SIEMENS

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 without communication
- Available as a two-sensor device or with remote sensor
- Parallel transmission of AMR and walk-by telegrams
- Communication in S-mode or C-mode
- OMS compliant AMR telegrams in C-mode

CE

## 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. Temperatures are acquired by one (radiator) or two sensors (radiator and room temperature sensor). 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. The main areas of application are in central heating systems, where heating energy is used individually by the different consumers.

The WHE5../WHE6.. can be operated as a one- or two-sensor measuring system with product or unit scale.

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

### 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. |

### 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 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.

### 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:

- No communication interface
- With optical communication interface (optional)
- With RF interface

### No 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 optical communication interface

The heat cost allocator with optical communication interface can be read on site using an infrared adapter and a suitable computer and the data can be archived for later evaluation.

### With RF interface

Wireless heat cost allocators send parallel AMR and walk-by data telegrams in S-mode or C-mode. AMR telegrams comply with OMS in C-mode.

### Walk-by

The heat cost allocators are read locally via radio. They transmit consumption data at the set reading time. The reads 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.

### 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
- 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)

[1)] In development: Mobile readout tool WTT726-FE7300 and Readout and parameterization app ACT60

**Tampering**

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

Any unauthorized device opening is registered, shown on the display (WHE50..) and transmitted via radio (WHE5.. / WHE6..).

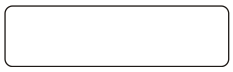
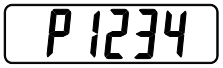
**Function check**

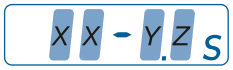
Heat cost allocators perform a self-test every 4 minutes. An error message "Err x" is displayed if the error lasts for 5 consecutive measuring cycles (20 minutes).

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**

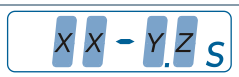
Device states, consumption values and measuring system information are displayed in a loop.

| **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<br>For example, December 31 | | 2 s |
| | | |
| Due date value | | 5 s |
| | | |
| Checksum | | 2 s |
| | | |
| *These displays steps are only visible if a product scale is added to the WHE5..:* | | |
| *kQ value*<br>*corresponds to the radiator rated capacity in W* |  | *1 s* |
| | | |

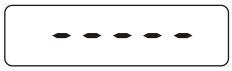
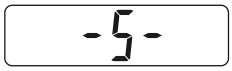
| | | |
|---|---|---|
| *kC value*<br>*Evaluation factor that considers the thermal coupling of the temperature sensor* | | *1 s* |
| | | |
| Variable display |  | 1 s<br>See "Overview variable displays" |
| | | |

**Sleep mode**

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

| **Display loop sleep mode** | | |
|---|---|---|
| | | |
| Sleep mode<br>Measuring operation inactive | | 2 s |
| | | |
| Due date<br>For example, December 31 | | 2 s |
| | | |
| Variable display |  | 2 s<br>See "Overview variable displays" |
| | | |
| XX | **FS** = Code for walk-by and AMR (S-mode)<br>**FC** = Code for walk-by and AMR (C-mode)<br>**AL** = Algorithm, no RF system available | |
| Y | **3** = Code for WHE3x algorithm<br>**4** = Code for WHE4x algorithm | |
| Z | **1** = Code for one-sensor measuring system<br>**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 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" shown 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 | | | |
| 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 | |

## Technical design

### 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.<br>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 user 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.<br>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<br>• Walk-by |
| Transmission delay (Offset) | • Time delay for sending out telegrams after the due date<br>• 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<br>Data and monthly telegrams with consumption values | |
| 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<br>Annually: 48 reading days, once a year by due date |
| | Transmission-free days | Monthly: Saturday and Sunday<br>Annually: Sunday |
| | Current consumption values and 13 statistical values | |

### RF features in C-mode

| Features of the heat cost allocators in C-mode: | | |
|---|---|---|
| RF system | Parallel transmission of data telegrams | • AMR<br>• Walk-by |
| | Increased radio power (10 dBm) | |
| Transmission response | | |
| AMR telegrams | Every 7.5 hours, 24 hours a day, 365 days a year<br>Data telegrams with consumption values | |
| Walk-by telegrams | Every 112 seconds, 10 hours a day (from 8:00 am to 6:00 pm)<br>365 days a year<br>Current consumption values and 13 statistical values | |

### Change of mode

You can change from S-mode to C-mode at any time with the ACT50-HCA [1)] (V2.1 or higher), the infrared reading head WFZ.IRDA-USB [2)] and the programming adapter HCAPH001 001.

[1)] To be replaced by ACT60 (in development)

[2)] To be replaced by WTT726-FE7300 (in development)

## Type summary

The following types of heat cost allocators are available:

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

| Options | Order number | Type |
|---|---|---|
| Two-sensor device, battery warning On<br>summer switch-off between 06/01 and 08/31, due date 12/31<br>Walk-by reading mode: Annually, S-mode | S55562-F127 | WHE542-D100S |
| Two-sensor device, battery warning On<br>summer switch-off between 6/01 and 9/30, due date 9/30<br>Walk-by reading mode: Monthly, S-mode | S55562-F128 | WHE542-D291S |

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

| Options | Order number | Type |
|---|---|---|
| Two-sensor device, battery warning On<br>summer switch-off between 6/01 and 9/30, due date 9/30<br>C-mode | S55562-F129 | WHE632-D292C |

### 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

| Component | Order number | Type |
|---|---|---|
| Threaded hoop (pipe 18 to 30 mm) | JXF:FKT0014 | FKT0014 |
| Threaded hoop (pipe 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 |

| Component | Order number | Type |
|---|---|---|
| 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**

| Component | Order number | Type |
|---|---|---|
| Spacer sleeve | JXF:FKT0010 | FKT0010 |
| Spacer | JXF:FKA0013 | FKA0013 |
| Threaded bushing | JXF:FKA0012 | FKA0012 |
| Clamping piece (threaded hoop 17 mm) | JXF:FKA0003 | FKA0003 |
| Clamping piece (threaded hoop 18. 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 adapter | JXF:FKK0044 | FKK0044 |
| Contact screw | JXF:FKA0010 | FKA0010 |
| Contact screw long | JXF:FKA0011 | FKA0011 |

**Standard parts**

| Component | Order number | Type |
|---|---|---|
| Self-tapping screw B 2.9 x 13 | JXF:FNR0008 | FNR0008 |
| Screw B 3.9 x 45 | JXF:FNR0007 | FNR0007 |
| Phillips-head screw M4 x 30 | JXF:FNR0003 | FNR0003 |
| Phillips-head screw M4 x 40 | JXF:FNR0004 | FNR0004 |
| Phillips-head screw M4 x 50 | JXF:FNR0005 | FNR0005 |
| Phillips-head screw M4 x 70 | JXF:FNR0006 | FNR0006 |

| Component | Order number | Type |
|---|---|---|
| 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**

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

| Component | Order number | Type |
|---|---|---|
| Readout and parameterization software | JXF:ACT50-HCA | ACT50-HCA [1)] |
| Programming adapter | JXF:HCAPH001001 | HCAPH001001 |
| Infrared read head with USB interface | JXF:WFZ.IRDA-USB | WFZ.IRDA-USB |
| Mobile tool (ACT60) | S55563-F161 | WTT726-FE7300 |
| PC RF module (only S-mode telegrams) | JXF:WTZ.RM | WTZ.RM |

[1)] To be replaced by ACT60 (in development)

## Product documentation

System manual

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

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. |

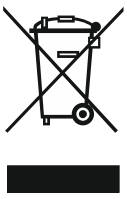
### Mounting

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.<br>See www.siemens.com/bt/disposal for additional information. |

## Warranty service

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

| Power supply | |
|---|---|
| Battery type | 3 V lithium battery |
| Battery life | Type 10 years |

| Functional data | |
|---|---|
| RF: | |
| Radio frequency<br>● S-mode<br>● C-mode | <br>(868.30 +/- 0.30 MHz)<br>(868.95 +/- 0.25 MHz) |
| Transmitting power:<br>● S-mode<br>● C-mode | <br>Typical 2.5 dBm, max. 14.0 dBm<br>Typical 7.3 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<br>● One-sensor WHE4x algorithm | $t_{min,m}$ = 55°C, $t_{max,m}$ = 105 °C<br>$t_{min,m}$ = 55 °C, $t_{max,m}$ = 105 °C |
| ● Two-sensor WHE3x algorithm<br>– Standard scale:<br>– Scaled:<br>● Two-sensor WHE4x algorithm | <br>$t_{min,m}$ = 48 °C, $t_{max,m}$ = 105 °C<br>$t_{min,m}$ = 35 °C, $t_{max,m}$ = 105 °C<br>$t_{min,m}$ = 35 °C, $t_{max,m}$ = 105 °C |
| Start of metering: ($t_Z$ refers to the temperature of heating medium determined) | |
| ● One-sensor devices | $t_Z \geq 30$ °C (at $t_L$ = 20 °C) unevaluated<br>$t_Z \geq 28$ °C (at $t_L$ = 20 °C) evaluated |
| ● Two-sensor devices | $t_Z - t_L \geq 5$ K |
| [1] Definitions according to DIN EN 834:<br>$t_{min,m}$: 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<br>$t_{max,m}$: Highest mean design heating medium temperature at which the heat cost allocator may be used<br>$t_Z$: Mean heating medium temperature of the radiator at which the counter of the heat cost allocator starts up<br>$t_L$: Reference air temperature<br>$t_m$: Mean heating medium temperature | |

| Degree of protection | |
|---|---|
| Protection class | III as per EN 61140 |
| Housing type | IP43 to EN 60529 |

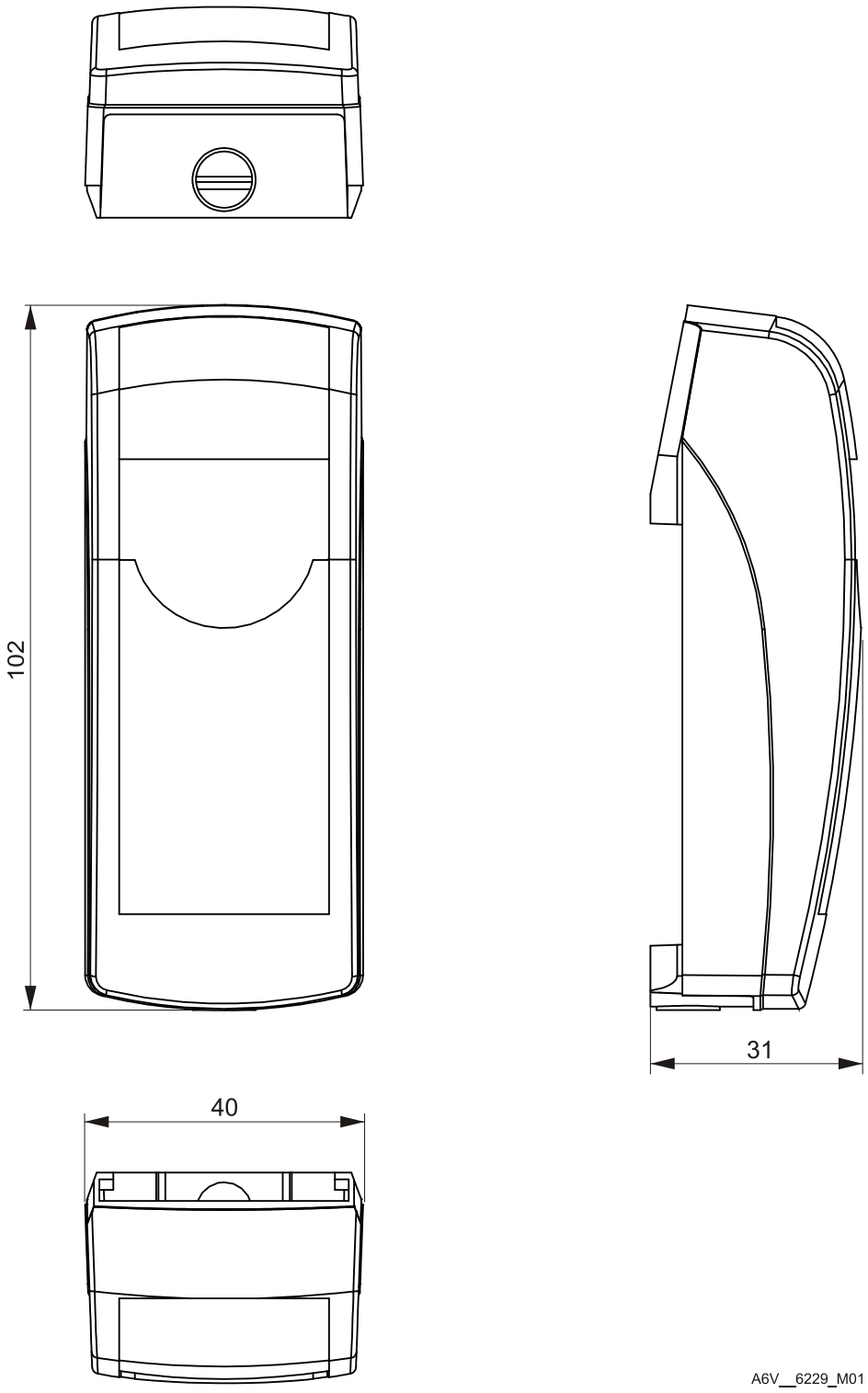
| Ambient conditions | | | |
|---|---|---|---|
| | **Operation** | **Transportation** | **Storage** |
| Temperature | 5...70 °C | -25...+70 °C | -5...+45 °C |
| Humidity | <95% r.h. (non-condensing) | | |

| Directives and standards | |
|---|---|
| Product standard | DIN EN 834<br>Heat cost allocator to acquire consumption data for room heating areas |
| EU conformity (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 https://www.siemens.com/bt/download.

| Material | |
|---|---|
| Dimensions | 40 x 102 x 31 mm (W x H x D) |
| Sensor cable length | 2.5 m |
| Weight | 58 g |
| Housing material | ABS + PC |
| Housing colors | RAL 9016 traffic white |

## Dimensions



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