



Electronic Heat Cost Allocators

WHE46...

Electronic units for heat cost allocation through acquisition of the amount of heat emitted by radiators. Wireless remote readout. Available as single- or double-sensor devices.

Use

The heat cost allocator WHE46 is used as a component of the Q AMR system to allocate heat costs to the various consumers based on actual heat consumption. Major fields of application are heating plants with central heat generation where heating energy is supplied to different individual users.

This type of plant is used in:

- Multifamily homes
- Office and administrative buildings or similar premises

Typical users are:

- Private building owners
- Property associations
- Building service companies
- Housing estate agents

The heat cost allocator is suited for use with the following types of radiators:

- Sectional radiators
- Tube radiators
- Panel radiators with horizontal or vertical water flow
- Pipe register radiators
- Convectors
- Mean design temperatures for heating medium of 35 °C to 105 °C (depending on the measuring principle used)

Functions

- Determining the amount of heat emitted by a radiator based on the measured and rated radiator temperature
- Cumulation of consumption since the last set day
- Previous year's consumption
- Remote wireless readout
- Selection of date metering is started (parameter settings by the customer)
- Transmission of consumption values to the WTT16...network nodes of the Q AMR system
- Protection against tampering: Display and error message to the central unit in case the devices were opened by unauthorized people
- WHE467... version can be programmed via IrDA (optoelectronic) interface, 460... version in combination with WHZ4.PO
- Standard delivery status is SLEEP mode. The hca awakes and transmits installation telegrams, when the device is mounted on the heat conductor.

Type summary

	<i>Type of device</i>	<i>Type reference</i>
Single-sensor measuring principle	heat cost allocator, compact device	WHE460
	heat cost allocator, compact device with IrDA interface	WHE467
	heat cost allocator, remote sensor device with IrDA interface	WHE467.FR
Double-sensor measuring principle	heat cost allocator, compact device	WHE460Z
	heat cost allocator, compact device with IrDA interface	WHE467Z
	heat cost allocator, remote sensor device with IrDA interface	WHE467Z.FR

Technical design

Measuring principle

The heat cost allocator is delivered either as a single- or double-sensor device. The following rating factors are factory set:

$$K_{cHF} = 1.28 \quad K_c = 2.50 \quad K_Q = 1000 \quad \text{Exp.} = 1.15$$

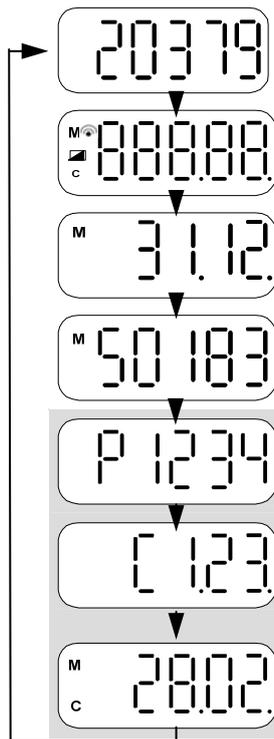
The standard setting for the set day is December 31. If the heat cost allocator does not operate with a product scale, the consumption value (CV) must be calculated from the reading (RV) and the radiator-specific K-values (K_c , K_{cHF} and K_Q) prior to billing.

$$\text{Single-sensor device} \quad CV = 7.529 * 10^{-4} * RW * K_Q * K_{cHF}^{1.15}$$

$$\text{Double-sensor device} \quad CV = 3.486 * 10^{-4} * RW * K_Q * K_c^{1.15}$$

Display

Display loop



The display contents changes cyclically and comprises the following data:

Current consumption

Segment test (flashing)

Key day date upon parameterization for annual readout or
Date of last end of month upon parameterization for monthly readout

Consumption value upon parameterization for annual readout or
consumption value of last end of month upon parameterization for monthly readout

k_Q value
corresponds to radiator rated output in W

k_C value
evaluation factor taking into account different
thermal coupling of the temperature sensors

These display steps only become visible
when the WHE4xx was equipped with
product scale.

Date of target key day

Appears only if the date of the target key
day differs from the date of the key day.

Sleep mode



In Sleep mode, the WHE4xx does not count consumption values. This allows the device, for example, to be transported in summer without continuing counting. The standard counting mode is started and the display loop set by mounting the WHE 4 on the heat conductor.

Special displays



Start day - The device will not count until the start date arrives.



Error display
only when a serious error occurs The device no longer changes the display.



IrDA communication becomes possible again in the following month



Device service life of 10 years has been exceeded.

Accessories

Installation gauge and other accessories

<i>Accessory</i>	<i>Type reference</i>
Installation gauge	WHZ2.ML
Spare seal for WHE30 / WHE46...	U12130-2004
Bezel for WHE46...	WHZ4.B
IrDA adapter for WHE4 without IrDA interface	WHZ4.PO

All devices of the WHE46... family are supplied complete with seal.

Installation kits

The following installation kits comprise all available components. Select the appropriate components according to the type of installation. Installation kits are available for:

- Panel radiators
- Ribbed radiators
- Convectors
- Tube radiators
- Finned radiators
- Aluminum radiators

Installation kit for panel radiators

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Heat conductor	Heat conductor 4-1	50 pcs	F12130-2001/4-2
Slotted round nut	M3	500 pcs	F12102-2019
Welding bolt	M3 × 6 mm	100 pcs	02/572
Welding bolt	M3 × 10 mm	100 pcs	02/574
Welding bolt	M3 × 15 mm	500 pcs	F12102-2041
Welding bolt (aluminum)	M3 × 16 mm	1,000 pcs	F12102-2041/1
Shank nut (hexagon nut)	M3 × 3 mm	100 pcs	FZ253-210
Shank nut (hexagon nut)	M3 × 6 mm	1,000 pcs	FZ253-200
Shank nut (hexagon nut)	M3 × 9.5 mm	100 pcs	FZ253-220
Corrugated-head nut	M3	1,000 pcs	FZ253-230

Installation kit for ribbed radiators

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Heat conductor	Adapter 2/55 mm	25 pcs	F12105-2061
Trapeze slide nut 35	35 mm	50 pcs	FZ253-300
Trapeze slide nut 50	50 mm	50 pcs	FZ253-310
Trapeze slide nut 65	65 mm	50 pcs	FZ253-320
Screw	M4 × 35	1,000 pcs	F12105/2084
Screw	M4 × 50	500 pcs	F12105/2085
Screw	M4 × 70	500 pcs	F12105/2086

Use the corresponding heat conductor and the appropriate trapeze slide nut in accordance with installation requirements.

Installation kit for convectors, remote sensor installation

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Complete convector clamp (clamp, counter-support, 2 slotted nuts, pull-off nut)		1 pce	F12105-1051
Welding bolt	M3 x 6	100 pcs	02/572
Slotted round nut	M3	500 pcs	F12102-2019

Attach the remote sensor to the previously installed convector clamp by means of the pull-off nut.

Installation kit for finned radiators and similar models

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Heat conductor	Heat conductor 4-1	50 pcs	F12130-2001/4-2
Complete mounting kit		1 pce	WHZ2.FWE

Installation kits for tubular radiators

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Heat conductor	Heat conductor 4-1	50 pcs	F12130-2001/4-2
Heat conductor	Adapter 2/55 mm	50 pcs	F12105-2061
Slide nut	36 mm	1 pce	FZ253-130
Slide nut	45 mm	1 pce	FZ253-120
Screw	M4 x 35	1000 pcs	F12105/2084
Screw	M4 x 50	500 pcs	F12105/2085
Screw	M4 x 70	500 pcs	F12105/2086
Filler piece		10 pcs	F12130-2016

Installation kits for aluminum radiators

<i>Parts</i>	<i>Variants</i>	<i>Packaging unit</i>	<i>Type reference</i>
Heat conductor	Heat conductor 4-1	50 pcs	F12130-2001/4-2
2 x square pin		50 pcs	FZ253-160
2 x screw	M3 x 25	500 pcs	F12105-2076
2 x self-tapping screw	C 4.2 x 25 C (in place of square pin)	500 pcs	F10102-2026

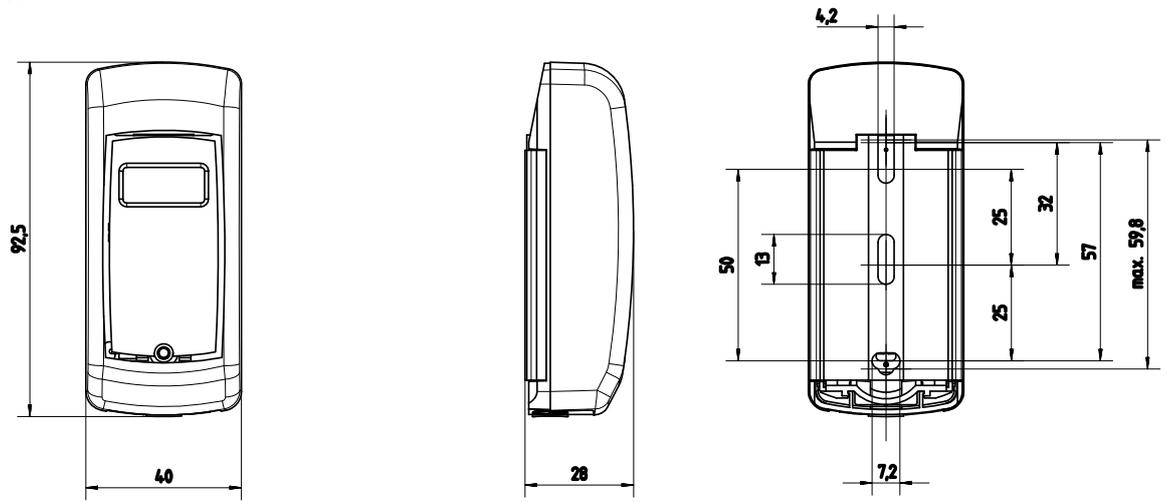
Use either 2 self-tapping screws C 4.2 x 25 or 2 square pins with the appropriate screws M 3 x 25 in accordance with mounting requirements.

General data

Technical data	Measuring principle	single-sensor or double-sensor
	Operation range ¹⁾	
	Single-sensor device	$t_{\min,m} = 55\text{ °C}$, $t_{\max,m} = 105\text{ °C}$
	Double-sensor devices	$t_{\min,m} = 35\text{ °C}$, $t_{\max,m} = 105\text{ °C}$
	Start of metering	(t_z relates to the determined heating medium temperature)
	Single-sensor devices	$t_z \geq 30\text{ °C}$ (at $t_L = 20\text{ °C}$) unprogrammed $t_z \geq 28\text{ °C}$ (at $t_L = 20\text{ °C}$) programmed
	Double-sensor devices	$t_z - t_L \geq 5\text{ K}$
	¹⁾ Definitions as per DIN EN 834	
	$t_{\min,m}$	Lowest mean design temperature for heating medium at which the heat cost allocator may be used. For single-pipe heating systems, this is the mean design temperature of the heating medium for the last radiator in the row
	$t_{\max,m}$	Highest mean design temperature for the heating medium at which the heat cost allocator may be used
	t_z	Mean temperature of heating medium for the radiator at which the registering mechanism of the heat cost allocator starts up
	t_L	Reference air temperature
	t_m	Mean heating medium temperature
Dimensions	92.5 x 40 x 28 mm	
Life	10 years plus 15 months reserve	
Display	LCD, 5 digits with symbols	
Weight	120 g	
Frequency	868 MHz	
Transmission power	< 1 mW	
Standards	Heat cost allocator for acquiring the consumption of room heating surfaces	EN 834
	Electromagnetic compatibility	
	Immunity	ETSI EN 301 489 –1 V1.4.1 (2002-08) ETSI EN 301 489 –3 V1.4.1 (2002-08) EN 61000-6-2:2001
	Emissions	EN 300 220 –1 V1.3.1 (2000-09) EN 300 220 –3 V1.1.1 (2000-09) EN 61000-6-3:2001
	Safety of IT equipment	EN 60950
	CE-Conformity	Directive 1995/5/EC (R&TTE Directive) Radio and Telecommunications Terminal Equipment Act (FTEG)

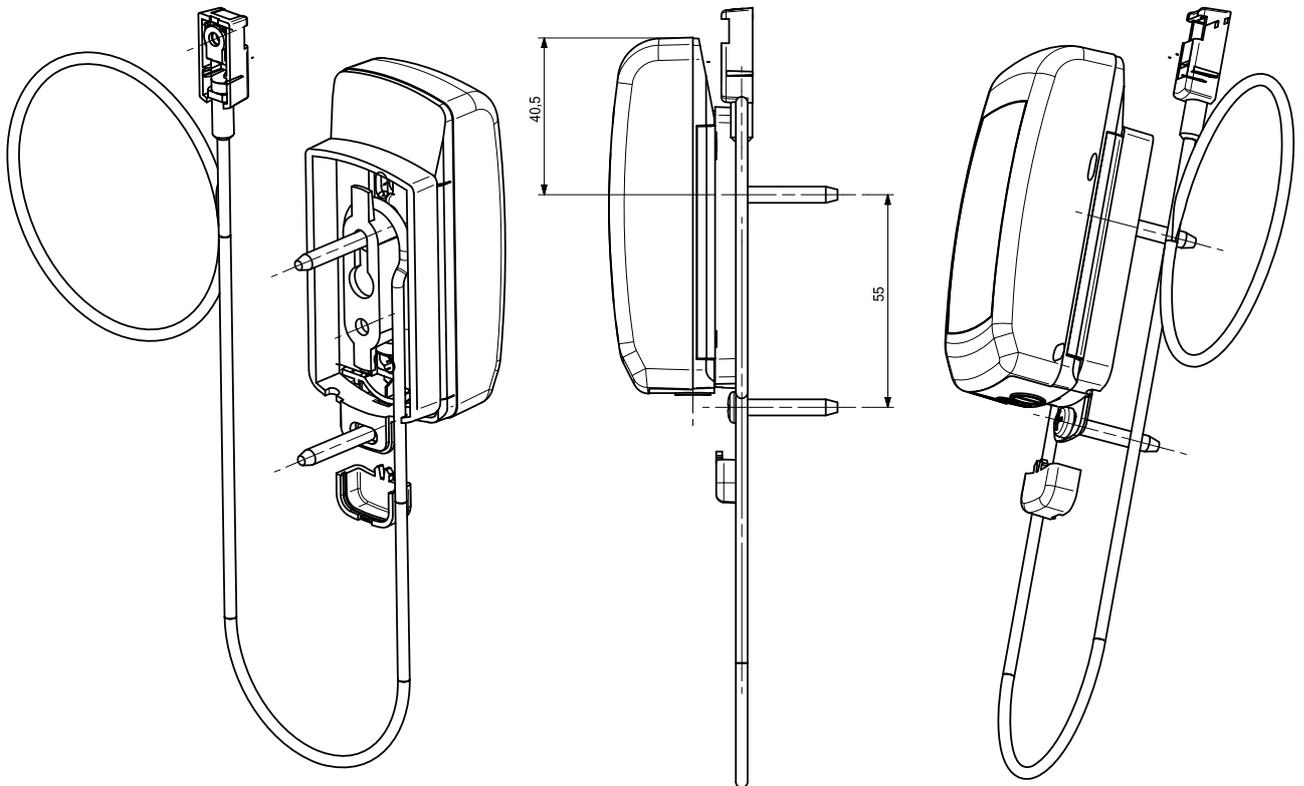
Dimensions

Compact device



Dimensions in mm

Remote sensor device



Dimensions in mm

The information contained in this Data Sheet only gives general descriptions and general technical features which, in the case of specific applications, may not necessarily apply, or which may change due to further development of the product. Technical features are legally binding only if expressly agreed upon at the time a contract is concluded.

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