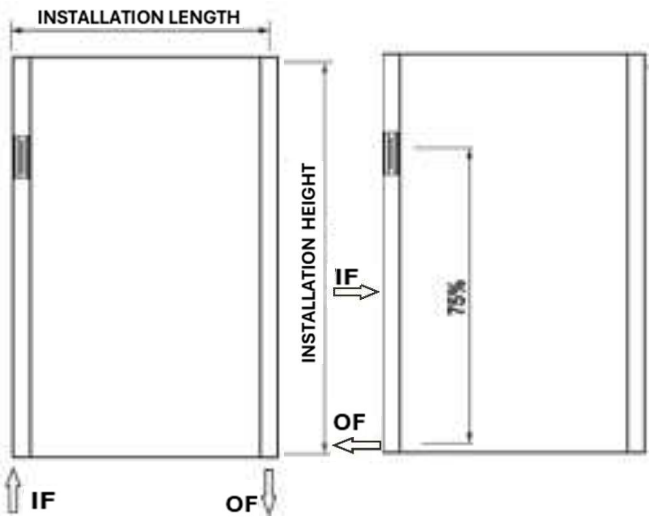
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

Mounting sheet 2-02: Bathroom radiators (towel rails): mounting on IF-manifold (welding assembly)

- Alternative mounting type (only if the corresponding Kc values are available)
- Mounting point (MP) at 75 % of the installation height (IH) and according to the profile shape 1-6
- Connection riding and equal-sided (also in ladder design)
- Mounting point (MP) according to the profile shape 1-6





Note:

For individual radiators measured by Engelmann, side mounting (outside of the profile) on the IF-manifold is also permitted if the front of the profile at 75 % of the installation height (IH) cannot be used for welding assembly. However, this requires a corresponding Kc value measured at the mounting point (MP) (e.g. Arbonia / Bagnotherm or Vogel & Noot / Cosmo Standard). The notes on the mounting point (MP) in the Kc value table must be observed.

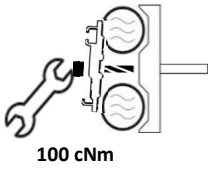
If possible, welding assembly should be avoided for chrome-plated radiators or radiators made of stainless steel. In this case, screw mounting (2-04) or (2-08) should be selected if the corresponding Kc values are available.

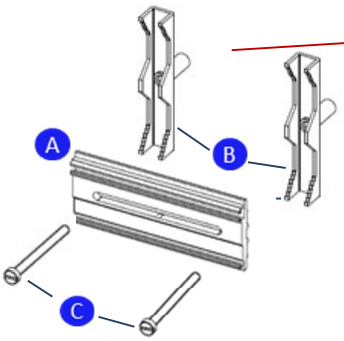
Mounting material required:

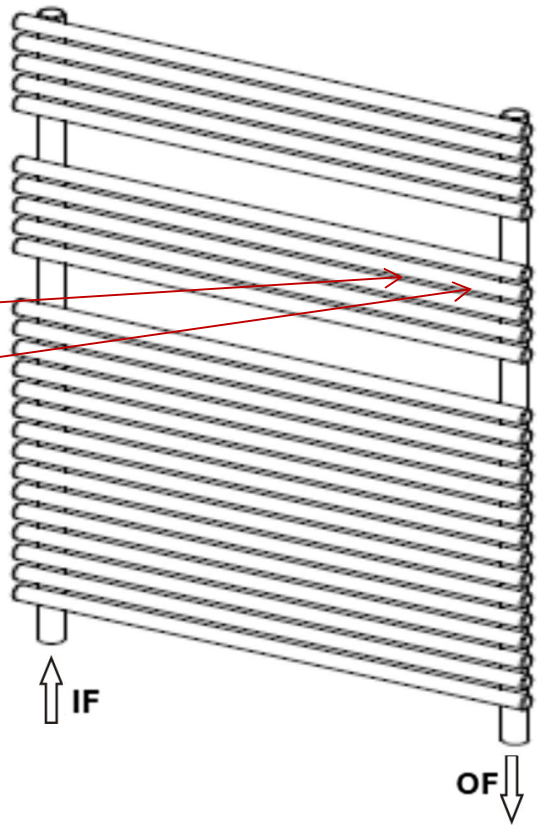
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

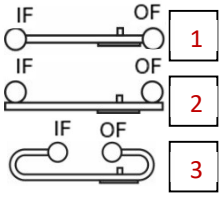
Mounting sheet 2-03: Bathroom radiators (towel rails): mounting close to OF-collector (screw mounting)

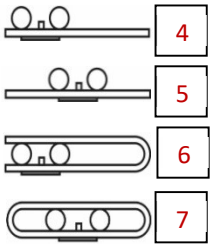
- Recommended mounting type
- At 75 % IH horizontally on the cross tubes, as close as possible to the OF-collector (Figures 1-3)
- Or at 75 % IH horizontally on the cross tubes, between IF-manifold and OF-collector (Figures 4-7)





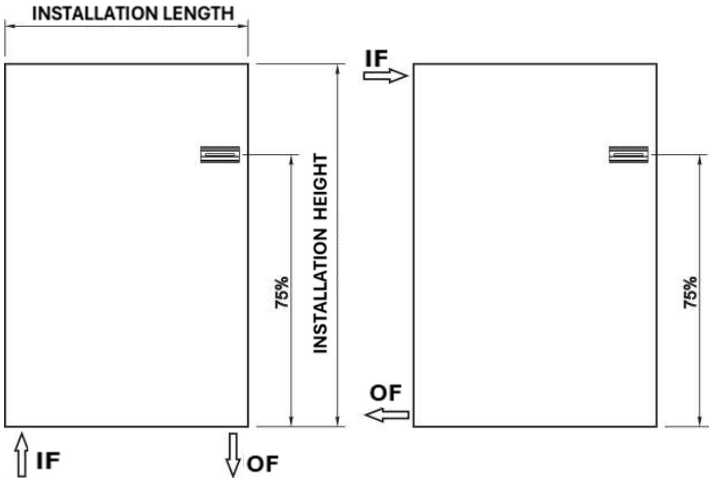






Note:
The display is located on the right-hand side of the bathroom radiators in versions 1-3.

Note:
The display is located on the right-hand side of the bathroom radiators in versions 4-7.

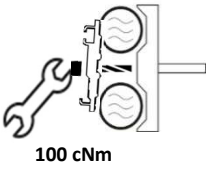


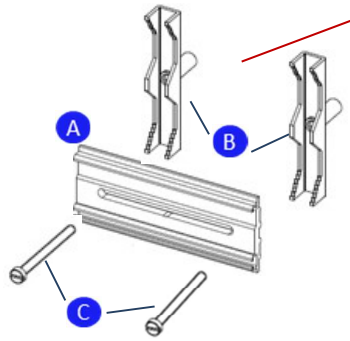
Mounting material required:

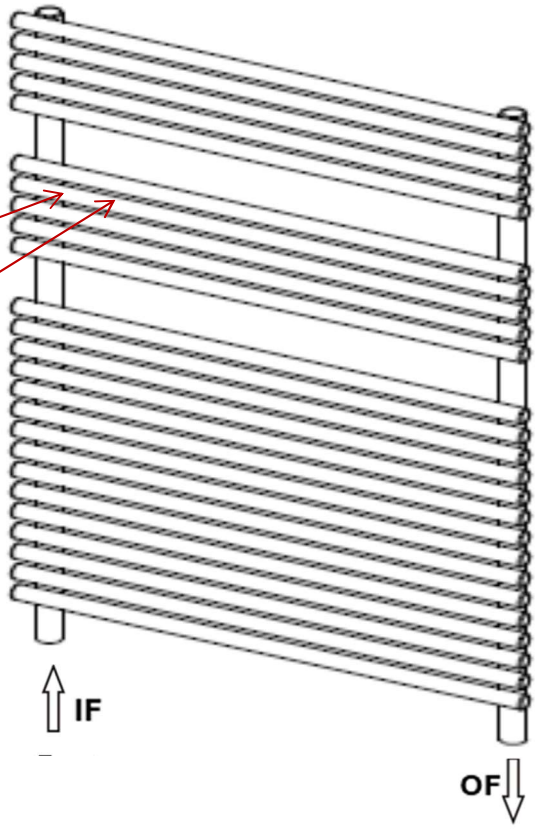
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	1	Alternatively, depending on the tube spacing
Sliding nut tube (45 mm)	0051200010	1	Alternatively, depending on the tube spacing
Flat head screw (C)			
Flat head screw M4x45 DIN 84	0051200007	1	Alternatively
Flat head screw M4x55 DIN 84	0051200008	1	Alternatively
Flat head screw M4x35 DIN 84	0051200006	1	Alternatively

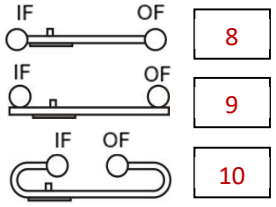
Mounting sheet 2-04: Bathroom radiators (towel rails): mounting close to IF-manifold (screw mounting)

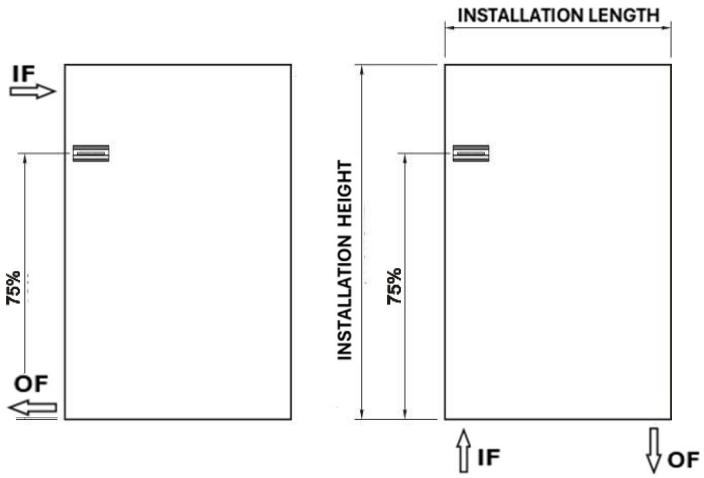
- Alternative mounting type (only if the corresponding Kc values are available)
- At 75 % IH horizontally on the cross tubes, as close as possible to the IF-manifold (Figures 8-10)











Note:

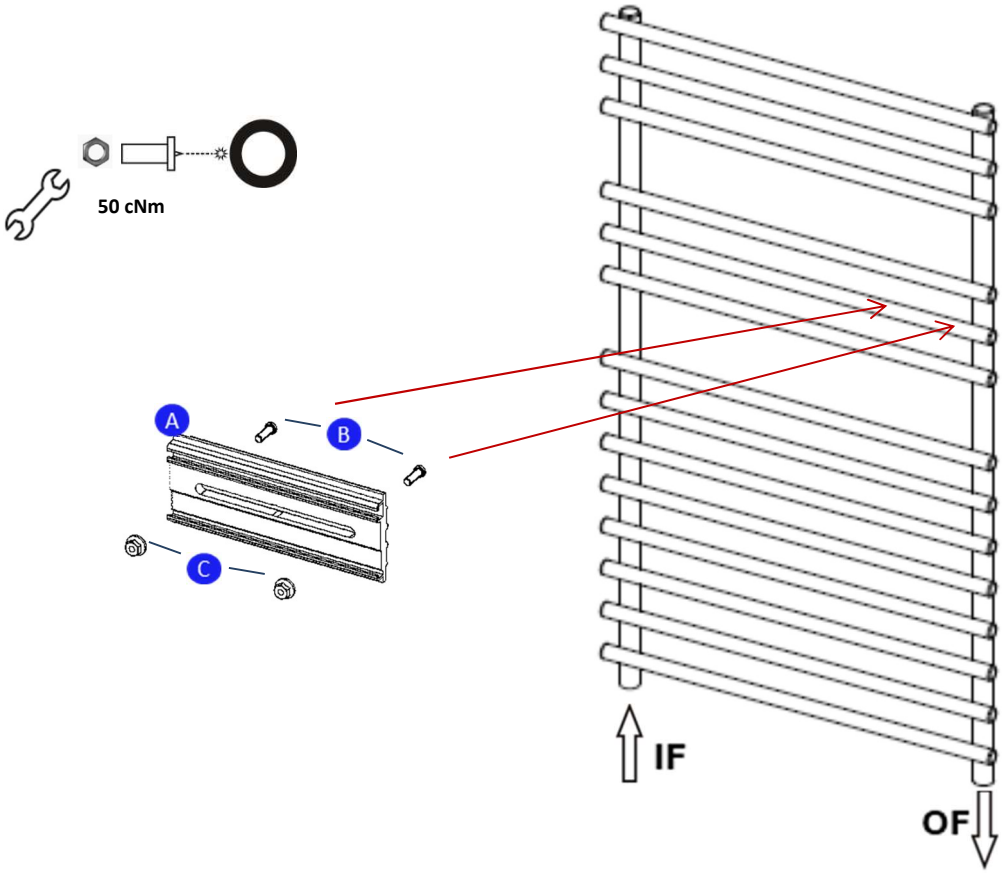
The display is located on the right-hand side of the bathroom radiator versions 8-10.

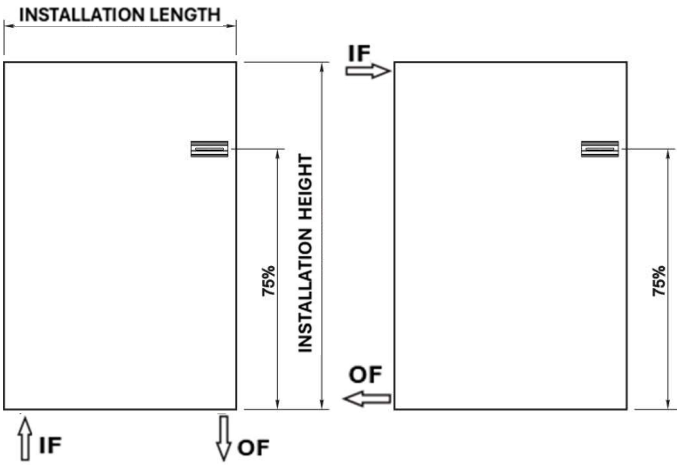
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	1	Alternatively, depending on the tube spacing
Sliding nut tube (45 mm)	0051200010	1	Alternatively, depending on the tube spacing
Flat head screw (C)			
Flat head screw M4x45 DIN 84	0051200007	1	Alternatively
Flat head screw M4x55 DIN 84	0051200008	1	Alternatively
Flat head screw M4x35 DIN 84	0051200006	1	Alternatively

Mounting sheet 2-05: Bathroom radiators (towel rails) with large tube spacing (welding assembly)

- Welded horizontally at 75 % IH on the cross tube close to the OF-collector
- Mounting on collector duct not possible





Note:

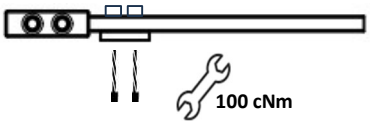
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

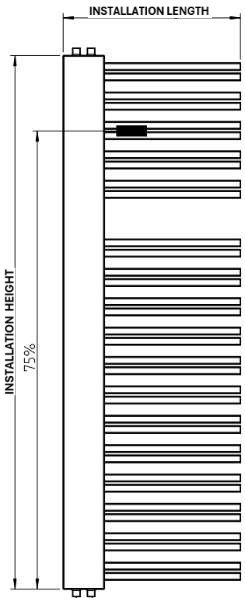
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	

Mounting sheet 2-06: Bathroom radiators (towel rails) with asymmetrical structure and mounting on the IF/OF tubes not possible (screw mounting between rectangular cross tubes)

- Screwed horizontally at 75 % IH between the cross tubes close to the IF/OF-tubes
- Mounting on collector duct not possible → Typical: Schulte Bologna





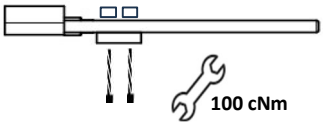
Note:
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

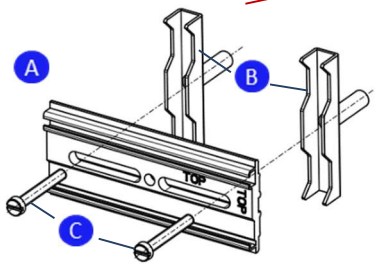
Mounting material required:

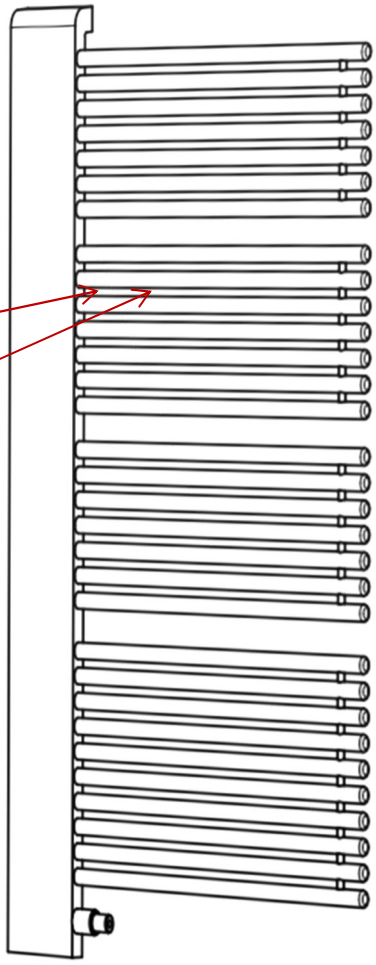
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)			
Spread angle M4 23/35	0051200027	2	Alternatively, according to aperture size
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

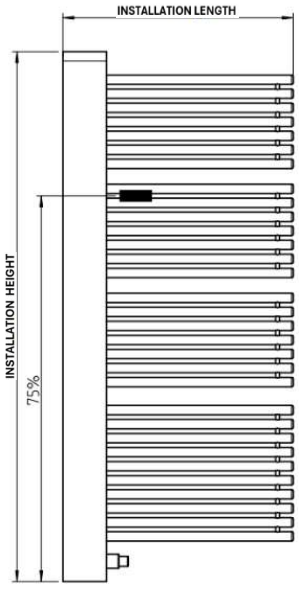
Mounting sheet 2-07: Bathroom radiators (towel rails) with asymmetrical structure and mounting on the IF/OF tubes not possible (screw mounting between round cross tubes)

- At 75 % IH horizontally between the cross tubes close to the IF/OF-tubes
- Mounting on collector duct not possible → Typical: Kermi Credo Half









Note:

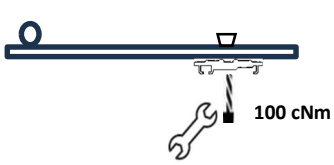
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

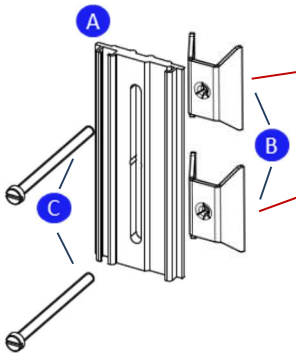
Mounting material required:

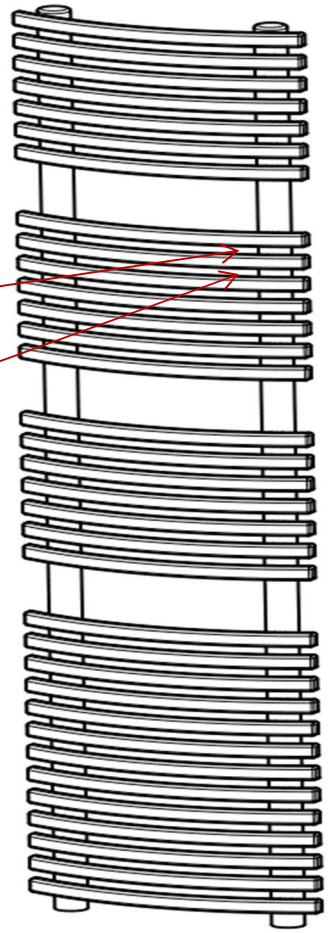
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to aperture size
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

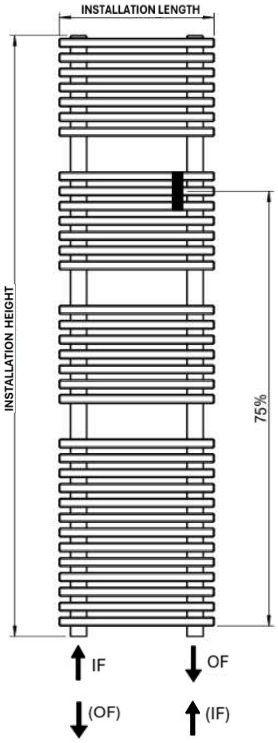
Mounting sheet 2-08: Bathroom radiators (towel rails) with inaccessible collector and distribution ducts and/or bent horizontal tubes (screw mounting between the cross tubes)

- At 75 % IH vertically above the cross tubes close to the outlet collector or close to the inlet manifold (if Kc values are available)
- Typical: Arbonia Bagnotherm BO and Kermi Credo Swing









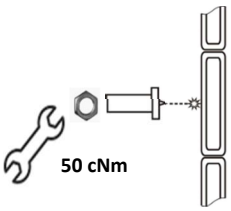
Note:
The corresponding Kc value must be selected depending on the mounting point (OF side or IF side).

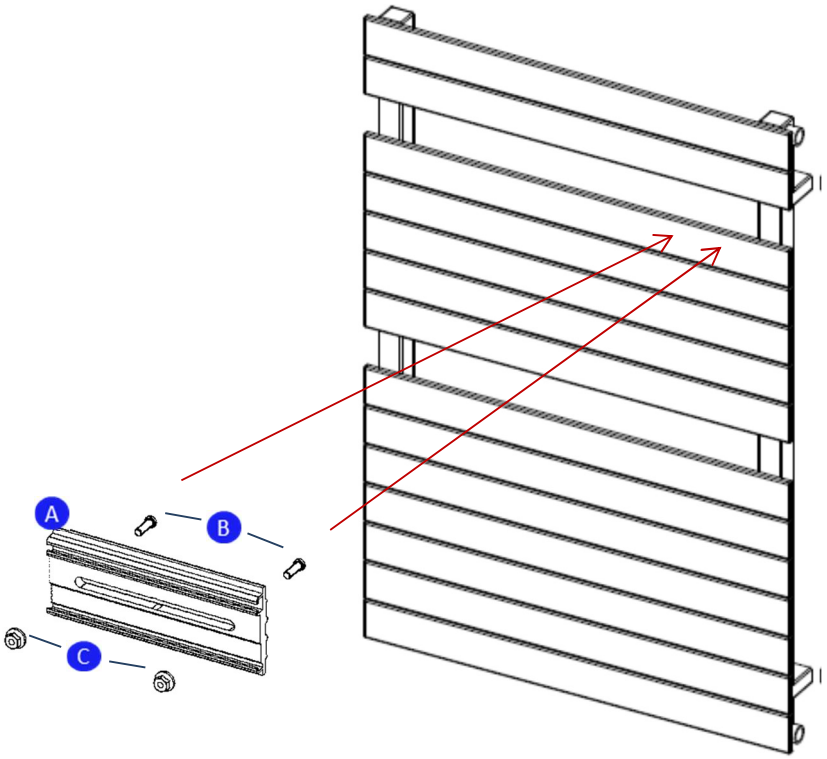
Mounting material required:

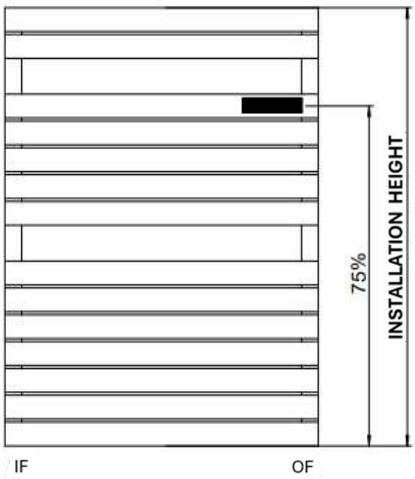
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)			
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Spread angle M4 53/65	0051200031	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

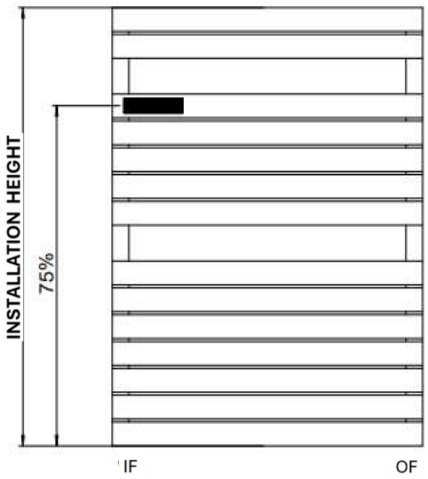
Mounting sheet 2-09: Radiators made of horizontal flat profile tubes, special shape bathroom radiators (welding assembly)

- Welding assembly at 75 % IH on the horizontal flat tube
- Typical: Finimetal Novella Plan









Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Note:

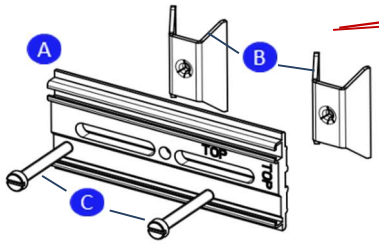
The corresponding Kc value must be selected depending on the mounting point (OF side or IF side).

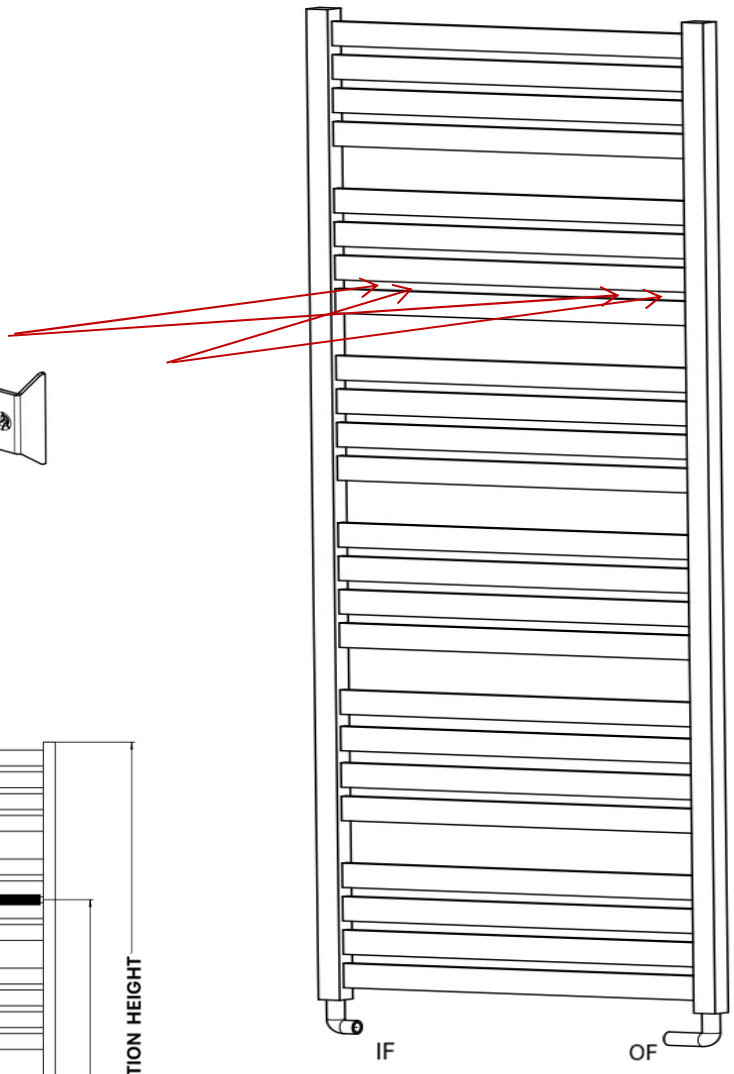
Mounting material required:

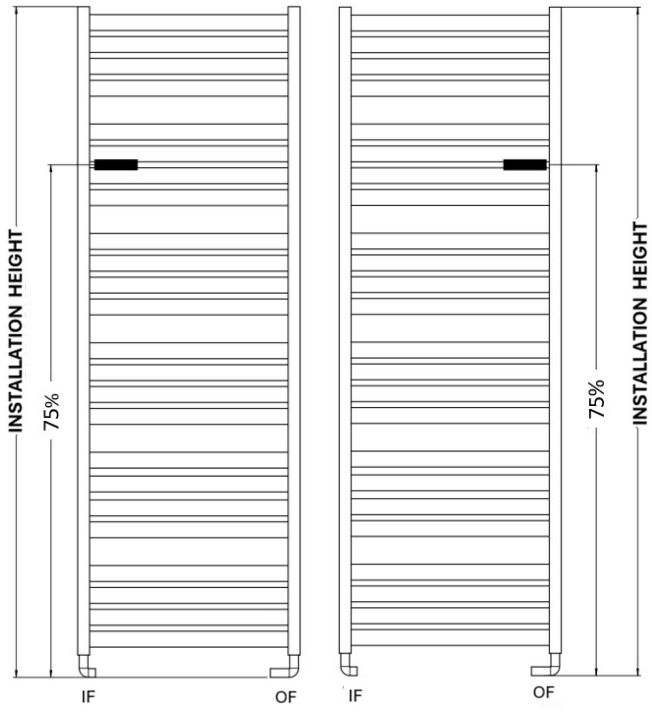
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 2-10: Radiators made of horizontal flat profile tubes, special shape bathroom radiators (screw mounting)

- Screw mounting at 75 % IH between the horizontal flat tubes
- Typical: Schulte Genf







Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Note:

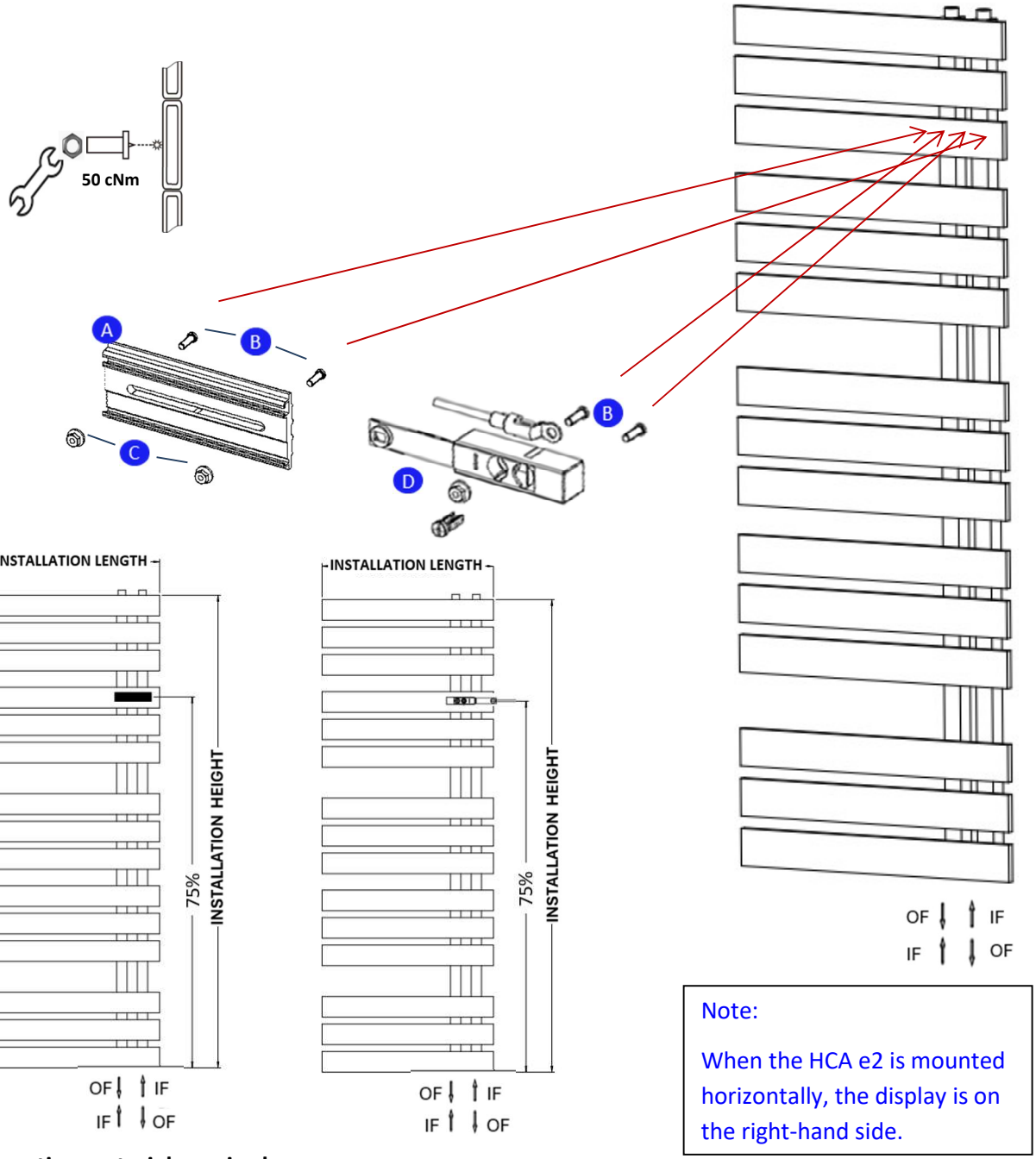
The corresponding Kc value must be selected depending on the mounting point (OF side or IF side).

Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 23/35	B	0051200027	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

Mounting sheet 2-11: Radiators made of horizontal flat profile tubes with asymmetrical structure and mounting on the IF/OF tubes not possible, special shape bathroom radiators (welding assembly)

- Special mounting: For single-sided connection only
- Typical: HSK Yenga or Zehnder Roda



Note:

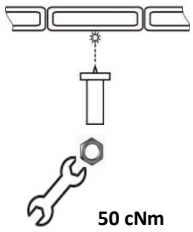
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

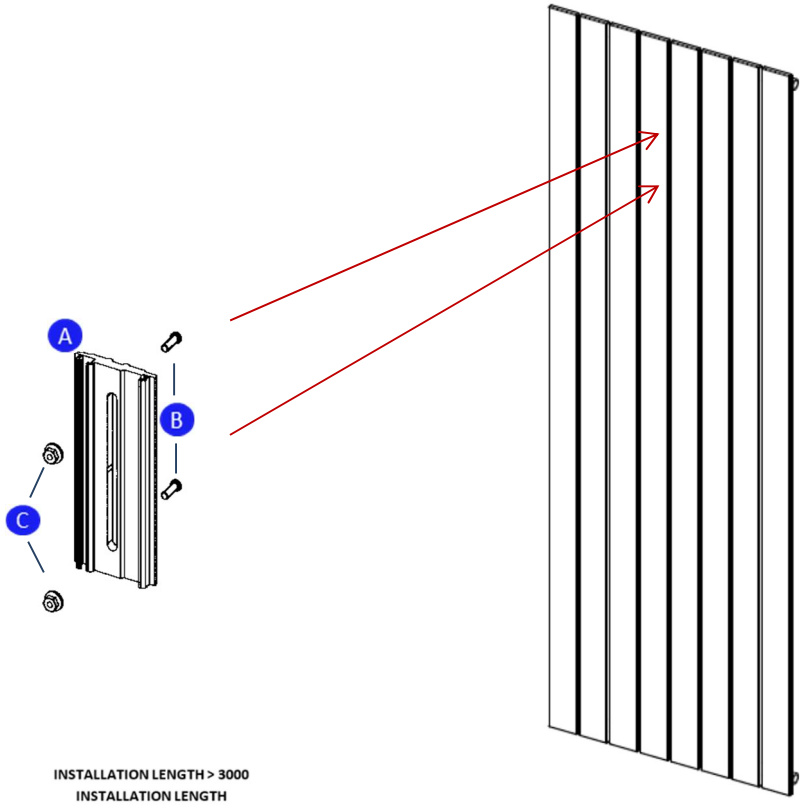
Mounting material required:

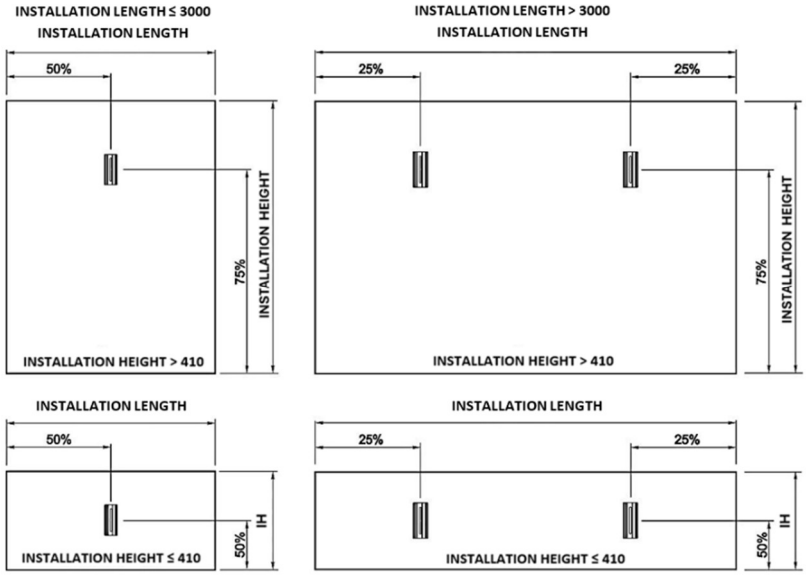
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively
Remote sensor complete	D			
2 m		0251200006	1	Alternatively
5 m		0251200011	1	Alternatively

Mounting sheet 3-01: Radiators made of flat profile tubes with vertical tube routing

- Welding assembly on the vertical tube







Note:

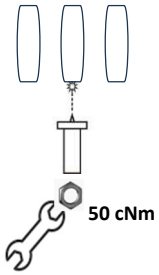
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

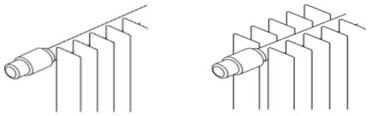
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

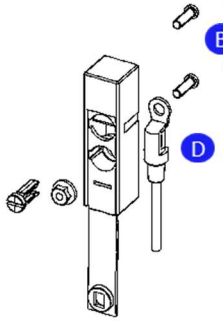
Mounting sheet 3-01a: Radiators made of flat profile tubes with vertical tube routing (gallery radiators)

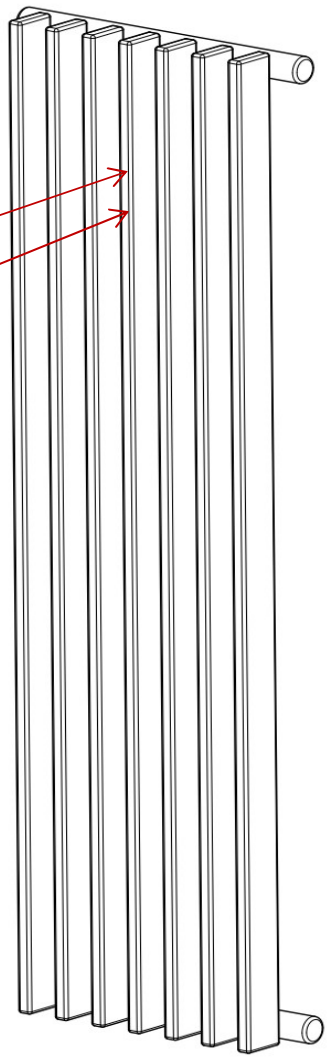
- Single-row and double-row (see Sketch 3)
- Typical: Arbonia Arbotherm / Zehnder Excelsior / Acova-Runaco RX

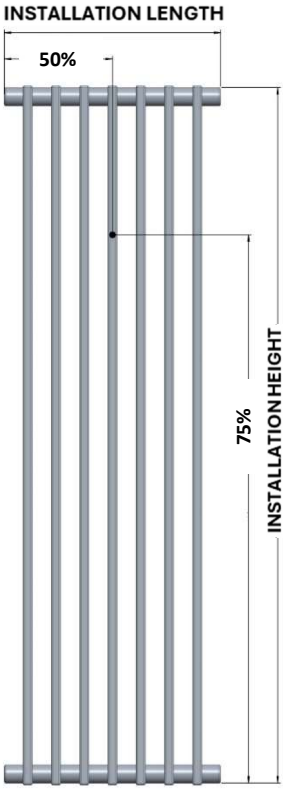




Sketch 3: Single- and double-row design



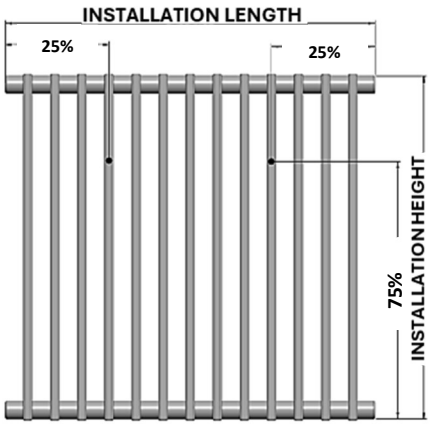




INSTALLATION LENGTH ≤ 3000

Note:

Due to the wide range of installation depths and pitches (30-70 mm) for gallery radiators, a remote sensor is welded onto the front surface of the flat tubes.



INSTALLATION LENGTH > 3000

Note:

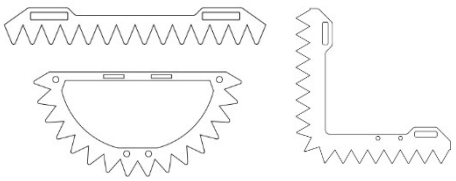
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

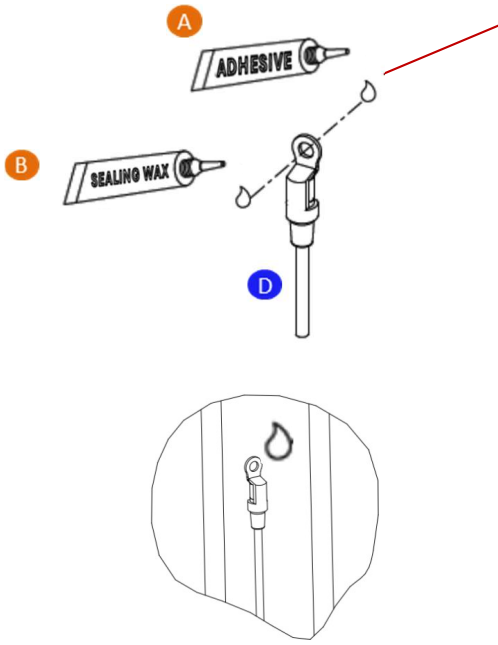
Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 3-01b: Radiators made of triangular profile tubes with vertical tube routing (gallery radiators)

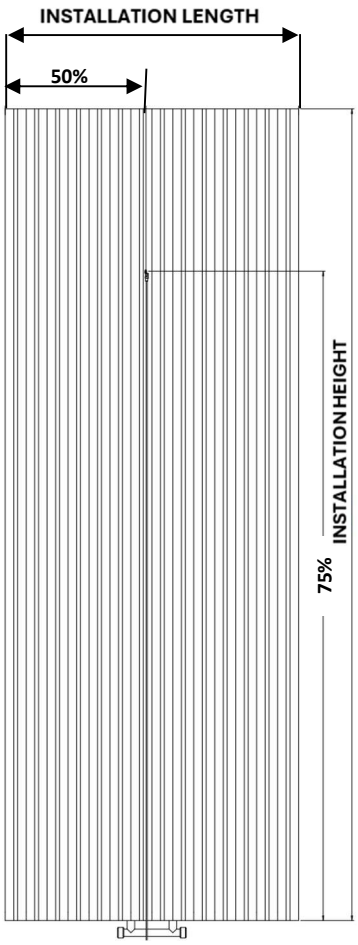
- Variants: straight, bent, across the corner (see Sketch 4)
- Typical: Jaga Iguana
- Adhesive fastening on the side of the triangular tube (see Sketch 5)

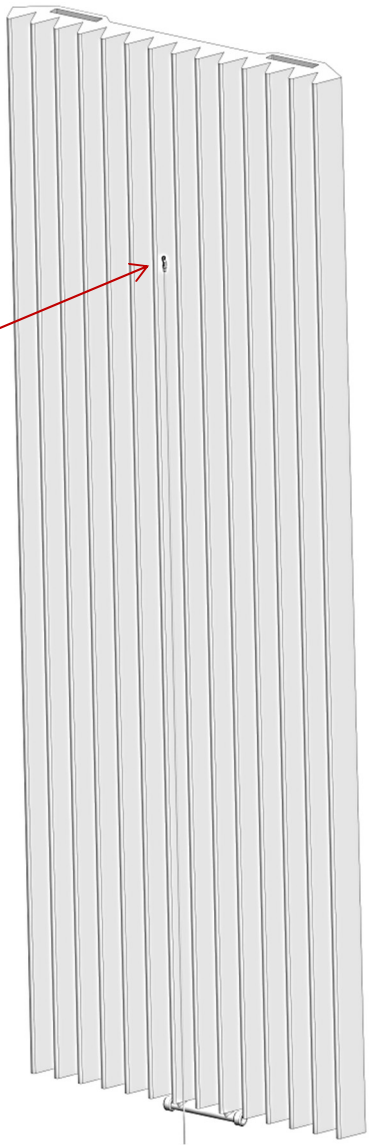


Sketch 4: Straight, bent, across the corner



Sketch 5: Adhesive fastening on the side of the triangular tube



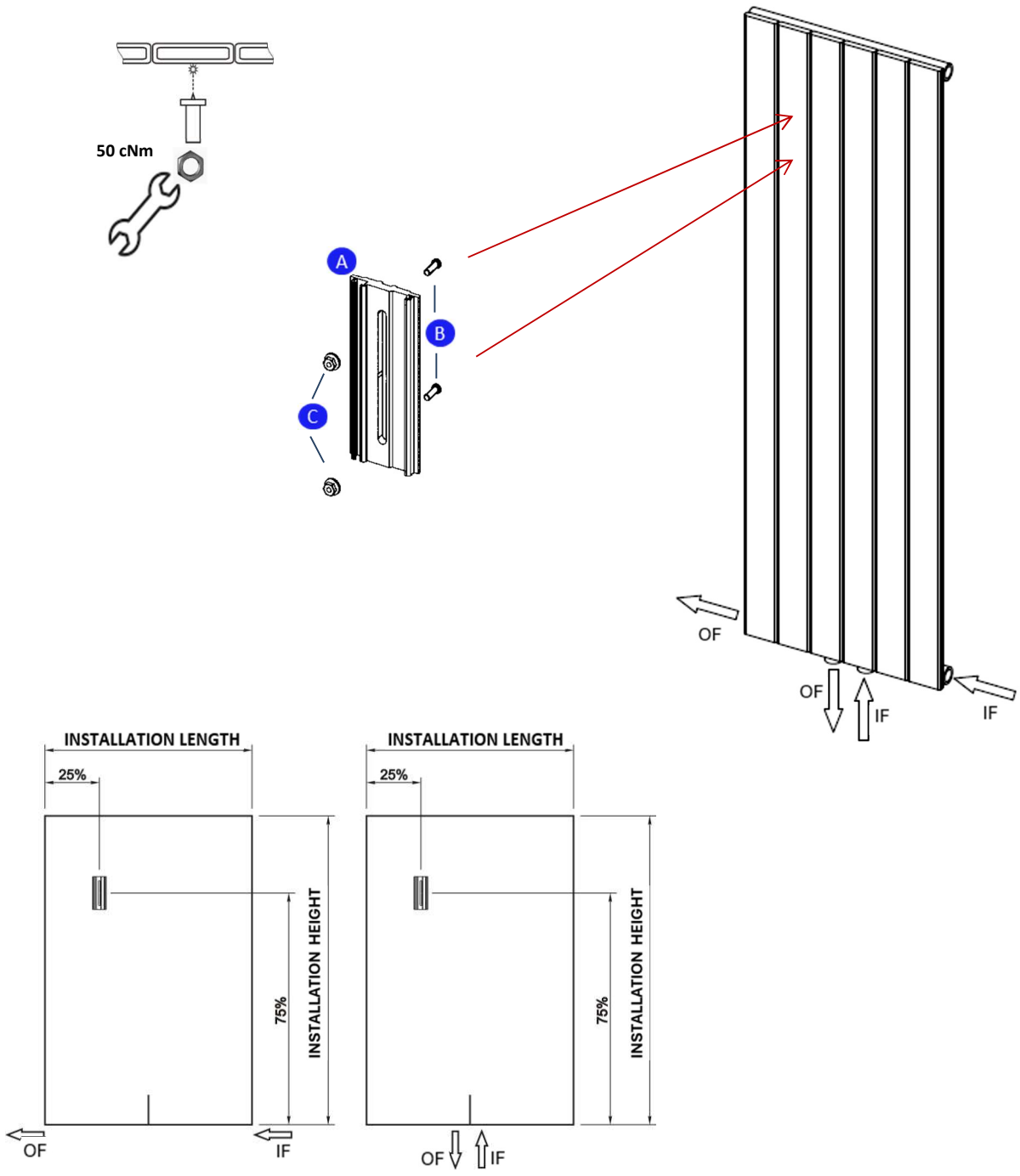


Mounting material required:

Article designation	Article number	Quantity	Note
Remote sensor complete D			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Adhesive A		1	External procurement
Sealing wax B		1	External procurement

Mounting sheet 3-02: Radiators made of flat profile tubes with vertical tube routing with separating disk

- Connection at the bottom riding or centered with separating disc
- Welding assembly on the vertical tube

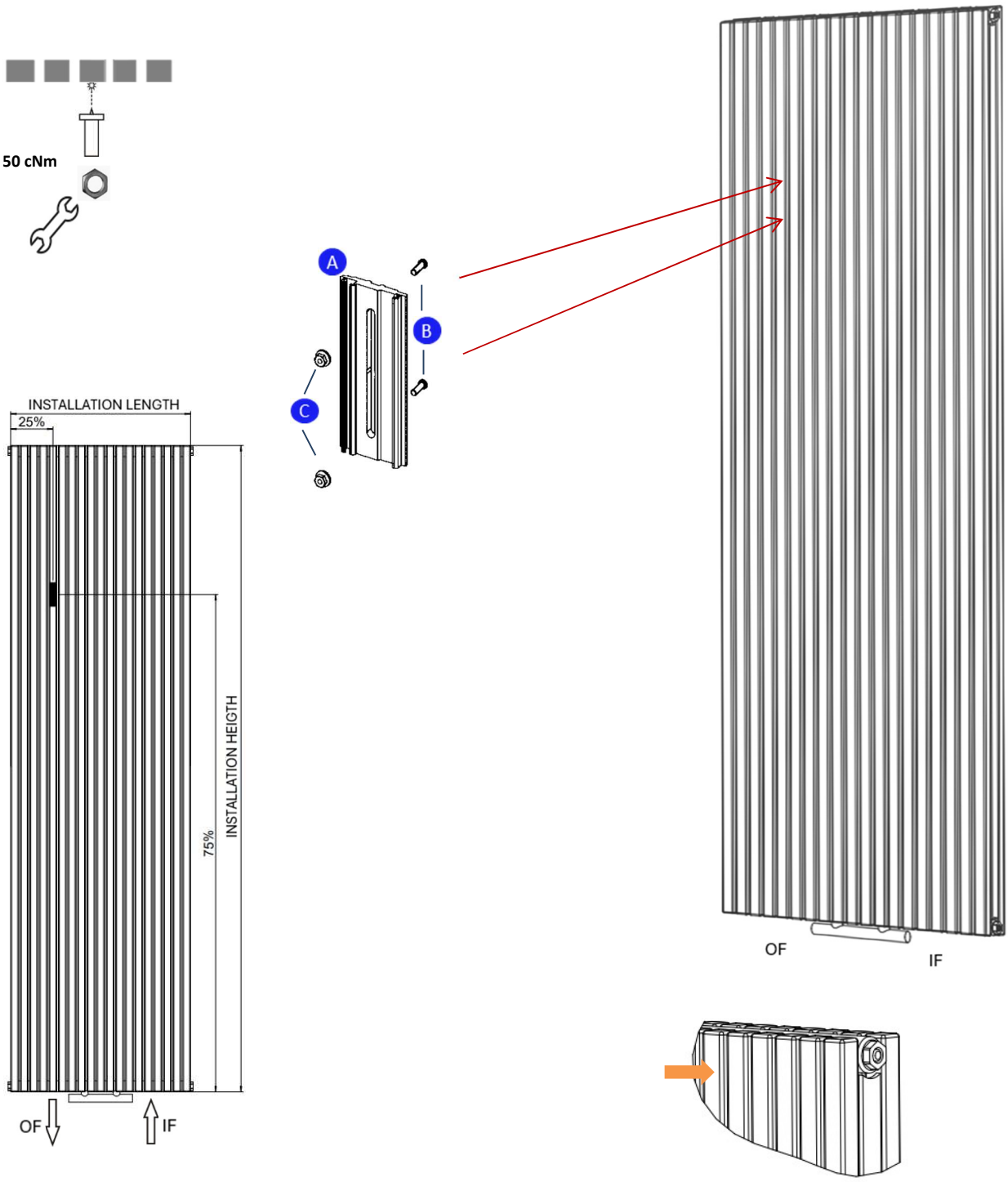


Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively

Mounting sheet 3-02a: Radiators made of square tubes with vertical tube routing

- Welding assembly on the square tube (see Sketch 6) at 25 % IL on the outlet side
- Connection at the bottom riding
- Typical: Vasco Carrè and Kermi Decor Arte Pure



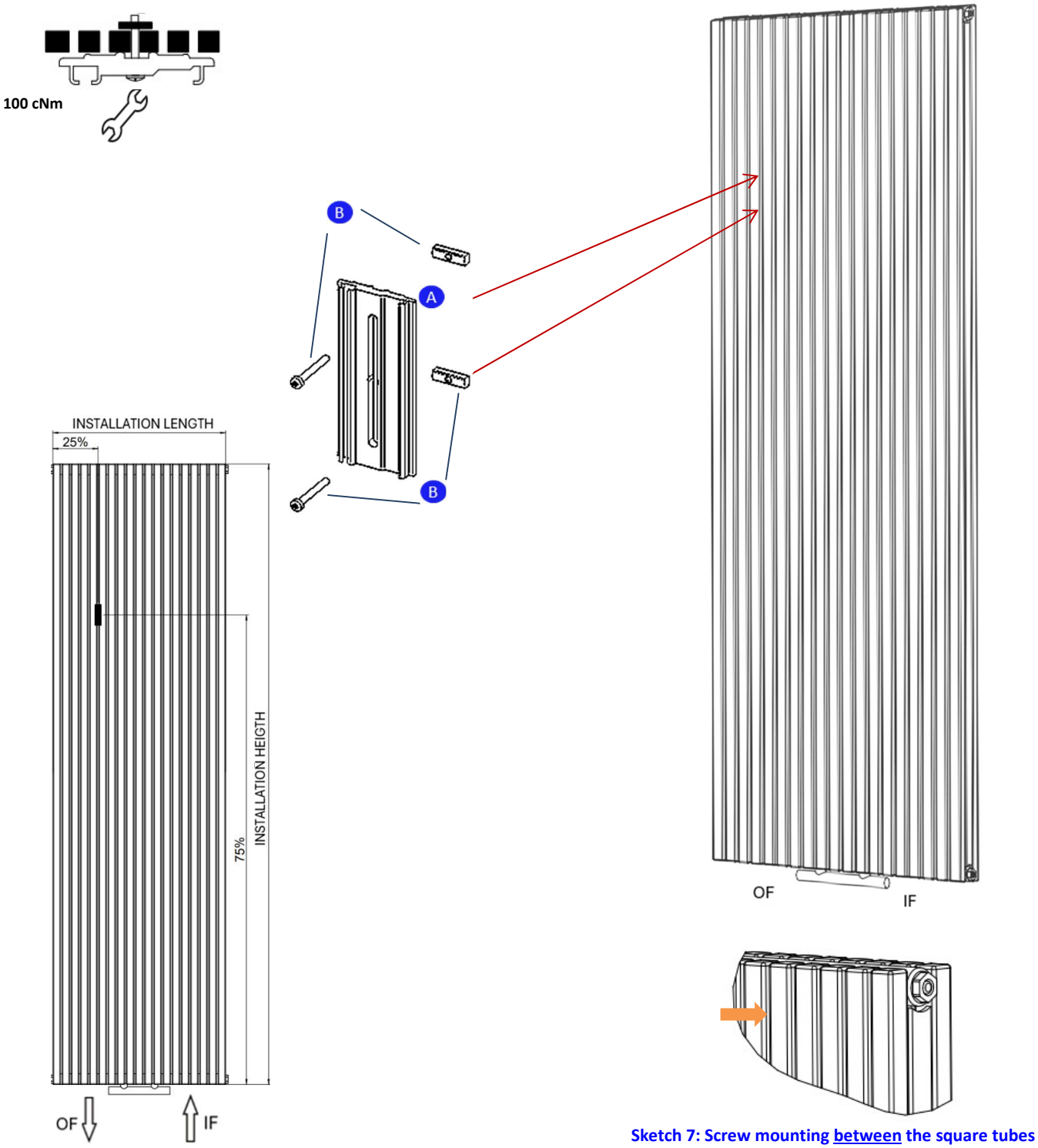
Sketch 6: Welding assembly on the square tube

Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively

Mounting sheet 3-02b: Radiators made of square tubes with vertical tube routing

- Screw mounting between the square tubes (see Sketch 7) at 25 % IL on the outlet side
- Connection at the bottom riding
- Typical: Vasco Carrè and Kermi Decor Arte Pure



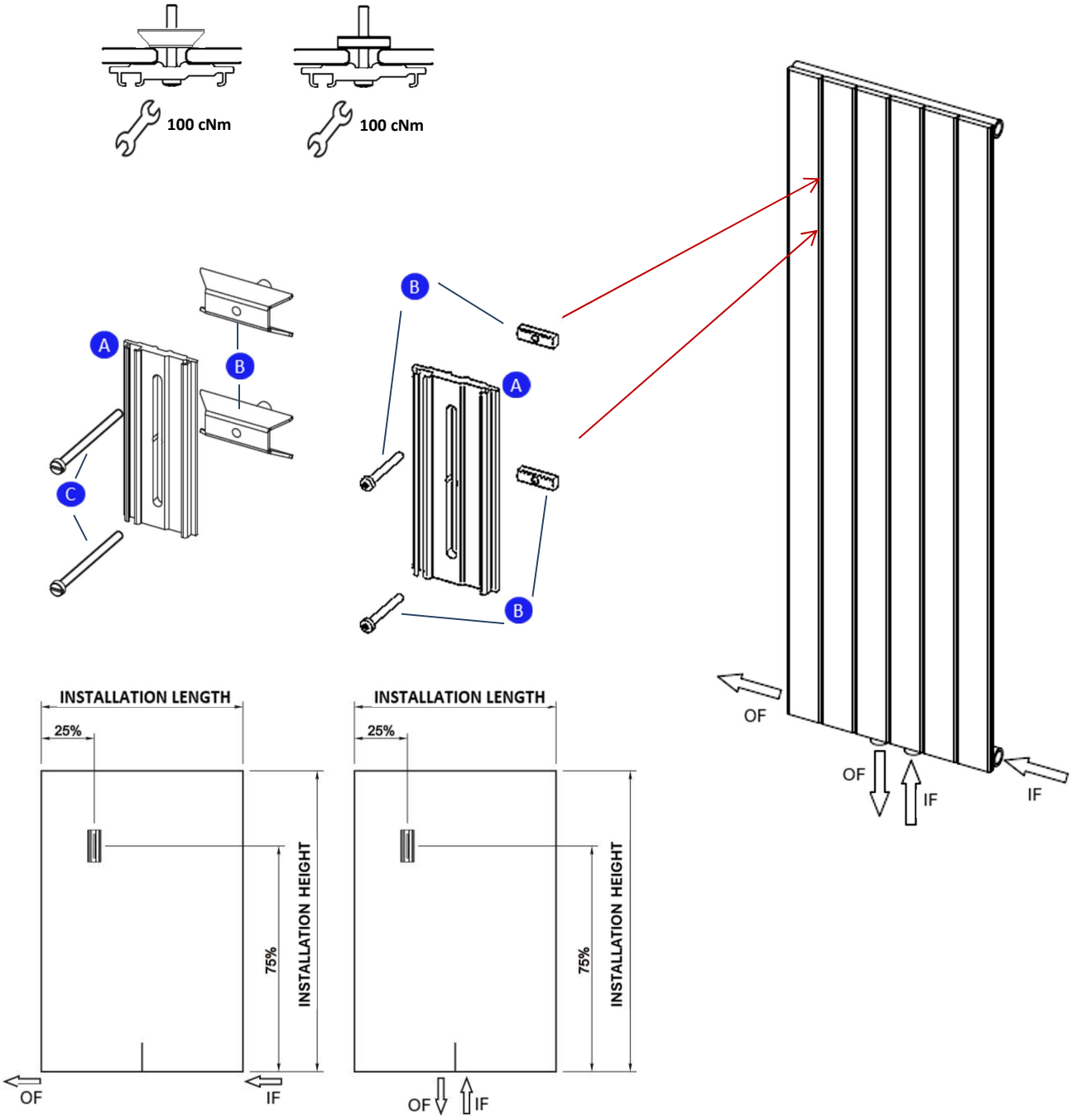
Sketch 7: Screw mounting between the square tubes

Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Aluminum radiator mounting kit	B	0251200004	2	

Mounting sheet 3-02c: Radiators made of flat profile tubes with vertical tube routing with separating disk

- Connection at the bottom riding or centered with separating disc
- Screw mounting between the vertical flat tubes at 25 % IL on the outlet side

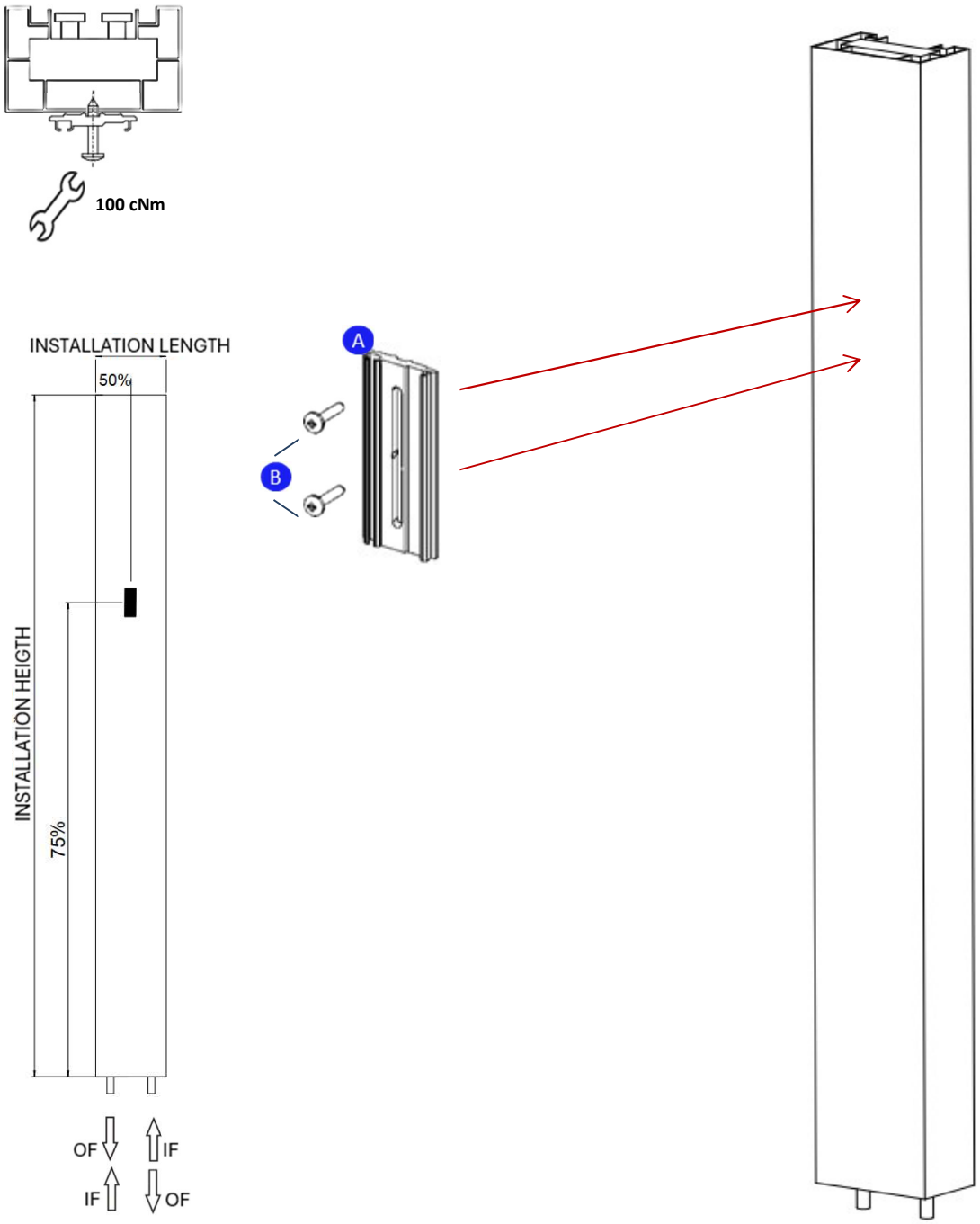


Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Aluminum radiator mounting kit (B)	0251200004	2	Alternatively (according to gap width)
Spread angle M4 23/35 (B)	0051200027	2	Alternatively (according to gap width)
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

Mounting sheet 3-02d: Radiators made of aluminum flat profile tubes (single element)

- Screw mounting on the vertical flat tube at 75 % IH
- Typical: Kermi Decor-Arte Plan Mono and Vasco Beams Mono

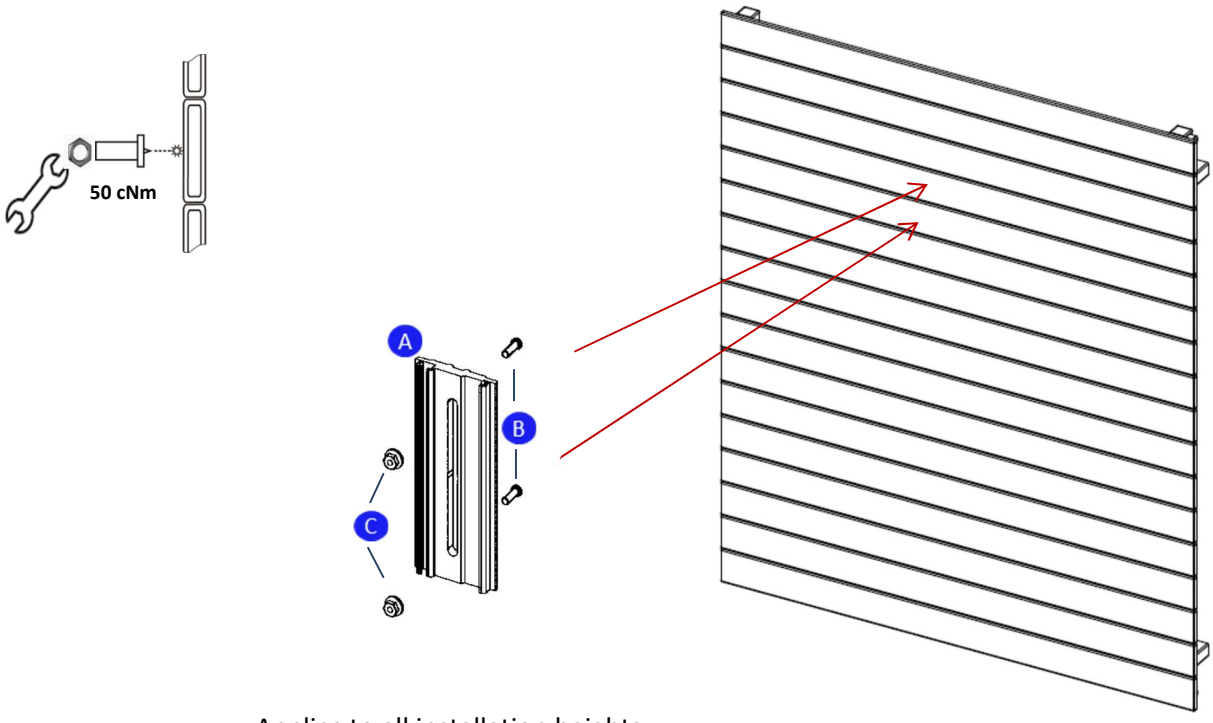


Mounting material required:

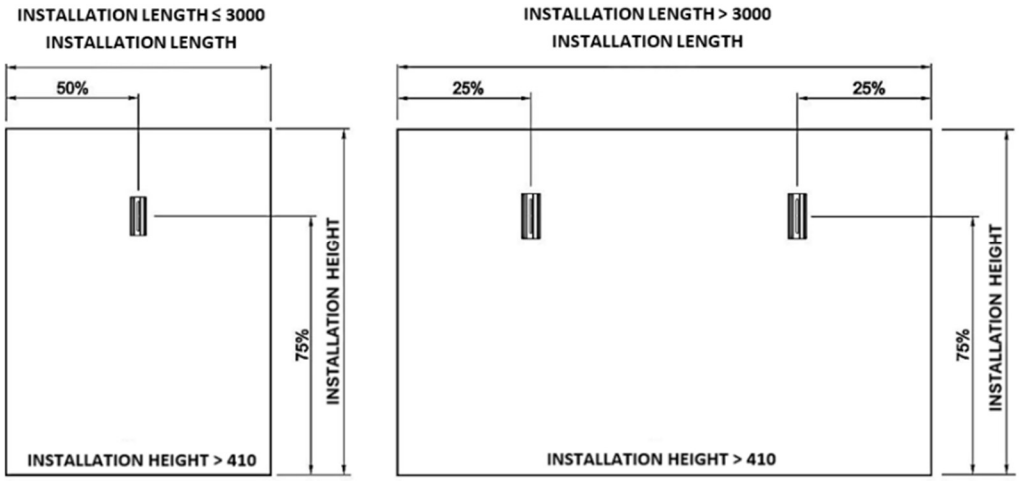
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Self-tapping screw 4.2x25 (B)	0051200013	2	Pre-drilling recommended (3.5 mm)

Mounting sheet 3-03: Radiators made of flat profile tubes with horizontal tube routing, IH ≥ 5-ply (heating wall)

- Recommended mounting
- For all installation heights ≥ 5-ply, equal-sided and alternating connection, vertical mounting
- Remote sensor mounting (Mounting sheet 99-07-FF)



Applies to all installation heights

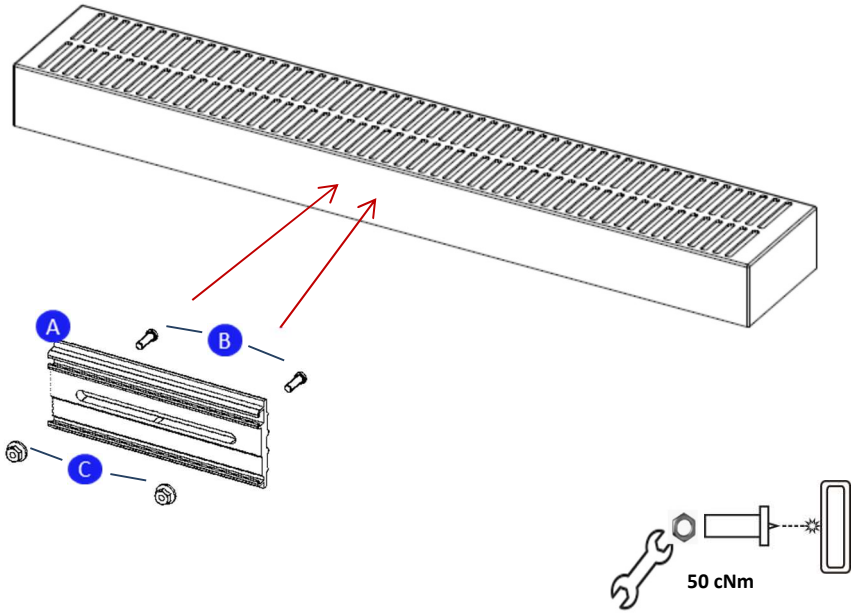


Mounting material required:

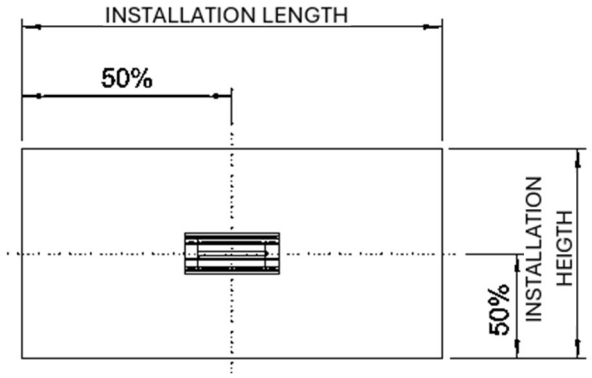
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively

Mounting sheet 3-04: Radiators made of flat profile tubes with horizontal tube routing, IH 1-ply (Radiavector)

- Only for installation heights (IH) 1-ply, equal-sided and alternating connection, horizontal mounting



Applies to all installation lengths



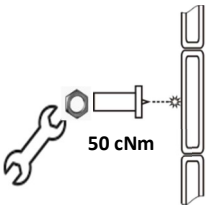
Note:
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

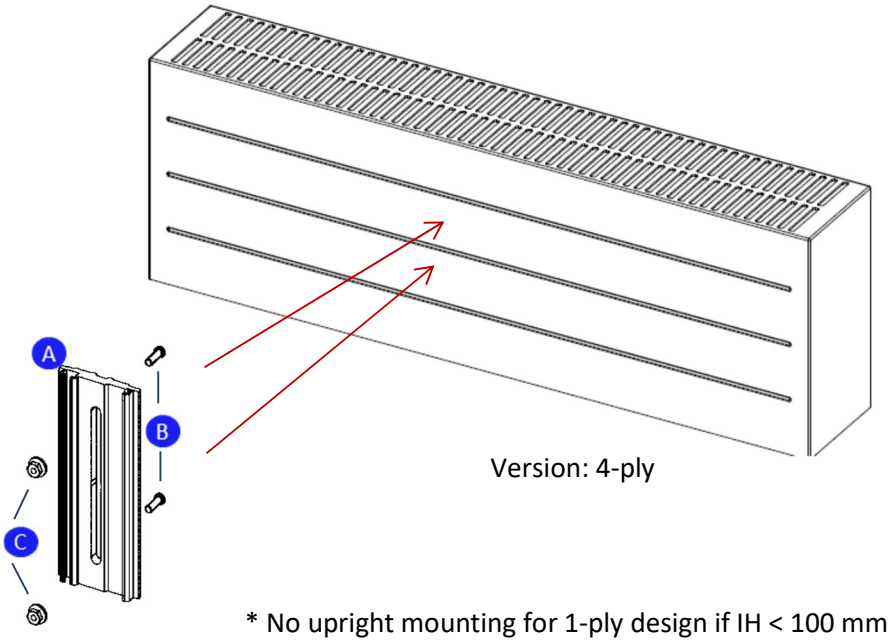
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 3-05: Radiators made of flat profile tubes with horizontal tube routing, IH 1-4-ply 50 % (Radiavector)

- Applies to the installation heights (IH): 1-ply,* 2-ply, 3-ply, 4-ply: equal-sided and alternating connection, vertical mounting, MP 50 %
- Remote sensor mounting (Mounting sheet 99-07-FF)

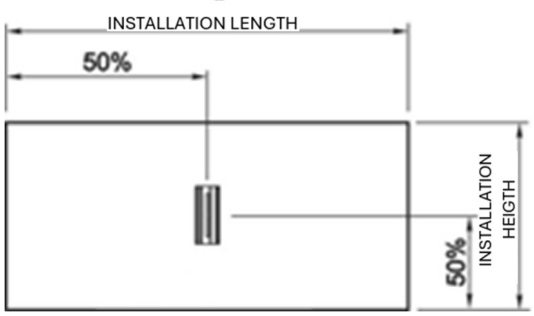


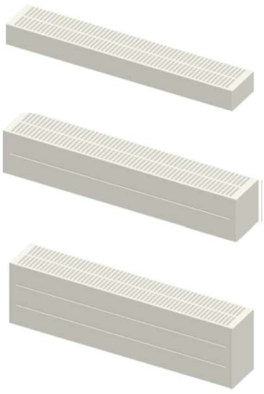


Version: 4-ply

* No upright mounting for 1-ply design if IH < 100 mm.

Applies to all installation lengths





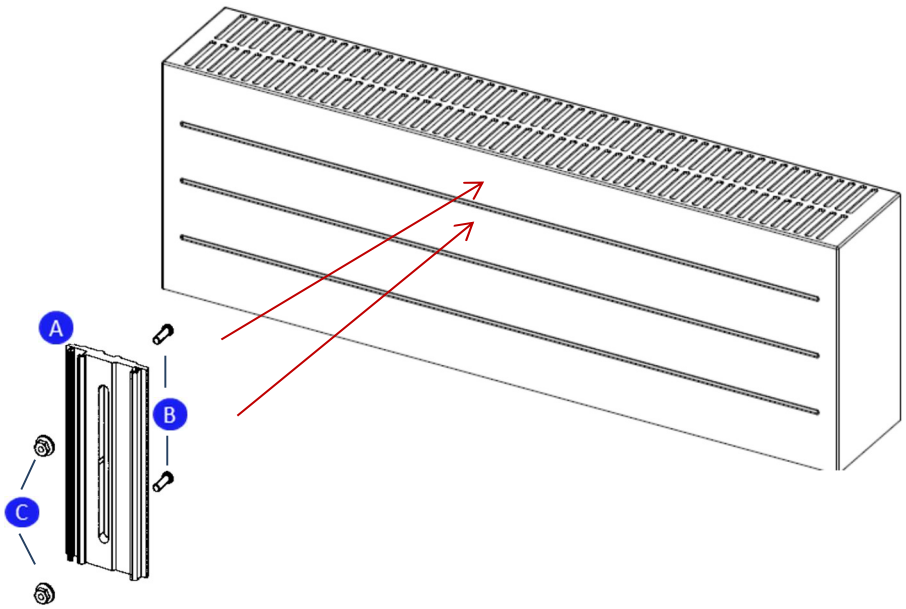
Versions: 1-ply, 2-ply and 3-ply

Mounting material required:

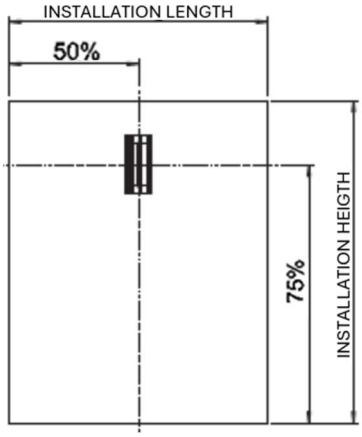
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively

Mounting sheet 3-06: Radiators made of flat profile tubes with horizontal tube routing, special mounting 4-ply 75 % (Radiavector)

- Special mounting (only if the corresponding Kc values are available)
- Applies to 4-ply installation height: equal-sided and alternating connection, vertical mounting, MP 75 %
- Remote sensor mounting (Mounting sheet 99-07-FF)



Applies to all installation lengths



Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 3-07: Radiators made of flat profile tubes with horizontal tube routing (Kampmann Rakon)

- For installation heights 1-ply, 2-ply, 3-ply, mounting point (MP) at 50 % of the installation height (IH)
- For installation heights 4-ply, 5-ply, 6-ply, mounting point (MP) at 75 % of the installation height (IH)
- Applies to equal-sided and alternating connection types
- Remote sensor mounting (Mounting sheet 99-07-FF)

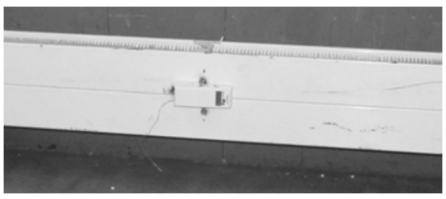


Figure 20: Mounting point (MP) at 50 % IH for 1-, 2- and 3-ply versions

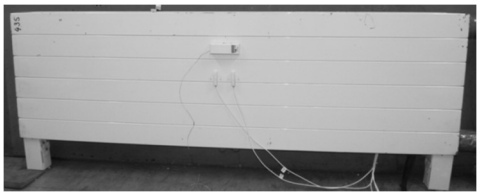
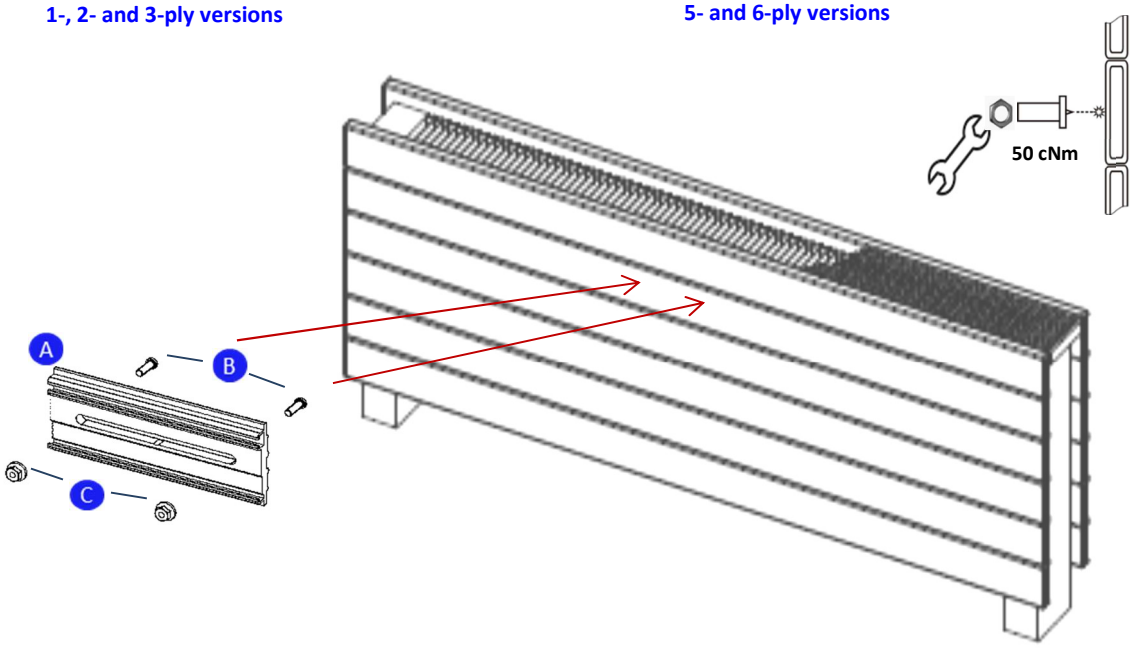
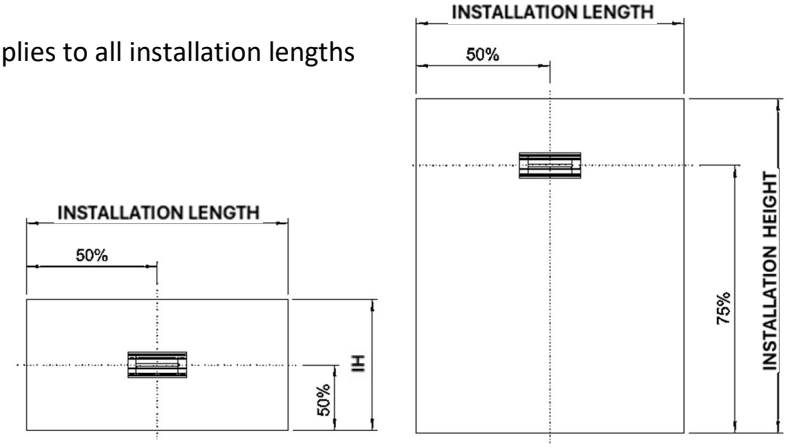


Figure 21: Mounting point (MP) at 75 % IH for 4-, 5- and 6-ply versions



Applies to all installation lengths



Note:

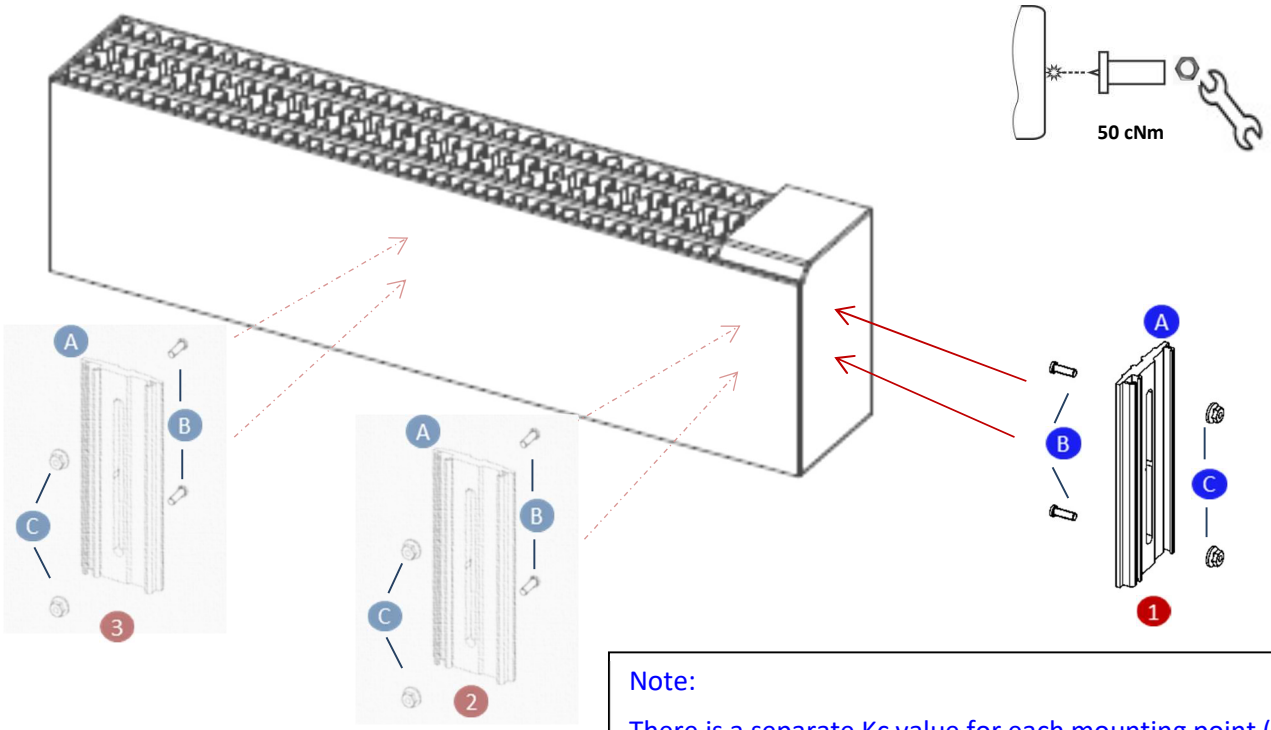
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 3-08: Radiators made of flat profile tubes with horizontal tube routing (Reusch Procal)

- Convector made of flat profile tubes with fixed cover
- Recommended mounting: 50 % of the installation height (IH) on the side of the reversing chamber 1
- Alternative mounting: 50 % of the installation height (IH) at the front of the reversing chamber 2
- Alternative mounting: 50 % of the installation height (IH) and 50 % of the installation length (IL) 3



Note:

There is a separate Kc value for each mounting point (MP)!
The notes on the mounting point (MP) in the Kc value table must be observed!
It is recommended to always select the mounting point with the lowest Kc value (optimum thermal connection 1!).

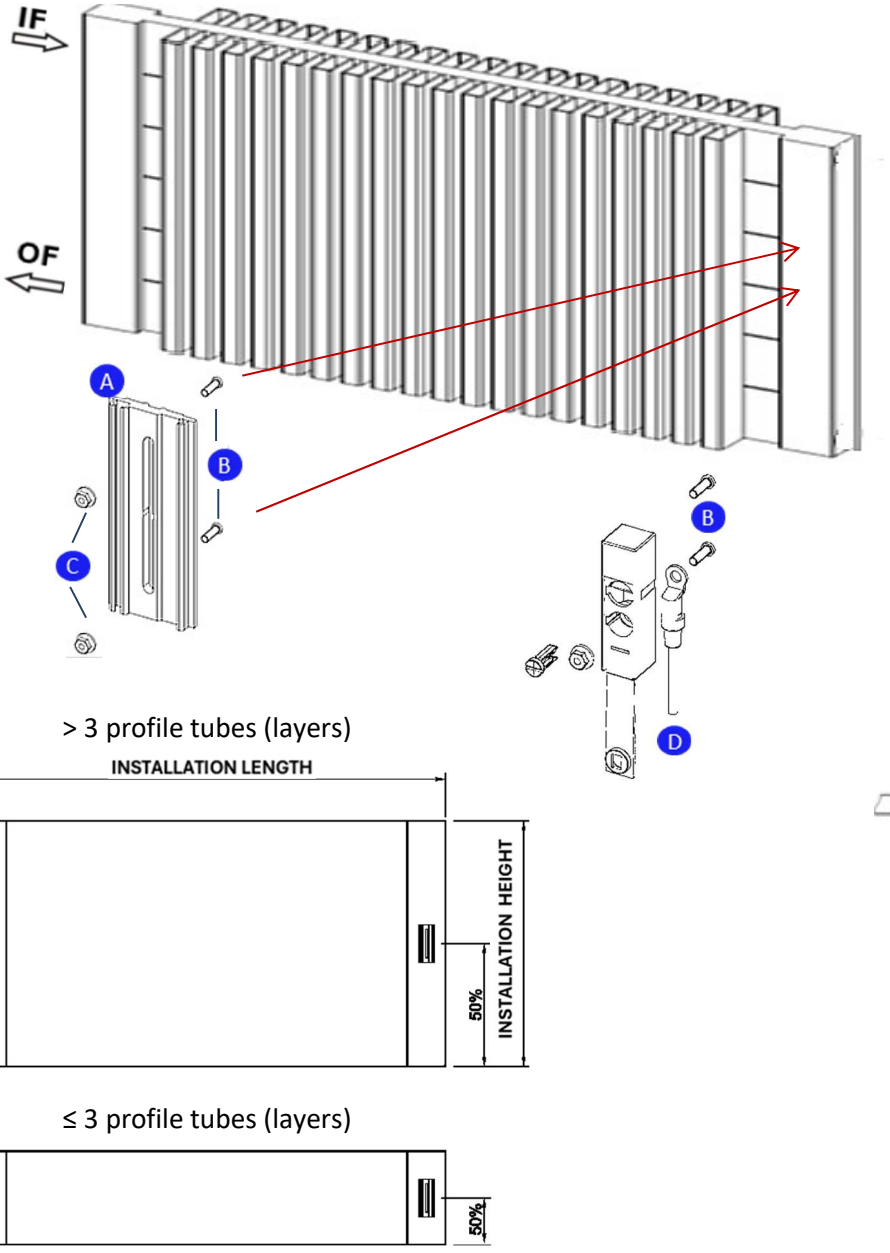
Applies to all installation lengths and heights

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Threaded bolt M3x10 DIN32501 B	0051200014	2	
Locking nut M3 C	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 3-09: Radiators made of flat profile tubes with horizontal tube routing and front fins, equal-sided connection (welding assembly on the reversing chamber)

- With equal-sided connection, it is possible to mount compact unit and remote sensor (on reversing chamber)
- With alternating connection, only remote sensor mounting → see Mounting sheet 3-10

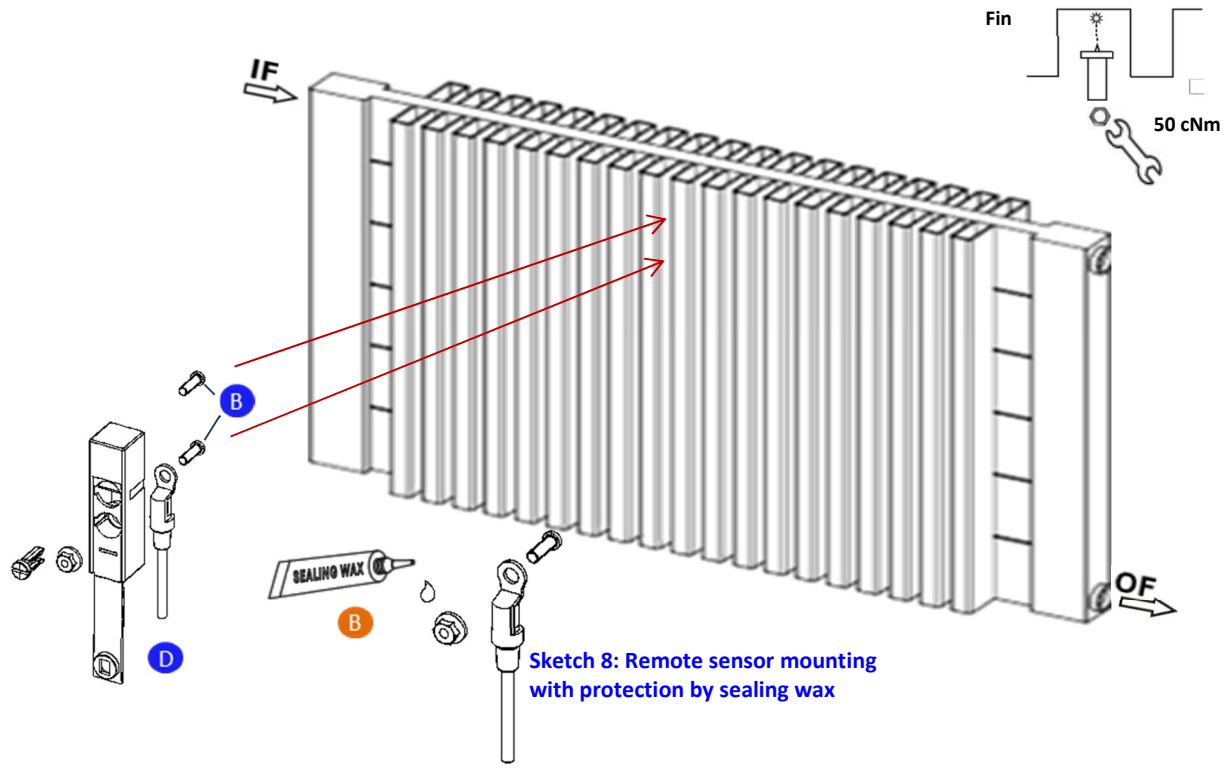


Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Remote sensor complete (D)			**Alternatively for remote sensor**
2 m	0251200006	1	See 5.8.5
5 m	0251200011	1	

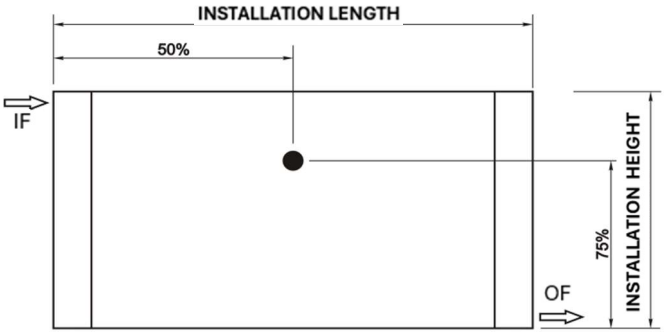
Mounting sheet 3-10: Radiators made of flat profile tubes with horizontal tube routing and front fins, alternating connection

- With alternating connection, only remote sensor mounting (in fin corrugation)

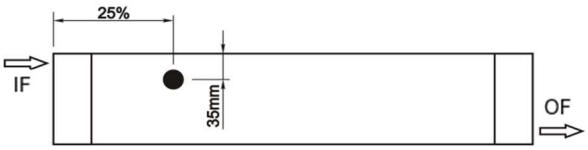


Sketch 8: Remote sensor mounting with protection by sealing wax

> 3 profile tubes (layers)



≤ 3 profile tubes (layers)



Note:

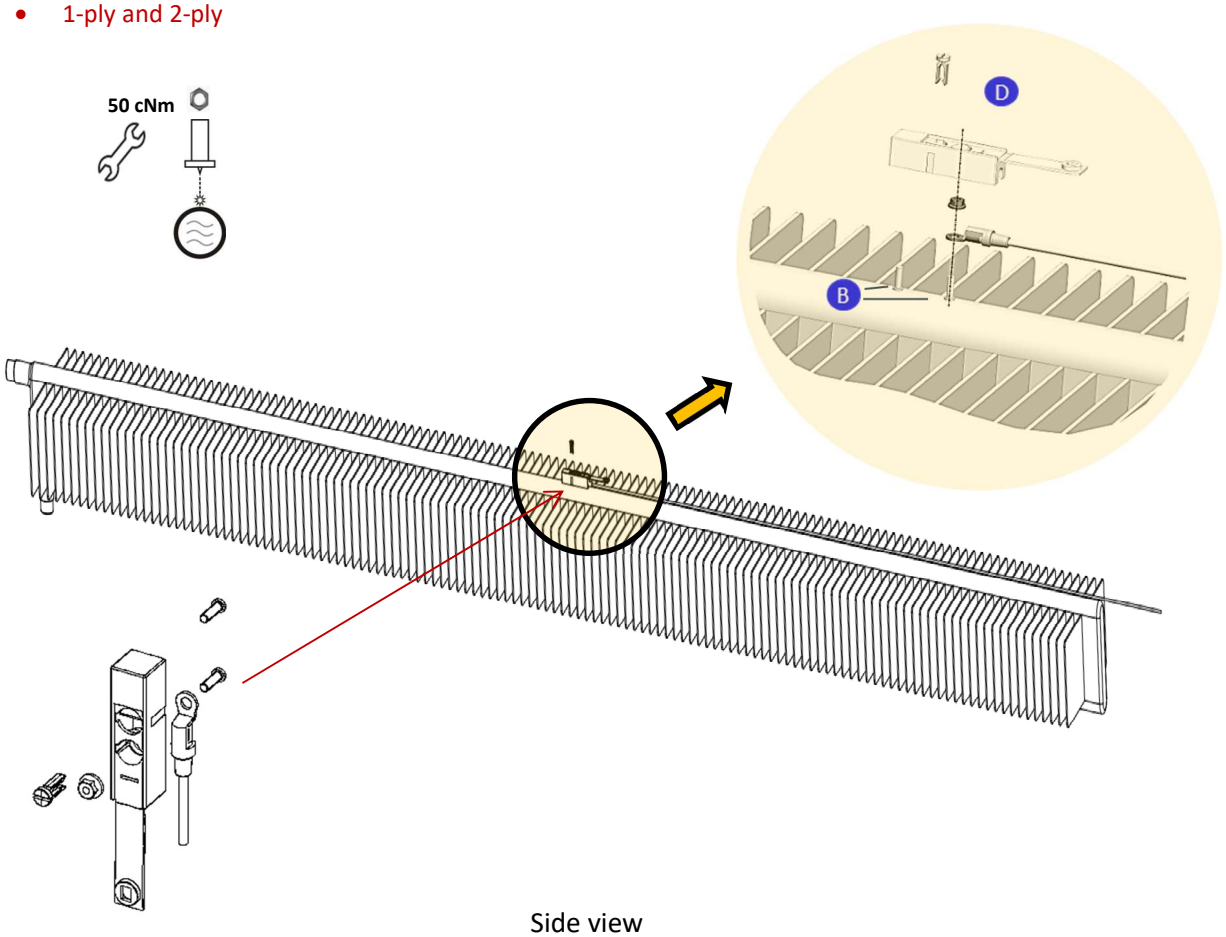
If the fin spacing is too small to mount the remote sensor with the cover housing, it is also possible to mount the remote sensor without the cover. In this case, however, the fastening nut must be secured with sealing wax to ensure tamper-resistance → see Sketch 8.

Mounting material required:

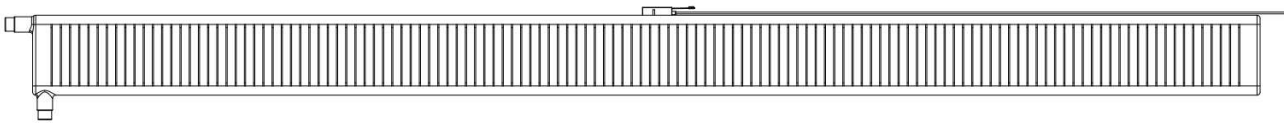
Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Sealing wax (B)		1	External procurement

Mounting sheet 3-10a: Radiators made of flat profile tubes with horizontal tube routing and front fins, equal-sided connection

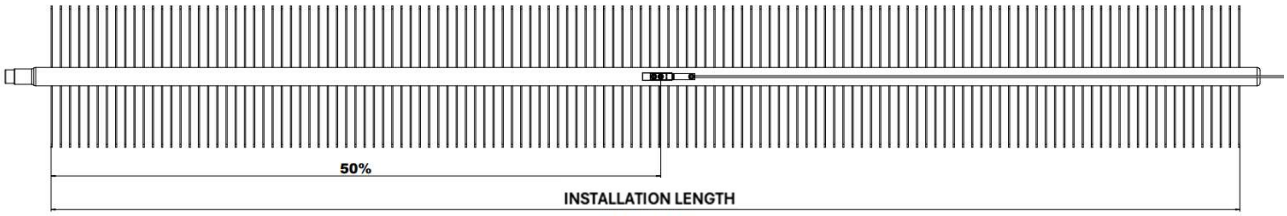
- With equal-sided connection, remote sensor mounting at half installation length on top of the water-bearing tube
- Typical: Baufa Convecto Classic
- 1-ply and 2-ply



Side view



Top view

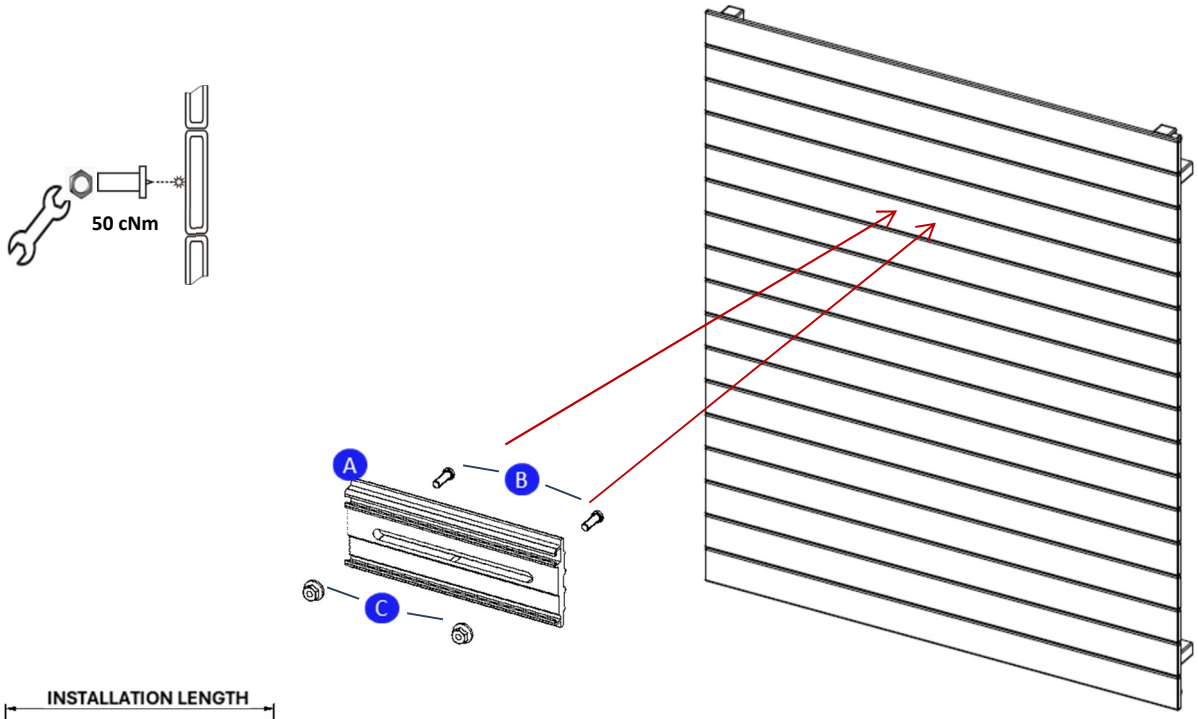


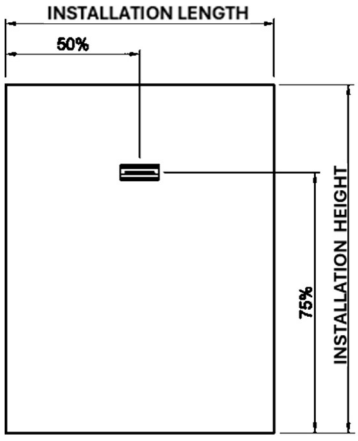
Mounting material required:

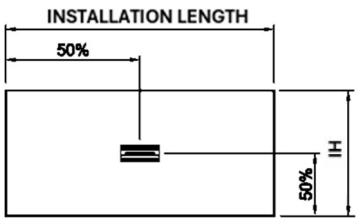
Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 3-11: Radiators made of flat profile tubes with horizontal tube routing, IH ≥ 5-ply (heating wall)

- Special mounting: only for equal-sided connection type
- For all installation heights ≥ 5-ply, equal-sided connection, horizontal mounting







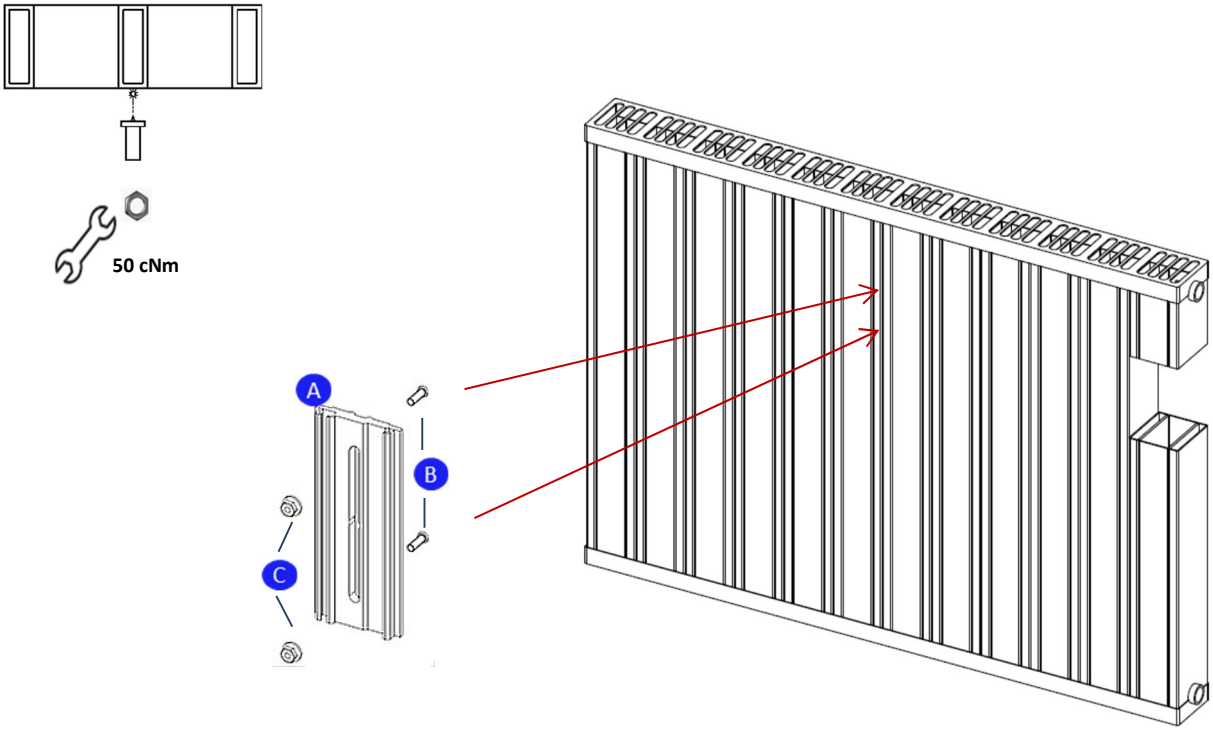
Note:
When the HCA e2 is mounted horizontally, the display is on the right-hand side.

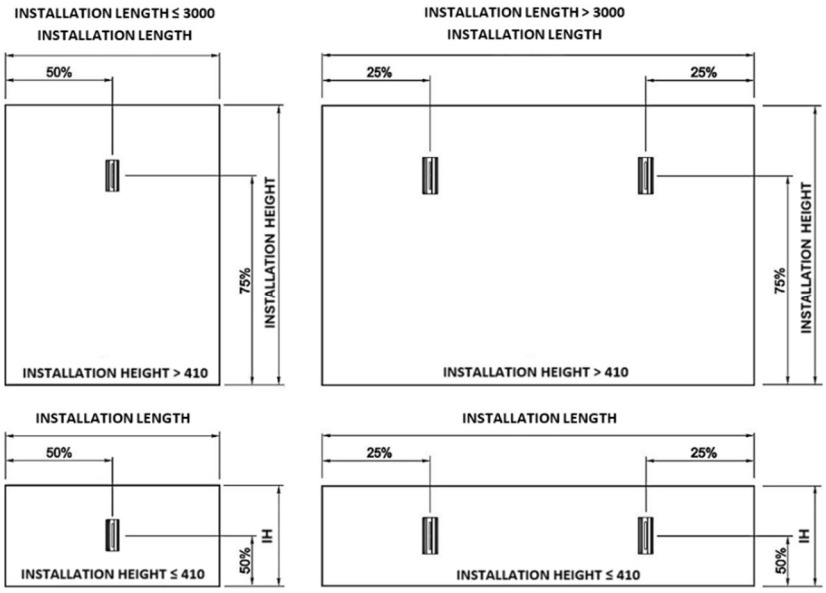
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 4-01: Radiators made of tube registers with box-type convection parts (welding assembly)

- Remote sensor mounting (Mounting sheet 99-07-FF)



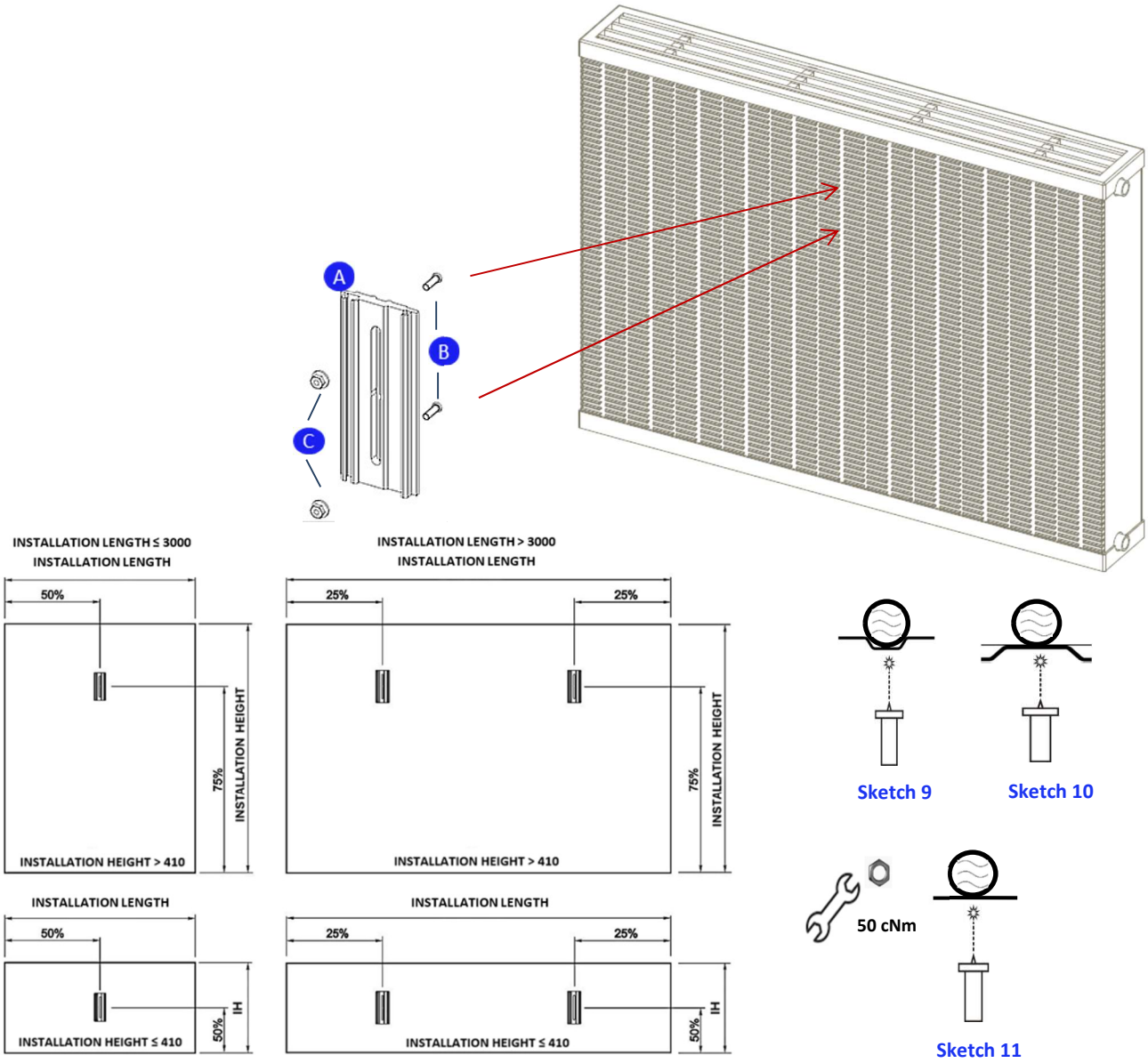


Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 4-02: Radiators made of tube registers with box-type convection parts (welding assembly)

- Sketch 9: Raised water routing
- Sketch 10: Water routing not raised – raised flared fins
- Sketch 11: Water routing not raised – front fins not flared
- Remote sensor mounting (Mounting sheet 99-07-FF)

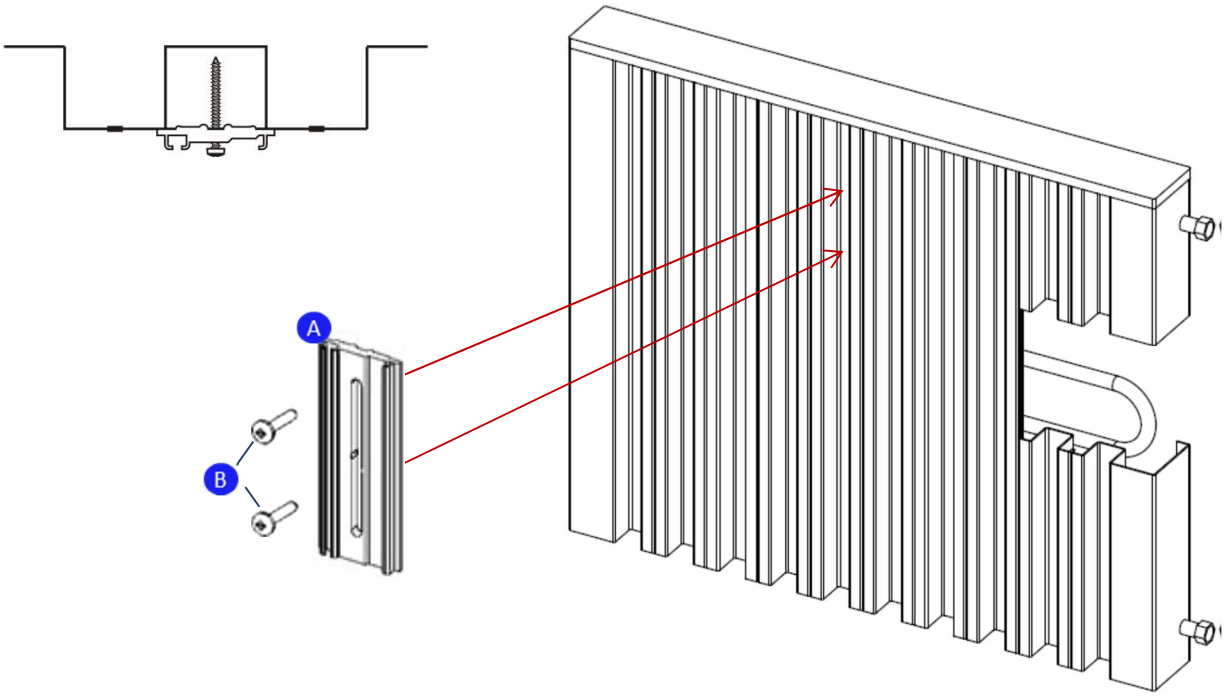


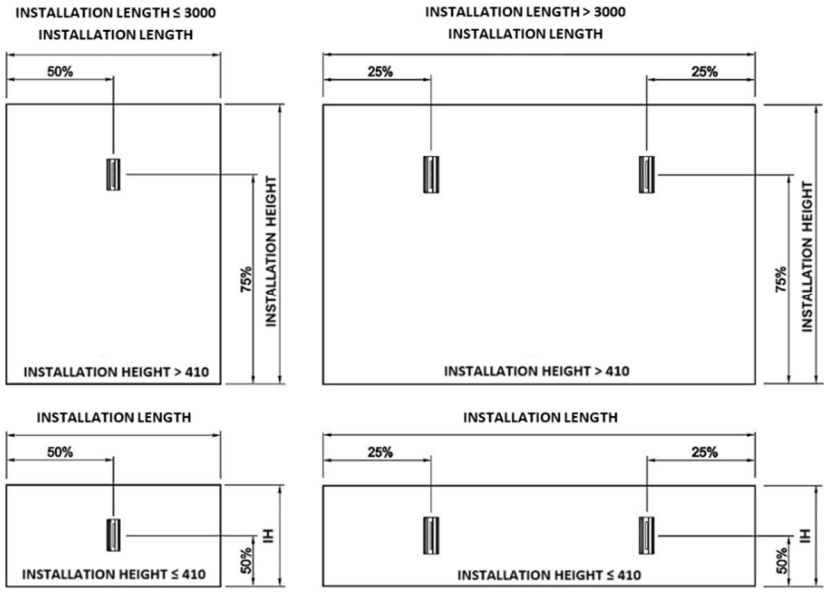
Mounting material required:

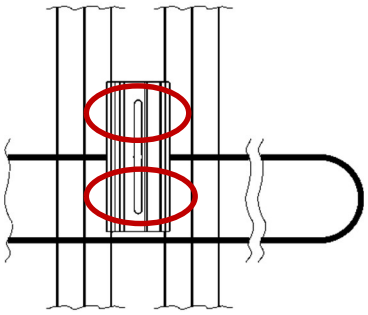
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt (B)			
Threaded bolt M3x10 DIN32501	0051200014	2	Sketch 9 and Sketch 11
Threaded bolt M3x12 DIN32501	0051200015	2	Sketch 10: Alternatively, depending on tread depth
Threaded bolt M3x15 DIN32501	0051200016	2	Sketch 10: Alternatively, depending on tread depth
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 4-03: Radiators made of tube registers with box-type convection parts (screw mounting)

- Heating medium distribution via pipe coil
- Remote sensor mounting (Mounting sheet 99-04-FF) ❷







Sketch 12

Note:

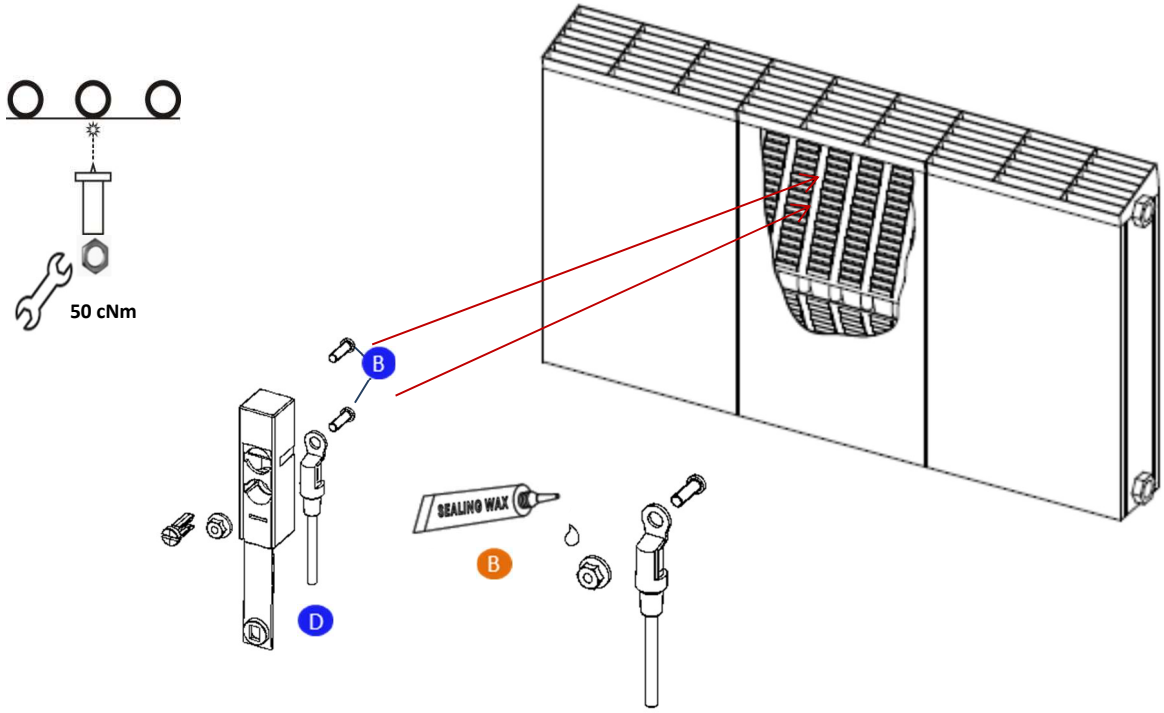
For screw mounting with self-tapping screws, ensure that the holes are drilled above or below the internal pipe coil → see Sketch 12.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor Ⓐ	0051200030	1	
Self-tapping screw 4.2x25 Ⓑ	0051200013	2	

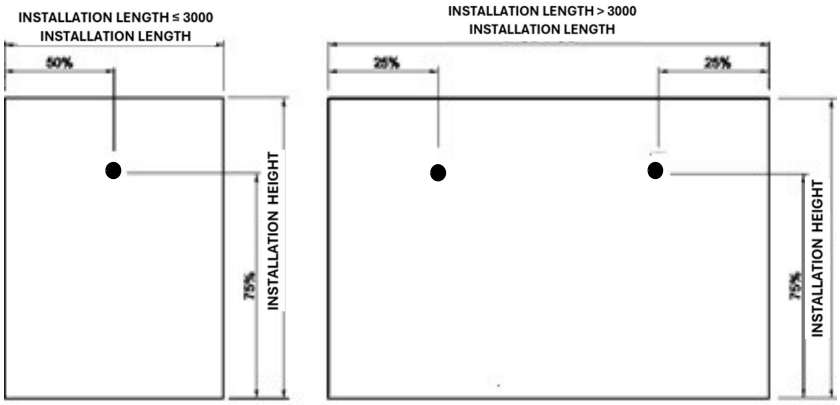
Mounting sheet 4-04: Radiators made of tube registers with box-type convection parts with inclined register, only remote sensor (welding assembly)

- Water routing not raised



Sketch 13: Remote sensor mounting with protection by sealing wax

Applies to installation heights



Note:

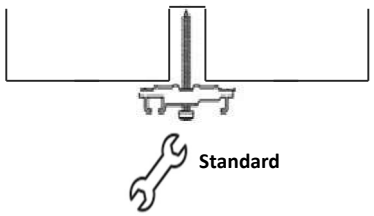
If the overall height of the remote sensor with cover is too high, it is also possible to mount the remote sensor without a cover. In this case, however, the fixing nut must be secured with sealing wax to ensure tamper-resistance → see Sketch 13.

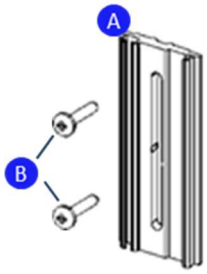
Mounting material required:

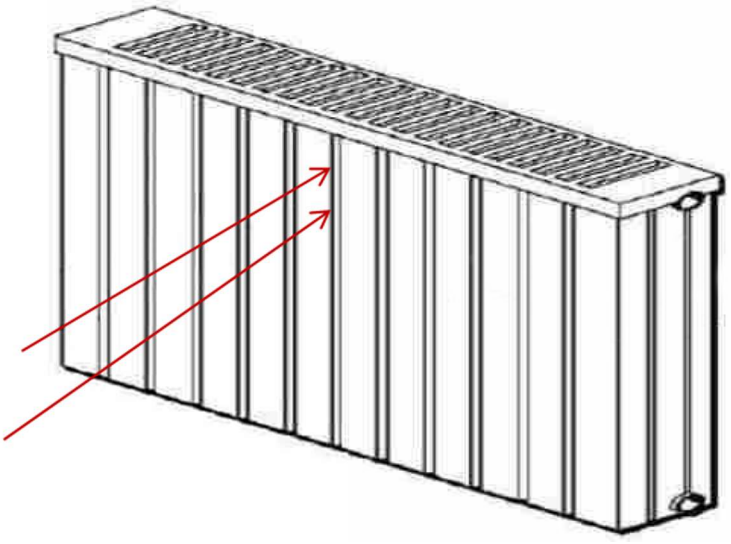
Article designation	Article number		Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014		2	
Remote sensor complete (D)				
2 m	0251200006		1	Alternatively
5 m	0251200011		1	Alternatively
Sealing wax (B)			1	External procurement

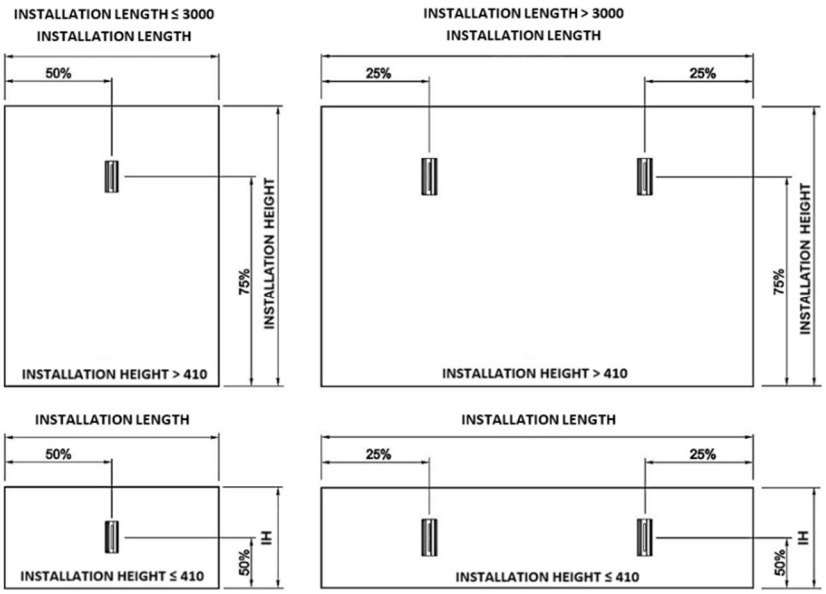
Mounting sheet 4-05: Radiators made of tube registers (aluminum)

- Fastening with self-tapping screws
- Remote sensor mounting (Mounting sheet 99-04-FF) 2









Note:

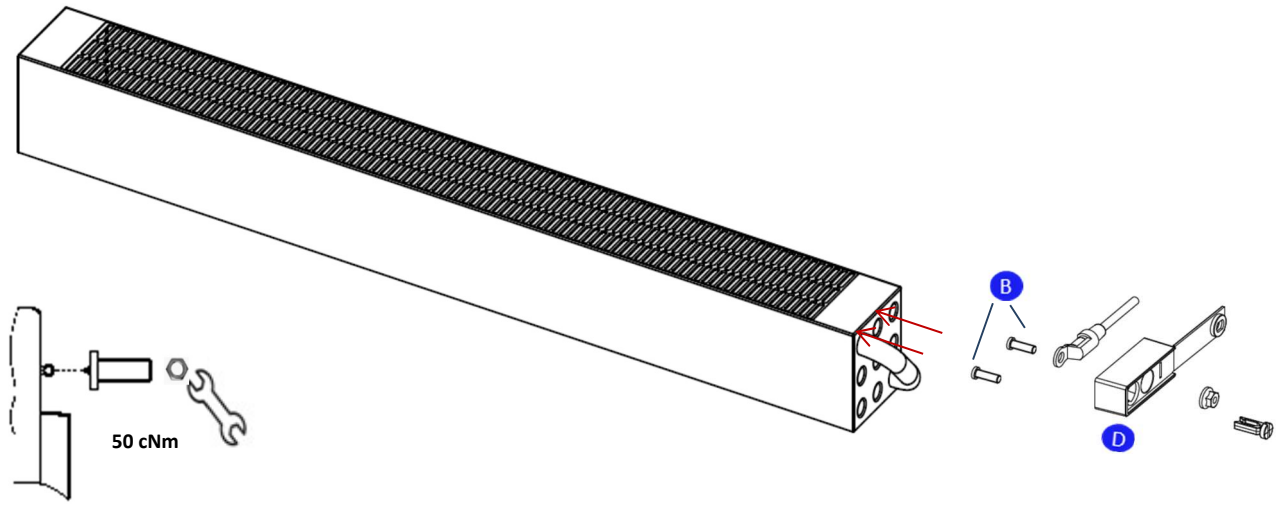
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Self-tapping screw 4.2x25 B	0051200013	2	

Mounting sheet 4-06: Convector (prefabricated convector) with fixed cover (remote sensor mounting)

- Arbonia/Kermi and similar products
  - Compact convector basic convector type 10/10 (also for types 10/13, 10/16, 10/21, 10/26, 15/10, 15/13): see Figure 23**Fehler! Verweisquelle konnte nicht gefunden werden.**
  - Compact convector basic convector type 25/16 (also for types 15/16, 25/21, 15/26, 25/10, 25/13, 25/21, 25/26): see Figure 22
- Jaga Mini
  - Prefabricated convector type 10 (also for types 15 and 20 (2-ply): see Figure 25
  - Prefabricated convector type 21 (also for types 11 and 16 (4-ply): see Figure 24



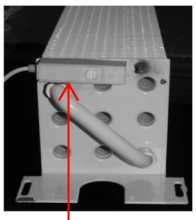


Figure 23:
Type 10/10 remote sensor mounted after 50 % of the water path on the cover plate above the inlet flow!

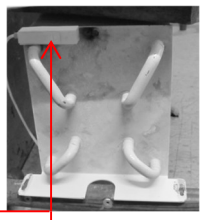


Figure 22:
Type 25/16 remote sensor mounted after 25 % of the water path on the cover plate above the inlet flow!

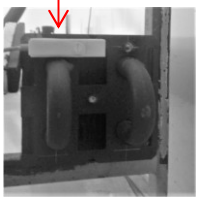


Figure 25:
Type 10 (Jaga Mini) remote sensor mounted after 50 % of the water path on the cover plate above the inlet flow!

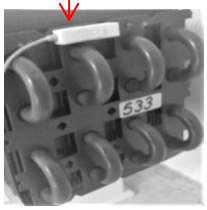


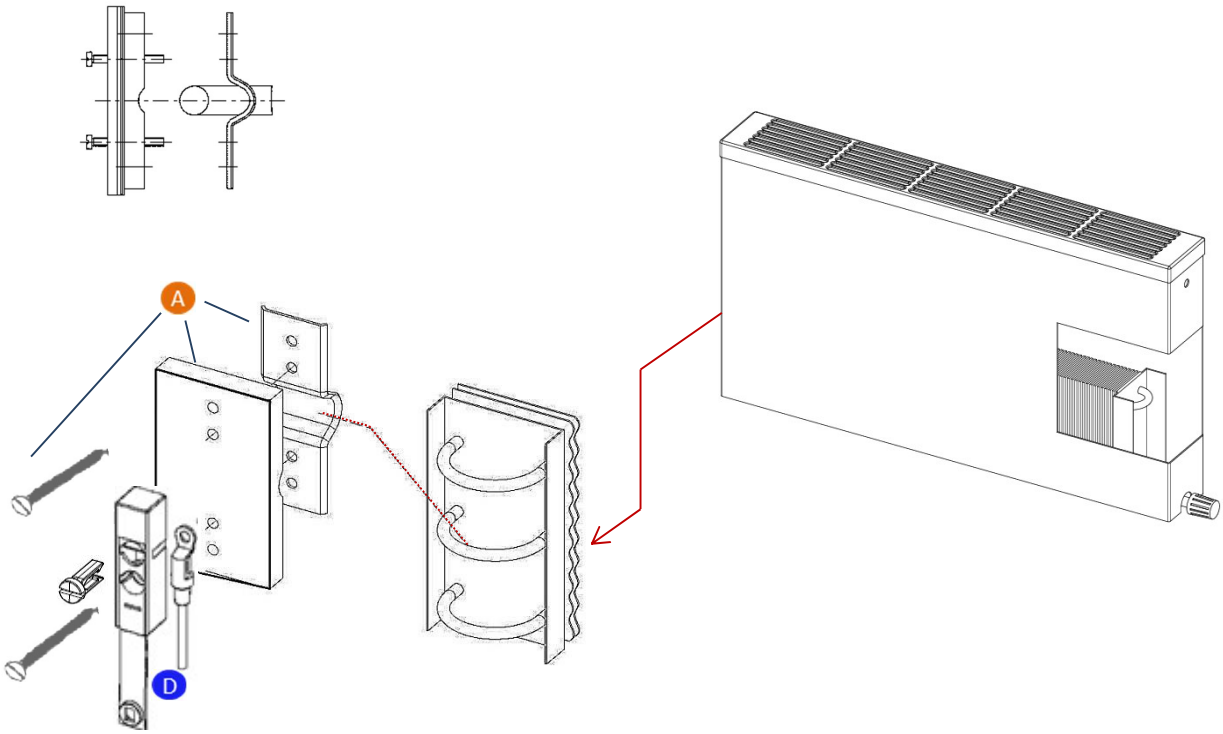
Figure 24:
Type 21 (Jaga Mini) remote sensor mounted after 25 % of the water path on the cover plate above the inlet flow!

Mounting material required:

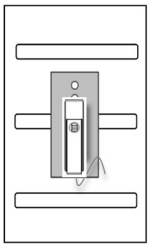
Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 4-07: Convector (prefabricated convector) Vama, Helitherm (remote sensor mounting)

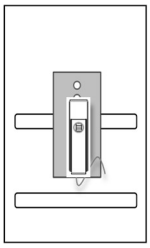
- Fastening with Helitherm mounting kit



Applies to all installation lengths



Sketch 14



Sketch 15

Note:

A special mounting kit from the manufacturer Vama Euroklima is required for mounting. The mounting bracket required for installing the heat cost allocator / remote sensor must be selected according to the respective installation depth.

In the version with three tubes, the mounting point (MP) is on the middle tube loop or at half the height of the fin (see Sketch 14).

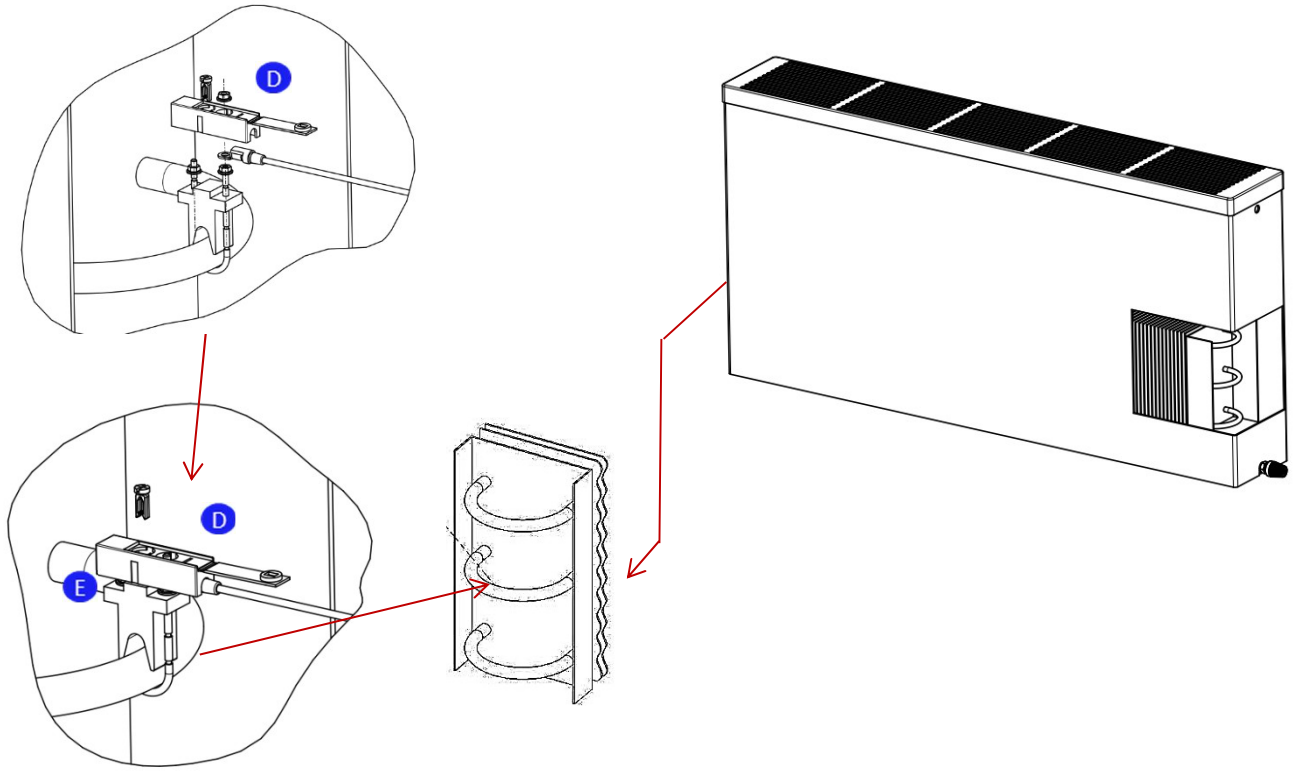
In the version with two tubes, the mounting point (MP) is on the upper tube loop (see Sketch 15).

Mounting material required:

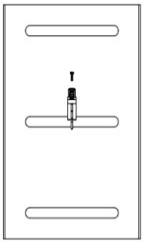
Article designation	Article number	Quantity	Note
Helitherm mounting kit (A)		1	Purchase via Vama-Euroklima
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 4-07a: Convector (prefabricated convector) Vama, Helitherm (remote sensor mounting)

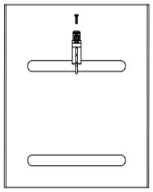
- Fastening with Engelmann convector bracket
- See also remote sensor mounting (Mounting sheet 99-08-FF)



Applies to all installation lengths



Sketch 16



Sketch 17

Note:

Alternative mounting type to Mounting sheet 4-07 via convector bracket.

In the version with three tubes, the mounting point (MP) is on the middle tube loop or at half the height of the fin (see Sketch 16).

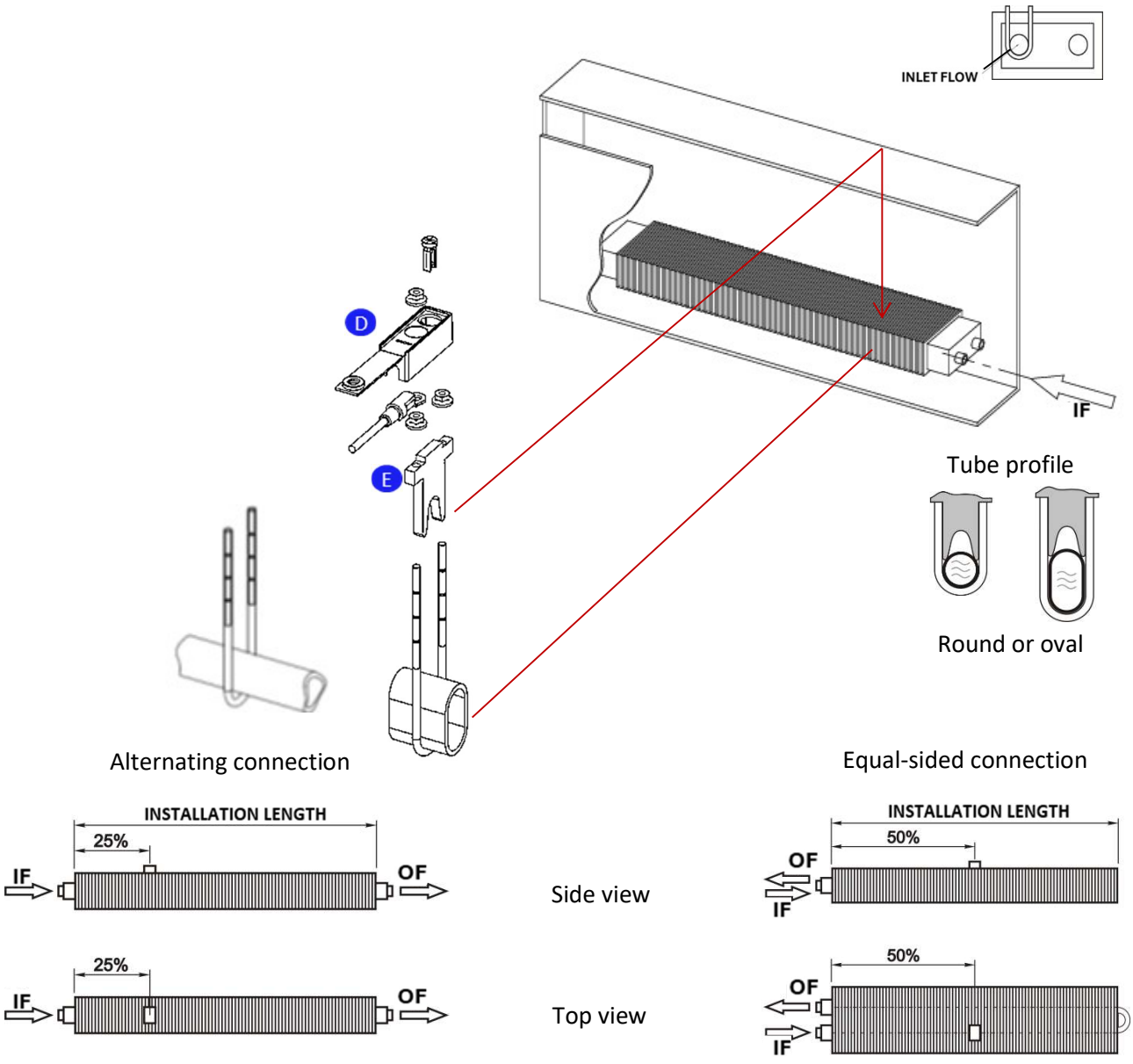
In the version with two tubes, the mounting point (MP) is on the upper tube loop (see Sketch 17).

Mounting material required:

Article designation	Article number	Quantity	Note
Convector bracket complete (E)	0051200011	1	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 4-08: Single-layer convector, without (or with removable) cover (remote sensor mounting)

- For equal-sided and alternating connection types
- See also Mounting sheet 99-08-FF



¼ of the IL after 25 % water path from the inlet flow

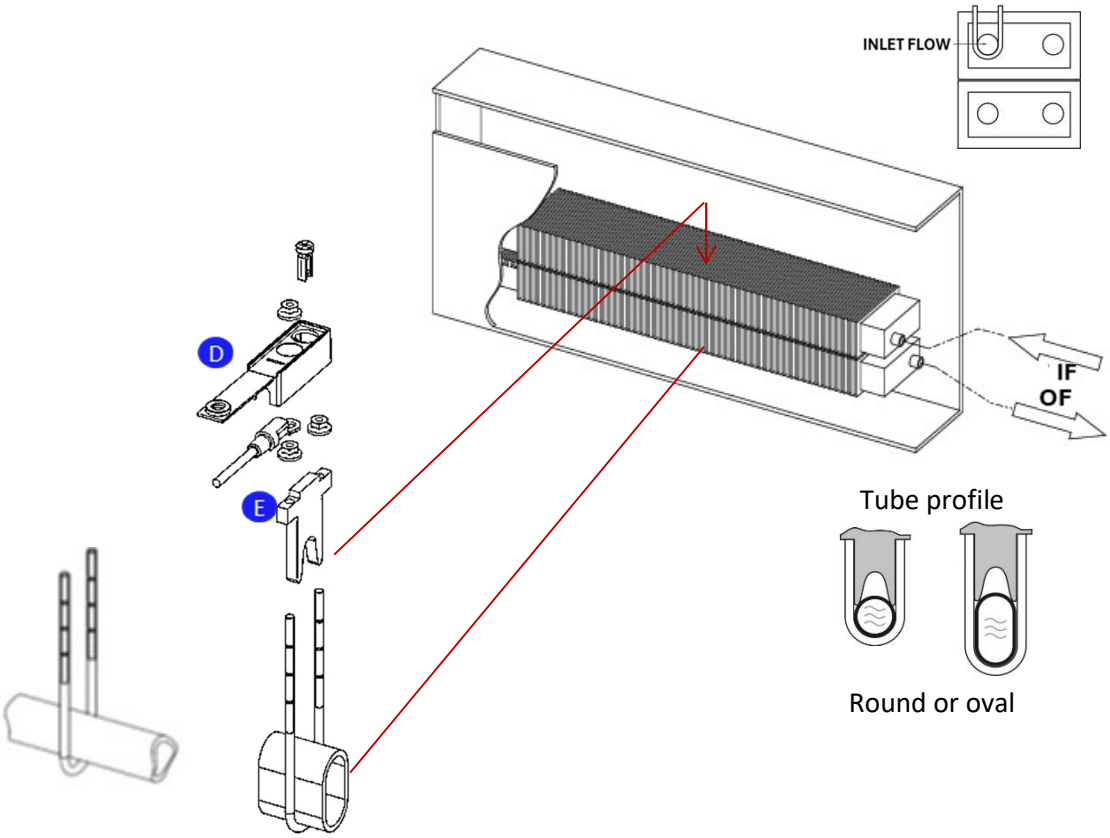
½ oft the IL above the IF (25 % water path from the inlet flow)

Mounting material required:

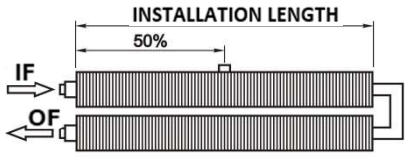
Article designation	Article number	Quantity	Note
Convector bracket complete (E)	0051200011	1	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 4-09: Multi-layer convector, without (or with removable) cover (remote sensor mounting)

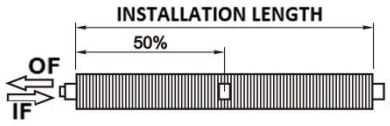
- For equal-sided and alternating connection types
- See also Mounting sheet 99-08-FF



Convector 2-ply
Equal-sided connection



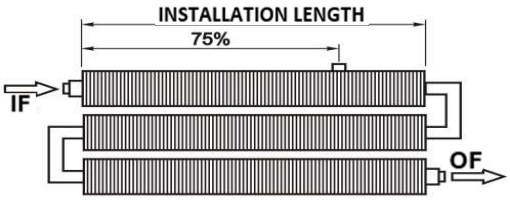
Side view

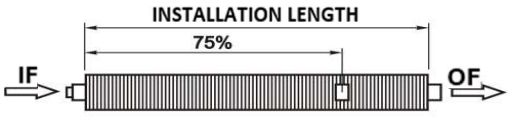


Top view

1/2 of the IL after 25 % water path from the inlet flow

Convector 3-ply
Alternating connection





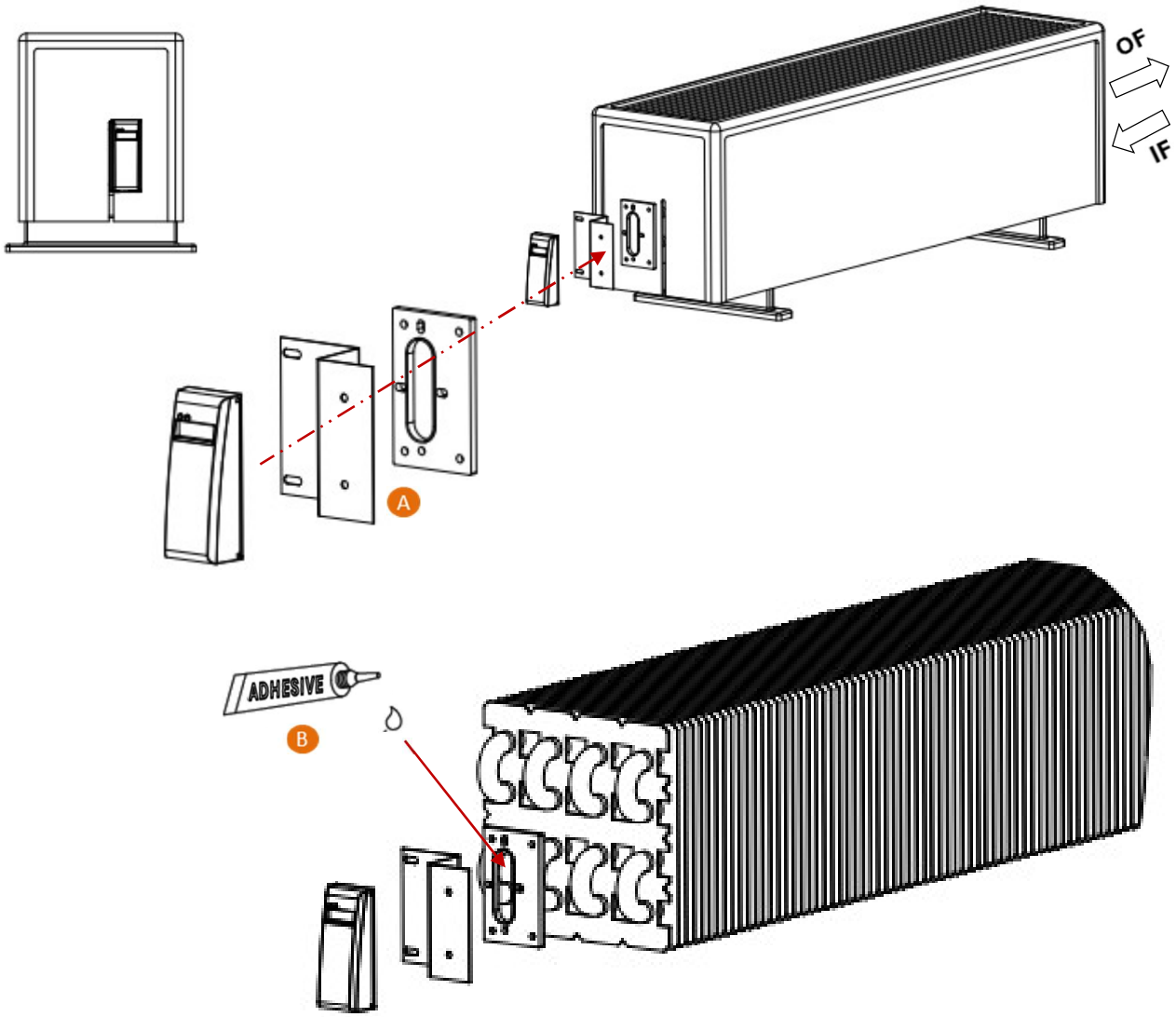
3/4 of the IL after 25 % water path from the inlet flow

Mounting material required:

Article designation	Article number	Quantity	Note
Convector bracket complete (E)	0051200011	1	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 4-10: Convector (prefabricated convector) with fixed cover (compact unit)

- Mounting compact unit (mounting remote sensor: see 4-06)
- Jaga Mini
  - Prefabricated convector type 10 (also for types 15 and 20 (2-ply): see Figure 25
  - Prefabricated convector type 21 (also for types 11 and 16 (4-ply): see Figure 24



Note:

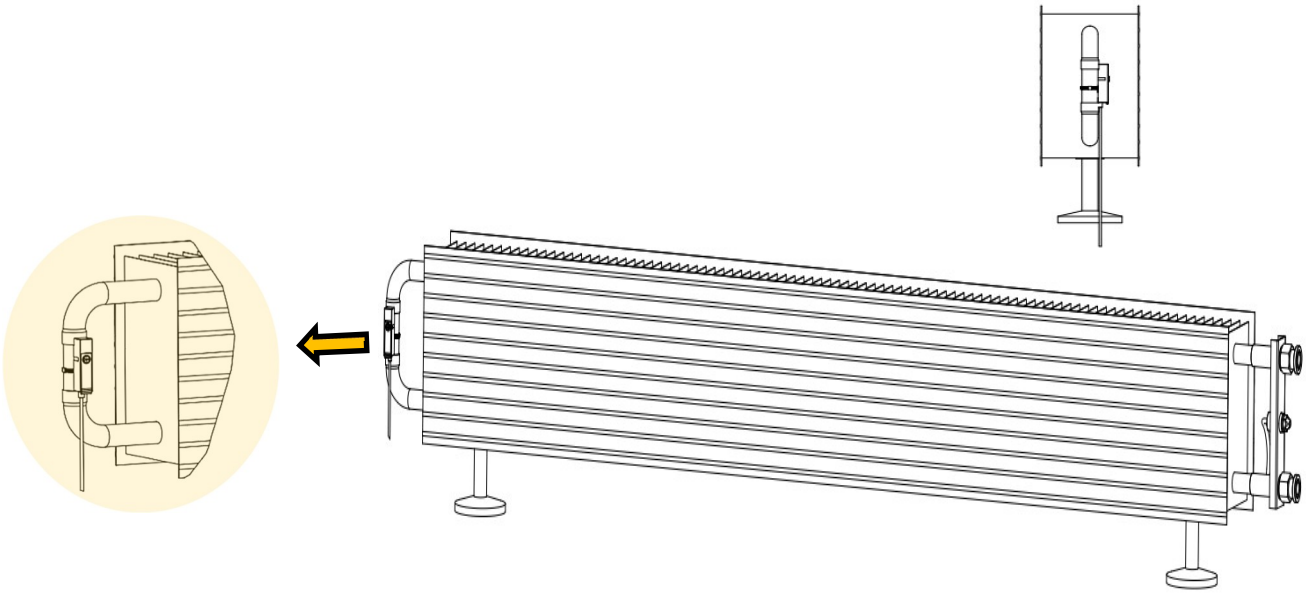
Six self-tapping screws are required to mount the heat cost allocator, including the Jaga mounting kit. Silicone adhesive must be applied between the tube and the adapter plate.

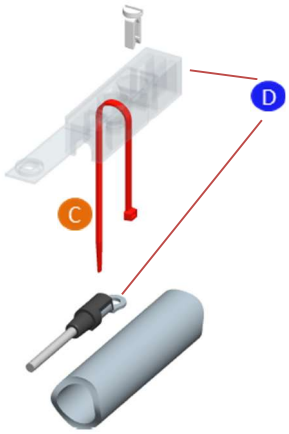
Mounting material required:

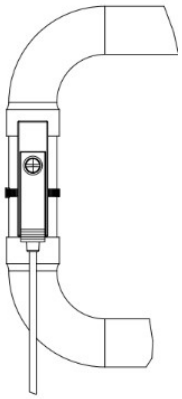
Article designation	Article number	Quantity	Note
Jaga mounting kit (A)		1	Purchase via Jaga
Self-tapping screw		6	External procurement
Silicone adhesive (B)		1	External procurement

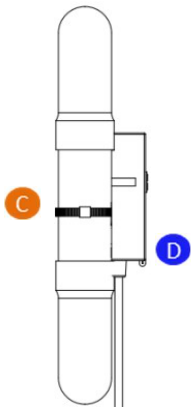
Mounting sheet 4-11: Convector (underfloor convector)

- Convector WK-P and similar
- Remote sensor on turning loop with cable tie







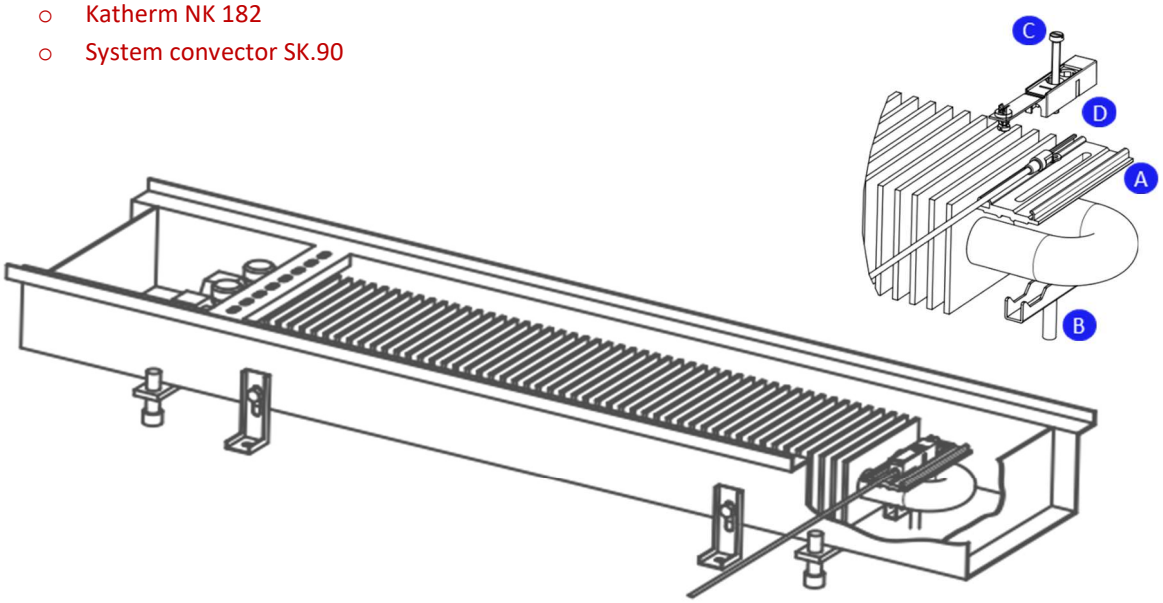


Mounting material required:

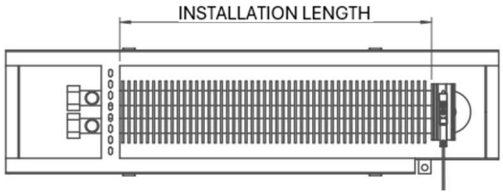
Article designation	Article number	Quantity	Note
Remote sensor complete D			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Cable tie Polyamide 6.6 Standard (PA66) or Polyamide 6.6 Heat-Stable (PA66HS), C width max. 2.8 mm		1	External procurement

Mounting sheet 4-12: Convector (underfloor convector)

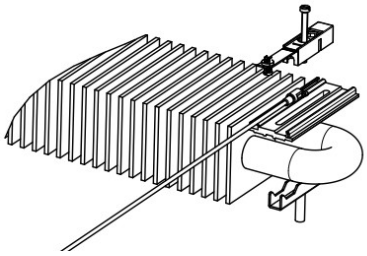
- Kampmann/Möhlenhoff
  - Katherm NK 182
  - System convector SK.90

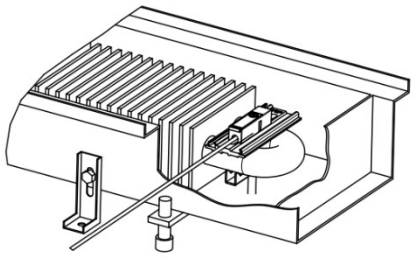


Top view



Mounting point: On the deflection loop after 50 % of the water path between the IF and OF connections



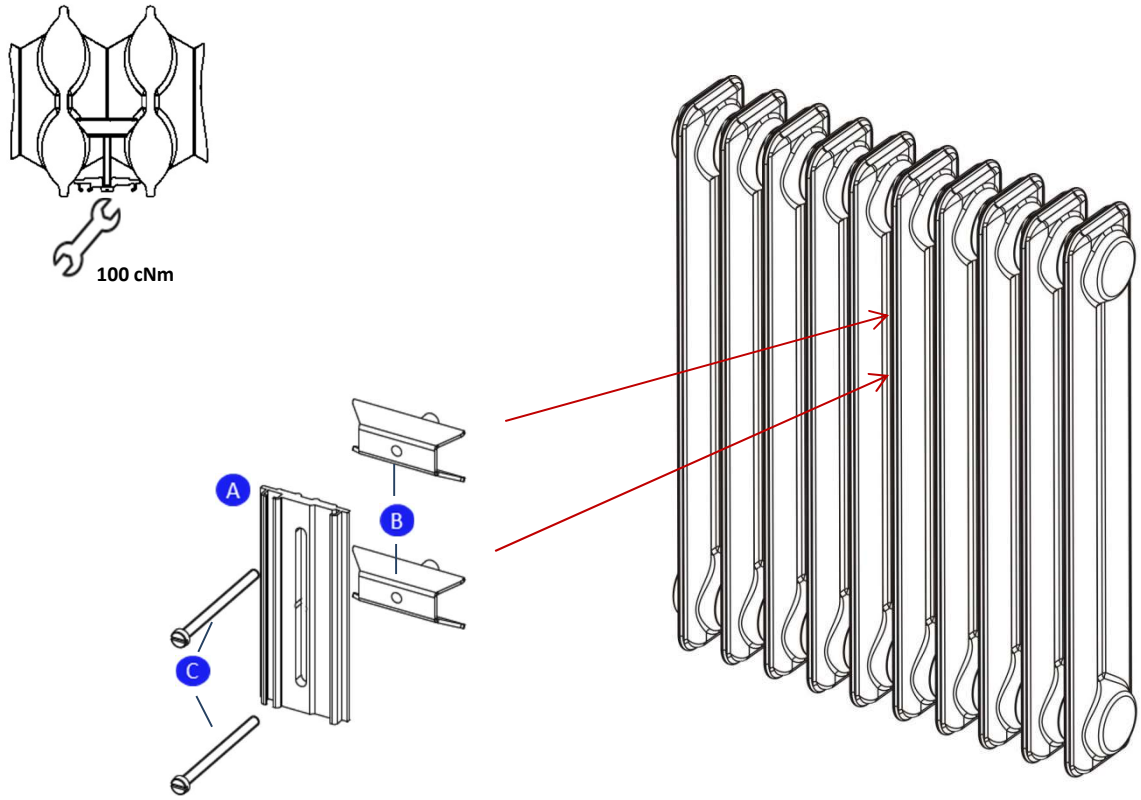


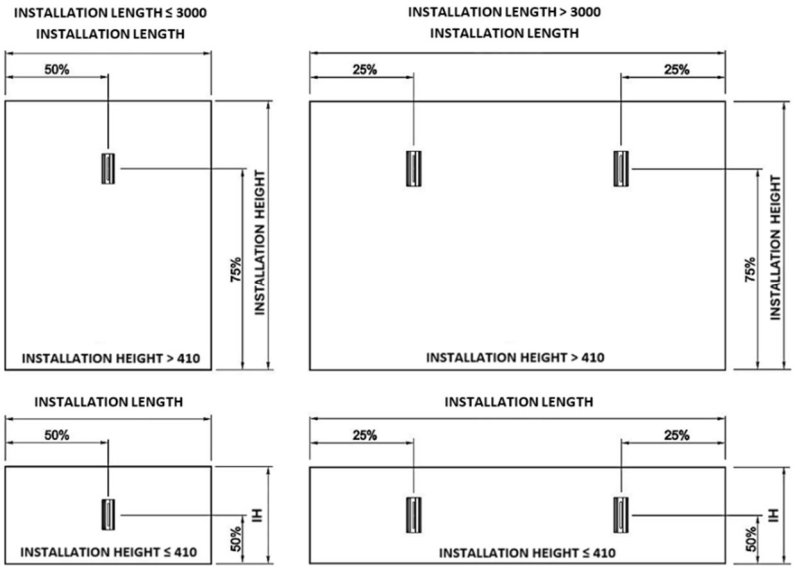
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	1	Alternatively, depending on the tube spacing
Sliding nut tube (45 mm)	0051200010	1	Alternatively, depending on the tube spacing
Flat head screw (C)			
Flat head screw M4x45 DIN 84	0051200007	1	Alternatively
Flat head screw M4x55 DIN 84	0051200008	1	Alternatively
Flat head screw M4x35 DIN 84	0051200006	1	Alternatively

Mounting sheet 5-01-1: Steel sectional radiators (screw mounting)

- DIN steel radiators old (before 1961) / new (from 1961) → Section length 45-50 mm (1)
- Remote sensor mounting (Mounting sheet 99-01-FF)





Note:

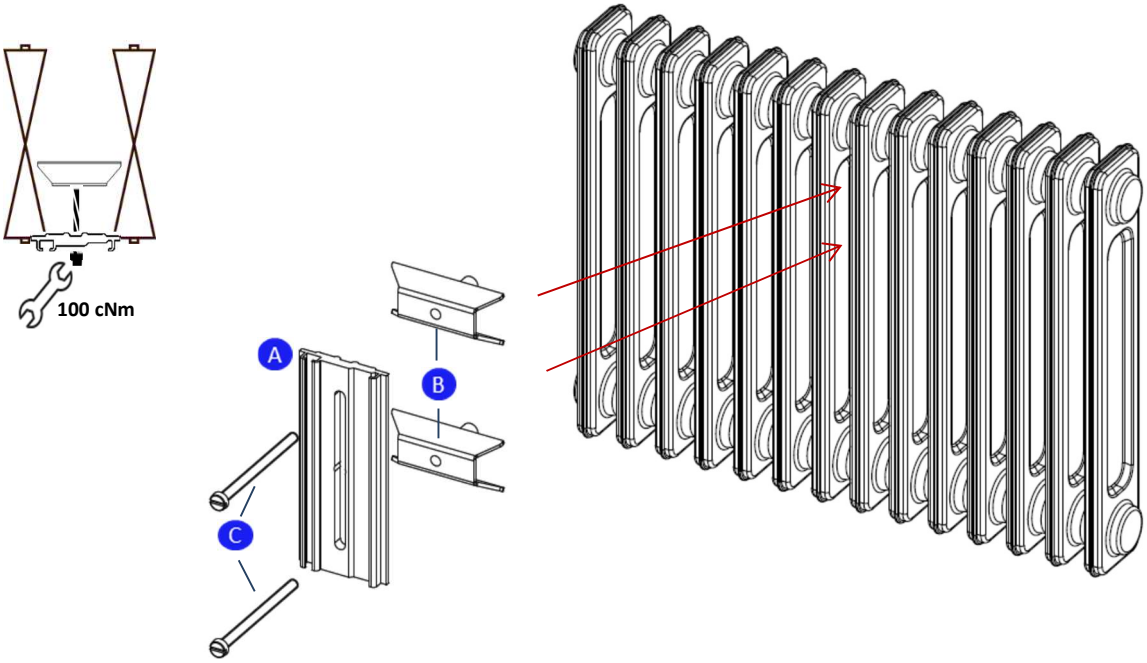
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

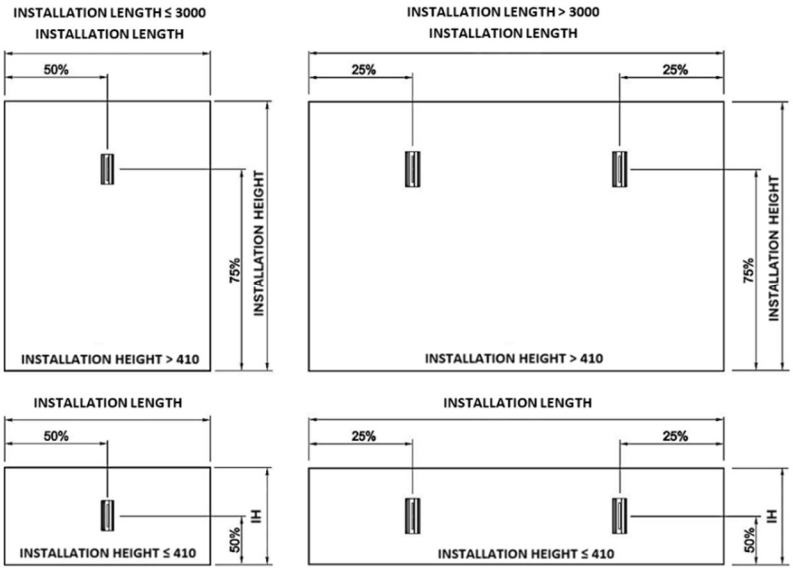
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 33/48	B	0051200004	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

Mounting sheet 5-01-2: Steel sectional radiators (screw mounting)

- Flat-tube radiator → Section length 30 - 40 mm (2)
- Remote sensor mounting (Mounting sheet 99-01-FF)





Note:

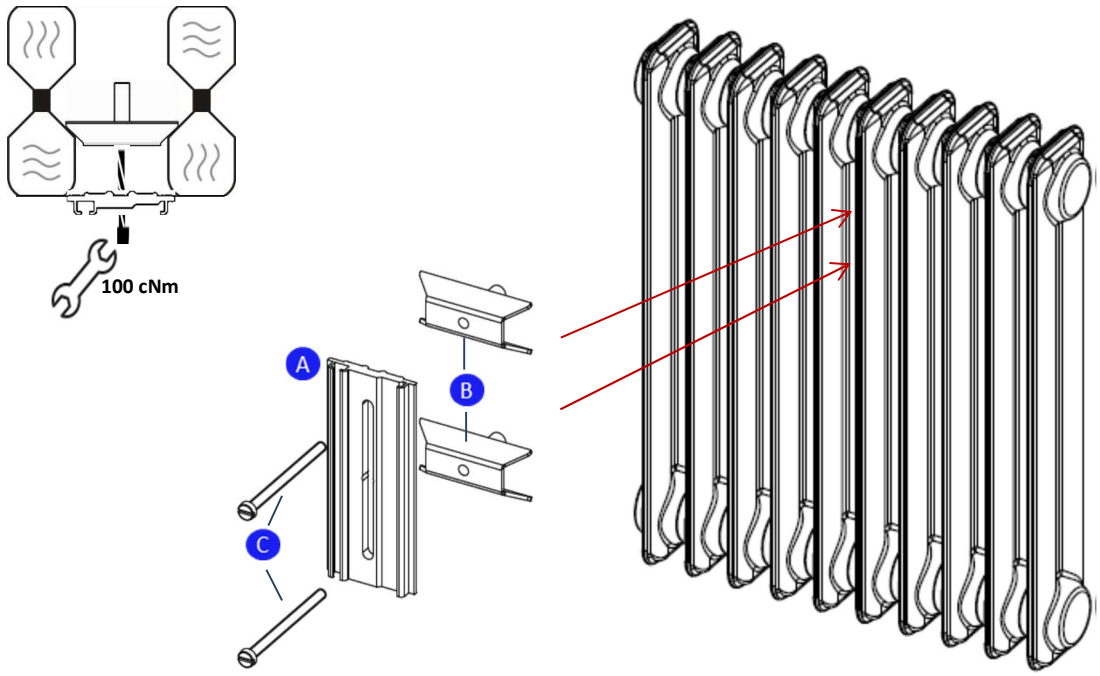
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

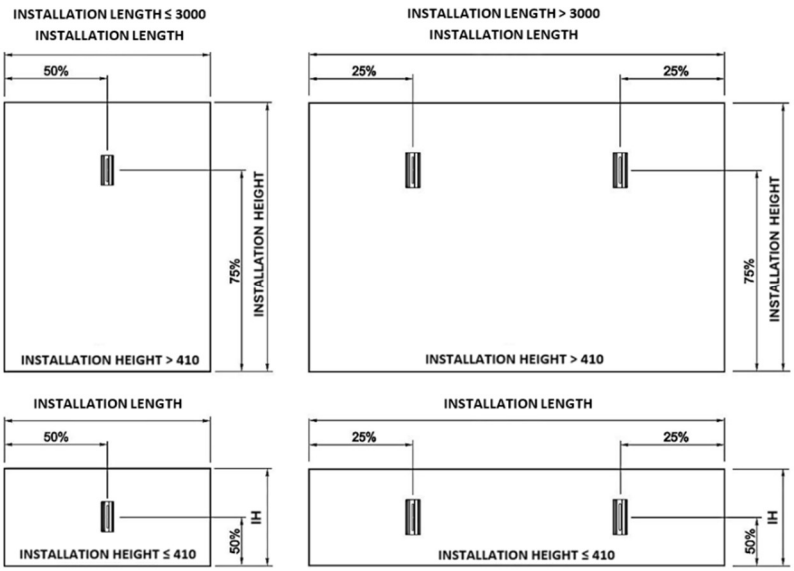
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 23/35	B	0051200027	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

Mounting sheet 5-01-3: Steel sectional radiators (screw mounting)

- With flattened edge → Section length 50 mm (3)
- Remote sensor mounting (Mounting sheet 99-01-FF)





Note:

If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

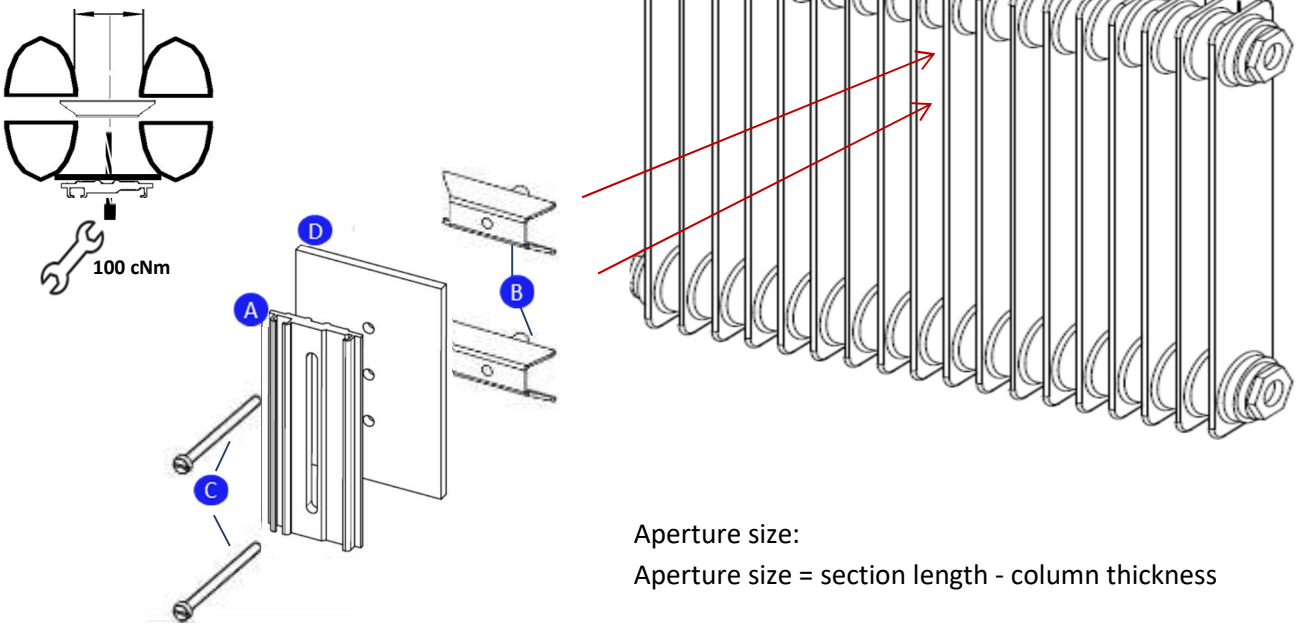
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 33/48	B	0051200004	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

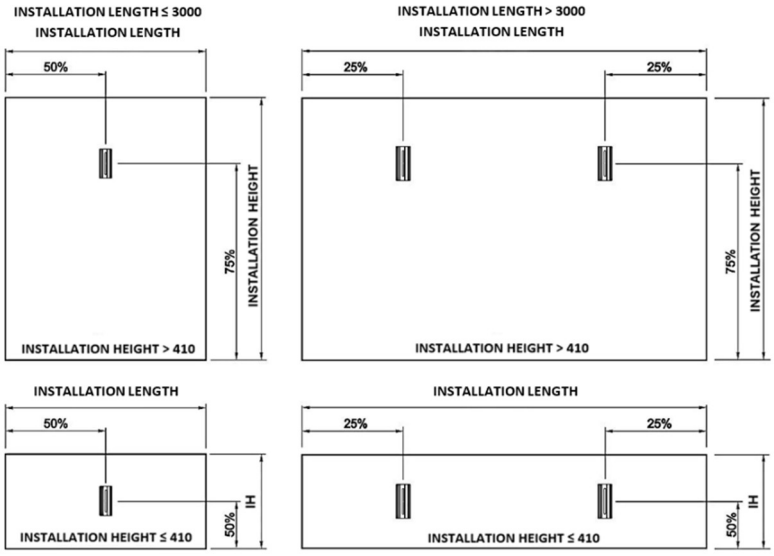
Mounting sheet 5-01-4: Steel sectional radiators (screw mounting)

- Clear width (aperture size) > 36 mm (4)
- Remote sensor mounting (Mounting sheet 99-02-FF)

Aperture size
> 36 mm



Aperture size:
Aperture size = section length - column thickness



Note:

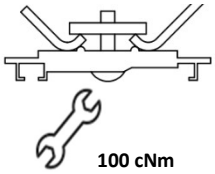
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

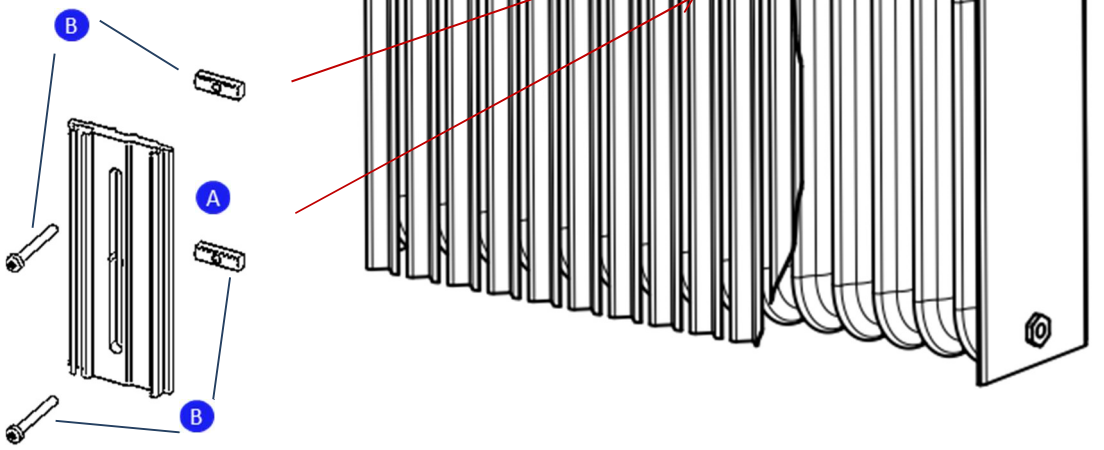
Mounting material required:

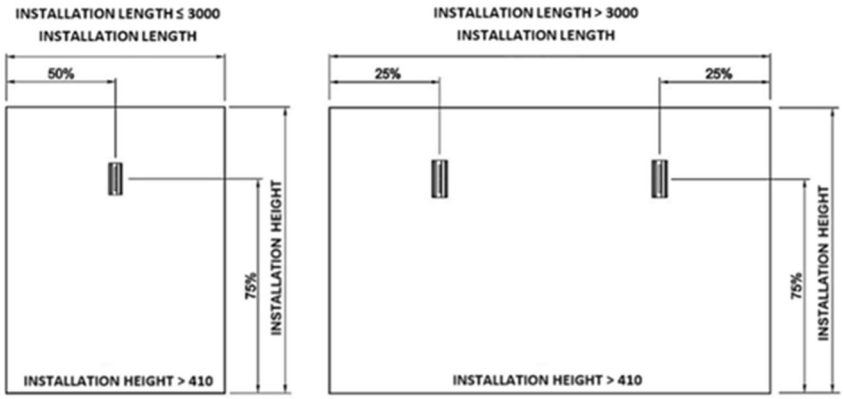
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)			
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Spread angle M4 53/65	0051200031	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	
Heat conductor adapter HCA e2, wide (D)	0051200035	1	

Mounting sheet 5-01-5: Steel sectional radiators with front plates (screw mounting)

- Typical: Perr Perrlux 5







Note:

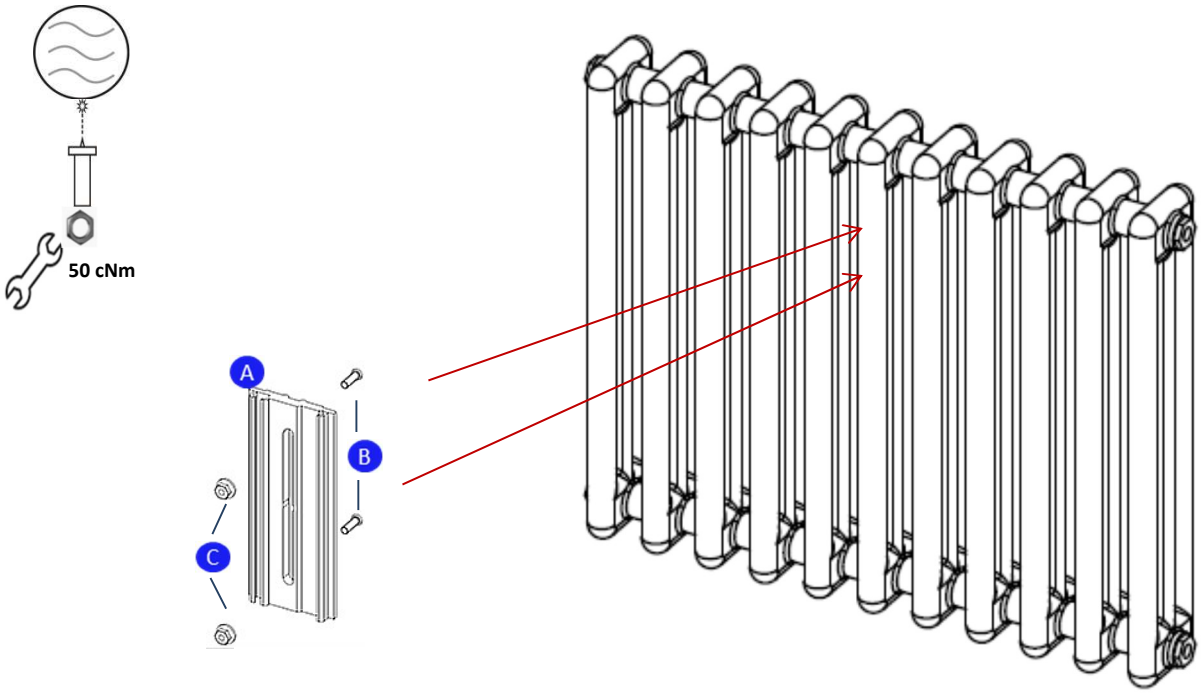
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

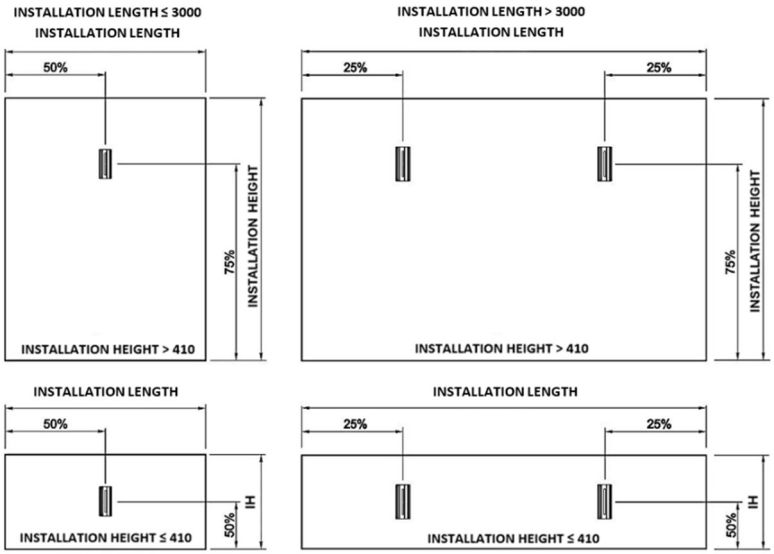
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Aluminum radiator mounting kit B	0251200004	2	

Mounting sheet 5-02: Steel sectional radiators – hygienic radiators (welding assembly)

- Section length ≥ 50 mm (hygienic radiators)
- Remote sensor mounting (Mounting sheet 99-07-FF)





Note:

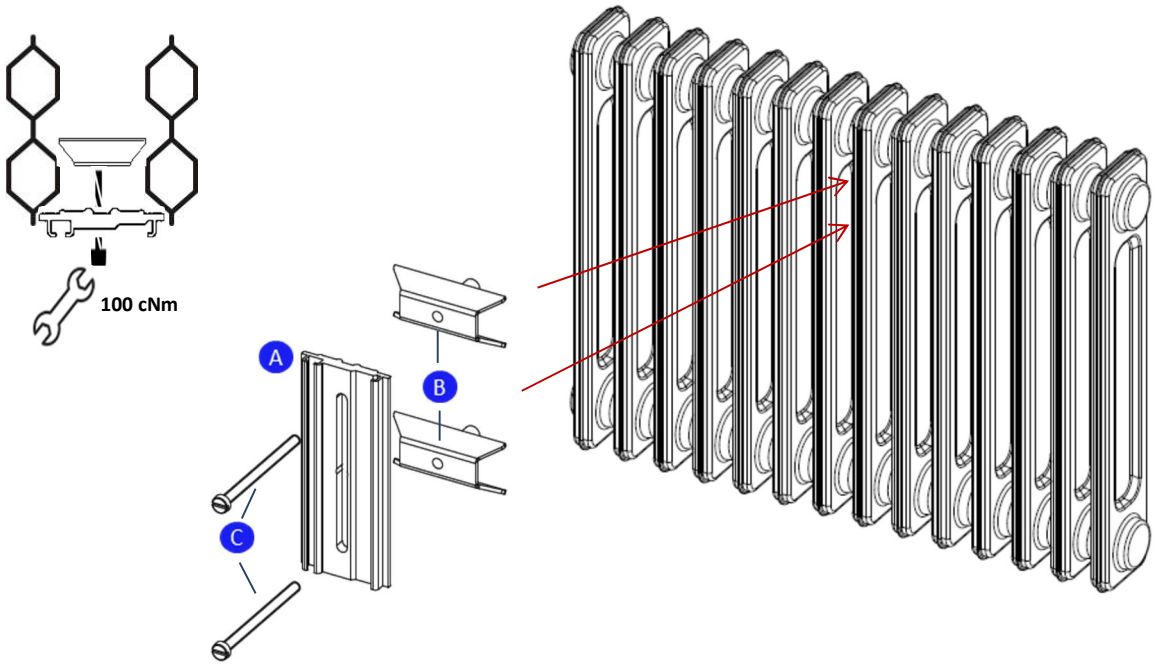
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

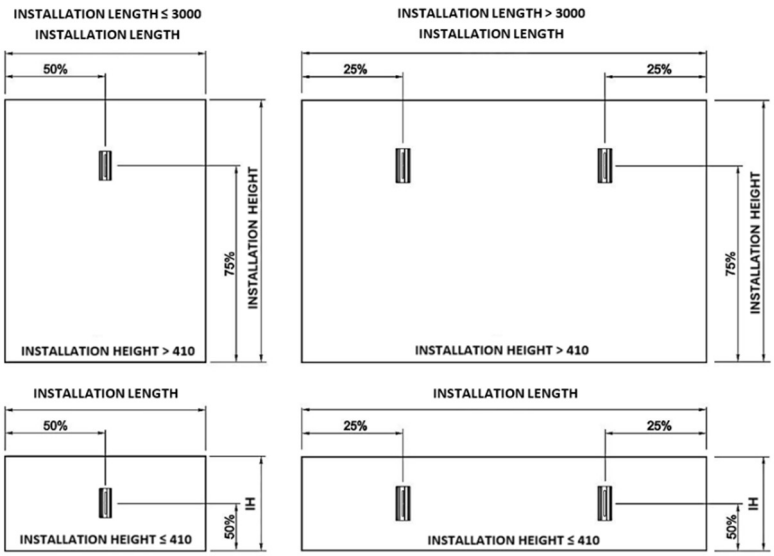
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 5-03-1: Cast iron sectional radiators – DIN 4703 (screw mounting)

- DIN 4703 → Section length 60 mm (1)
- Remote sensor mounting (Mounting sheet 99-01-FF)





Note:

If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

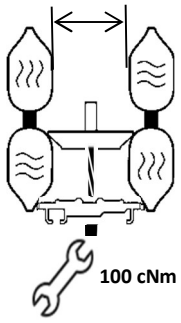
Mounting material required:

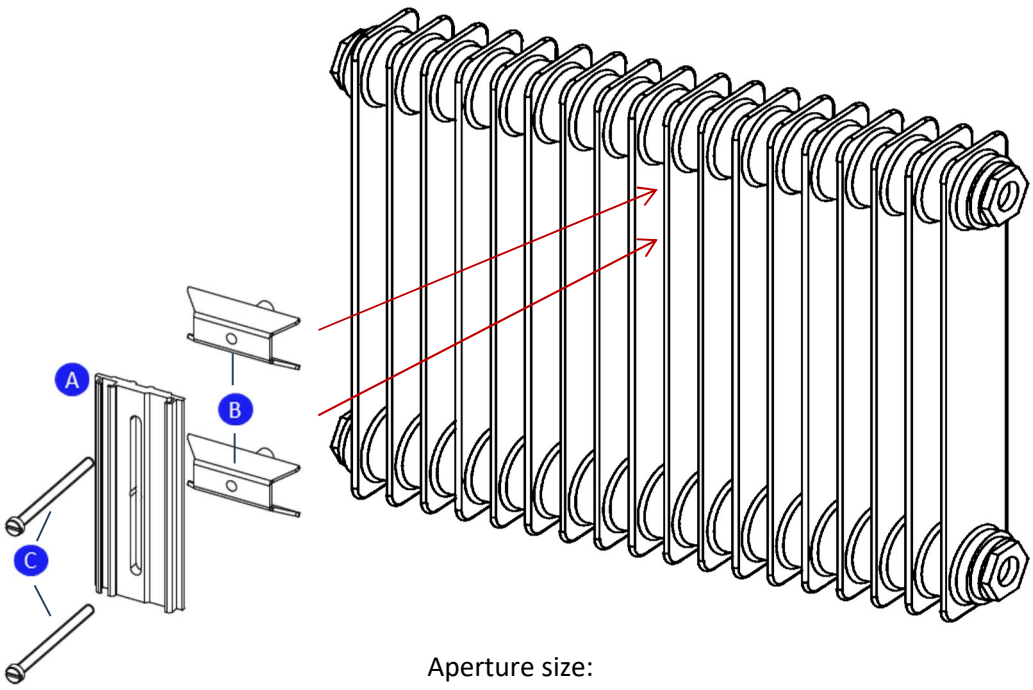
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 33/48	B	0051200004	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

Mounting sheet 5-03-2: Cast iron sectional radiators – aperture size ≤ 36 mm (screw mounting)

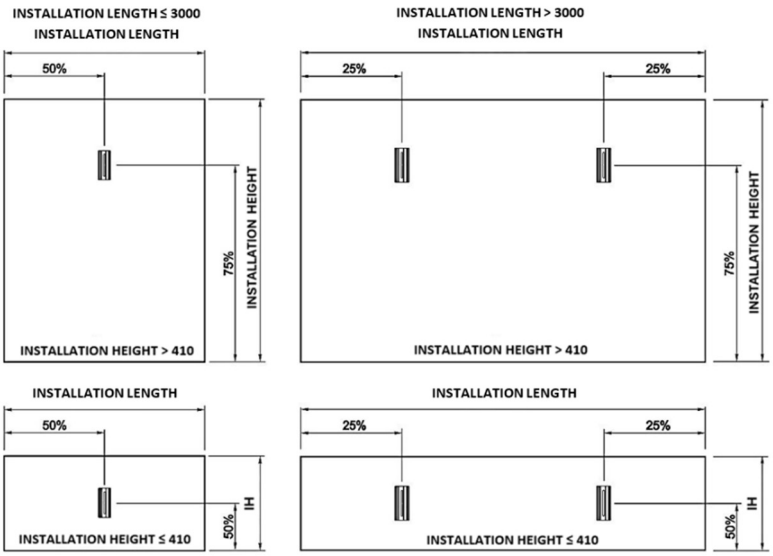
- Clear width (aperture size) ≤ 36 mm (2)
- Remote sensor mounting (Mounting sheet 99-01-FF)

Aperture size
≤ 36 mm





Aperture size:
Aperture size = section length - column thickness



Note:

If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

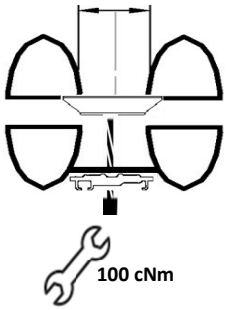
Mounting material required:

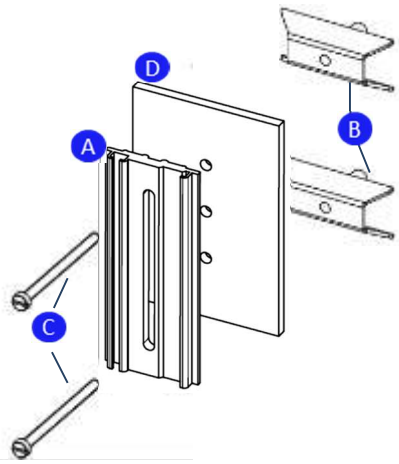
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)			
Spread angle M4 23/35	0051200027	2	Alternatively, according to aperture size
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

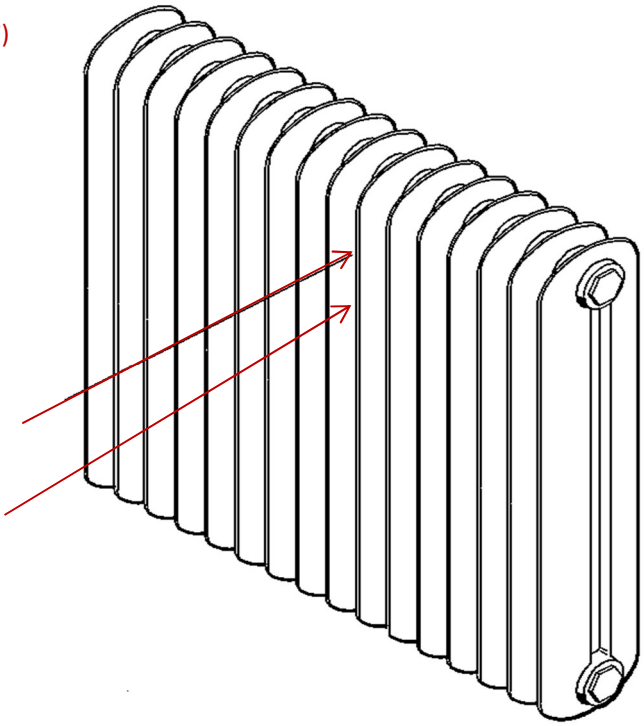
Mounting sheet 5-03-3: Cast iron sectional radiators – aperture size > 36 mm (screw mounting)

- Aperture size > 36 mm (3)
- Remote sensor mounting (Mounting sheet 99-02-FF)

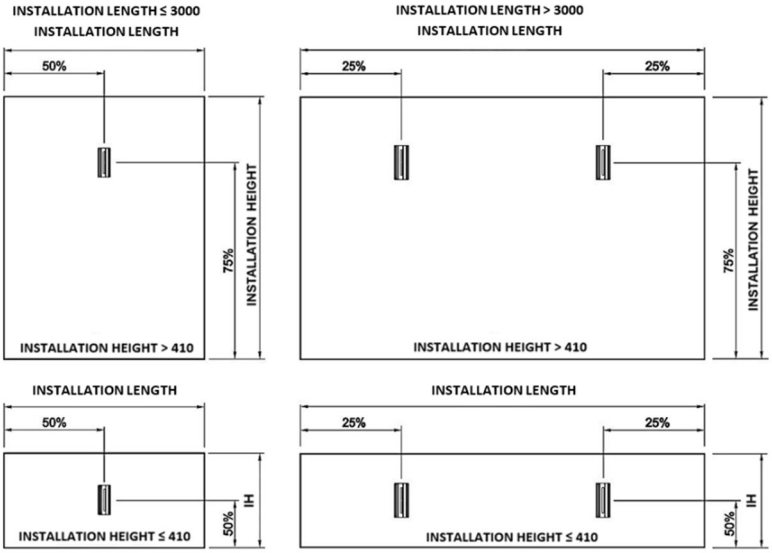
Aperture size
> 36 mm







Aperture size:
Aperture size = section length - column thickness



Note:

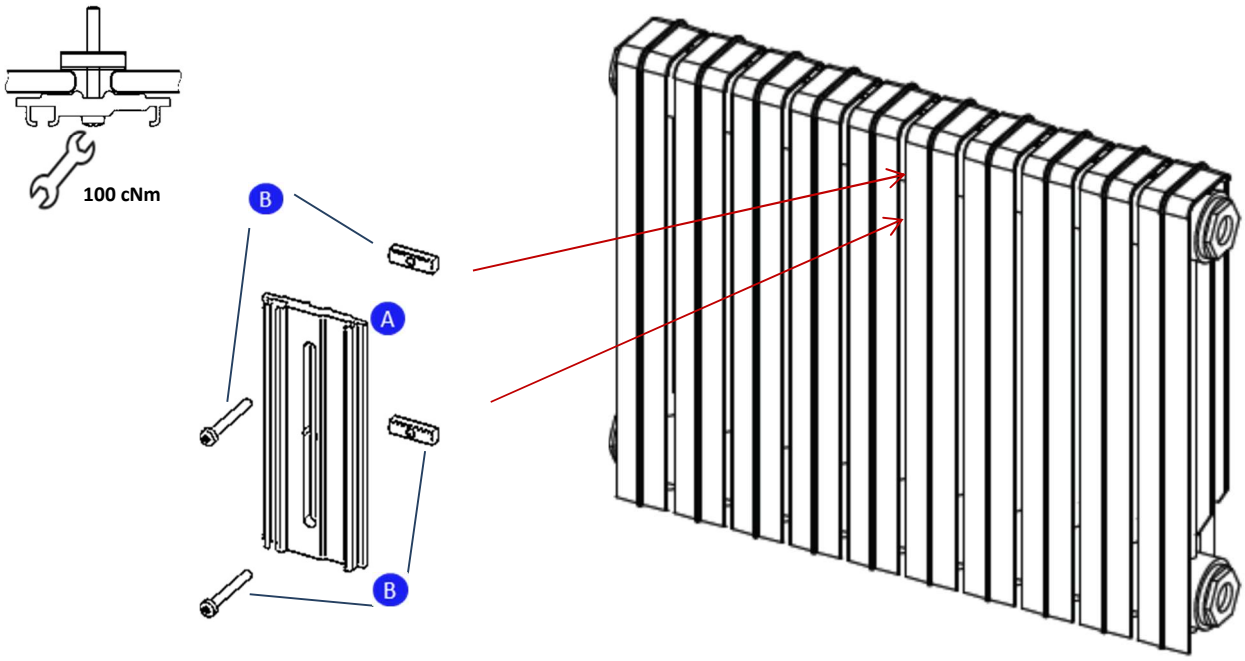
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

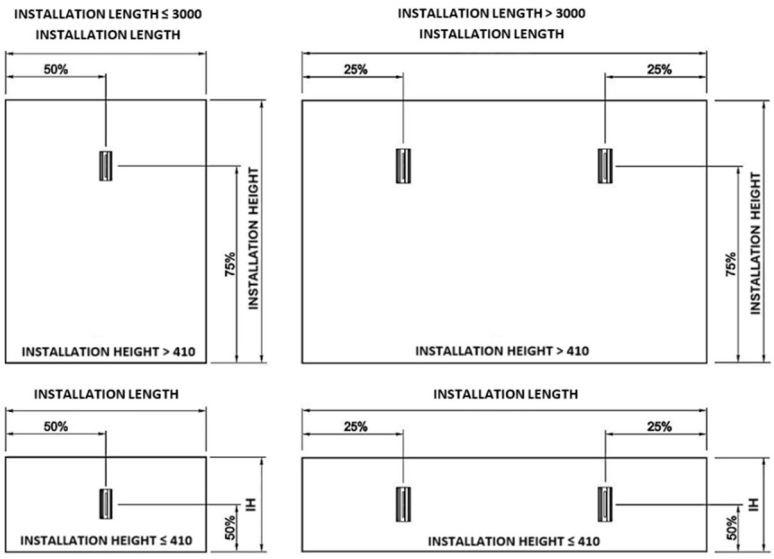
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)			
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Spread angle M4 53/65	0051200031	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 (C)	0051200007	2	
Heat conductor adapter HCA e2, wide (D)	0051200035	1	

Mounting sheet 5-03-4: Cast iron sectional radiators – front face radiator (screw mounting)

- Front face radiator 4
- Remote sensor mounting (Mounting sheet 99-04-FF) 2





Note:

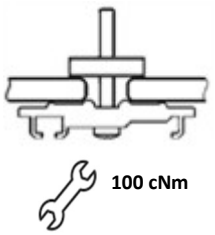
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

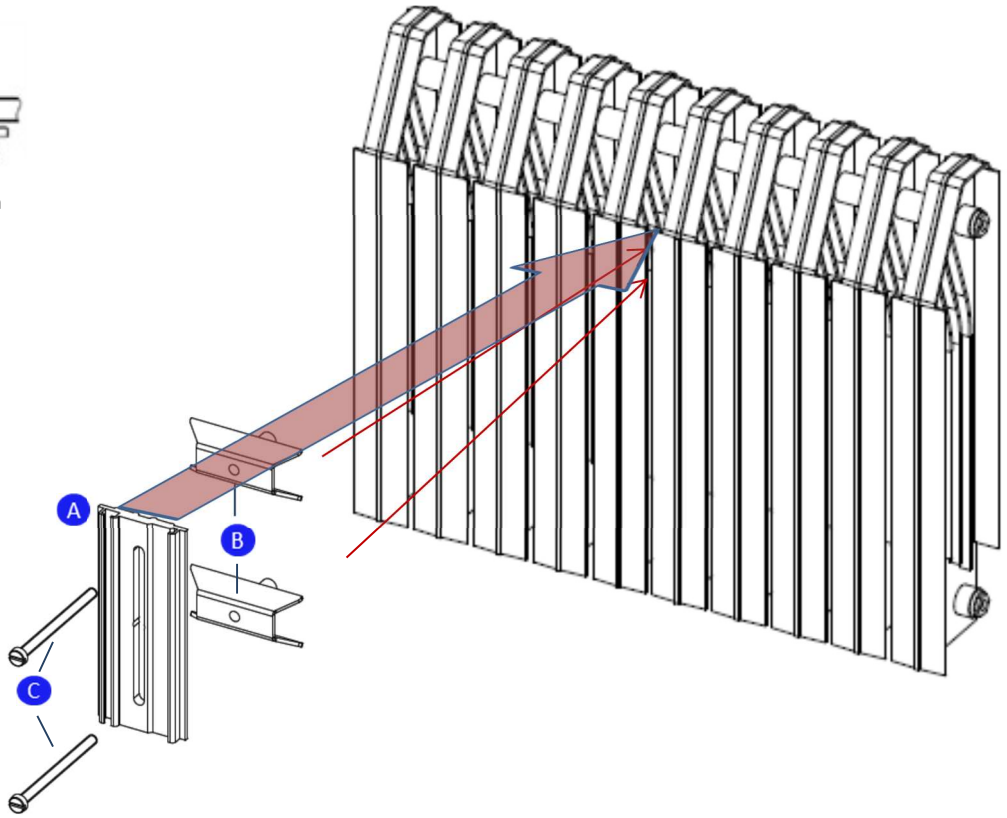
Mounting material required:

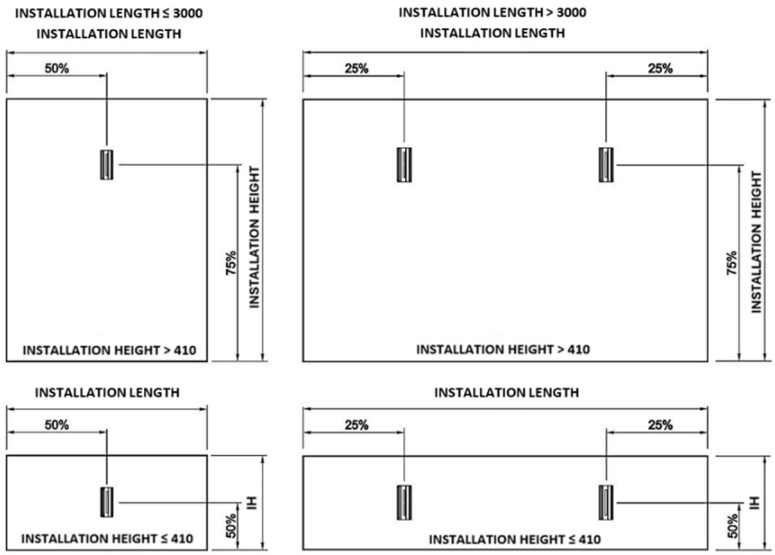
Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Aluminum radiator mounting kit	B	0251200004	2	

Mounting sheet 5-03-5: Cast iron sectional radiators – type KR (screw mounting)

- Top edge of backplate (BP) flush with top edge of air outlet (5)
- Remote sensor mounting (Mounting sheet 99-01-FF)







Note:

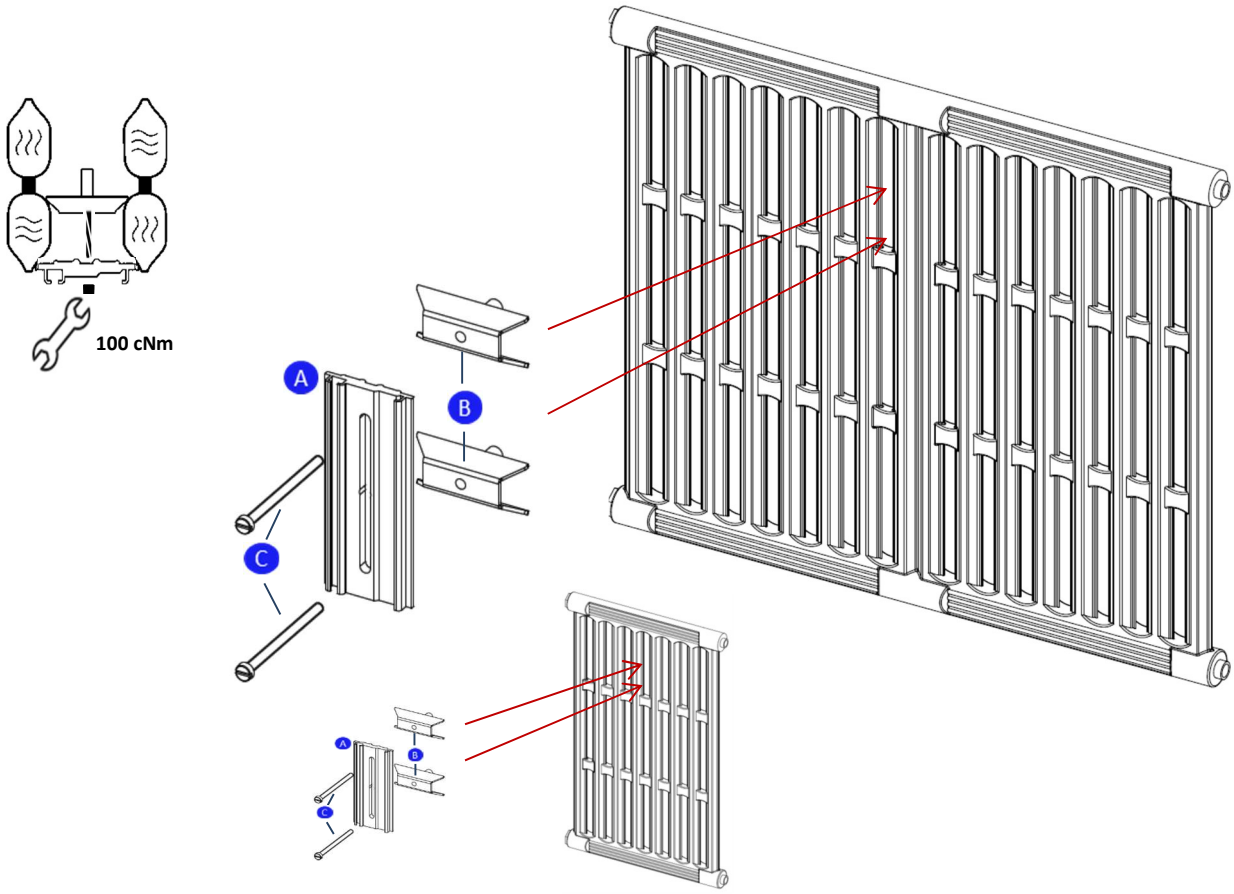
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

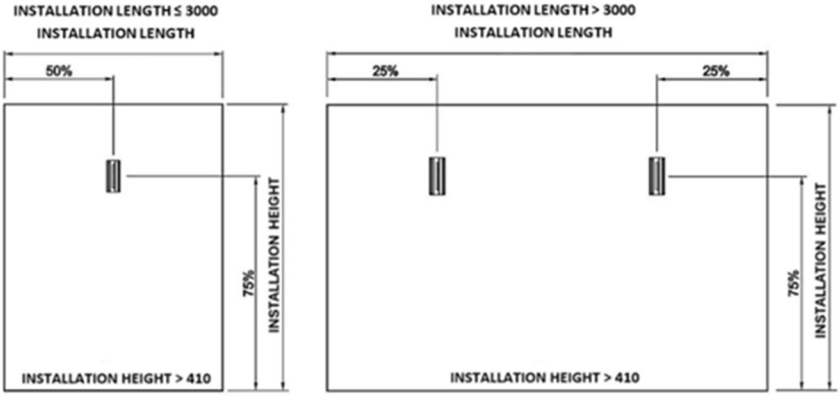
Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Spread angle M4 23/35	B	0051200027	2	
Flat head screw M4x45 DIN 84	C	0051200007	2	

Mounting sheet 5-03-6: Cast iron sectional radiators – radiators with struts (screw mounting)

- Radiators with struts 6
- Remote sensor mounting (Mounting sheet 99-01-FF)





Note:

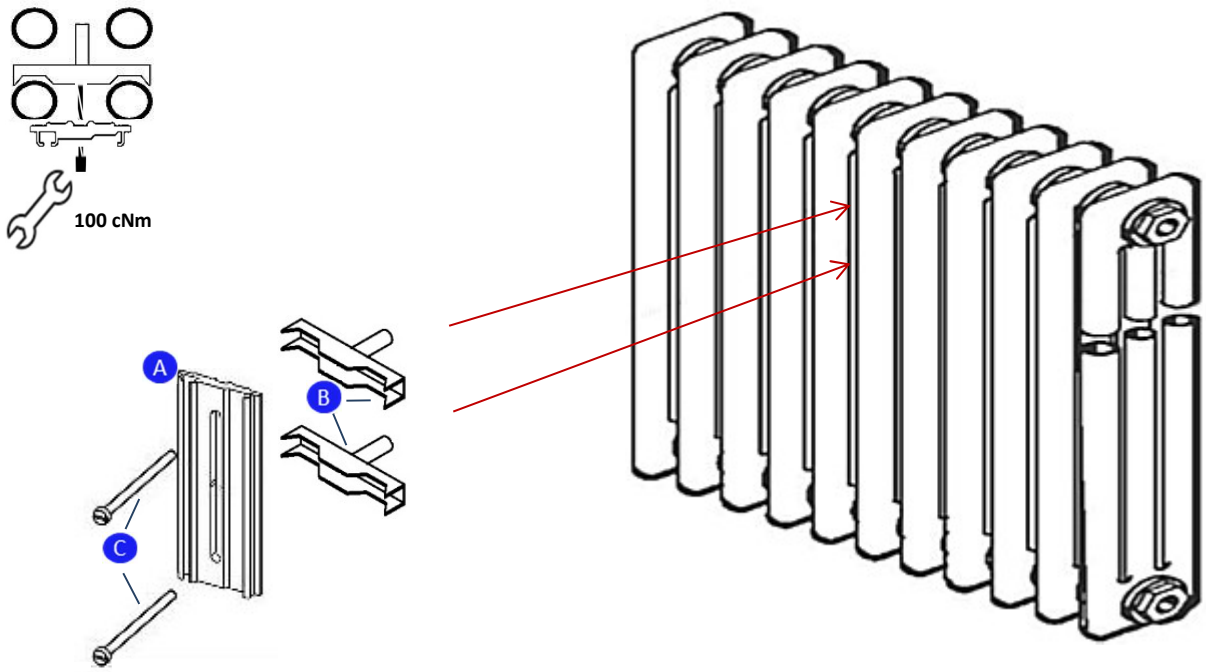
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow above a recess.

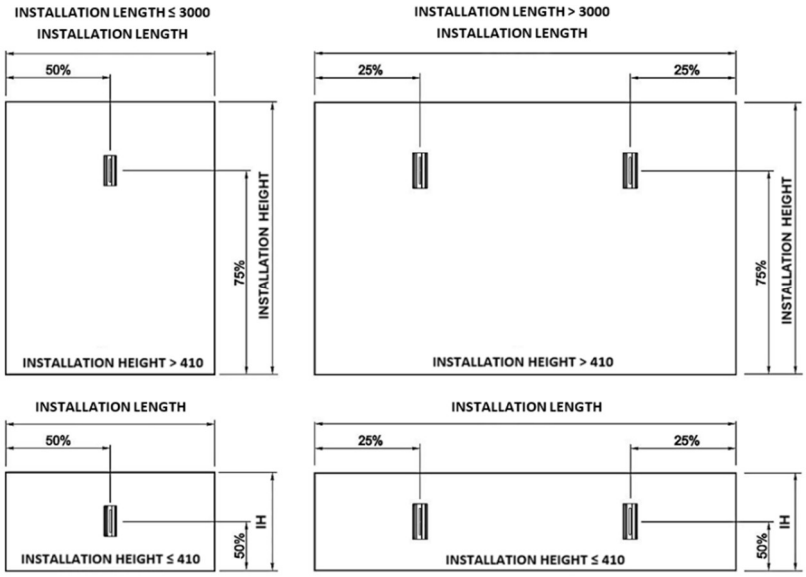
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Spread angle B			
Spread angle M4 23/35	0051200027	2	Alternatively, according to aperture size
Spread angle M4 33/48	0051200004	2	Alternatively, according to aperture size
Flat head screw M4x45 DIN 84 C	0051200007	2	

Mounting sheet 5-04-1: Sectional radiators made of tubes (screw mounting)

- Two- and multi-column, section length ≤ 46 mm (1)
- Remote sensor mounting (Mounting sheet 99-03-FF)





Note:

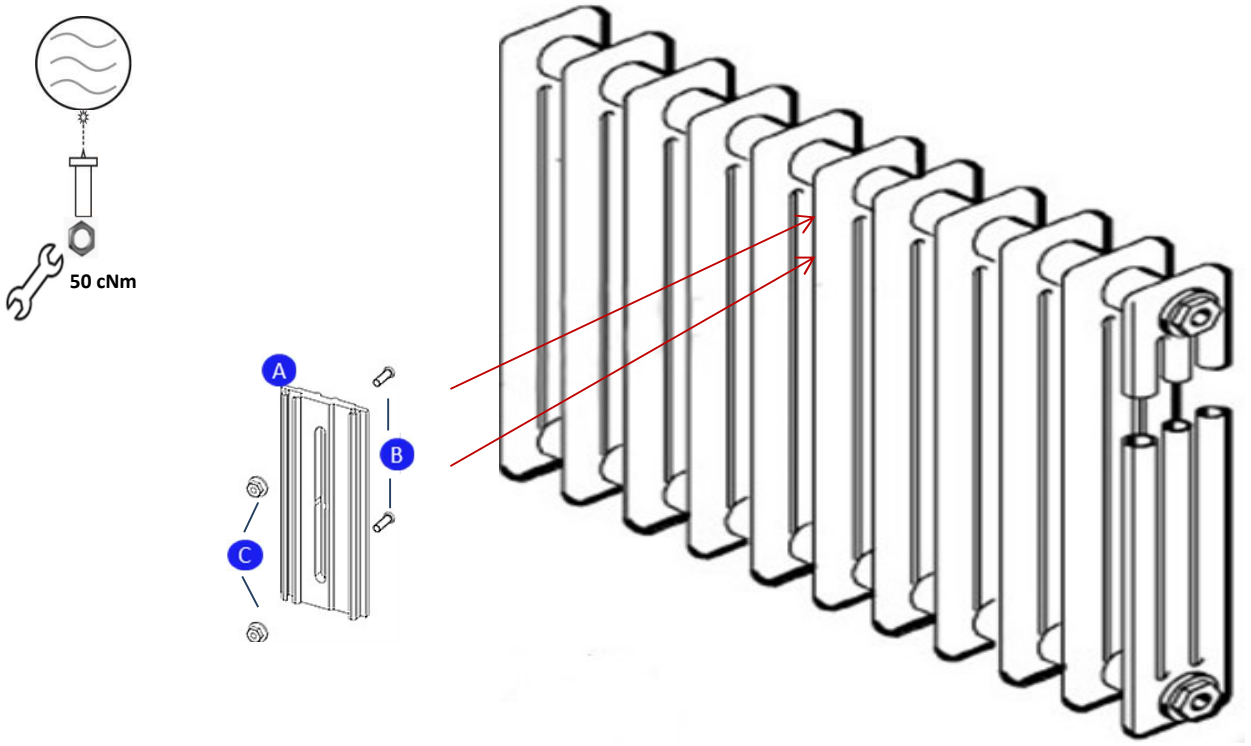
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

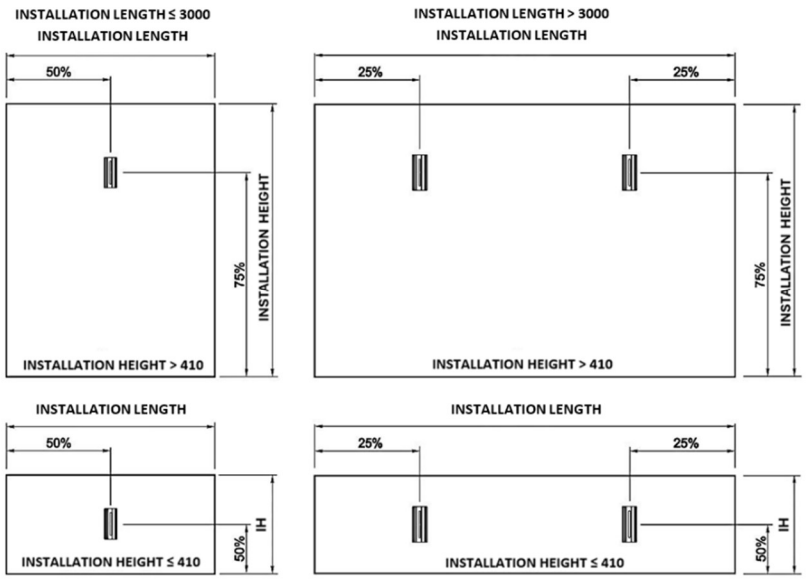
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to tube spacing
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to tube spacing
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

Mounting sheet 5-04-2: Sectional radiators made of tubes (welding assembly)

- Two- and multi-column, section length > 46 mm (2)
- Remote sensor mounting (Mounting sheet 99-07-FF)





Note:

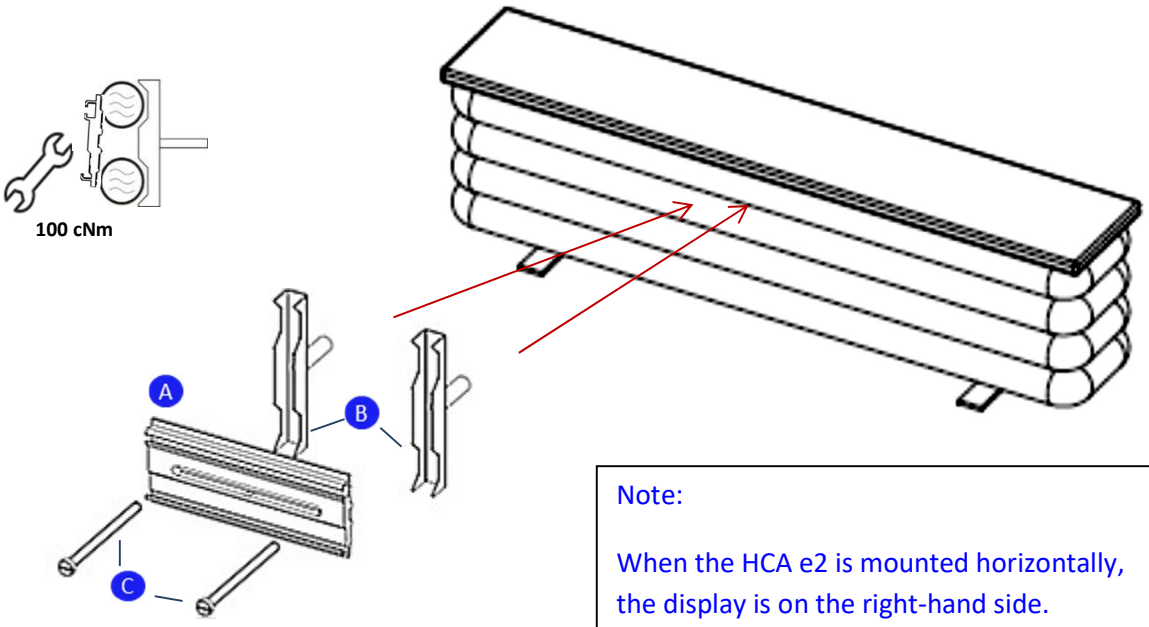
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 5-04-3: Sectional radiators made of tubes – windowsill radiators (screw mounting)

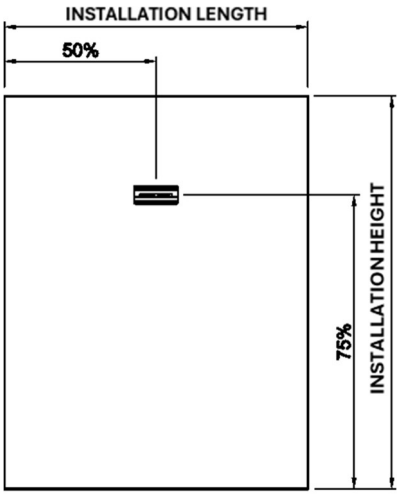
- Windowsill radiators 3
- Remote sensor mounting (Mounting sheet 99-03-FF)



Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Applies to all installation lengths and all installation heights



Note:

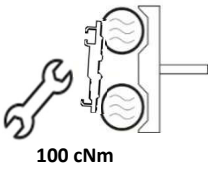
If it is not possible to mount the device at the exact height shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the next possible position. Please ensure that the installation height of 80 % is not exceeded when selecting the next higher position.

Mounting material required:

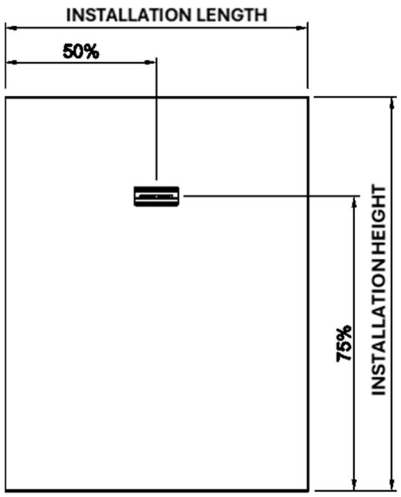
Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Sliding nut tube B			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to tube spacing
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to tube spacing
Flat head screw M4x45 DIN 84 C	0051200007	2	

Mounting sheet 5-04-4: Sectional radiators made of tubes – installed rotated by 90° (screw mounting)

- Installed rotated by 90° 4
- Remote sensor mounting (Mounting sheet 99-03-FF)



Applies to all installation heights



Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

Note:

If it is not possible to mount the device at the exact height shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the next higher position.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Sliding nut tube B			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to tube spacing
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to tube spacing
Flat head screw M4x45 DIN 84 C	0051200007	2	

Mounting sheet 5-05-1: Sectional radiators made of aluminum

- Special mounting
- Fastening with self-tapping screws and pre-drilled holes 1
- Applies to compact unit and remote sensor

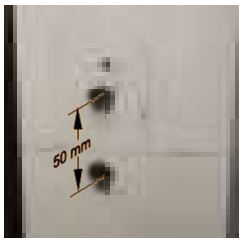
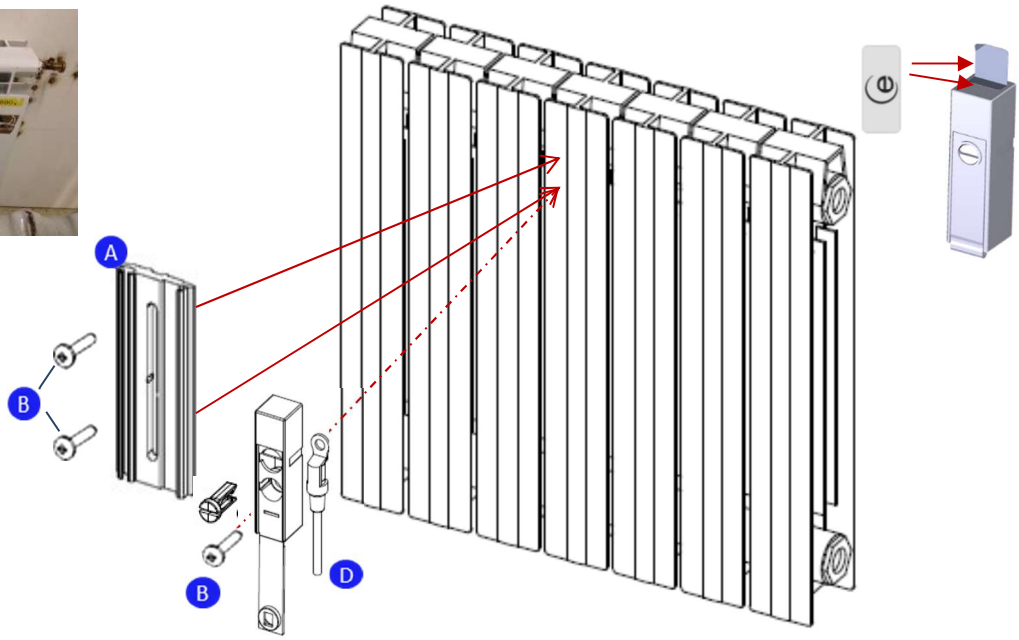


Figure 27

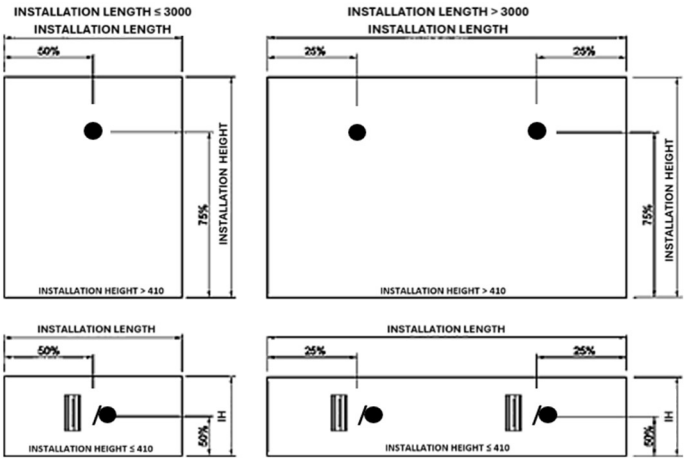
Figure 26: Adhesive seal for tamper protection against twisting during remote sensor mounting

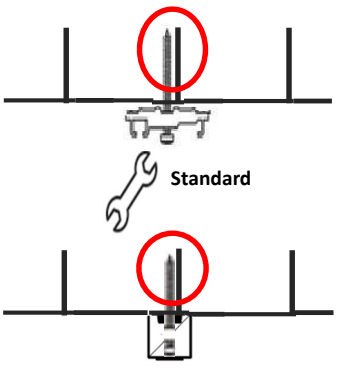


Note:

To prepare for fastening the aluminum heat conductor with self-tapping screws, two holes must be drilled at a vertical distance of 50 mm (see Figure 27) into the aluminum element using a metal twist drill (Ø 3.5 mm) (only one hole is required for mounting a remote sensor). The holes must be drilled at a horizontal distance of approx. 5 mm from the left edge of the section bar so that the screwed-in self-tapping screw does not touch the section bar (see Sketch 18).

If the number of sections is odd, the mounting must be carried out on the middle section. If the number of sections is even, the mounting must be carried out on the next section in the direction of the heating valve, starting from the middle of the installation length. When mounting the remote sensor, the remote sensor housing must be secured against twisting with the adhesive seal (see Figure 26).





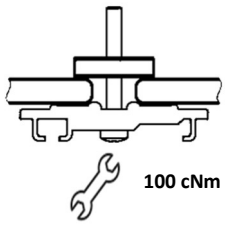
Sketch 18 : Illustration of the fastening of the compact unit and remote sensor to the radiator sections

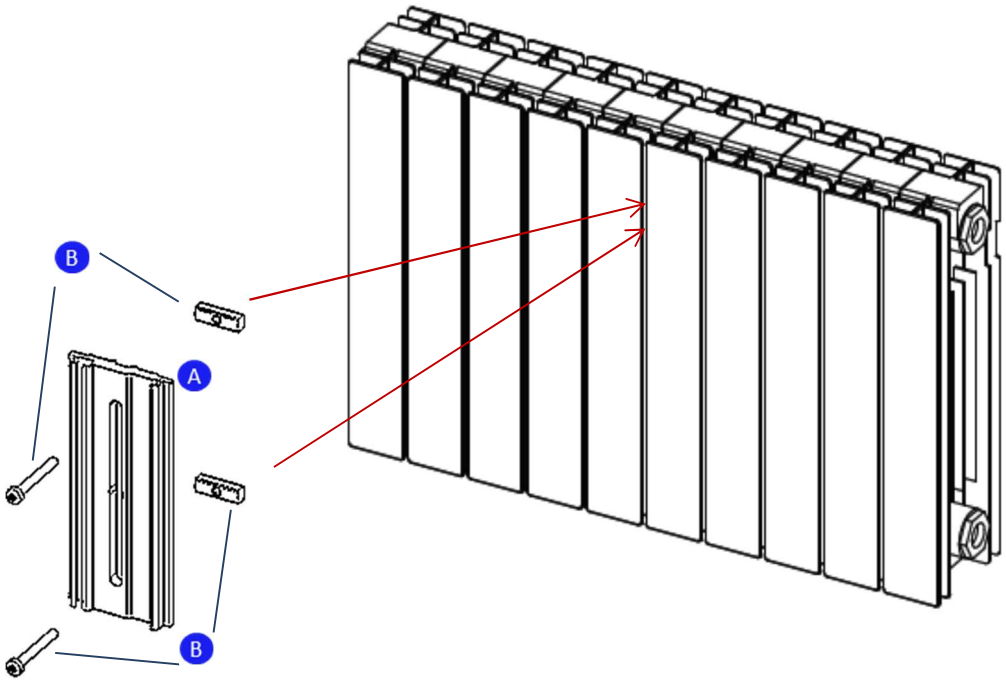
Mounting material required:

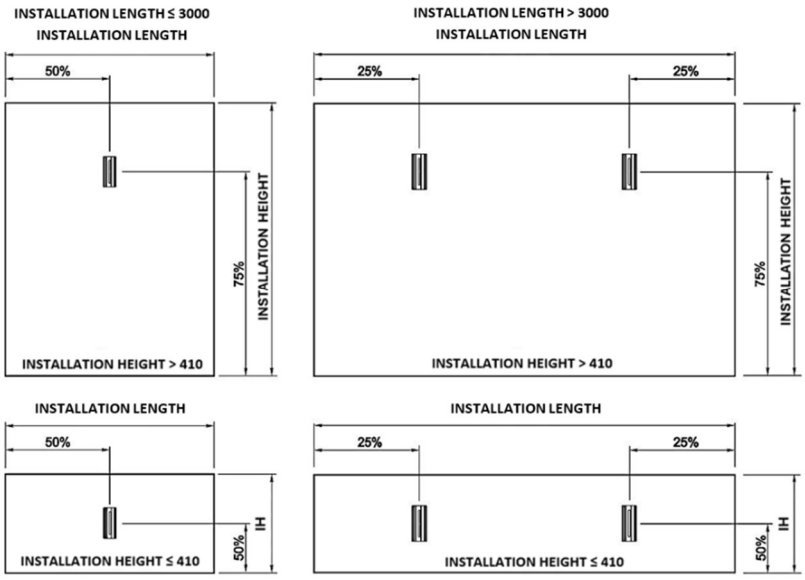
Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Self-tapping screw 4.2x25 B	0051200013	2	
Remote sensor complete D			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively

Mounting sheet 5-05-2: Sectional radiators made of aluminum

- Fastening with aluminum mounting kit between the sections (2)
- Gap > 4 mm
- Remote sensor mounting (Mounting sheet 99-04-FF) (1)







Note:

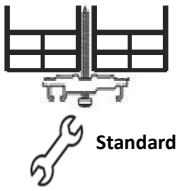
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

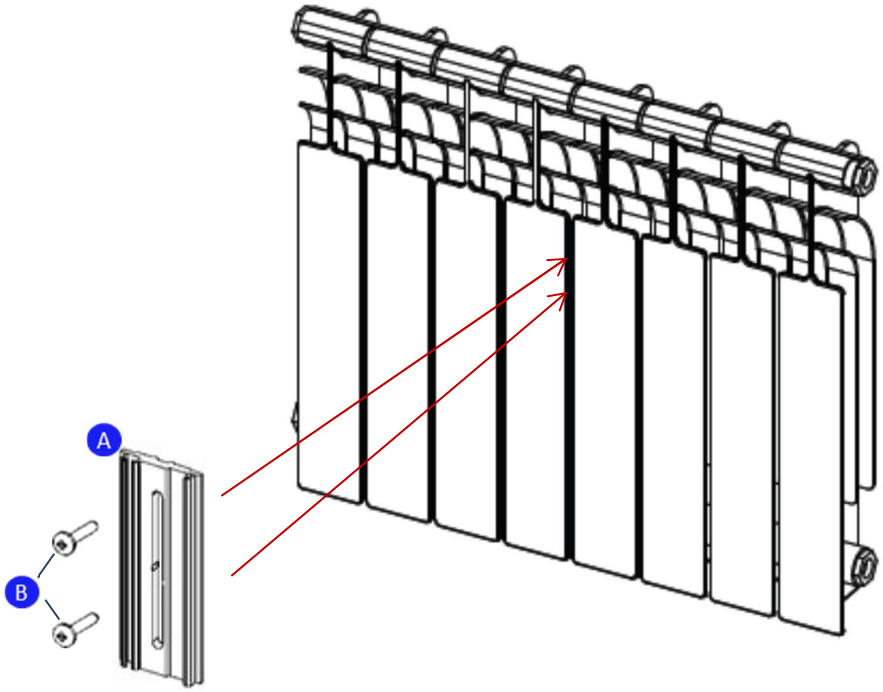
Mounting material required:

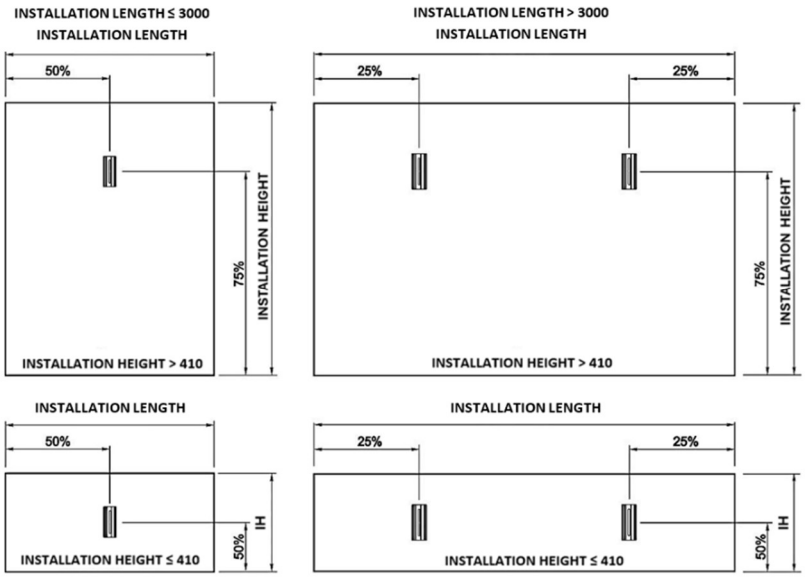
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Aluminum radiator mounting kit (B)	0251200004	2	

Mounting sheet 5-05-3: Sectional radiators made of aluminum

- Fastening with self-tapping screws between the sections 3
- Gap ≤ 4 mm
- Remote sensor mounting (Mounting sheet 99-04-FF) 2







Note:

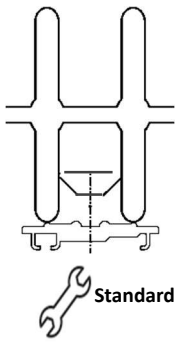
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. even number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

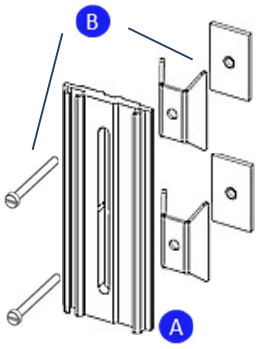
Mounting material required:

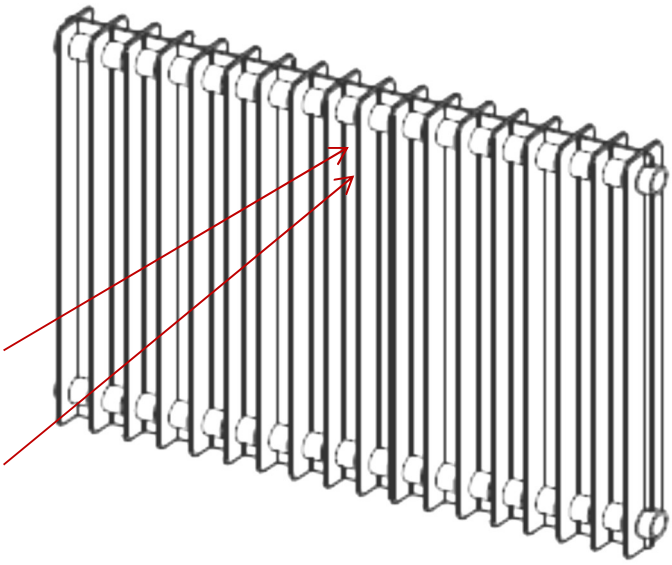
Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Self-tapping screw 4.2x25 B	0051200013	2	

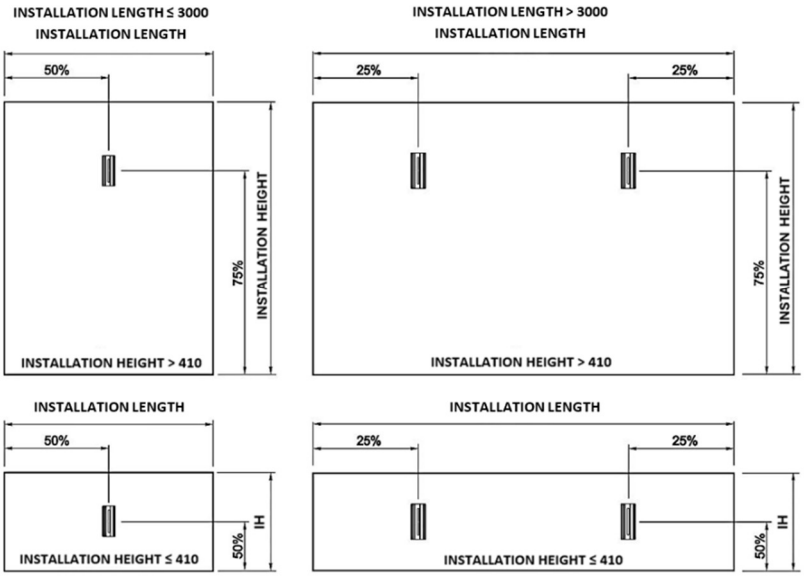
Mounting sheet 5-06: Accordion radiators / fin radiators

- Remote sensor mounting (Mounting sheet 99-05-FF)









Note:

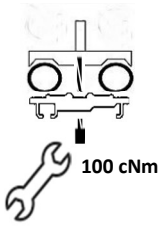
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

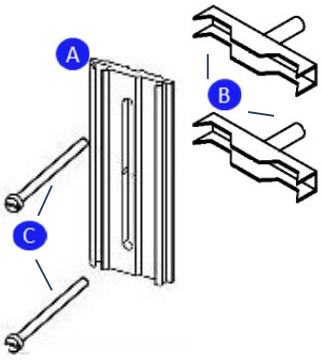
Mounting material required:

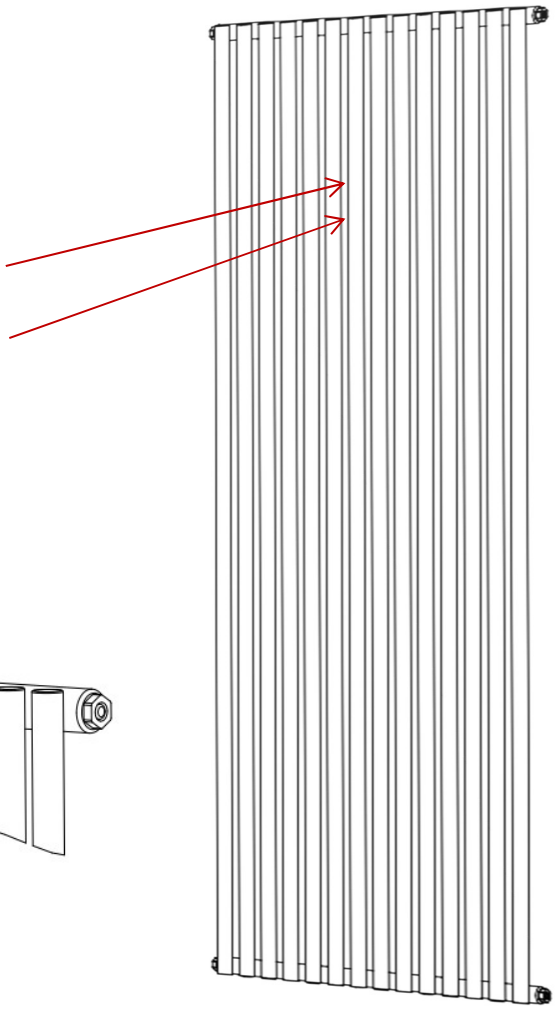
Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Spreader bracket complete B	0251200003	2	

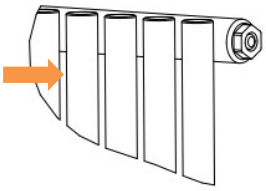
Mounting sheet 6-01: Radiators made of vertical tubes (screw mounting)

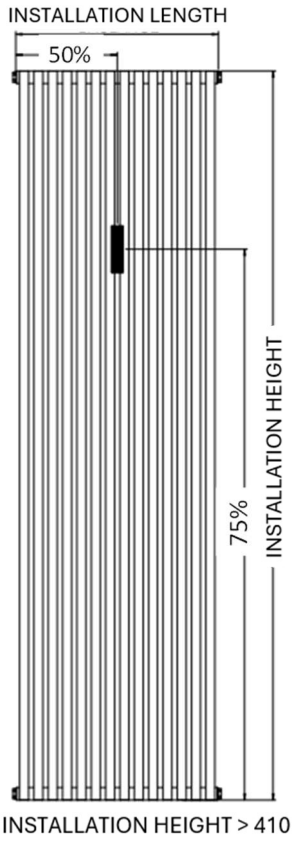
- Equal-sided or alternating connection
- Screw mounting between the vertical tubes
- Remote sensor mounting (Mounting sheet 99-03-FF)

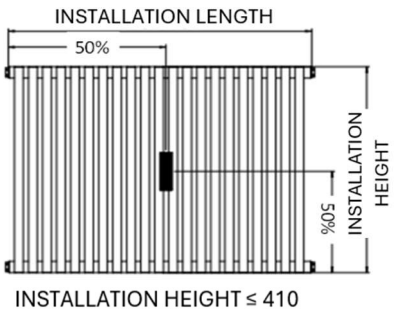












Note:

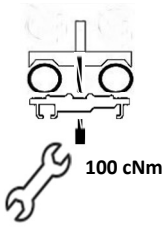
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

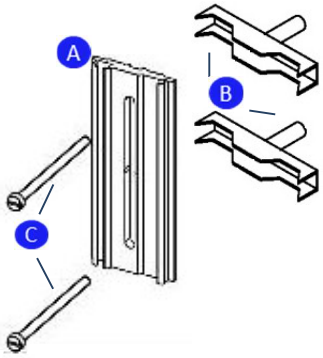
Mounting material required:

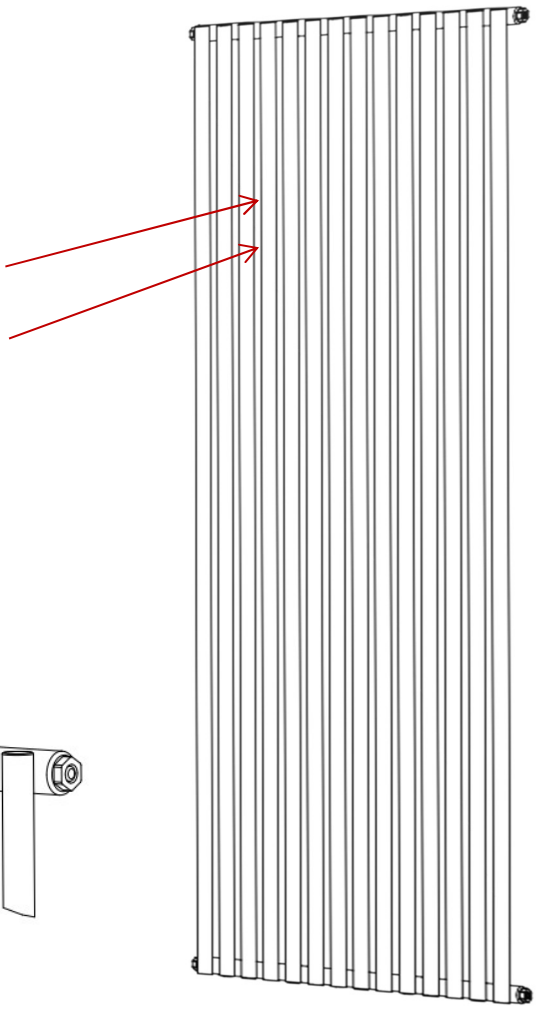
Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to tube spacing
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to tube spacing
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

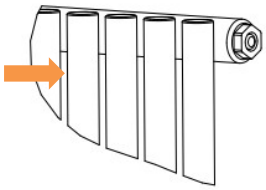
Mounting sheet 6-01a: Radiators made of vertical tubes (screw mounting)

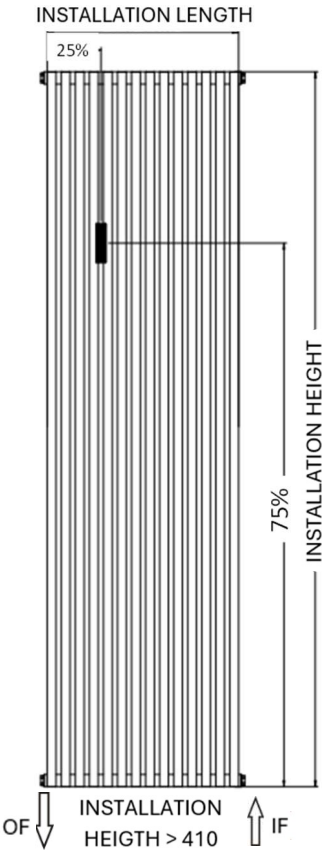
- Connection at the bottom riding or centered with separating disc
- Screw mounting between the vertical tubes
- Remote sensor mounting (Mounting sheet 6-04)

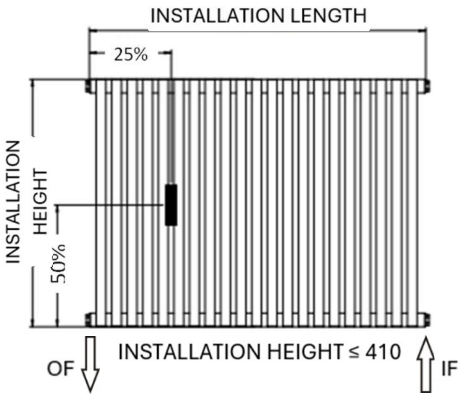












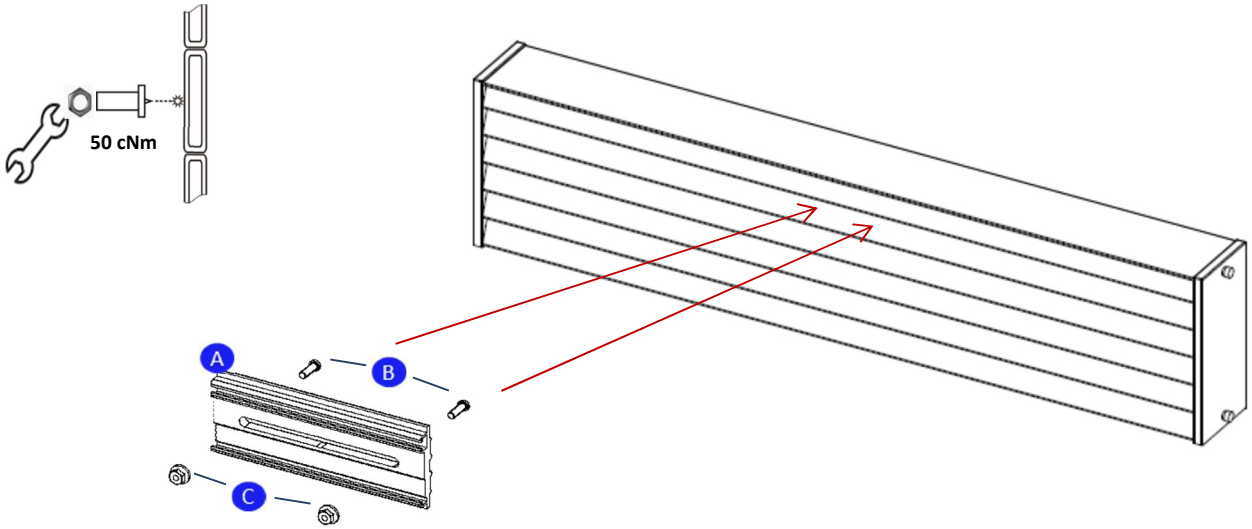
Note:

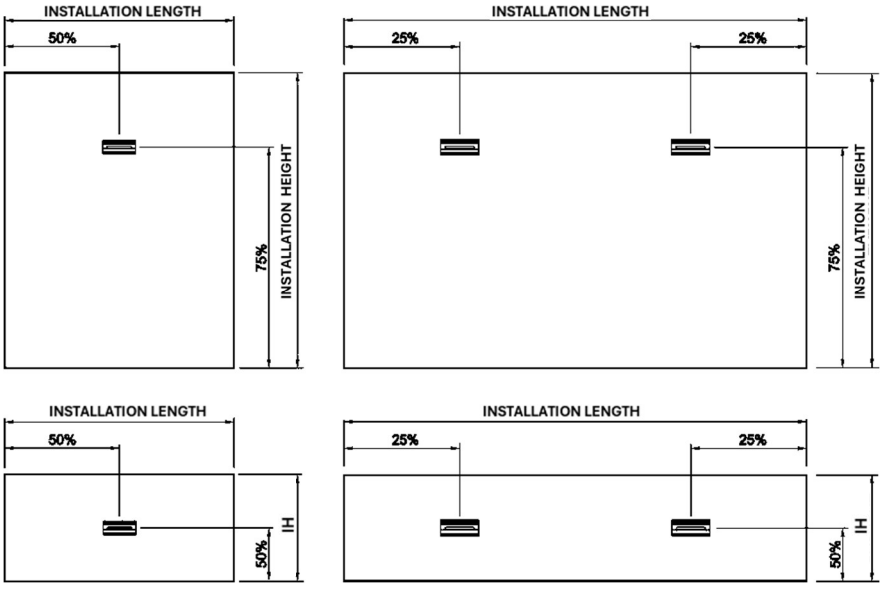
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)			
Sliding nut tube (36 mm)	0051200009	2	Alternatively, according to tube spacing
Sliding nut tube (45 mm)	0051200010	2	Alternatively, according to tube spacing
Flat head screw M4x45 DIN 84 (C)	0051200007	2	

Mounting sheet 6-02: Horizontal louver radiators (welding assembly)





Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side.

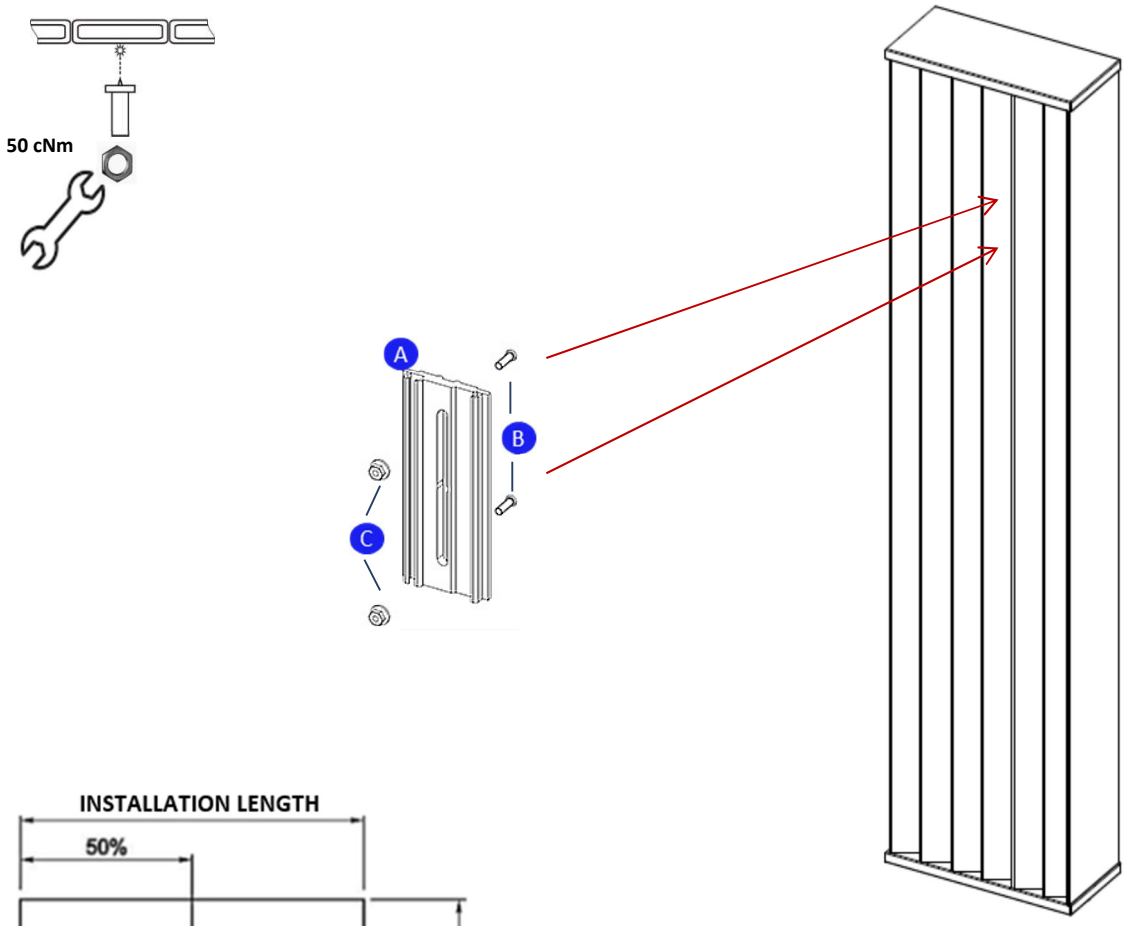
Note:

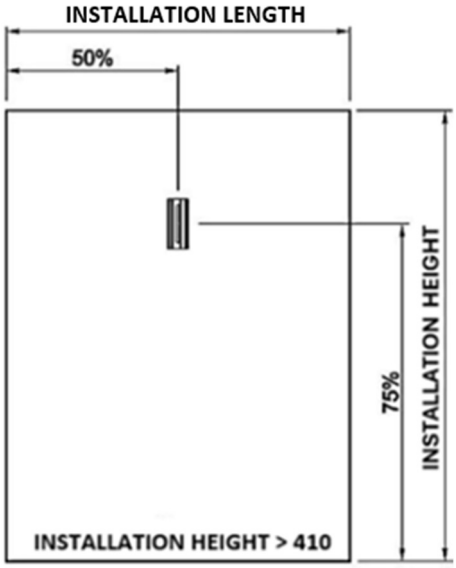
If it is not possible to mount the device at the exact height shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the next higher position.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 6-03: Vertical louver radiators (welding assembly)





Note:

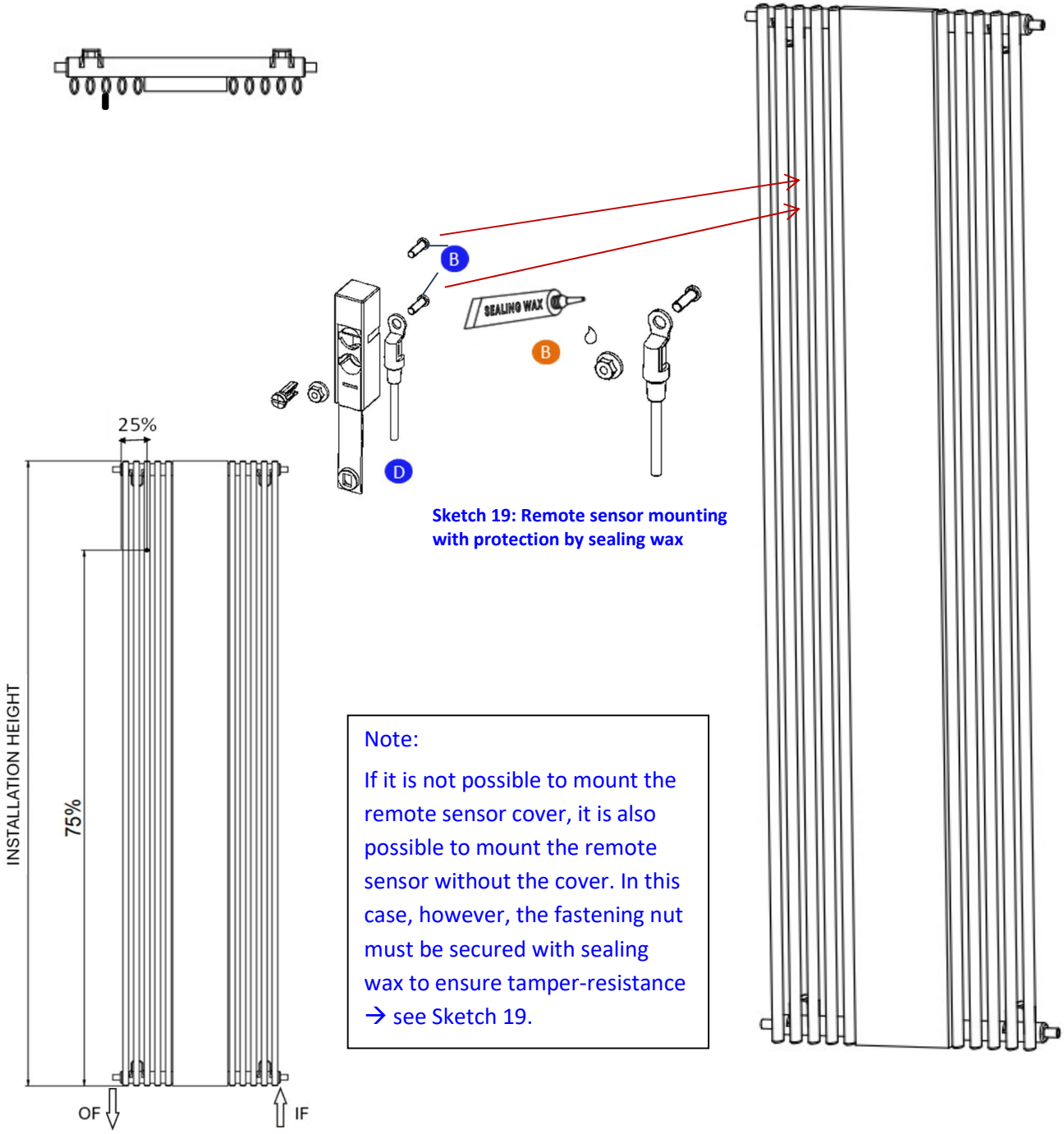
If it is not possible to mount the device at the exact length shown in the dimension sketch (e.g. different number of sections), the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 6-04: Radiators made of vertical tubes (round or oval tube profile), remote sensor mounting (welding assembly)

- Typical: Hudson Reed Keida
- Connection at the bottom riding or centered with separating disc
- Tube arrangement continuous or divided in the middle by mirror/console



Sketch 19: Remote sensor mounting with protection by sealing wax

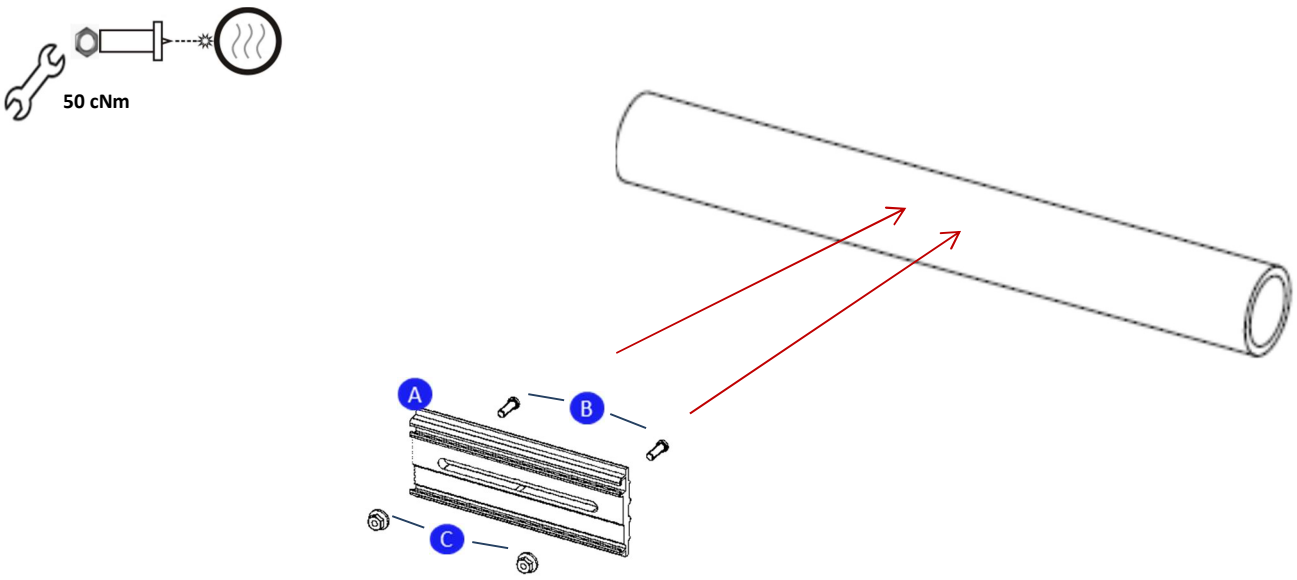
Note:

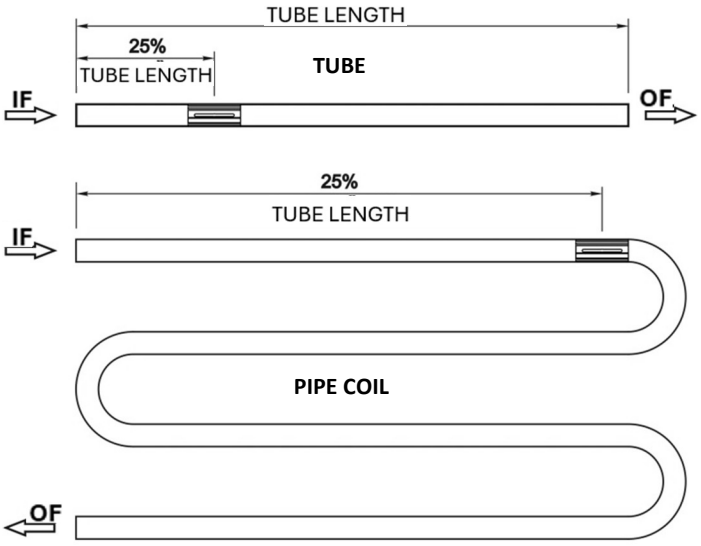
If it is not possible to mount the remote sensor cover, it is also possible to mount the remote sensor without the cover. In this case, however, the fastening nut must be secured with sealing wax to ensure tamper-resistance → see Sketch 19.

Mounting material required:

Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Remote sensor complete (D)			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Sealing wax (B)		1	External procurement

Mounting sheet 7-01: Tubes and pipe coils as heating surfaces – horizontal, without ribs (welding assembly)





Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side when viewed from above.

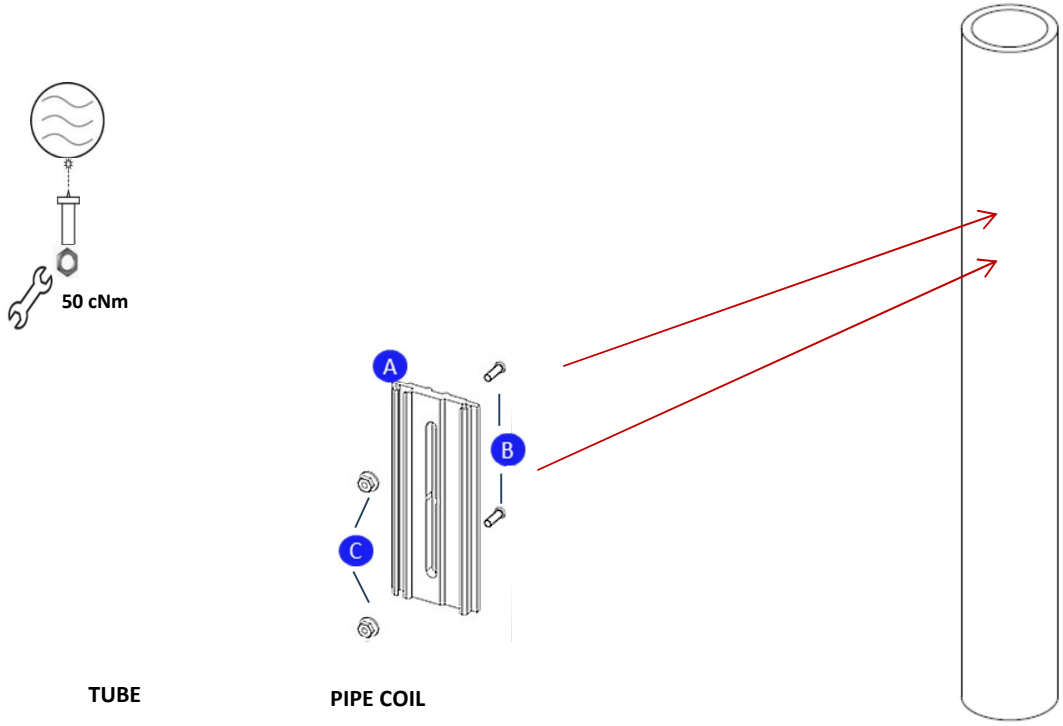
Note:

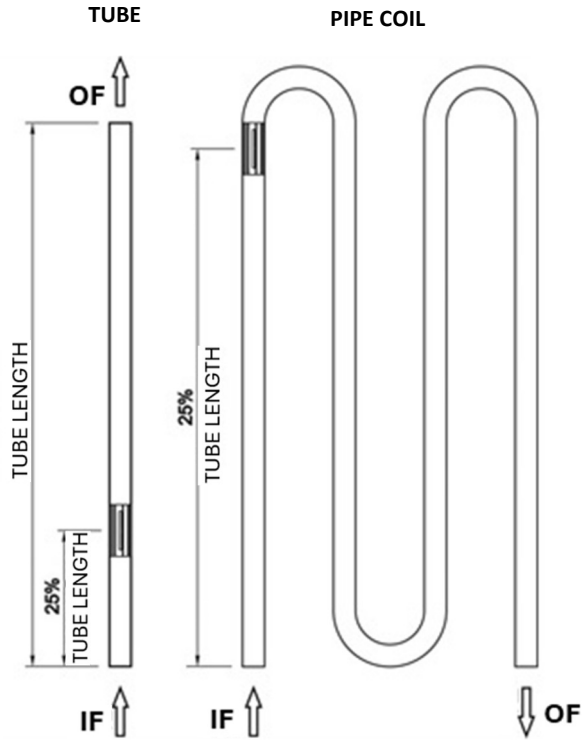
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation		Article number	Quantity	Note
Aluminum heat conductor	A	0051200030	1	
Threaded bolt M3x10 DIN32501	B	0051200014	2	
Locking nut M3	C	0051200033	2	
Shank nut M3x8.5		0051200002	2	Alternatively

Mounting sheet 7-02: Tubes and pipe coils as heating surfaces – vertical, without ribs (welding assembly)





Note:

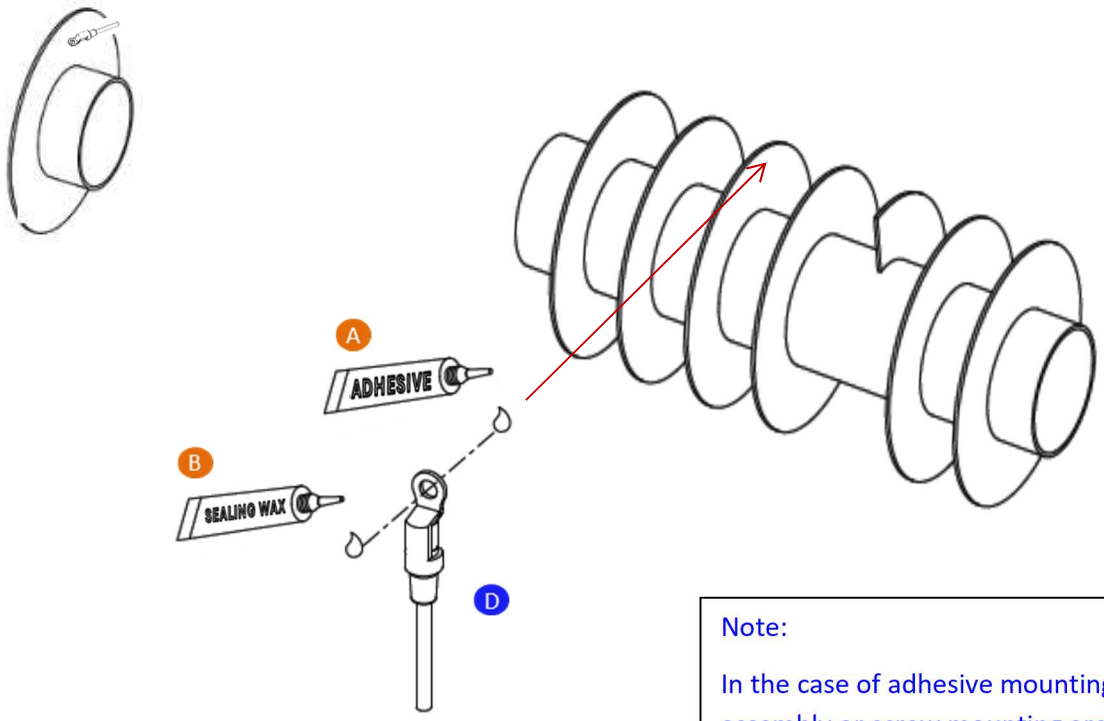
If it is not possible to mount the device at the exact height shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

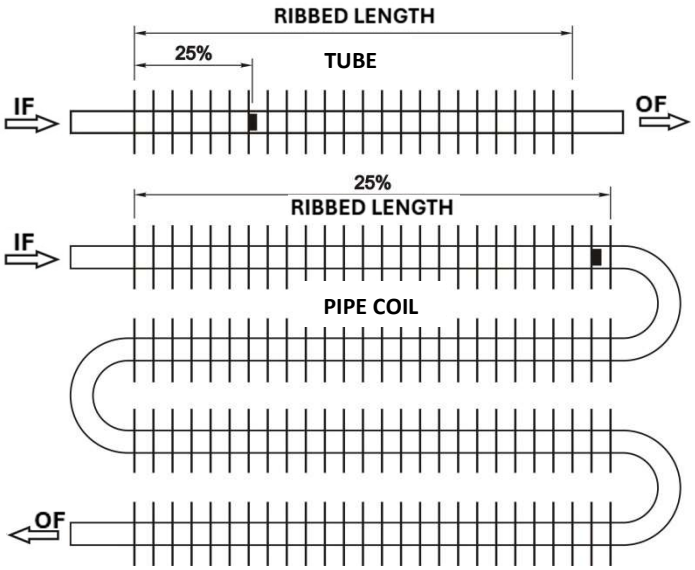
Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 7-03: Tubes and pipe coils as heating surfaces – horizontal, with ribs (adhesive mounting)

- Remote sensor mounting only





Note:

In the case of adhesive mounting (welding assembly or screw mounting are not possible), the bonding point on the rib must be cleaned or, if necessary, sanded before mounting. After mounting, the remote sensor must be secured against tampering with sealing wax.

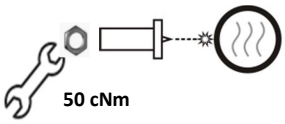
Note:

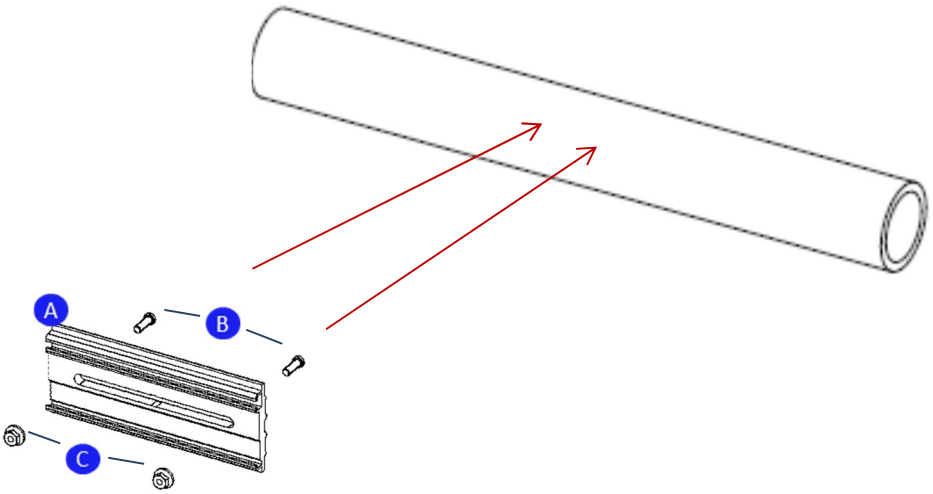
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow. **It is best to mount the remote sensor on the upper edge of the rib.**

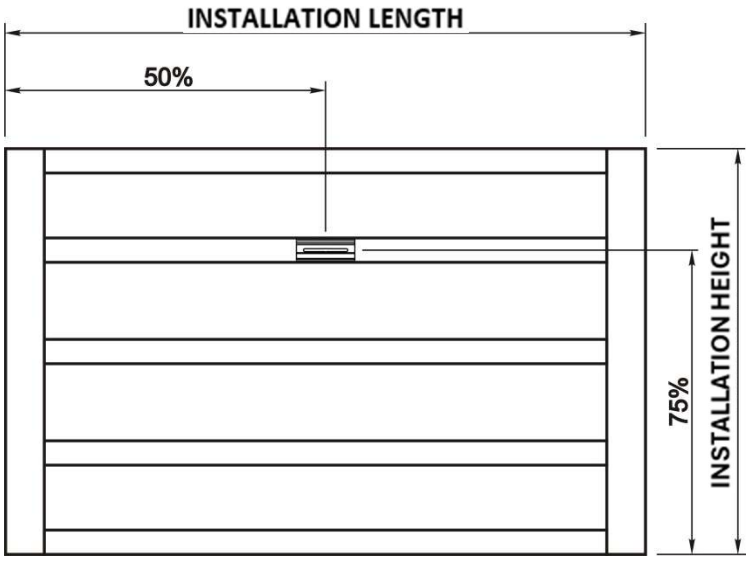
Mounting material required:

Article designation	Article number	Quantity	Note
Remote sensor complete D			
2 m	0251200006	1	Alternatively
5 m	0251200011	1	Alternatively
Adhesive A		1	External procurement
Sealing wax B		1	External procurement

Mounting sheet 7-04: Tube registers – horizontal, without ribs (welding assembly)







Note:

When the HCA e2 is mounted horizontally, the display is on the right-hand side when viewed from above.

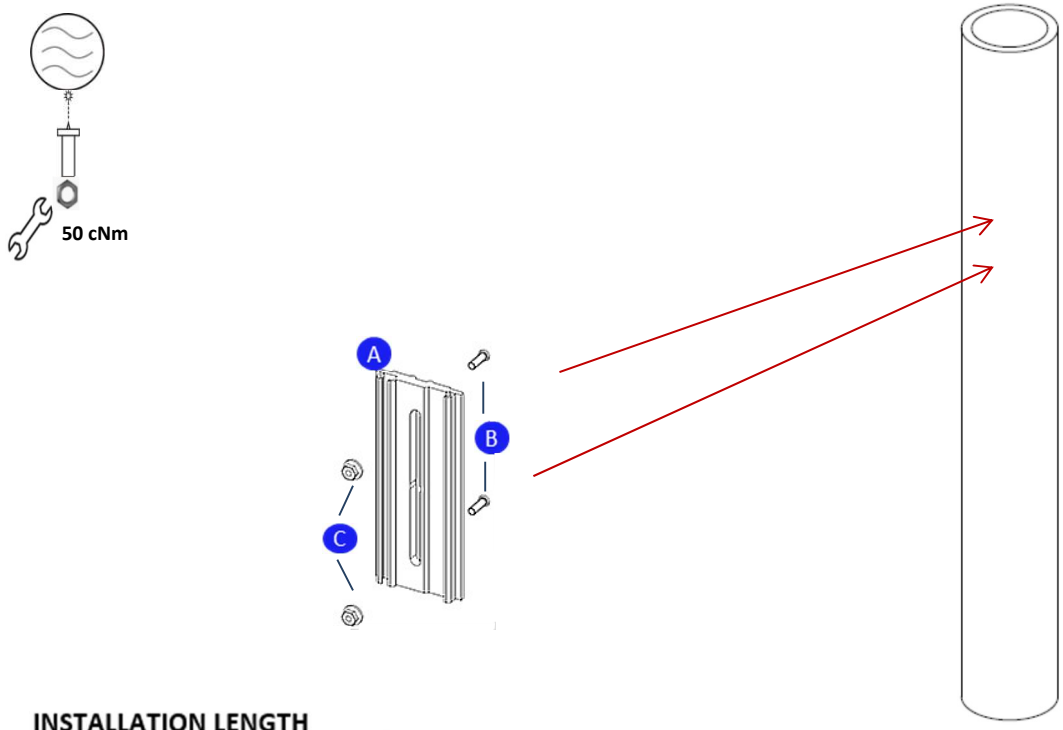
Note:

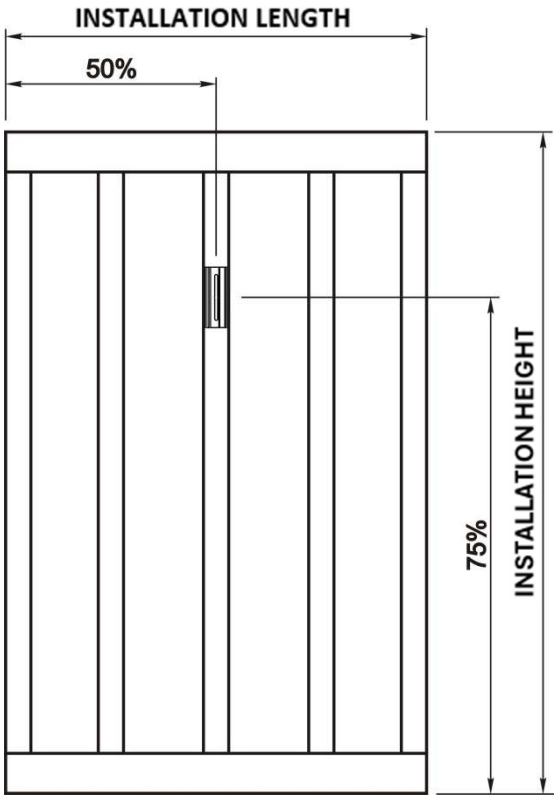
If it is not possible to mount the device at the exact height shown in the dimension sketch, the mounting should be carried out in the next higher position.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 7-05: Tube registers – vertical, without ribs (welding assembly)





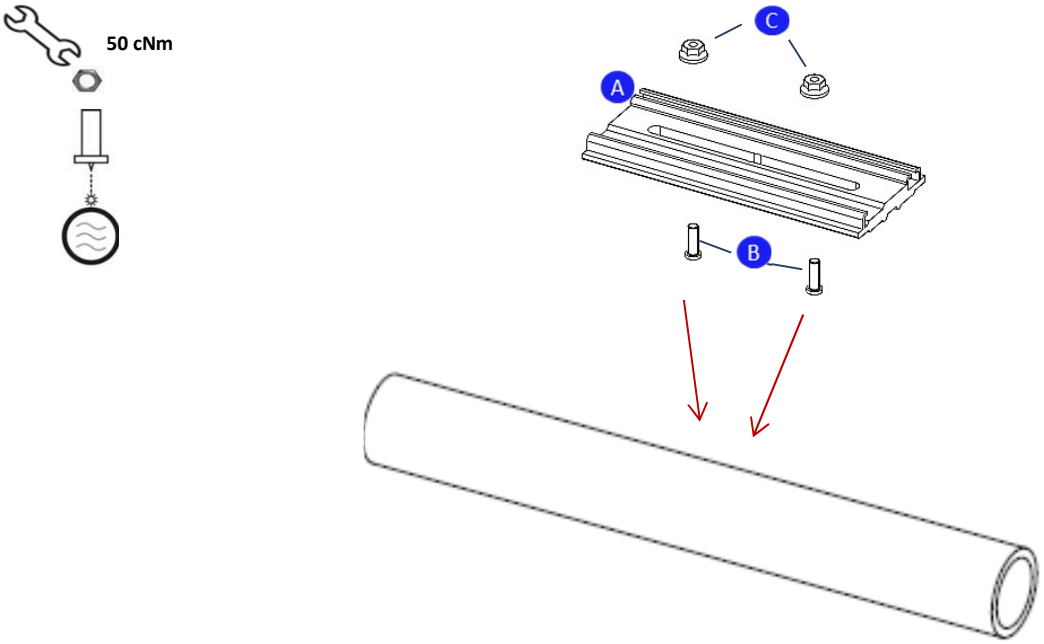
Note:

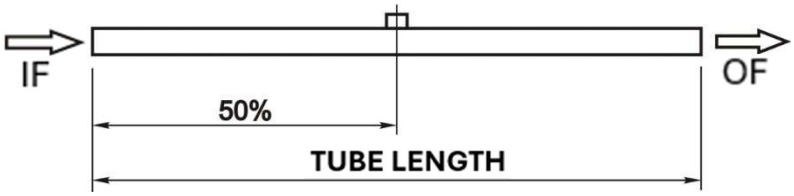
If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 7-06: Individual tubes as connecting lines – horizontal (welding assembly)





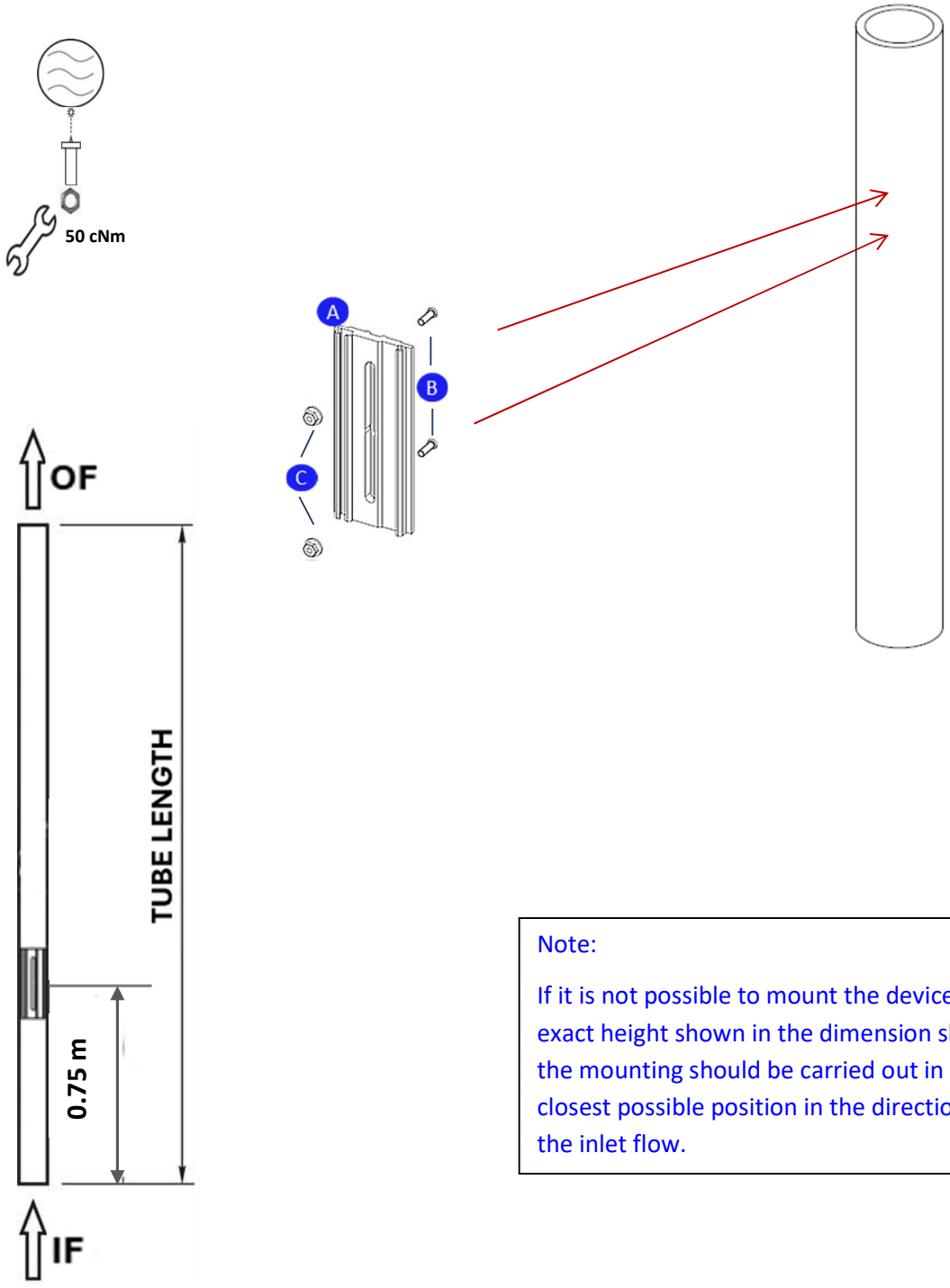
Note:

If it is not possible to mount the device at the exact length shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 7-07: Individual tubes as connecting lines – vertical (welding assembly)



Note:

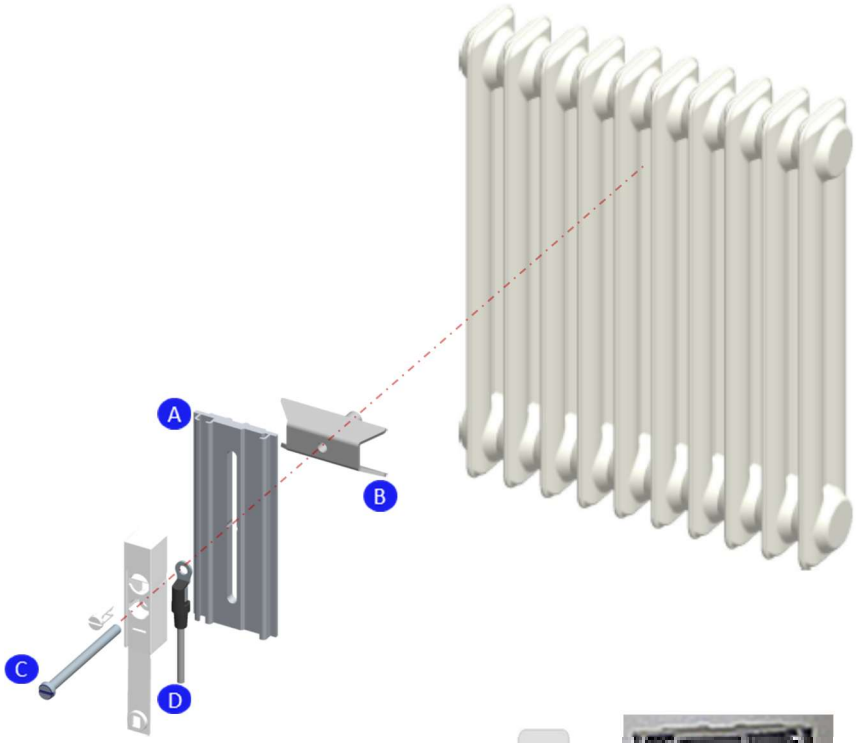
If it is not possible to mount the device at the exact height shown in the dimension sketch, the mounting should be carried out in the closest possible position in the direction of the inlet flow.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Threaded bolt M3x10 DIN32501 (B)	0051200014	2	
Locking nut M3 (C)	0051200033	2	
Shank nut M3x8.5	0051200002	2	Alternatively

Mounting sheet 99-01-FF: Remote sensor screw mounting with spread angle: sectional radiators, clear width ≤ 36 mm

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously



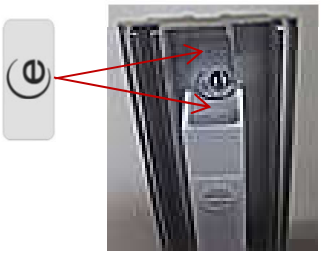
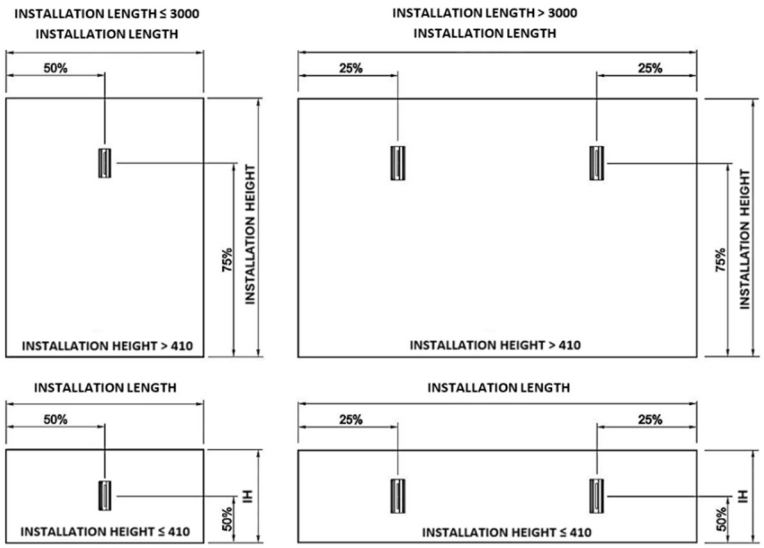


Figure 28: Adhesive seal for remote sensor housing



Note:
The remote sensor housing is secured against twisting with the adhesive seal (see Figure 28).

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spread angle (B)	See 5.3	1	Depending on the section spacing
Flat head screw M4 (C)	See 5.1	1	Depending on the required length
Remote sensor complete: 2 m / 5 m (D)	See 5.8.5	1	Depending on the required length

Mounting sheet 99-02-FF: Remote sensor screw mounting with spread angle: sectional radiators, clear width > 36 mm

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously

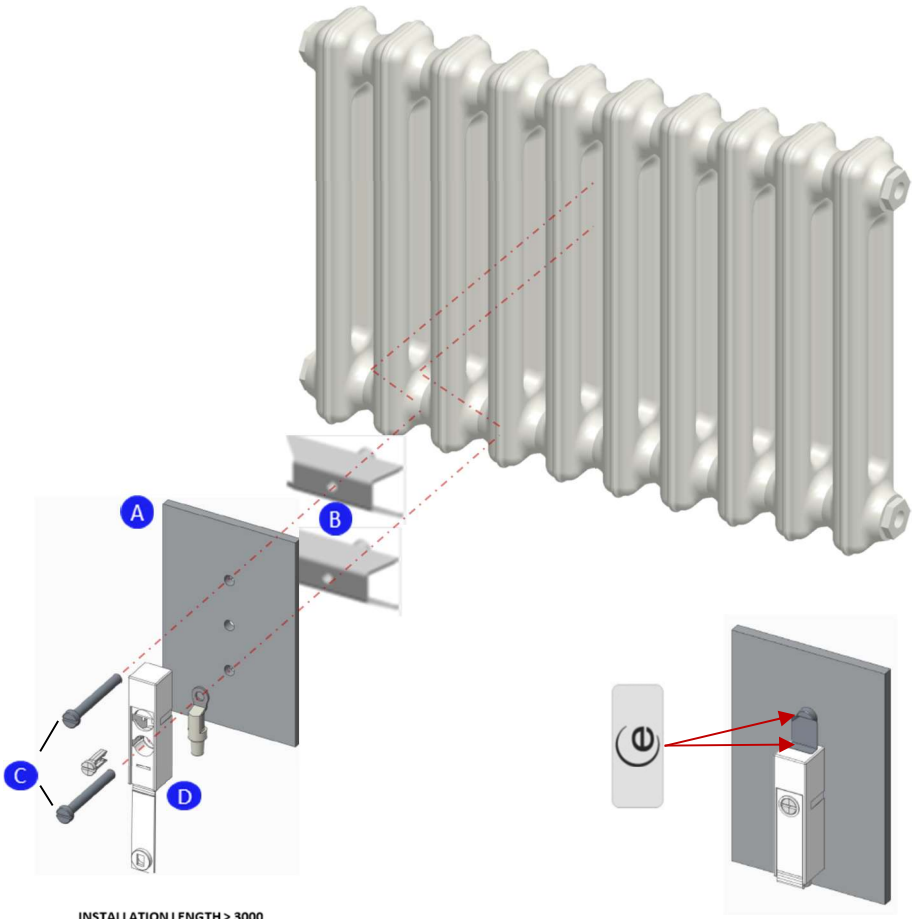
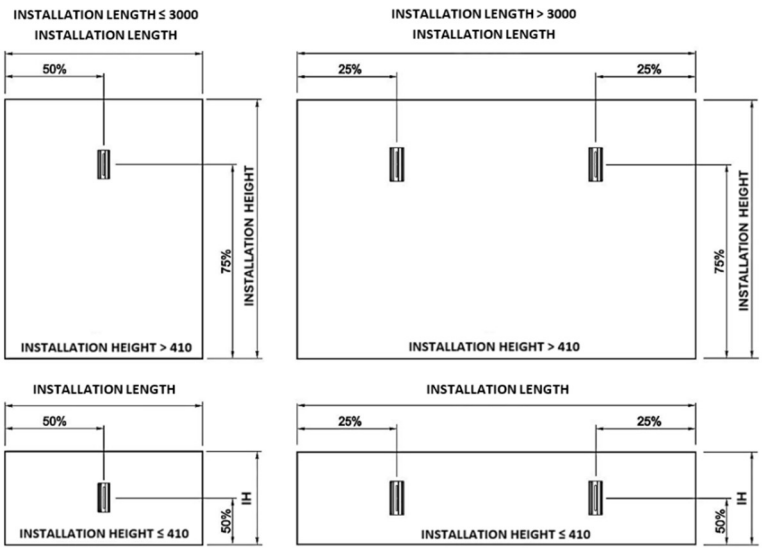


Figure 29: Adhesive seal for remote sensor housing



Note:
The remote sensor housing and the upper fastening screw of the wide aluminum adapter are secured against tampering with the adhesive seal (see Figure 29). The adhesive seal is included with every remote sensor set.

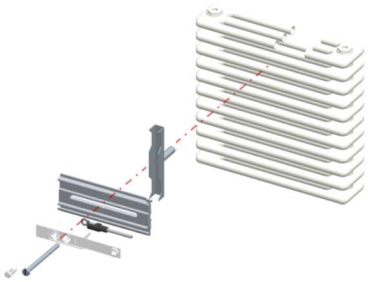
Mounting material required:

Article designation	Article number	Quantity	Note
Heat conductor adapter HCA e2, wide (A)	0051200035	1	
Spread angle (B)	See 5.3	2	Depending on the section spacing
Flat head screw M4 (C)	See 5.1	2	Depending on the required length
Remote sensor complete: 2 m / 5 m (D)	See 5.8.5	1	Depending on the required length

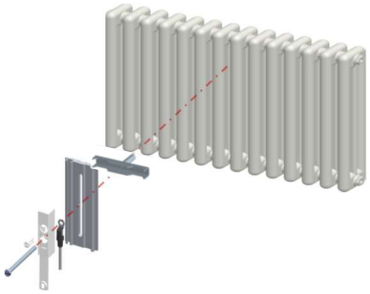
Mounting sheet 99-03-FF: Remote sensor screw mounting with sliding nut: sectional radiators made of tubes / radiators made of vertical tubes

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously

Presentation 1: Radiators made of vertical tubes

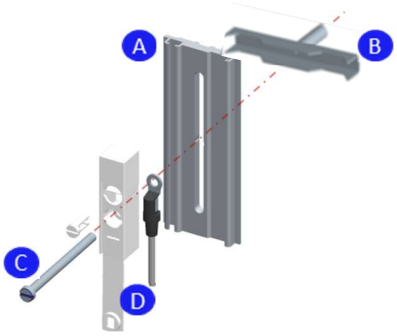


Presentation 2: Sectional radiators made of tubes – installed rotated by 90°



Presentation 3: Sectional radiators made of tubes

Presentation 4: Sectional radiators made of tubes – windowsill radiators



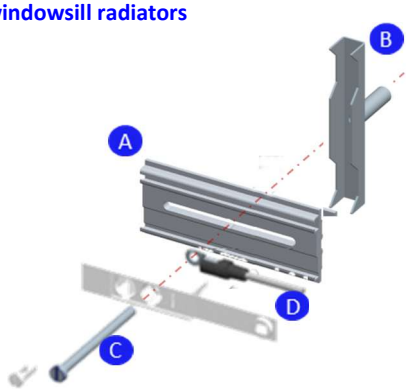


Figure 30: Adhesive seal for remote sensor housing

> Note:
> The remote sensor housing must be secured against twisting using an adhesive seal (see Figure 30). An adhesive seal is included with each remote sensor set for this purpose.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Sliding nut tube (B)	See 5.4	1	Depending on the tube spacing
Flat head screw M4 (C)	See 5.1	1	Depending on the required length
Remote sensor complete: 2 m / 5 m (D)	See 5.8.5	1	Depending on the required length

Mounting sheet 99-04-FF: Remote sensor screw mounting with self-tapping screw / aluminum radiator mounting kit: sectional radiators made of aluminum front face radiators made of tube registers (aluminum)

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously
- Gap between the sections > 4 mm: mounting with aluminum mounting kit 1
- Gap between the sections ≤ 4 mm: mounting with self-tapping screw 2

Figure 31: Adhesive seal for remote sensor housing: for securing on aluminum heat conductor

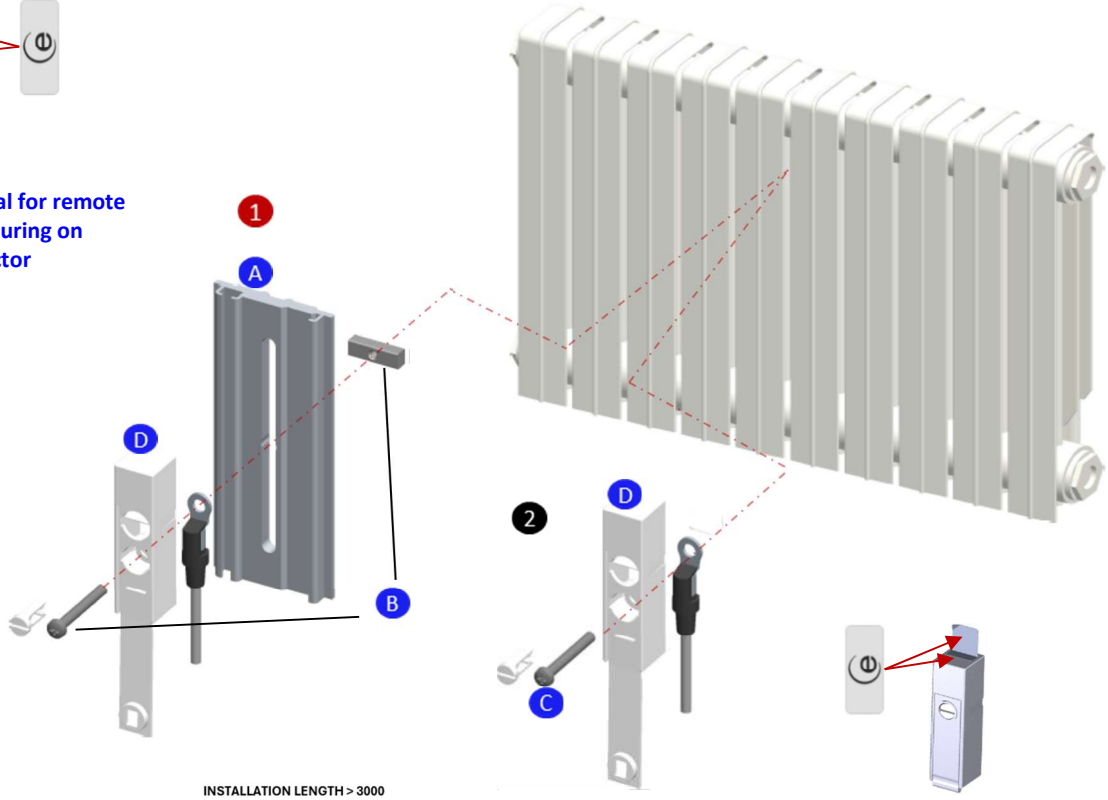
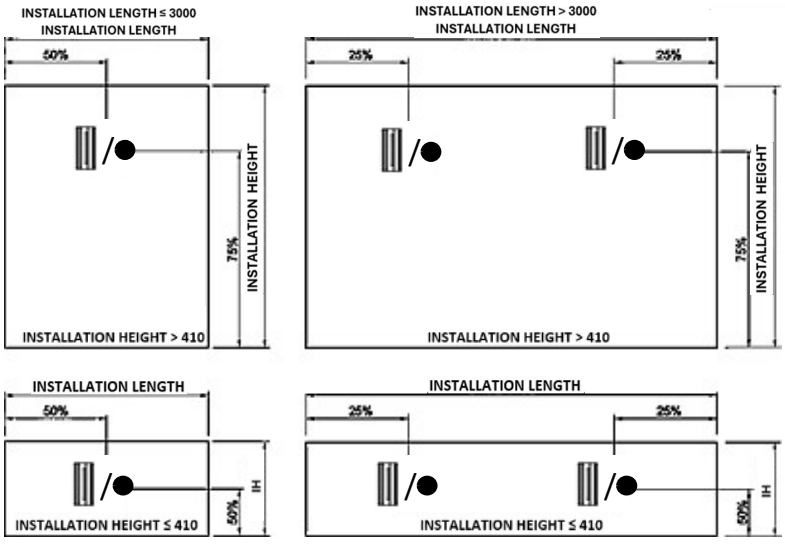


Figure 32: Adhesive seal for remote sensor housing: for securing on radiator



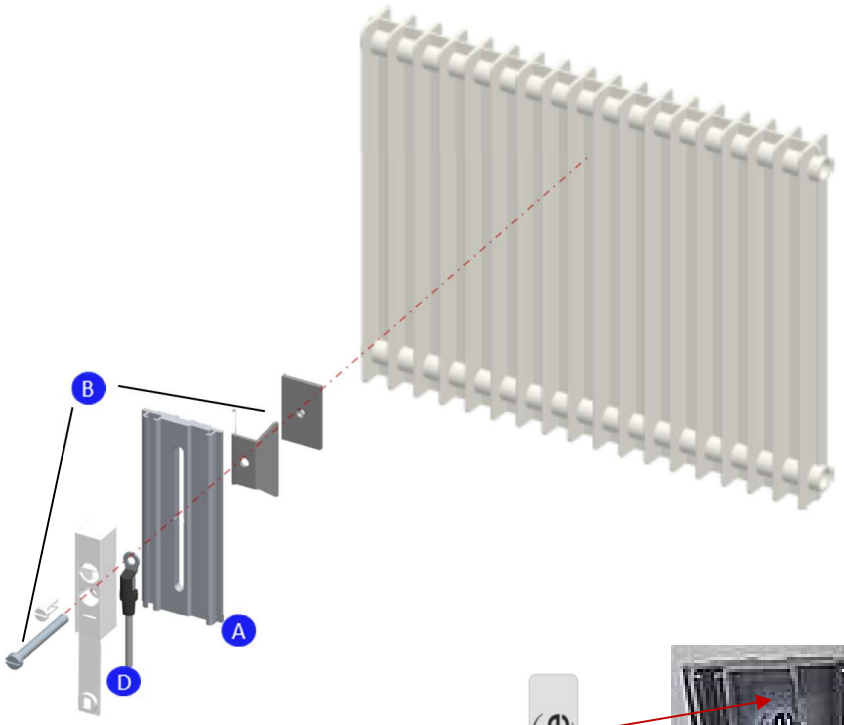
Note:
The remote sensor housing must be secured against twisting using an adhesive seal (see Figure 31 and Figure 32). An adhesive seal is included with each remote sensor set for this purpose.

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor A	0051200030	1	
Aluminum radiator mounting kit B	See 5.6	1	Depending on the gap width
Self-tapping screw 4.2x25 C	See 5.6	1	Depending on the gap width
Remote sensor complete: 2 m / 5 m D	See 5.8.5	1	Depending on the required length

Mounting sheet 99-05-FF: Remote sensor screw mounting with spreader bracket complete: accordion radiators / fin radiators

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously



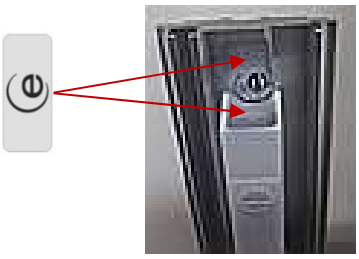
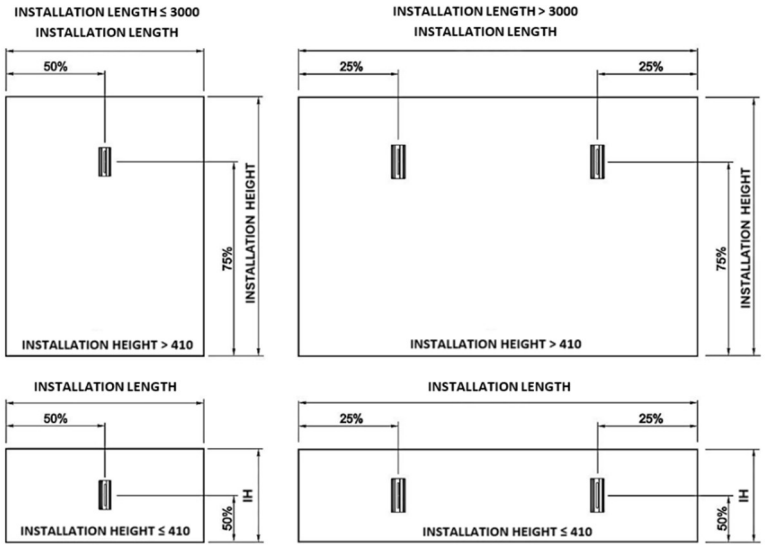


Figure 33: Adhesive seal for remote sensor housing



Note:
The remote sensor housing is secured against twisting with the adhesive seal (see Figure 33).

Mounting material required:

Article designation	Article number	Quantity	Note
Aluminum heat conductor (A)	0051200030	1	
Spreader bracket complete (B)	See 5.5	1	
Remote sensor complete: 2 m / 5 m (D)	See 5.8.5	1	Depending on the required length

Mounting sheet 99-06-FF: Remote sensor welding assembly / cable tie mounting: tubes

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously
- Welding assembly on tube 1
- Cable tie mounting on tube 2

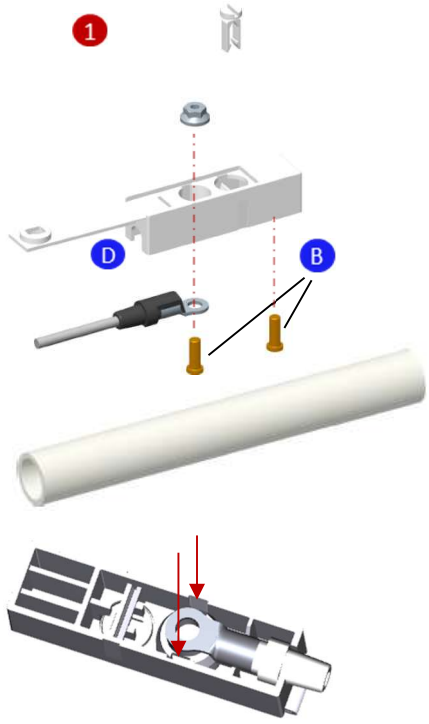


Figure 34: Routing aid for fastening the remote sensor housing using a cable tie

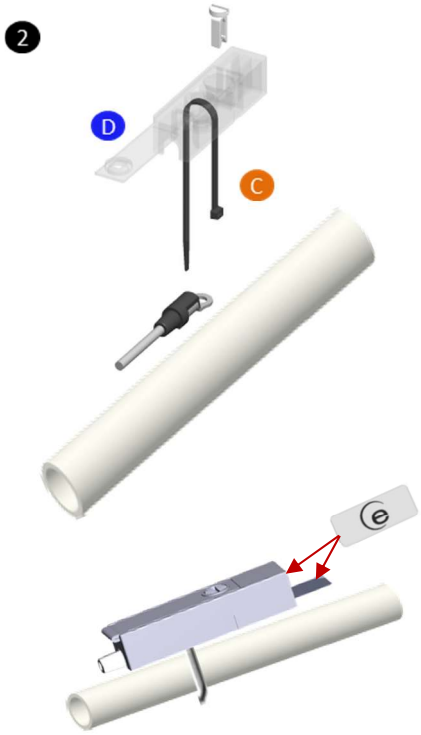


Figure 35: Adhesive seal for fastening to remote sensor housing and heating tube

Note:
Mounting the remote sensor using a cable tie is recommended primarily for very thin-walled tubes where welding assembly is not appropriate, or at mounting points where welding studs cannot be used for space reasons.
The remote sensor housing has a routing aid for fastening with a cable tie (see Figure 34). This is only accessible when the housing lock is open. If the housing lock is closed with the security seal supplied in the remote sensor set, it is not possible to insert a new cable tie into the closed remote sensor housing in case of tampering (severed cable tie)!

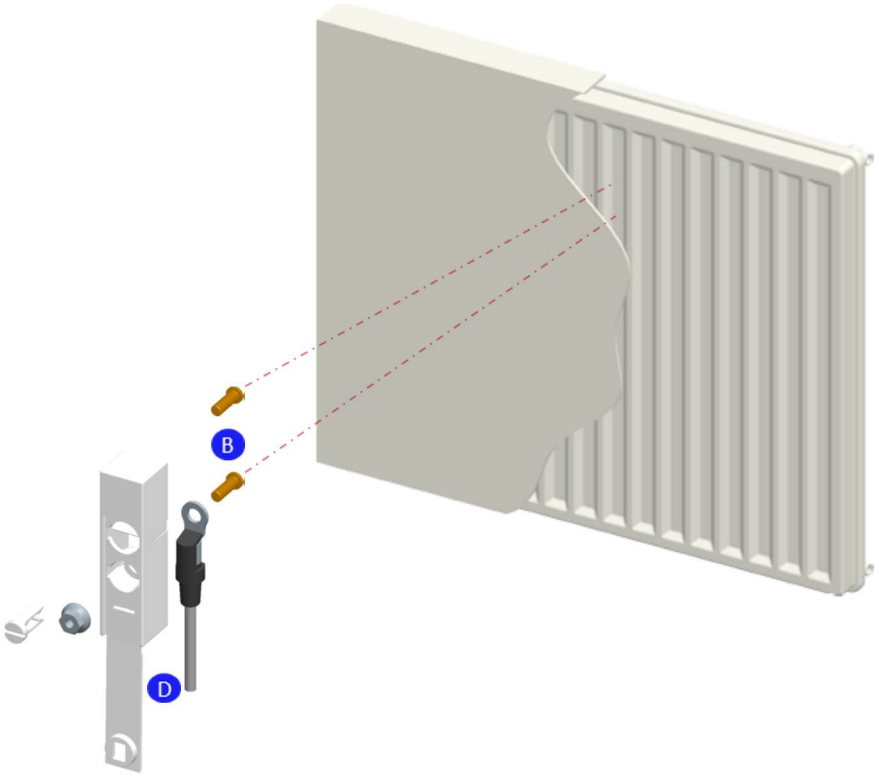
The remote sensor housing attached to the tube with a cable tie must be secured against twisting with the Engelmann adhesive seal (see Figure 35)!

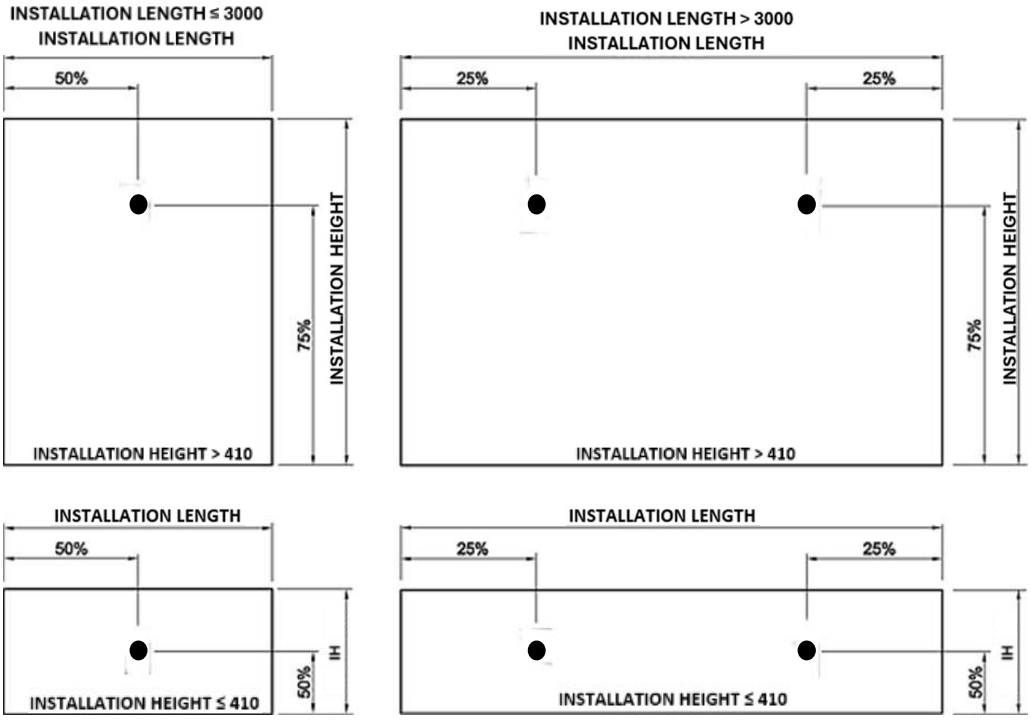
Mounting material required:

Article designation	Article number	Quantity	Note
Threaded bolt M3x10 DIN32501 B	0051200014	2	
Remote sensor complete: 2 m / 5 m D	See 5.8.5	1	Depending on the required length
Cable tie Polyamide 6.6 Standard (PA66) or Polyamide 6.6 Heat-Stable (PA66HS), width max. 2.8 mm C		1	External procurement

Mounting sheet 99-07-FF: Remote sensor welding assembly for panel radiators and others

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously





Mounting material required:

Article designation	Article number	Quantity	Note
Threaded bolt M3 B	See 5.2	2	Depending on the required length
Remote sensor complete: 2 m / 5 m D	See 5.8.5	1	Depending on the required length

Mounting sheet 99-08-FF: Remote sensor screw mounting: convector brackets

- The mounting points for the compact unit shown in the mounting sheets are to be used analogously
- Convector bracket: fastening the remote sensor with housing 1
- Convector bracket: fastening the remote sensor without housing 2

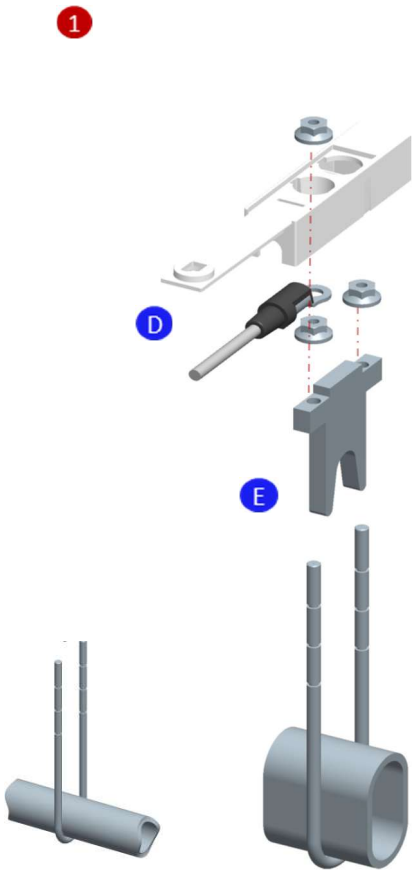


Figure 36: Mounting convector bracket with remote sensor complete

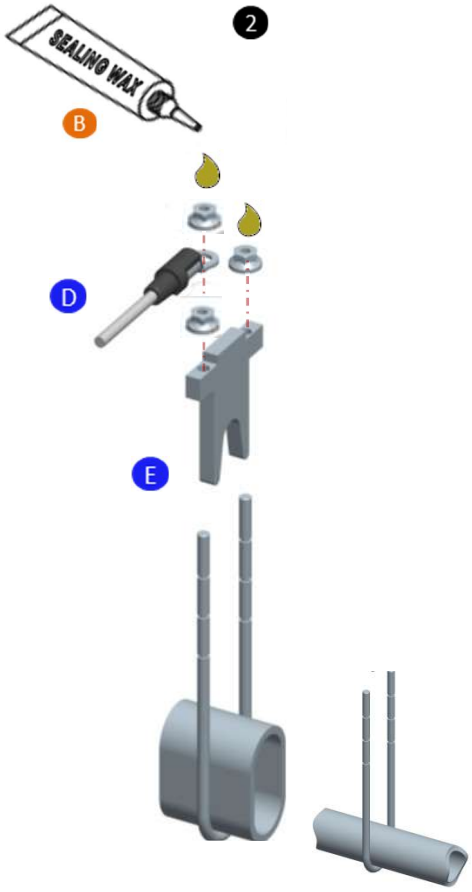


Figure 37: Mounting convector bracket with remote sensor (without housing)

Note:
The mounting of the remote sensor on a radiator using the convector bracket must be carried out completely, i.e. with the remote sensor housing (see Figure 36). If the remote sensor cannot be mounted complete with the housing (e.g. due to a lack of space), it can also be mounted without the housing (see Figure 37). However, all fastening screws that could allow tampering (disassembly or twisting of the remote sensor) must then be secured with sealing wax!

Mounting material required:

Article designation	Article number	Quantity	Note
Convector bracket complete E	Siehe 5.7	1	
Remote sensor complete: 2 m / 5 m D	Siehe 5.8.5	1	Depending on the required length
Sealing wax B		1	External procurement

Version overview:

Version number	Date	Change / Correction	Section / Mounting sheet
V 1.0	02.05.2016	First edition	
V 1.1	04.07.2016	Schematic drawing inserted: Horizontal louver radiators (welding assembly)	6-02
V 1.1	04.07.2016	Schematic drawing inserted: Vertical louver radiators (welding assembly)	6-03
V 1.1	04.07.2016	Schematic drawing modified: Radiators made of flat profile tubes with vertical tube routing	3-01
V 1.1	04.07.2016	Schematic drawing inserted: Panel radiators with other profiling with convection fins on the front (welding assembly)	1-12
V 1.1	04.07.2016	Schematic drawing modified: Horizontally profiled panel radiators with fins on the front (welding assembly)	1-09
V 1.1	11.07.2016	Schematic drawing inserted: Horizontally profiled panel radiators with front fins and cover plate (welding assembly)	1-10
V 1.1	13.07.2016	Schematic drawing modified: Sectional radiators made of aluminum	5-05-2
V 1.1	13.07.2016	Schematic drawing modified: Sectional radiators made of aluminum	5-05-3
V 1.1	13.07.2016	Figure 6 and Figure 8 modified: New aluminum heat conductor	4.1 and 4.2.1
V 1.1	14.07.2016	Version number integrated into footer	Throughout
V2.0	01.03.2025	Release	Complete
V2.0	01.03.2025	Update of chapter numbering	Throughout
V2.0	01.03.2025	New version number and date integrated into footer	Throughout
V2.0	01.03.2025	Declaration of conformity omitted	7
V2.0	01.03.2025	Section "Determining equations" moved to a separate subchapter with subheadings "The determining equation for operation in product scale mode" and "The determining equation for operation in unit scale mode"	1.4 1.4.1 1.4.2
V2.0	01.03.2025	Section "Pipe heat share" moved to subchapter "Basic sensitivity of the Engelmann heat cost allocator"	1.5
V2.0	01.03.2025	Intrayear consumption information (ICI) and conversion of consumption units into kilowatt hours (kWh)	1.6 (New)
V2.0	01.03.2025	Provision of Kc values in various applications: Engelmann Kc value table, Thermosoft2000 (Visual Therm) and WeBeS (DataSet – System WIP-HIP)	3.2.1 (New)
V2.0	01.03.2025	Mounting accessories corrected and updated on mounting sheets	Various
V2.0	01.03.2025	Numbering on profile illustrations corrected	2-02
V2.0	01.03.2025	Note on mounting of the heat cost allocator specified (note fields)	Various
V2.0	01.03.2025	Horizontally profiled panel radiators with aluminum front cover plate (screw mounting) – HM Thema flat vertical	1-06a (New)
V2.0	01.03.2025	Horizontally profiled panel radiators with aluminum front cover plate (remote sensor adhesive mounting) – HM Thema flat vertical	1-06b (New)
V2.0	01.03.2025	Flat panel radiators with water-bearing front (welding assembly) – Zehnder Plano vertical (also for Zehnder Sculptur)	1-07a (New)
V2.0	01.03.2025	Panel radiators with other profiles (welding assembly) – Kermi/Arbonia Karotherm	1-11a (New)
V2.0	01.03.2025	Bathroom radiators (towel rails) with asymmetrical structure and mounting on the IF/OF tubes not possible (screw mounting between rectangular cross tubes) – Schulte Bologna	2-06 (New)
V2.0	01.03.2025	Bathroom radiators (towel rails) with asymmetrical structure and mounting on the IF/OF tubes not possible (screw mounting between round cross tubes) – Kermi Credo Half	2-07 (New)
V2.0	01.03.2025	Bathroom radiators (towel rails) with inaccessible collector and distribution ducts and/or bent horizontal tubes (screw mounting between the cross tubes) – Arbonia Bagnotherm BO and Kermi Credo Swing	2-08 (New)
V2.0	01.03.2025	Radiators made of horizontal flat profile tubes, special shape bathroom radiators (screw mounting) – Schulte Genf	2-10 (New)
V2.0	01.03.2025	Radiators made of horizontal flat profile tubes with asymmetrical structure and mounting on the IF/OF tubes not possible, special shape bathroom radiators (welding assembly) – HSK Yenga or Zehnder Roda	2-11 (New)
V2.0	01.03.2025	Radiators made of flat profile tubes with vertical tube routing (gallery radiators) – Arbonia Arbotherm / Zehnder Excelsior / Acova-Runaco RX	3-01a (New)

V2.0	01.03.2025	Radiators made of triangular profile tubes with vertical tube routing (adhesive fastening of the remote sensor on the side of the triangular tube) – Jaga Iguano (several variants)	3-01b (New)
V2.0	01.03.2025	Radiators made of square tubes with vertical tube routing (welding assembly on the square tube) – Vasco Carrè and Kermi Decor Arte Pure	3-02a (New)
V2.0	01.03.2025	Radiators made of square tubes with vertical tube routing (screw mounting between the square tubes) – Vasco Carrè and Kermi Decor Arte Pure	3-02b (New)
V2.0	01.03.2025	Radiators made of flat profile tubes with vertical tube routing with separating disk (screw mounting between the vertical flat tubes)	3-02c (New)
V2.0	01.03.2025	Radiators made of aluminum flat profile tubes (single element) – Kermi Decor-Arte Plan Mono and Vasco Beams Mono	3-02d (New)
V2.0	01.03.2025	Radiators made of flat profile tubes with horizontal tube routing and front fins, equal-sided connection – Baufa Convecto Classic	3-10a (New)
V2.0	01.03.2025	"Radiators made of flat profile tubes, special shape bathroom radiators (welding assembly)" omitted	3-12
V2.0	01.03.2025	Convector (prefabricated convector) with fixed cover (remote sensor mounting): Data and illustrations for Jaga Mini added	4-06
V2.0	01.03.2025	Convector (prefabricated convector) Vama, Helitherm (remote sensor mounting) (fastening with Engelmann convector bracket)	4-07a (New)
V2.0	01.03.2025	Convector (prefabricated convector) with fixed cover (compact unit) – Jaga Mini	4-10 (New)
V2.0	01.03.2025	Convector (underfloor convector) – Convector WK-P and similar	4-11 (New)
V2.0	01.03.2025	Convector (underfloor convector) – Kampmann/Möhlenhoff	4-12 (New)
V2.0	01.03.2025	Steel sectional radiators with front plates (screw mounting) – Perr Perrlux	5-01-5 (New)
V2.0	01.03.2025	Cast sectional radiators – Radiators with struts (screw mounting)	5-03-6 (New)
V2.0	01.03.2025	Schematic drawing modified: Mounting sheet 5-05-1 marked as special mounting	5-05-1
V2.0	01.03.2025	Radiator made of vertical tubes (screw mounting)	6-01 (Update)
V2.0	01.03.2025	Radiators made of vertical tubes (screw mounting)	6-01a (New)
V2.0	01.03.2025	Radiators made of vertical tubes (round or oval tube profile), remote sensor mounting (welding assembly) – Hudson Reed Keida	6-04 (New)
V2.0	01.03.2025	Change of mounting point from the side edge of the rib to the upper edge of the rib (easier to mount)	7-03

Notes: