

Metering

Electronic heat cost allocators

WHE5..., WHE6..



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

- With radio interface for remote read out or optical interface for on-site read out
- Available as a two-sensor device or with remote sensor
- Communication in S-mode or C-mode
 - Parallel transmission of AMR and walk-by telegrams
 - OMS compliant AMR telegrams in C-mode
- Encrypted communication
 - Data transmission as per OMS security profile with AES-128 encryption to Security mode 5 (Standard) or Security mode 7 (upon request)

Application

The electronic heat cost allocators WHE5.. and WHE6.. are designed for decentralized installation and used when heating costs must be allocated to several consumers based on actual consumption. The main areas of application are in central heating systems, where heating energy is used individually by the different consumers.

Such systems are used in e.g.:

- Multi-family homes
- Office and administrative building

Typical users:

- Service and billing providers
- Housing industry and housing cooperatives
- Building service companies and real estate agencies

The heat cost allocator is used together 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 and bathroom radiators

Limitations

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.

For combined valves and flap-controlled radiators, measuring devices may only be installed if the flap control unit is removed or disabled in the "open" position.

The electronic system must be removed or disabled on convectors where an electric fan varies output or towel heaters with an electric heating cartridge, to install electronic heat cost allocators.

Functions

The heat cost allocators are classified as follows based on type of communication:

- With optical communication interface (optional)
- With RF interface

With optical communication interface

Heat cost allocators with an optical communication interface can be read out on site using the mobile readout tool ¹. The data can be archived for later evaluation.

With RF interface

Heat cost allocators that communicate via wireless, send:

- Parallel AMR and walk-by data telegrams in S-mode or C-mode (does not apply to Security mode 7). AMR telegrams comply with OMS in C-mode.
- OMS telegrams OMS telegrams can be received by all OMS-compatible receivers.

Walk-by

The heat cost allocators are read locally via wireless. They transmit consumption data at the set reading time. The reader collects the RF telegrams using a mobile readout tool ¹. 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.

¹ Mobile readout tool WTT726-FE7300 and Readout and parameterization app ACT60 Metering'

Additional information on the 'ACT60 Metering' readout and parameterization app is available at: Product documentation [► 13].

AMR

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

Readout parameters

The heat cost allocators transmit the following parameters via RF:

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

Tampering

Heat cost allocator are equipped with a factory installed lead seal.

Any unauthorized device opening is registered, listed on the display and transmitted via radio (WHE5.. / WHE6..).

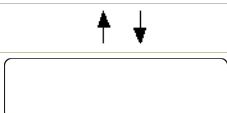
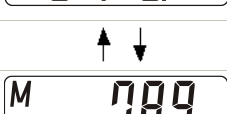
Function check

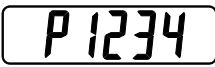
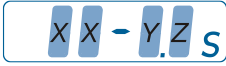
Heat cost allocators perform a self-test every 4 minutes. An error message "Err x" displays if the error lasts for 5 consecutive measuring cycles (20 minutes).

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
		

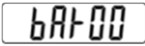
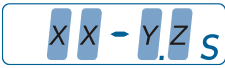
Display loops in normal mode		
Checksum		2 s
		
These displays steps are only visible if a product scale is added to the WHE5...		
kQ value corresponds to the radiator rated capacity in W		1 s
		
kC value Evaluation factor that considers the thermal coupling of the temperature sensor		1 s
		
Variable display		1 s See "Overview variable displays"
		

Sleep mode

Devices are factory set to sleep mode. Measuring operation inactive.

Display loop sleep mode		
		
Sleep mode Measuring operation inactive		2 s
		
Due date For example, December 31		2 s
		
Variable display		2 s See "Overview variable displays"
		
	FS = Code for walk-by and AMR (S-mode) FC = Code for walk-by and AMR (C-mode) FO = Code for AMR, C-mode AL = Algorithm, no RF system available	
	2 = Code for 20x algorithm 3 = Code for WHE3x algorithm 4 = Code for WHE4x algorithm	
	1 = Code for single-sensor measuring system 2 = Code for two-sensor measuring system	

Special displays

Error messages			
"Err 1" constantly displays. 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 base on the setting.		0.5 s	
End of battery life			
Is displayed after the end of service life, alternating with the consumption values based on the setting.		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' displays discretely on all displays based on the setting.	 Clear text	0.5 s	
Example: Display 'current value' with 'c'	 Discrete	0.5 s	
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 AMR		2 s	
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. The display then 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	

Encrypted communication

Wireless devices can be ordered that communicate via the OMS security profile using AES-128 encryption (Security mode 5).

The Key Handling Portal is the central platform for managing required AES keys. You must register on the Key Handling Portal at <https://keyhandling.siemens.com/> to access the corresponding AES key.

For background information, see document [A6V15062322](#).

Read out encrypted devices from the IoT gateway WTV776 or [S GCP](#)

The IoT gateway WTV776 or [S GCP](#) retrieves the AES keys deposited in the Key Handling Portal. This securely encrypts data transmitted in the IoT gateway or [S GCP](#).

Read out encrypted devices via walk-by

App 'ACT60 Metering' reads out data via walk-by. Wireless devices (DMC) must be scanned using App 'Key Management Assist' and assigned to the corresponding customer account to use the app. Walk-by read out connect 'ACT60 Metering' to the Key Handling Portal and queries the required AES key. This decrypts and reads telegrams directly on site.



Apps 'ACT60 Metering' (Android only) and 'Key Management Assist' can be downloaded from the appropriate app store.

For additional information, see Product documentation [► 13].

Technical design

One- and two-sensor measuring system

The WHE5../WHE6.. can be operated as a one- or two-sensor measuring system with product or unit scale. Temperatures are acquired by one sensor (radiator) or two sensors (radiator and room temperature sensor).

- The two-sensor mode determines the actual temperature difference between room and radiator.
- The single-sensor mode presets a constant value for the room temperature.

These measured values are used as the basis for calculating consumption.



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

Two-sensor heat cost allocators can be operated unconfigured and as often as you want in a one-sensor heat cost allocator.

A heat cost allocator with AES-128 encryption per Security mode 5 (Standard) or Mode 7 (optional) is available for secure data transmission.

Compatibility

The WHE54.. and WHE63.. replaces the WHE55.. and WHE56.. In addition to improved energy management, the WHE54.. and WHE63.. can be operated in different RF modes and are compatible with the WHE55.., WHE56.. as well as WHE3.. and WHE4... The existing heat conductors of the WHE3.. and WHE4.. device families can be reused with the WHE5... and WHE6.. The non-communicating WHE50.. (B-series) is compatible with the WHE3.. and WHE50.. (A-series).

NOTICE



The WHE2.. cannot be replaced by the WHE5.. or WHE6.., since neither the measuring algorithm nor RF transmitter fitted in the heat cost allocator (with WHE26) are compatible.

Measuring principle

Heat cost allocators are delivered as a one- or two-sensor devices. 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} and 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 factory set:	
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	
Settings:	
Sensing type	From a two to one-sensor measuring system
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-mode or C-mode (depending on the variant)

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. This option is set by default 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" displays if the battery service life has expired
Display meter readings in case of errors
The units accumulated until the heat cost allocator fails displays on the heat cost allocator as a counter reading. The option is set by default to "No", 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	• AMR • Walk-by
Transmission delay (Offset)	• Time delay for sending out telegrams after the due date • Time delay for sending out telegrams after the start of the month in days (Default = 0 days)	
Transmission-free days	A maximum of 2 weekdays – selected from Friday, Saturday and Sunday – can be defined as transmission-free days. At least 1 day of the week must be set (default = Sunday)	
Transmission response		
AMR telegrams	Every 4 hours, 24 hours a day, 365 days a year • Current consumption with date • Last monthly value with date • Due date value with date • Device status: Error code and error date	
Walk-by telegrams	Every 128 seconds, 10 hours a day (from 8:00 am to 6:00 pm)	
	Readout type	Monthly: 4 reading days from the first of each month Annually: 48 reading days, once a year by due date
	Transmission-free days	Monthly: Saturday and Sunday Annually: Sunday
	• Current consumption with date • Last monthly value with date and 12 additional monthly values • Due date value with date • Device status: Error code and error date	

RF features in C-mode

Wireless attributes for heat cost allocators with or without AES-128-encrypted data transmission per Security mode 5 (Standard) or mode 7 (optional)

Features of the heat cost allocators in C-mode:		
RF system	Parallel transmission of data telegrams	• AMR (OMS-compliant data transmissions) • Walk-by
	Increased radio power (10 dBm)	
Transmission response		
AMR telegrams	Every 7.5 minutes, 24 hours a day, 365 days a year • Current consumption with date • Last monthly value with date • Due date value with date • Device status: Error code and error date	
Walk-by telegrams (Devices with Security mode 5 only)	Every 112 seconds, 10 hours a day (from 8:00 am to 6:00 pm) 365 days a year • Current consumption with date • Last monthly value with date and 12 additional monthly values • Due date value with date • Device status: Error code and error date	

Change of mode

The following tool combinations can toggle between S-mode and C-mode:

- ACT50 readout and parameterization software and
- Infrared read head WFZ.IRDA-USB ¹ and
- Programming adapter HCAPH001 001

Or:

- Readout and parameterization software ACT50 / ACT60 Metering and
- Mobile parameterization and readout tool WTT726-FE7300 and
- Programming adapter HCAPH001 001

¹ No longer available



The customer cannot switch between Security mode 5 and Security mode 7 as well as enable or disable encryption in the field.

Type summary

The following types of heat cost allocators are available:

WHE.. with RF interface (AMR + walk-by), S-mode

Order number	Type	Description
S55562-F127	WHE542-D100S	Two-sensor device, battery warning On Summer switch-off between June 1 and August 31, due date December 31 Walk-by reading mode: Annually, S-mode
S55562-F128	WHE542-D291S	Two-sensor device, battery warning On Summer switch-off between June 1, and September 30, due date September 30 Walk-by reading mode: Monthly, S-mode

WHE.. with RF interface (AMR + walk-by), C-mode (Security mode 0)

Order number	Type	Description
S55562-F129	WHE632-D292C	Two-sensor device, battery warning On Summer switch-off between June 1, and September 30, due date September 30 C-mode

WHE6.. with RF interface (OMS), with wireless AES-128-encryption per Security mode 5 ¹

Order number	Type	Description
S55562-F131	WHE632-D192CE	Two-sensor device, battery warning On Summer switch-off between June 1, and August 31, due date September 30
S55562-F132	WHE632-D292CE	Two-sensor device, battery warning On Summer switch-off between June 1, and September 30, due date September 30
S55562-F133	WHE682-D292CE	With IrDa interface, 2-sensor, battery warning On Summer switch-off between June 1, and September 30, due date September 30

¹ Security mode 7: Upon request

Delivery

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



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

Accessories

Fittings

Order number	Type	Description
JXF:FKT0014	FKT0014	Threaded hoop (pipe 18 to 30 mm)
JXF:FKT0004	FKT0004	Threaded hoop (pipe to 17 mm)
JXF:FNM0002	FNM0002	Shank nut M3 x 3
JXF:FNM0003	FNM0003	Shank nut M3 x 6
JXF:FNM0001	FNM0001	Shank nut M3 x 9.5
JXF:FKM0002	FKM0002	Clamping sleeve special radiator
JXF:FKT0015	FKT0015	Clamping bracket (pipes TE 36 mm)
JXF:FKT0016	FKT0016	Clamping bracket (pipes TE 46 mm)
JXF:FKT0009	FKT0009	Clamping bracket shortened
JXF:FKT0018	FKT0018	Clamping bracket trapezoidal 35 mm
JXF:FKT0019	FKT0019	Clamping bracket trapezoidal 50 mm
JXF:FKT0020	FKT0020	Clamping bracket trapezoidal 65 mm
JXF:FKA0004	FKA0004	Expanding bracket for lamella-type radiator
JXF:BOZ4002	BOZ4002	Square bolt 4.5 mm with cross pin
JXF:BOZ4003	BOZ4003	Square bolt 6 mm with cross pin
JXF:BOZ4004	BOZ4004	Square bolt 12 mm with cross pin

Installation parts

Order number	Type	Description
JXF:FKT0010	FKT0010	Spacer sleeve
JXF:FKA0013	FKA0013	Spacer
JXF:FKA0012	FKA0012	Threaded bushing
JXF:FKA0003	FKA0003	Clamping piece (threaded hoop 17 mm)
JXF:FKA0008	FKA0008	Clamping piece (threaded hoop 18. 30 mm)
JXF:FKA0009	FKA0009	Installation plate for remote sensor
S55563-F115	FKA0017	Mounting plate standard
JXF:FKA0022	FKA0022	Mounting plate wide
JXF:FKA0001	FKA0001	Prism
JXF:FKK0044	FKK0044	Wall adapter
JXF:FKA0010	FKA0010	Contact screw
JXF:FKA0011	FKA0011	Contact screw long

Standard parts

Order number	Type	Description
JXF:FNR0008	FNR0008	Self-tapping screw B 2.9 x 13
JXF:FNR0007	FNR0007	Screw B 3.9 x 45
JXF:FNR0003	FNR0003	Phillips-head screw M4 x 30
JXF:FNR0004	FNR0004	Phillips-head screw M4 x 40
JXF:FNR0005	FNR0005	Phillips-head screw M4 x 50
JXF:FNR0006	FNR0006	Phillips-head screw M4 x 70
JXF:FKT0013	FKT0013	Welding stud M3 x 8
JXF:FKT0011	FKT0011	Welding stud M3 x 12
JXF:FKT0012	FKT0012	Welding stud M3 x 15
JXF:FNM0004	FNM0004	Hexagon nut M4
JXF:FNM0005	FNM0005	Self-locking nut with serrated bearing M3

Other accessories

Order number	Type	Description
JXF:FNU0001	FNU0001	Dowel 6 mm
JXF:HCAIK010 0S1	HCAIK0100S1	Remote sensor set 1.5 m
JXF:HCAIK010 0S2	HCAIK0100S2	Remote sensor set 2.5 m
JXF:HCAIK010 0S5	HCAIK0100S5	Remote sensor set 5.0 m

Order number	Type	Description
JXF:FKK0041	FKK0041	Lead seal blue
JXF:FOZ0001	FOZ0001	Cable duct white
JXF:FKK0034	FKK0034	Snap-on panel
JXF:HCAIP001001	HCAIP001001	Installation template
JXF:FSS0007	FSS0007	ERGO universal instant glue 3g
JXF:FKT0017	FKT0017	Installation aid (convector)

Programming and readout accessories

Order number	Type	Description
JXF:ACT60	ACT60	Readout and parameterization app for WTT726-FE7300 ¹
JXF:HCAPH001001	HCAPH001001	Programming adapter
S55563-F161	WTT726-FE7300	Mobile parameterization and readout tool for ACT60
		Key Handling Portal
		Key Management Assist ¹

¹ Apps 'ACT60-Metering' and 'Key Management Assist' are available on Google Play.

Remote readout options

Order number	Type	Description
S55563-F157	WTT662-BA1100	Network nodes can only receive telegrams in S-mode and C-mode (Security mode ≤ 5)
S55563-F164	WTT568-AF0305	The M-bus wireless gateway can remotely read out devices communicating via network nodes that communicate in S-mode and C-mode (Security Mode ≤ 5)
S55563-F149	WTX660-E05060	The wireless converter can receive encrypted telegrams in S-mode, C-mode, and T-mode (Security Mode 5 and 7)
S55563-F166	WTV776-HB6035	The IoT-Gateway can remotely read encrypted devices that communicate in S-mode, C-mode, and T-mode (Security mode 5 and 7)

Product documentation

Topic	Title	Document ID
User's guide	WHE5 family System manual	CE2M2886
User's guide	WHE5.. / WHE6.. System manual	A6V101110193
User's guide	Key Handling Portal	A6V15062322
User's guide	Key Management Assist App	A6V15062326
Data sheet	Mobile parameterization and readout tool for ACT60	A6V12732504

Related documents such as the environmental declarations, declarations of conformity, etc., can be downloaded from the following Internet address:

www.siemens.com/bt/download

Notes

Engineering

- Heat cost allocators are designed for wall mounting
- Install the device in accordance with the System Manual
- Observe all permissible ambient conditions
- Do not expose heat cost allocators to dripping water

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

Mounting

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

Maintenance

The devices are maintenance-free.

Disposal

 	This symbol or any other national label indicate that the product, its packaging, and, where applicable, any batteries may not be disposed of as domestic waste. Delete all personal data and dispose of the item(s) at separate collection and recycling facilities in accordance with local and national legislation. See Siemens disposal information for additional information.
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Warranty

Comply with all technical data relating to the application. Siemens rejects any and all warranties in the event that third-party products are used.

Technical design

Power supply	
Battery type	3 V lithium battery
Battery life	Up to 10 years ¹ + reserve
¹ Battery life up to 10 years as of commissioning. Actual battery life depending on operating state and external factors.	

Operating data	
RF:	
Radio frequency per EN 300-220/ 2	
- S-mode - C-mode	868.30 +/- 0.30 MHz 868.95 +/- 0.25 MHz
Transmitting power:	
- S-mode - C-mode	Typical 7 dBm, max. 14.0 dBm Typical 10 dBm, max. 14.0 dBm
RF protocol	Wireless M-bus per EN 13757-4
Measuring principle:	
One- or two-sensor devices	
Field of application ¹⁾ :	
- One-sensor WHE3x algorithm - One-sensor WHE4x algorithm	$t_{\min,m} = 55^{\circ}\text{C}$, $t_{\max,m} = 105^{\circ}\text{C}$ $t_{\min,m} = 55^{\circ}\text{C}$, $t_{\max,m} = 105^{\circ}\text{C}$
- Two-sensor WHE3x algorithm - Standard scale: - Scaled: - Two-sensor WHE4x algorithm	$t_{\min,m} = 48^{\circ}\text{C}$, $t_{\max,m} = 105^{\circ}\text{C}$ $t_{\min,m} = 35^{\circ}\text{C}$, $t_{\max,m} = 105^{\circ}\text{C}$ $t_{\min,m} = 35^{\circ}\text{C}$, $t_{\max,m} = 105^{\circ}\text{C}$
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	$t_z - t_L \geq 5\text{ K}$
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	

Degree of protection	
Protection class	III to EN 61140
Housing type	IP43 to EN 60529

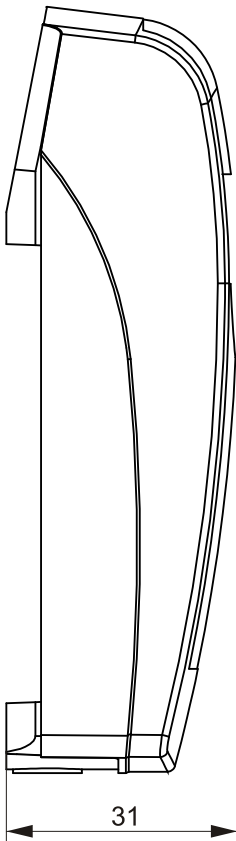
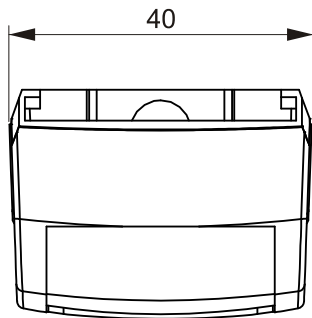
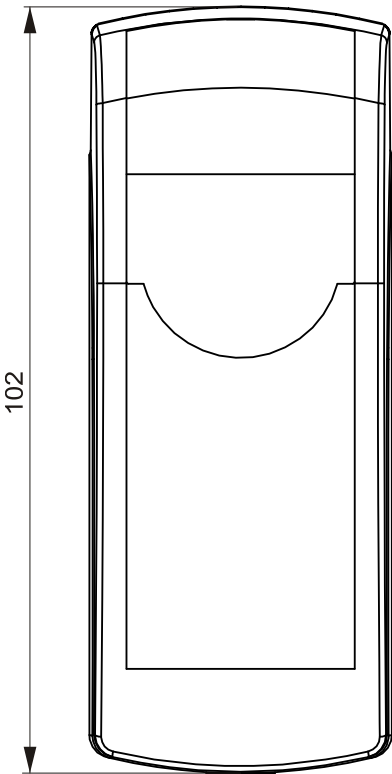
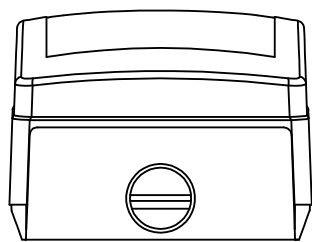
Ambient conditions			
	Operation	Transportation	Storage
Temperature	5...55 °C	-25...+70 °C	-5...+45 °C
Humidity	<95% r.h. (non-condensing)		

Directives and standards	
Product standard	DIN EN 834 Heat cost allocator to acquire consumption data for room heating areas
EU compliance (CE)	See EU declaration of conformance *)
Environmental compatibility	The product environmental declaration *) contains data on environmentally compatible product design and assessments (RoHS compliance, material composition, packaging, environmental benefit, and disposal).

*) 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	1.5 m, 2.5 m, 5.0 m
Weight	0.055 kg
Housing material	PC + ABS
Housing colors	White (silk matt)

Dimensions



A6V__6229_M01

Compliance

European Union conformity

Contact for regulatory topics: (EU) Siemens AG, Berliner Ring 23, DE-76437 Rastatt

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Smart Infrastructure
Global Headquarters
Theilerstrasse 1a
CH-6300 Zug
+41 58 724 2424
www.siemens.com/buildingtechnologies

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