

Electronic heat cost allocator

WHE5..



Electronic device for heat cost allocation based on measuring the heat output from radiators.

- With radio interface for remote readout or without communication
- Available as a two-sensor device or with remote sensor
- Parallel transmission of AMR and walk-by data telegrams
- Communication in S-mode or C-mode (optional)

The electronic heat cost allocator WHE5.. is designed for decentral installation and is used when heating costs are allocated to several consumers based on actual consumption. The temperatures are acquired by 1 (radiator) or 2 sensors (radiator and room temperature). In two-sensor mode, the actual temperature difference between room temperature and radiator temperature is acquired, while in one-sensor mode, a constant value for the room temperature is predefined.

These measured values are used as the basis for calculating consumption. Main area of application is in central heating systems, where the heating energy is used individually by the different consumers.

The WHE5.. can be operated as a one- or two-sensor measuring system with product or unit scale.

Such systems are used in e.g.:

- Apartment buildings
- Office and administration buildings

Typical users:

- Meter reading service companies
- Housing industry and housing associations
- Building service companies and property management

The heat cost allocator is used in connection with the following types of radiators:

- Ribbed radiators
- Tubular radiators
- Panel-type radiators with horizontal or vertical water flow
- Radiators with internal tube register
- Convectors

Compatibility

The WHE542.. replaces the WHE55.. and WHE56.. In addition to improved energy management, the WHE542.. can be operated in different RF modes and is compatible with the WHE55.., WHE56.., WHE3.. and WHE4... The existing heat conductors of the WHE3.. and WHE4.. device families can be reused with the WHE5... The non-communicating WHE50.. (B-series) is compatible with the WHE3.. and WHE50.. (A-series).

Note

The WHE2.. cannot be replaced by the WHE5.., since both the measuring algorithm and the RF transmitter fitted in the heat cost allocator (with WHE26) are not compatible.

One- and two-sensor measuring system

The joint use of different device types in one and the same property is only permitted as long as they all use a standard measuring system and have a standard measuring algorithm.

Two-sensor heat cost allocators can be operated in one- or two-sensor mode.

Restrictions

Electronic heat cost allocators cannot be used in connection with steam heaters, fresh-air radiators, floor heating systems, ceiling heating elements or flap-controlled radiators.

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

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

Depending on the type of communication, the heat cost allocators are classified as follows:

- Without communication interface
- With optical communication interface (optional)
- With RF interface

Without communication interface

Heat cost allocators without communication interface WHE50.. must be read visually on site and the measuring results must be manually recorded. They are especially suited for systems that do not require complex data evaluations or particularly fast readout processes.

With RF interface

Heat cost allocators communicating via radio transmit parallel walk-by and AMR data telegrams.

Walk-by

The heat cost allocators are locally read via RF. They transmit consumption data at the set reading time. The meter-reader collects the radio telegrams with the mobile data collector (WTZ.MB – only S-mode telegrams) and a netbook/tablet with the associated software (ACT46.PC). The meter-reader does not have to enter the user's residence or office.

In the case of smaller plants, the data can usually be collected from outside the building.

AMR

The heat cost allocators transmit the current consumption data in cycles to the network nodes. They automatically collect the data of all integrated heat cost allocators and store them. The customer can then read out all consumption data of a plant from a remote location.

Readout parameters

The heat cost allocators WHE42.. transmit the following parameters via RF:

- Device number (8 digits)
- Type of device/software version
- Time of day/date
- Error status
- Error date
- Current consumption
- Due date
- Due date value
- Counter reading at end of last month
- 13 monthly values (only for walk-by)

Tampering

The heat cost allocator is equipped with a factory installed lead seal.

Any unauthorized device opening is registered, shown on the display (WHE50..) and transmitted via RF (WHE42..).




















Function control

The heat cost allocator performs a self-test every 4 minutes. An error message "Err x" is displayed if the error lasts for 5 consecutive measuring cycles (20 minutes).

After the error has been registered and shown on the display, the device stops measuring. The date the error occurred is stored internally.






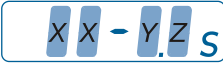

Display device type

Device states, consumption values and measuring system information are displayed in a loop.

Display loops in normal mode		
		
Current consumption		2 S
		
Display test: Everything on		0.5 S
		
Display test: Everything off		0.5 S
		
Due date For example, December 31		2 S
		
Due date value		5 S
		
Checksum		2 S
		
<i>These displays steps are only visible if a product scale is added to the WHE5.:</i>		
<i>kQ value</i> <i>corresponds to the radiator rated capacity in W</i>		1 S
		
<i>kC value</i> <i>Evaluation factor that consider the thermal coupling of the temperature sensors</i>		1 S
		
Variable display		1 second, see "Overview variable displays"
		








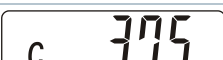
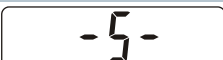



Display sleep mode

The devices are delivered ex factory in sleep mode. Measuring operation is inactive.

Display loops sleep mode		
		
Sleep mode Measuring operation inactive		2 S
		
Due date For example, December 31		2 S
		
Variable display		2 second, see "Overview variable displays"
		

Display loops sleep mode	
X X	FS = Code for walk-by and AMR (S-mode) FC = Code for walk-by and OMS (C-mode) AL = Algorithm, no RF system available
Y	3 = Code for WHE3x algorithm 4 = Code for WHE4x algorithm
Z	1 = Code for one-sensor measuring system 2 = code for two-sensor measuring system

Special displays

Error messages			
"Err 1" appears constantly. All other error messages are displayed in quick succession alternating with consumption values.		0.5 S	
Consumption display suppressed			
Is displayed in the event of an error in place of invalid consumption values, depending on the setting made.		0.5 S	
End of battery life			
Is displayed after the end of service life, alternating with the consumption values, depending on the setting made.		0.5 S	
Tampering or housing opening			
Is displayed in the event of tampering either as clear text, alternating with the consumption values, or by the indicator "c" shown discretely on all displays, depending on the setting made.		0.5 S	
Example: Display "current value" with "c".		0.5 S	
	Discrete		
Data interface (IrDA close range interface)			
This display indicates an active close-range interface.		10 S	
Radio system activated (AMR/walk-by) S-mode: Walk-by and AMR C-mode: Walk-by and OMS			
The transmission of installation telegrams is indicated on this display. Display sequence: InSt8, InSt7, ... InSt1		30 S	
Commissioning			
This display appears after snapping the device onto the mounting plate. Then, the display changes to the normal mode display loop.		3 S	
Remote sensor identification			
The meter has detected a remote sensor and adjusts its measuring behavior accordingly.		3 S	

Measuring principle

The heat cost allocator is delivered as a one- or two-sensor device. The following valuation factors are set when the units are delivered:			
$K_{CHF} = 1.28$	$K_c = 2.50$	$K_Q = 1000$	Exp. = 1,15
If the heat cost allocator does not work with a product scale, the consumption value (VW) must be calculated before billing, based on the readout value (AW) and the radiator-specific K-values (K_c , K_{CHF} und K_Q).			
One-sensor device	$VW = 7.529 * 10^{-4} * AW * K_Q * K_{CHF}^{1.15}$		
Two-sensor device	$VW = 3.486 * 10^{-4} * AW * K_Q * K_c^{1.15}$		
The respective K_c values can be determined by using the K_c value database.			

Default parameters

The following parameters are set when the device leaves the factory:	
Zeroing after the due date	Yes
Counting progress even after a device opening was identified	
Opening display as clear text	Yes
Conversion of the consumption values is not performed if the device parameters are changed	
The following parameters can be set:	
Type of sensor	Two- to one-sensor measuring system (one time)
K_c/K_Q	Valuation factors for calculating the heat output of a radiator (depending on the device's algorithm and the sensor type)
Next due date	Day the annual value is stored
Device name/device password	Device access data to prevent unauthorized device access
RF mode	S- or C-mode (default: S-mode)

Special functions

Continuous counting (without zeroing)
The meter status is not "zeroed" at the due date, but continues to count like a roller type counter. As a default, this option is set to "No" (counter reading will be reset to "0" at the due date)
Display battery warning
The heat cost allocator features service life monitoring. An optical message "bat00" is shown on the display if the battery service life has expired
Display meter readings in case of errors
The units accumulated until the heat cost allocator fails will be displayed on the heat cost allocator as a counter reading. The option is set to "No" by default, i.e. the consumption values are no longer displayed as soon as an error is registered. You can read, however, to determine whether to use the values (or not)
Opening display as clear text
An identified device opening is displayed as "c OPEN", alternating with the current value or the value of the previous year (old value) as a clear text message on the display of the heat cost allocator. If this option is set to "No", a device opening can be identified by the display of the icon "c" on all displays (discrete display)
Summer switch-off
Summer switch-off is activated by setting a date for the start and the end of summer switch-off. If active, the heat cost allocator records no consumption values during this period of time

RF features in S-mode

Features of the heat cost allocators in S-mode:		
RF system	Parallel transmission of data telegrams	<ul style="list-style-type: none"> • AMR • Walk-by
Transmission delay (offset)	<ul style="list-style-type: none"> • Delay for sending out telegram after the due date • Delay in the transmission of telegrams after the start of the month in days (default = 0 days) 	
Days with no transmission	A maximum of 2 weekdays (Friday, Saturday or Sunday) can be defined. At least 1 weekday must be set (default = Sunday)	

Transmission behavior		
AMR telegrams	Every 4 hours, 24 hours a day, 365 days a year Only data telegrams or consumption and 13 statistics values	
Walk-by telegrams	Every 128 seconds, 10 hours a day (from 08:00 to 18:00 o'clock)	
	Reading mode	Monthly: 4 reading days from each first day of the month Yearly: 48 reading days, once a year after the due date
	Days with no transmission	Monthly: Saturday and Sunday Yearly: Sunday
	Only current consumption values and 13 statistics values	

RF features in C-mode

Features of the heat cost allocators in C-mode:		
RF system	Parallel transmission of data telegrams	<ul style="list-style-type: none"> • OMS • Walk-by
	Increased radio power (10 dBm)	

Transmission behavior	
OMS telegrams	Every 7.5 minutes, 24 hours a day, 365 days a year Only current consumption values
Walk-by telegrams	Every 112 seconds, 10 hours a day (from 08:00 to 18:00 o'clock) 365 days a year Only current consumption values and 13 statistics values

Change of mode

Using the ACT50-HCA (V2.1 or higher), the infrared reading head WFZ.IRDA-USB and the programming adapter HCAPH001 001, a change from S-mode to C-mode, and vice versa, can be made at any time.

Types

The following types of heat cost allocators are available:

WHE without communication interface		
Options	Stock No.	Type
Two-sensor device, battery warning On summer switch-off between 06/01 and 08/31, due date 12/31, S-mode	S55562-F101	WHE502-D10

WHE.. with RF interface (AMR + walk-by)		
Options	Stock No.	Type
Two sensor, due date 12/31 Walk-by reading mode: Monthly, S-mode	S55562-F126	WHE542-0001S
Two-sensor device, battery warning On Summer switch-off between 06/01 and 08/31, due date 12/31 Walk-by reading mode: Annually, S-mode	S55562-F127	WHE542-D100S
Two-sensor device, battery warning On Summer switch-off between 06/01 and 08/30.09, due date 12/30.09 Walk-by reading mode: Monthly, S-mode	S55562-F128	WHE542-D291S

Scope of delivery

The heat cost allocators are delivered in packages of 50 units (1 packaging unit).

Note

The heat cost allocators are delivered without instructions and without heat conductor.

Accessories

Component		
Stock No.	Stock No.	Type
Threaded hoop (pipe 18 to 30 mm)	JXF:FKT0014	FKT0014
Threaded hoop (pipe up to 17 mm)	JXF:FKT0004	FKT0004
Shank nut M3 x 3	JXF:FNM0002	FNM0002
Shank nut M3 x 6	JXF:FNM0003	FNM0003
Shank nut M3 x 9.5	JXF:FNM0001	FNM0001
Clamping sleeve special radiator	JXF:FKM0002	FKM0002
Clamping bracket (pipes TE 36 mm)	JXF:FKT0015	FKT0015
Clamping bracket (pipes TE 46 mm)	JXF:FKT0016	FKT0016
Clamping bracket shortened	JXF:FKT0009	FKT0009
Clamping bracket trapezoidal 35 mm	JXF:FKT0018	FKT0018
Clamping bracket trapezoidal 50 mm	JXF:FKT0019	FKT0019
Clamping bracket trapezoidal 65 mm	JXF:FKT0020	FKT0020
Expanding bracket for lamella-type radiator	JXF:FKA0004	FKA0004
Square bolt 4.5 mm with cross pin	JXF:BOZ4002	BOZ4002
Square bolt 6 mm with cross pin	JXF:BOZ4003	BOZ4003
Square bolt 12 mm with cross pin	JXF:BOZ4004	BOZ4004

Installation parts		
Stock No.	Stock No.	Type
Spacer sleeve	JXF:FKT0010	FKT0010
Spacer	JXF:FKA0013	FKA0013
Threaded bushing	JXF:FKA0012	FKA0012
Clamping piece (threaded hoop 17 mm)	JXF:FKA0003	FKA0003

Installation parts		
Stock No.	Stock No.	Type
Clamping piece (threaded hoop 18 to 30 mm)	JXF:FKA0008	FKA0008
Installation plate for remote sensor	JXF:FKA0009	FKA0009
Mounting plate standard	S55563-F115	FKA0017
Mounting plate wide	JXF:FKA0022	FKA0022
Prism	JXF:FKA0001	FKA0001
Wall bracket	JXF:FKK0044	FKK0044
Contact screw	JXF:FKA0010	FKA0010
Contact screw long	JXF:FKA0011	FKA0011

Standard parts		
Stock No.	Stock No.	Type
Self-tapping screw B 2.9 x 13	JXF:FNR0008	FNR0008
Screw B 3.9 x 45	JXF:FNR0007	FNR0007
Cross-slot screw M4 x 30	JXF:FNR0003	FNR0003
Cross-slot screw M4 x 40	JXF:FNR0004	FNR0004
Cross-slot screw M4 x 50	JXF:FNR0005	FNR0005
Cross-slot screw M4 x 70	JXF:FNR0006	FNR0006
Welding stud M3 x 8	JXF:FKT0013	FKT0013
Welding stud M3 x 12	JXF:FKT0011	FKT0011
Welding stud M3 x 15	JXF:FKT0012	FKT0012
Hexagon nut M4	JXF:FNM0004	FNM0004
Self-locking nut with serrated bearing M3	JXF:FNM0005	FNM0005

Other accessories		
Stock No.	Stock No.	Type
Dowel 6 mm	JXF:FNU0001	FNU0001
Remote sensor set 1.5 m	JXF:HCAIK010 0S1	HCAIK010 0S1
Remote sensor set 2.5 m	JXF:HCAIK010 0S2	HCAIK010 0S2
Remote sensor set 5.0 m	JXF:HCAIK010 0S5	HCAIK010 0S5
Lead seal blue	JXF:FKK0041	FKK0041
Cable duct white	JXF:FOZ0001	FOZ0001
Snap-on panel	JXF:FKK0034	FKK0034
Installation template	JXF:HCAIP001001	HCAIP001001
ERGO universal instant glue 3g	JXF:FSS0007	FSS0007
Installation aid (convector)	JXF:FKT0017	FKT0017

Programming and readout accessories		
Stock No.	Stock No.	Type
Readout and parameterization software	JXF:ACT50-HCA	ACT50-HCA
Programming adapter	JXF:HCAPH001001	HCAPH001001
Infrared read head with USB interface	JXF:WFZ.IRDA-USB	WFZ.IRDA USB
Mobile data collector set (for S-mode telegrams only)	JXF:WTZ.WBSET-2/PC	WTZ.WBSET-2/PC
PC RF module (only S-mode telegrams)	JXF:WTZ.RM	WTZ.RM

System Manual

The System Manual is available in the following languages:	
German	CE2M2886de
English	CE2M2886en
Italian	CE2M2886it

Related documents such as environmental declarations, CE declarations, etc., can be downloaded at the following Internet address:

<http://siemens.com/bt/download>

Notes

Engineering

- The heat cost allocator is designed for wall mounting
- Install the device in accordance with the System Manual
- Observe the permissible ambient conditions
- The heat cost allocator must not be subjected to dripping water

Note

For information about project planning and installation, please refer to the System Manual.

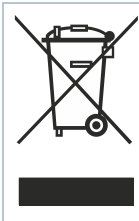
Installation

Attach the heat cost allocator to each radiator with the appropriate mounting materials (listed under accessories).

Maintenance

The devices are maintenance-free.

Disposal



The device is considered an electronics device for disposal in terms of European Directive 2012/19/EU and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.
- Dispose of empty batteries in designated collection points.

Warranty

Technical data on specific applications are valid only together with Siemens products listed under "Equipment combinations". Siemens rejects any and all warranties in the event that third-party products are used.

Power supply	
Battery type	3 V lithium battery
Battery service life	Typically 10 years

Functional data	
RF:	
Radio frequency	868 MHz with 1% duty cycle
Transmission power:	
• S-mode	2.5 dBm (typically)
• C-mode	7.3 dBm (typically)
Radio protocol	Wireless M-bus as per EN 13757-4
Measuring principle:	
One- or two-sensor devices	
Field of application ¹⁾ :	
• One-sensor WHE3x algorithm	$t_{min,m} = 55^{\circ}\text{C}$, $t_{max,m} = 105^{\circ}\text{C}$
• One-sensor WHE4x algorithm	$t_{min,m} = 55^{\circ}\text{C}$, $t_{max,m} = 105^{\circ}\text{C}$
• Two-sensor WHE3x algorithm	
– Standard scale:	$t_{min,m} = 48^{\circ}\text{C}$, $t_{max,m} = 105^{\circ}\text{C}$
– Scaled:	$t_{min,m} = 35^{\circ}\text{C}$, $t_{max,m} = 105^{\circ}\text{C}$
• Two-sensor WHE4x algorithm	$t_{min,m} = 35^{\circ}\text{C}$, $t_{max,m} = 105^{\circ}\text{C}$
Start of metering: (t_z refers to the temperature of heating medium determined)	
• One-sensor devices	$t_z \geq 30^{\circ}\text{C}$ (at $t_L = 20^{\circ}\text{C}$) unevaluated $t_z \geq 28^{\circ}\text{C}$ (at $t_L = 20^{\circ}\text{C}$) evaluated
• Two-sensor devices	$t_z - t_L \leq 5\text{ K}$
¹⁾ Definitions according to DIN EN 834: $t_{min,m}$: Lowest mean design heating medium temperature at which the heat cost allocator may be used. With single-tube heating systems this is the mean design heating medium temperature of the last radiator in the line $t_{max,m}$: Highest mean design heating medium temperature at which the heat cost allocator may be used t_z : Mean heating medium temperature of the radiator at which the counter of the heat cost allocator starts up t_L : Reference air temperature t_m : Mean heating medium temperature	

Protective data	
Protection class	III as per EN 61140
Housing	IP 43 to EN 60529

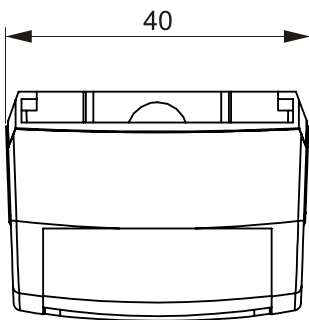
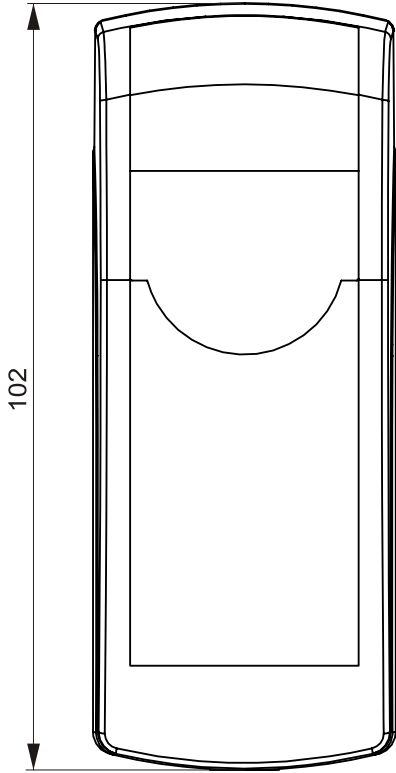
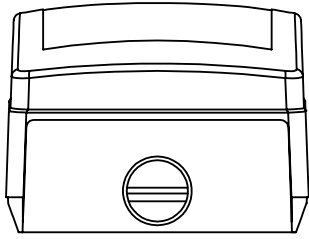
Ambient conditions	Operation	Transport	Storage
	EN 60721-3-3	EN 60721-3-2	EN 60721-3-1
Climatic conditions	3K4	2K3	1K3
Temperature	5...70 °C	-25...70 °C	-5...45 °C
Humidity	<95% r.h.		
Mechanical conditions	3M2	2M2	1M2
Maximum altitude	No data		

Norms and standards	
Product norm	DIN EN 834 Heat cost allocator to acquire consumption data for room heating areas
EU Conformity (CE)	CE2T2886xx ¹⁾
¹⁾ Documents can be downloaded at http://www.siemens.com/bt/download	

Environmental compatibility	
Environmental Declaration CE2E2886xx ¹⁾ contains data on environmental-compatible product design and assessment (RoHS compliance, compositions, packaging, environmental benefits and disposal)	
¹⁾ Documents can be downloaded at http://www.siemens.com/bt/download	

Material	
Dimensions	40 x 102 x 31 mm (W x H x D)
Sensor cable length	2.5 m
Device weight packed with attachments	58 g
Housing material	PC-ABS
Housing colors	RAL 9016 traffic white

Dimensions



A6V_6229_M01

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