Installation and Operating Instructions

Electronic heat cost allocator (EHKV) EURIS 3L
(LoRa) EURIS 3O (OMS)

INNOTAS GMBH

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REVISION	DATE	CHANGE
0.1.0	8 January 2026	First edition
0.1.1	27 January 2026	Revision
0.1.2	30 January 2026	Minor corrections
0.1.3	13 April 2026	Addition to display description

INSTALLATION AND OPERATING INSTRUCTIONS

ELECTRONIC HEATING COST ALLOCATOR (EHKV) EURIS3L (LORA) & EURIS3O (OMS)

3 Intended use

The electronic heat cost allocator is a measuring device that measures heat distribution when rooms are heated using radiators. Using the radiator parameters and the values recorded by the EHKV, the consumption of individual radiators can be determined in relation to the energy supplied.

4 Variants

The EURIS3 heat cost allocator is available in versions with or without a remote sensor. It is supplied with an optical parameterisation interface and LoRa-WANTM or wM-BUS (OMS) wireless connectivity.

4.1 2-sensor device

As a 2-sensor unit, the EHKV measures the radiator temperature used for calculation via a radiator sensor and the room temperature via a separate room temperature sensor. The permissible radiator design temperature is 35°C to 95°C. When using an optionally available remote radiator sensor, the upper radiator design temperature is 105°C.

4.2 Wireless interface

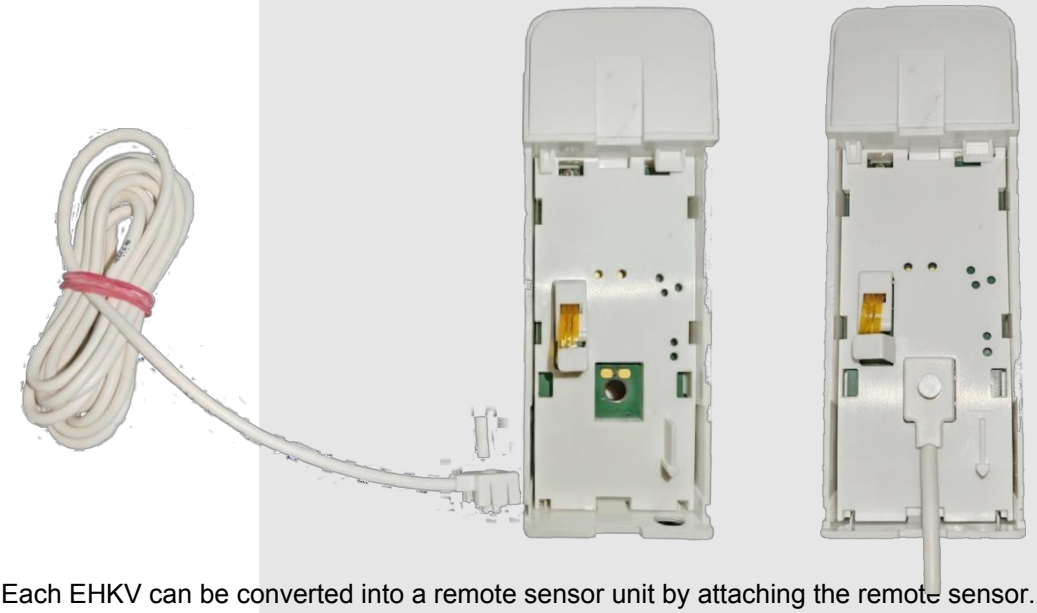
The LoRa-WAN Class-A interface is used for the EURIS3L, and the wM-BUS interface is used for the EURIS3O.

4.3 Optical interface

Measurement data and parameters can be read out and written to the EHKV via the optical interface (IrDA interface). A standard IR optical head is used for communication. We recommend purchasing the optical head from Innotas, as not all devices available on the market are fully compatible. The free MDC tool is used as the communication software for the
(O), the free MDC tool is used, and for variant (L), the LST "LoRa Setup Tool" is used. The interface in the EHKV is activated by the optical signal and a wake-up preamble. Communication can be protected by means of a PIN (disabled by default). This enables the customer to prevent unauthorised access to the IrDA port on the device. The PIN can also be set or reset via LoRa on the LoRa version.

4.4 Remote sensor variant

In the remote sensor variant, the very small radiator sensor is attached to a 2-metre-long cable. This variant is particularly suitable for covered radiators that are difficult to access. The remote sensor is installed on the radiator in accordance with the installation instructions, and the EHKV can be mounted next to the radiator. This variant can also be used to improve the EHKV's transmission position.



Each EHKV can be converted into a remote sensor unit by attaching the remote sensor. Once the remote sensor has been inserted, it is permanently secured by inserting the seal pin supplied. The conversion must be carried out before the EHKV is activated!

5 Display

The EHKV has a 7½-digit LCD display.

The most important values are displayed in a rolling sequence. There is a 2-second pause between the individual displays. Depending on the calculated energy balance, the display may switch off at night between 10.00 pm and 6.00 am. The display can show the units as absolute meter readings or relative consumption. The selected type of value display is indicated in the monthly report.

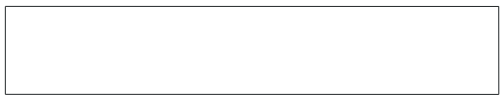
5.1 absolute value display

5.2 Relative value display

5.3 Displays in storage mode

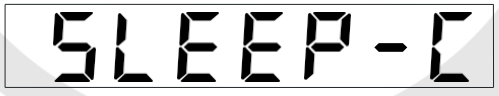
The EHKV is factory-set with parameters according to customer requirements or with default values. It is then set to transport mode (storage mode). In this state, it is inactive; temperature measurement and radio transmission are switched off. The display is activated for 1 second every 10 seconds (9 seconds off, 1 second on). The last 7 digits of the serial number and the radio status are displayed alternately.

Serial number. (1s)



Pause (9s)

Display for T-Mode



Alternatively SLEEP-C in C-Mode

Alternatively SLEEP-L in

LoRa Pause (9s)

5.4 Displays during operation

The values are displayed in a rolling sequence. There is a 2-second pause between each display.
Depending on the settings, the display may switch off at night between 10.00 pm and 6.00 am

Display test (1 s)

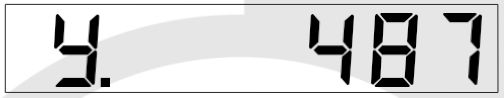
Pause (2 s)

(R) Current consumption value since the annual reference date (2 s)
(A) Absolute meter reading since activation

Pause (2 s)

(R) Consumption in the last month – ‘monthly value’ (2 s)
(A) Meter reading at the end of last month

Pause (2 s)



(R) Consumption as at the last annual reporting date (2s)
(A) Absolute meter reading as at the last annual reference date

Pause (2 s)

Reference date month consumption (2s) 12=December
The lower-case ‘r’ (R) stands for relative display values since the reference date (consumption)

Alternatively

Reference date month consumption (2s) 12=December
The ‘A’ (A) stands for absolute display values since activation (meter readings)

Optional: KQ value (for product scale) (1 s)

Pause (2 s)

5.5 Display in the event of a fault

This display remains on continuously if a serious fault occurs, such as a sensor break or sensor short circuit, which makes further operation of the device impossible.

6 Self-monitoring

During operation, the EHKV monitors the most important basic functions and components to ensure proper operation and to signal any potential faults in good time.

6.1 Tamper detection

Tamper detection is used to register the removal of the mounted EHKV from the radiator. The separation of the EHKV from the metal backplate is detected and signalled via an error bit. The EHKV continues to operate regardless. The error bit is recorded in the device status and the date of the error detection is stored. The error is transmitted via radio or read out via an interface. Tamper detection is activated at the end of the installation day, i.e. at midnight. A detected tamper error can be reset via an interface.

6.2 Sensor monitoring

Sensor monitoring is used to detect a possible sensor break or short circuit. If one of these faults is detected repeatedly, a fault bit is set after approx. 40 minutes. The EHKV is then no longer able to provide valid measured values. The fault is indicated by the LCD display lighting up and the message ‘Error’ appearing. The fault bit is recorded in the device status, transmitted via radio or read out via the interface. The fault can be reset via the interface. Sensor monitoring is only activated after the device has been commissioned.

6.3 Battery monitoring

Under normal operation, the EHKV’s battery has a calculated service life of at least 12 years. Further years of power reserve can be achieved through optimised radio settings. A battery fault is generated either when the battery voltage falls below a critical level or when the battery budget is exceeded. The fault bit is transmitted via radio or read out via the interface. The fault can be reset via the interface. Battery monitoring is enabled by default.

6.4 RESET Monitoring

The EHKV registers a software restart in the event of a fault. The fault bit is recorded in the device status and communicated via radio and the interface.

6.5 Memory monitoring

The EHKV monitors the consistency of the set parameters. If it detects an error, a checksum error is set. The error bit is recorded in the device status and communicated via radio and the interface.

6.6 RF Traffic Monitoring (EURIS 3L only)

The monitoring function records the number of protocols sent per day. If a corresponding daily limit is exceeded, this error is set. The error bit is reset in the device status of the next LoRa telegram after transmission. As LoRa-WAN is a wireless network, additional protocols may be sent in addition to the pre-planned telegrams. If a limit is frequently exceeded, this indicates that the network has not been optimally configured or that installation and commissioning are required.

7 Installation and commissioning

For the EURIS3 L version, the devices must be registered with the LoRa server (provisioning) before installation and activation. To do this, the DEVEUI, APPEUI and DEVKEY must be provided to the server. To simplify the process, you will receive an 'electronic delivery note', a CSV file containing all the serial numbers of the delivered devices. The structure is as follows:
GID;DEVEUI;APPEUI;APPKEY

7.1 Installation and assembly

The permissible tolerance for the installation height is ± 10 mm.
If the exact installation location cannot be maintained due to the HK design, installation is carried out relative to the centre of the HK → towards the flow (valve)

HK height (75%/50%) → offset upwards

7.1.1 Installation accessories

7.1.1.1 Heat conductor adapter, wide / 52

This additional adapter is required for specific radiator types with unusual designs or large section spacing. It is fitted behind the standard heat conductor.

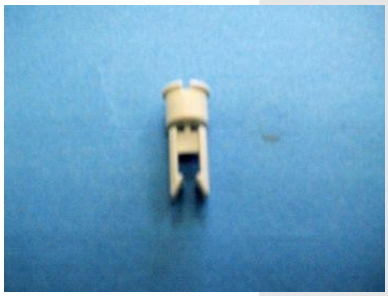
7-1 HEAT PIPE ADAPTER

7.1.1.2 Aluminium heat pipe

Standard heat pipe (included with every EHKV).

7-2 ALUMINIUM HEAT PIPE

7.1.1.3 Seal



7-3 SEAL

A seal is supplied with every EHKV to ensure correct installation.

7.1.1.4 Plate and special radiators (welded assembly)

7-4 ACCESSORIES FOR PLATES AND SPECIAL RADIATORS

Welding studs:

M3x10
M3x12
M3x15
Shaft nut M3
Slotted nut M3

7.1.1.5 Sectional radiators

7-5 ACCESSORIES FOR SECTIONAL RADIATORS

Sliding nut 33/51 (55 mm) Sliding nut 14/32 (36 mm)
To be fitted with M4x35 / M4x45 / M4x55 screw as required!

7.1.1.6 Tubular radiators

7-6 ACCESSORIES FOR TUBULAR RADIATORS

Sliding nut for tube (36 mm) Sliding nut for tube (45 mm)
To be fitted with M4x35 / M4x45 / M4x55 screws as required!

7.1.1.7 For convectors

Complete convector bracket

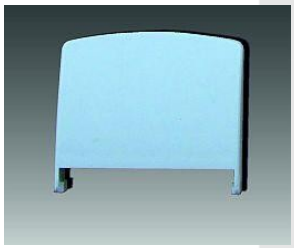
7-7 ACCESSORIES FOR CONVECTORS

7.1.1.8 Aluminium radiators

2 clamps for aluminium radiators, to be fitted with 2 M3x25 screws
Alternatively: 2 sheet metal screws 4.2x25

7-8 ACCESSORIES FOR ALUMINIUM RADIATORS

7.1.1.9 Decorative extensions



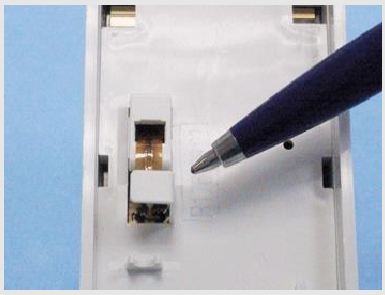
7-9 ACCESSORIES FOR TUBE CONVERSION

Optical extensions to cover any paint damage caused after converting from tubes to EHKV.

OPTICAL HEAD HOLDER

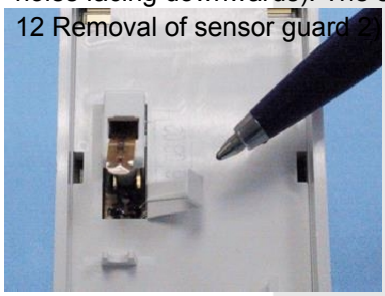
7.1.2 Installation

7-11 INSTALLATION OF HEAT CONDUCTOR GUARD

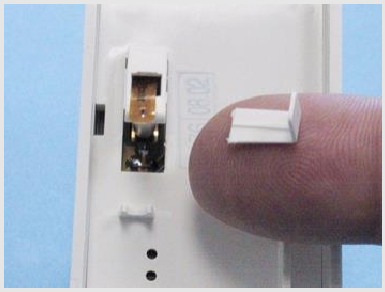


7-10 POSITION OF SENSOR

The heat conductor is mounted on the radiator in accordance with the installation instructions (slotted holes facing downwards). The sensor guard must be removed from the rear of the EHKV (see Fig. 7-12 Removal of sensor guard 2



7–13 REMOVAL SENSOR PROTECTION 1



7–12 REMOVAL SENSOR PROTECTION 2

To do this, bend the sensor guard to the side and remove it by snapping it off.

Caution: Do not bend the sensor!

7-14 FITTING THE EHKV TO THE HEAT PIPE

7-15 INSERTING THE SEAL

The EHKV is then hooked into the heat conductor from above, pressed into place and sealed at the underside. The seal must click into place.

7.1.2.1 Notes on welding installation

Welding may generate acoustic pulses to which pets are sensitive. Therefore, no pets should be present in the installation room.

7.1.2.2 General restrictions

The EHKV EURIS 3 must not be used with steam, underfloor and ceiling radiant heating systems, or with combined valve- and damper-controlled radiators, unless the damper control has been removed or deactivated. For radiators with auxiliary fans or heating elements, installation is only permitted if these additional electrical devices have been deactivated.

7.2 Commissioning

7.2.1 Activating the device

The EHKV is delivered pre-packaged from the factory. It is in “storage mode” at this stage. In storage mode, the EHKV is inactive; only the internal clock is running, and the display is as described in section 5.3. Unless specific customer settings are required, the EHKV is delivered with the following default settings:

- Dual-sensor operation
- German winter time (UTC+1h)
- Unified scale K1=1.538 K2=2.5 KQ=1000W
- No measurement-free summer months
- Immediate start of measurement after commissioning
- Reference date annually on 31 December at 24:00
- For EURIS3 L, LoRa-WANTM activation via OTAA

Once the EHKV has been installed, it can be put into operation. Thanks to its internal attachment detection, it now switches to operating mode, begins to flash to indicate a display test, and enters the display menu as described in section 5.4. Depending on the previous or factory settings, it will now start measuring and transmitting data packets.

EURIS3 L

The factory default connection mode is OTAA. The EHKV will now begin the JOIN process. Following successful activation, the device sends 20 installation telegrams at 2-minute intervals. This enables the installer to promptly check with the server whether the device has been successfully integrated into the LoRa network. The installation telegram contains all the important settings and information for the device. After the 20 installation telegrams, the EHKV transmits at the set intervals.

EURIS3 O

The EHKV begins to activate once installation is detected. Following successful activation, the device sends 20 telegrams at 30-second intervals. This allows the installer to promptly verify successful activation of the device using a receiver. Thereafter, the EHKV transmits at the set intervals.

8 Configuration

The EHKV can be configured via the optical interface. With the LoRa version EURIS3 L, some settings can also be configured via radio.

Configuration and data readout can be carried out via the optical interface (using an optical read/write head). This optical head can be connected to a PC or smartphone.

8-1 EHKV WITH OPTICAL HEAD

8.1 Configuration via IrDa optical head

In conjunction with the LST (LoRa Setup Tool) or MDC (Meter Device Commander) software, or the Android app, the following parameters can be changed:

EURIS3 L

- Date and time
- Meter reading
- Reference month (for the annual reference date)
- Months without readings
- Device PIN
- LoRa settings:
  - Connection type OTAA / ABP
  - APPEUI, DEVKEY, NETID, NetSKEY, AppSKEY
  - ADR, Link Check
  - Transmission interval
- Kc values, product or unit scales

EURIS3 O

- Date and time
- Meter reading
- Reference month (for the annual reference date)
- Months without meter readings
- Device PIN
- Wireless:
  - AES KEY
  - Mode 5/7
  - wM-Bus Mode T/C
  - Transmission time
  - Transmission interval
- Kc values, product or unit scales

8.2 Factory configuration

If the EHKVs are supplied to the customer in a customised form, the customer must complete an order form. The following settings can be specified:

- Time zone
- Connection settings OTAA
- Reference month (for the annual reference date)
- APPEUI DEVKEY
- Measurement parameters such as measurement-free months, start month, Kc values, etc.
- Device PIN “0000” (deactivated) or customer-specific
- Display: absolute or relative
- Display night-time switch-off
- Transmission interval, ADR, link check, ACK, ForceRejoin

8.3 LoRa radio settings

8.3.1 Important note regarding LoRaWAN wireless technology

LoRaWAN™ wireless technology is designed to manage the load on radio frequency bands, transmission power and connection stability via the LoRa Network Server (LNS). This management is carried out using special control commands within the LoRa protocols, which enable optimal use of resources.

The calculation of battery life for our end devices is based on precise and optimised interaction between the end device and the server. Changes to the system that generate additional data traffic may exceed the originally planned battery budget and result in a shorter battery life. For this reason, it is crucial to actively monitor the communication that actually takes place and not merely check for the arrival of expected payload data.

INNOTAS **GmbH accepts** no liability **for premature battery discharge caused by excessive communication traffic**

8.3.2 ADR setting

The ADR (Automatic Data Rating) setting means that the data rate or spreading factor of the radio transmission is controlled dynamically and automatically. The LoRa device sends a radio packet with an acknowledgement request to the server. If no acknowledgement is received, the device will first retransmit the packet and subsequently increase the spreading factor. If the server receives the packet correctly and with good quality, it sends a command to the device to reduce the spreading factor. High spreading factors lengthen the packet and thus increase the likelihood of a collision with another radio packet, and more energy is consumed. For example, with SF7 a packet is approx. 50–120 ms long, and with SF12 it is 2–3 s long.

8.3.3 Link Check setting

Here, the device cyclically checks whether a connection to the server still exists. The link check is performed every 5 radio telegrams. If no response is received 5 times in a row, the device assumes that there is no longer a connection to the server and enters the ReJoin state to reconnect to a server.

8.3.4 JOIN process

In the OTAA connection mode (factory setting), the device requests a connection to the LoRaWAN network using its device identifier (DEVEUI) and application identifier (APPEUI). The protocol is encrypted using the DEVKEY. The server responds to the device if it recognises it. The server then negotiates new private keys with the device. These are the NetSKey and the AppSKey. From this point onwards, communication is encrypted. During the join process, the LoRa server also transmits all important network settings, such as frequency channels, reception window spacing, etc., to the device to be connected.

8.3.5 Behaviour in the event of a connection failure

After activation, the device attempts to connect to the LoRaWAN™ network. It begins the first JOIN attempt with SF7. If unsuccessful, it repeats the attempt and then gradually increases the spreading factor up to SF12. If no connection is established, the radio switches to sleep mode for 24 hours. Afterwards, the JOIN sequence is attempted again twice with SF12. If this fails again, the device pauses for another 24 hours, and so on.

If the device is already connected but the server does not respond to acknowledgement requests – for example, because the telegrams are not reaching the server, the acknowledgement is not reaching the device, or the server is switched off – the device first increases the spread factor. Once SF12 is reached and after several unsuccessful retries, it falls back into the JOIN sequence and attempts to establish a new connection to the LoRaWAN™ network every 24 hours. If the link check is enabled as described in section 8.3.2, this too will trigger a JOIN state upon detection of a missing connection. In addition, a 'ForceReJoin' function can be enabled in the device, which forces a ReJoin after a configurable number of days ranging from 10 to 255. It is also possible to send a command via LoRaWAN to trigger an unscheduled JOIN. When the device sends a log to the server, this command is transmitted on the return channel together with a time specification. The time specification determines how long after receipt the device will perform a ReJoin.

Summary of when a JOIN is performed:

- after activation, via installation or optical sensor (SF7-SF12)
- after unsuccessful activation every 24 hours (2x SF12)
- if no acknowledgement is received for 5 consecutive ACK requests
- if no response is received to 5 consecutive LINK check requests
- after the set ForceReJoin days have elapsed
- upon receipt of a ReJoin command via LoRa-WAN and expiry of the delay in hours sent with it

8.4 wM-Bus radio settings

The wM-Bus radio supports modes T and C in the 868 MHz frequency band.

The radio parameter settings can be changed by the customer using the MDC (Meter Device Commander). The radio mode can be set to T or C, with or without encryption. With AES 128 encryption, there is a choice between Mode 5 and Mode 7. If data is forwarded via a smart meter gateway, it must be encrypted using Mode 7. Due to the requirement to provide a UVI, it is generally necessary to receive the radio protocols via a stationary collector. These are mostly battery-powered devices that only activate their receivers at specific times. Taking this requirement into account, the transmission time of individual telegrams can be predetermined quite precisely. You can specify in which month, in which week of the month and on which day of the week, at what time of day and until what time of day the device begins transmitting, with an adjustable interval time. To avoid simultaneous transmission with other devices, a variance can be set.
You can choose whether to send an OMS-compliant telegram containing consumption since the reference date, consumption on the reference date, the reference date, last month's consumption and status information,
or a long telegram containing consumption since the reference date, consumption on the reference date and consumption figures for the last 15 months.
When configuring the transmission intervals, the MDC calculates the energy required over the guaranteed service life and limits it as necessary.

9 Radiator assessment

Radiator assessment may only be carried out by qualified personnel.

9.1 KC values

The conversion of the read value into a billable value is carried out using the Kc evaluation factor. This factor depends on the radiator type. Only the application of a appropriate KC value ensures correct billing. A KC value table is available on the Innotas Elektronik website.

9.2 Scaling

The device can be configured for unit or product scaling. By default, devices are supplied with unit scaling. In the case of the product scaling variant, each heat cost allocator must be configured according to the respective radiator.

9.3 Calculation of consumption values

Each with: $K_1 = \frac{1}{(1-C_{1F})}$ and $K_2 = \frac{1}{(1-C_{2F})}$ and $K_Q = \frac{Q_{60}}{1000\,W}$ with Q_{60} in watts

9.3.1 For unit valuation, the following applies

1F compact version and 1F remote sensor version (1FF)

The internal unit evaluation is performed using $K_{Q*KT} = 1$, $K_{1F} = 1$

The correction of the read values is carried out according to the following formula:

$$\text{Verbrauchswert} = \text{Ablesewert} * K_Q * K_1 * \left(\frac{K_1}{1,0}\right)^{1,15}$$

The value for K_1 of the radiator used can be found in the EURISII C-value table. K_T is the rating factor for rooms with low design indoor temperatures

KT = [(60K + 20°C – ti) / 60K] ^ 1.15 ti: design indoor temperature < 20°C

The EHKV Euris 3 is only supplied in the single-sensor configuration in exceptional cases at the customer's request.

2F compact version (2F)

The internal unit rating is calculated using $K_Q = 1$, $K_1 = 1.538$, $K_2 = 2.5$

The correction of the measured values is carried out using the following formula:

$$\text{Verbrauchswert} = \text{Ablesewert} * K_Q * \left(\frac{K_2}{2,5}\right)^{1,15}$$

The K_2 value for the radiator used can be found in the EURISII C-value table.

2F remote sensor version (2FF)

The internal unit rating is calculated using KQ = 1, K_1 and $K_2 = 1.538$

The correction of the measured values is carried out using the following formula:

$$\text{Verbrauchswert} = \text{Ablesewert} * K_Q * \left(\frac{K_2}{1,538}\right)^{1,15}$$

The value for K_2 of the radiator used can be found in the EURISII C-value table.

9.3.2 For product rating, the following applies

1F and 2F versions

The EHKV is internally rated with K_Q, K_1 and K_2. The values for K1 and K2 of the radiator used can be found in the C-value table of EURIS 3.

The values K_Q, K_1 and K_2 in the EHKV must each be entered multiplied by 1000.

$$\text{Verbrauchswert} = \text{Ablesewert [kW]}$$

9.4 Calculation example

It is assumed that a 2F compact unit with a standard scale is being used.

- After installation, the radiator type must be determined by the next billing date.
  The manufacturer's data sheets or identification services such as WeBeS or Thermosoft2000 are used to determine the type.
- Using the identified radiator type and its output K_Q, the K_C values are determined, e.g. from the K_C value table of the EHKV-EURIS 3.
- For example, the radiator type from Buderus Sanilo was identified. According to the table, the values obtained are K1=1.03 and K2=1.75. The calculated size or output of the radiator is Q60=1200W. $K_Q = \frac{Q60}{1000W}$
- The meter reading is 2345.
- The formula to be used is:

$$\text{Verbrauchswert} = \text{Ablesewert} * K_Q * \left(\frac{K_2}{2,5}\right)^{1,15}$$

- Substituting the values gives:

$$1867 = 2345 * \frac{1200W}{1000W} * \left(\frac{1,75}{2,5}\right)^{1,15}$$

$$1867 = 2345 * 0,79624$$

PLEASE NOTE! The K1 value from the K_C value table is not required for calculating consumption in two-sensor devices.
The EHKV requires the factory-set value for K1=1.538 for internal processing.

It is assumed that a 1F compact unit with a standard scale is being used.

- The formula to be used is:

$$\text{Verbrauchswert} = \text{Ablesewert} * K_Q * \left(\frac{K_1}{1,0}\right)^{1,15}$$

- Substituting the values gives:

$$2911 = 2345 * \frac{1200W}{1000W} * \left(\frac{1,03}{1,0}\right)^{1,15}$$

$$2911 = 2345 * 1,2414923$$

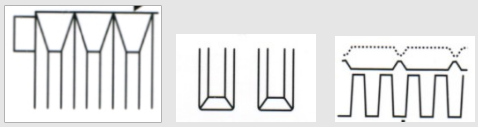
If the EHKV-EURIS 3 is operated in product scale mode, the determined values for K1, K2 and KQ must be entered before the first measurement. The EHKV calculates the values internally. The value read is then the consumption value.

In order to produce a reliable cost allocation from the consumption values, the consumption values of all EHKVs in the system must be weighted against the consumption costs to be allocated. The Heating Cost Allocation Regulation contains relevant provisions on this.

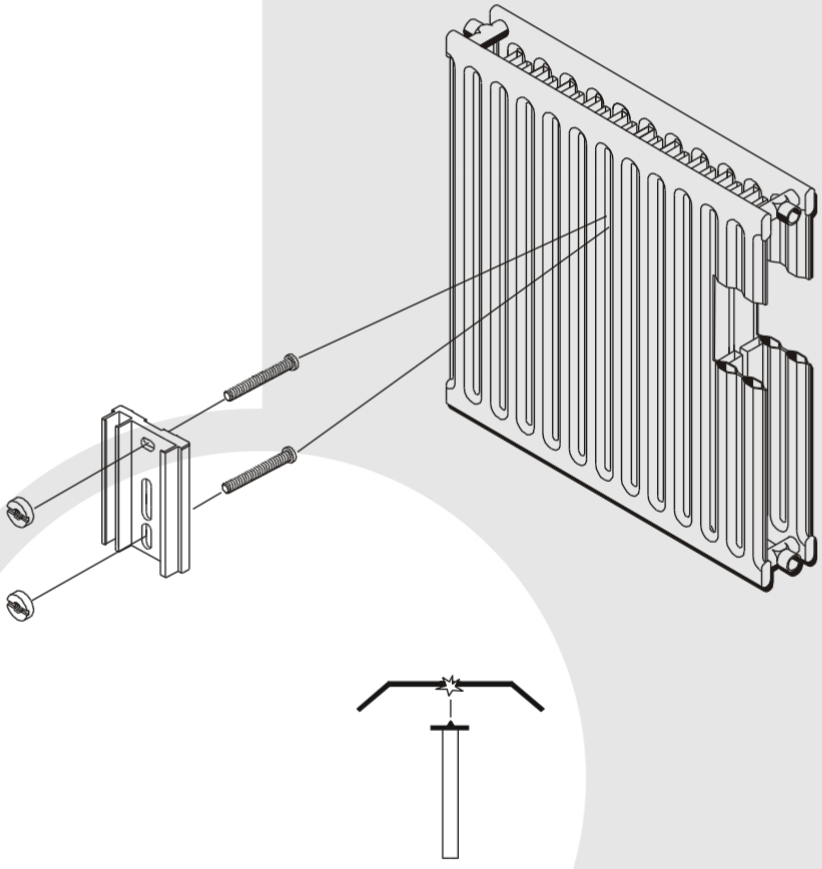
9.5 Procedure for determining the correct Kc values

To determine the correct Kc value for the respective radiator, proceed as follows:

- Determining the type or design of the radiator (section radiator, panel radiator, etc.)



- Determination of individual design features such as: fin shape, water connections, fin shape, etc.
- As this is quite complex and complicated, the companies Thermosoft 2000 www.thermosoft2000.de and WeBeS Wärmeenergie+Beratung+Service GmbH www.webes-berlin.de have specialised in identifying radiators.
- Once the type of radiator has been identified, the correct Kc value for that radiator can be determined from the database using the EHKV EURIS 3.
- If the relevant radiator is not listed in the Kc value table, in most cases the aforementioned companies can derive the Kc value for that radiator from their extensive database.



10 Technical data EURIS3 L

Standards	EN 834-2013, EN 61000-4-2, EN 61000-4-3, EN 55011
Measuring principle	2-sensor system / (1-sensor system)
Temperature operating limits 2-sensor (1-sensor)	Compact $t_{min/tmax}$ = 35°C/95°C (55°C/95°C) Remote sensor $t_{min/tmax}$ = 35°C/105°C
Operating temperature	0°C…55°C
Storage temperature	-25°C…55°C, briefly 70°C
Processor	32-bit controller
Temperature sensors	2 NTC sensors
Display	LCD with $7^{(1)}/_{2}$ digits
Operation	Optical interface / Download telegrams
Opening detection	Mechanical via seal; electronic via contact
Scaling	Units scale or product scale
Power supply	3 V DC lithium battery
Delivery	Standby mode (measurement and radio not active)
Operating time on a single battery	12 years + reserve
Heater output	up to 10,000 W
Storage	Last 18 monthly values & fortnightly values
Measurement cycle	4 minutes
Error display	Display, optical interface and via radio
Reading	Via LCD / optical interface or radio
Radio interface	LoRa-WAN 868–870 MHz frequency band
Radiated power	< 14dBm
LoRa-WAN™specification	V1.0.4
Number of telegrams per day	every 1 day, every 2 days, every 4 days
Data security	Wireless: 2-layer AES 128, optical: via PIN (configurable)
Self-monitoring	Sabotage, sensor, operating time, reset, data
Test mark	Approved in accordance with HKVO, CE in accordance with Directive 2014/53/EU (RED)
Protection rating to DIN 40050	IP 41

11 Technical data EURIS3 O

Standards	EN 834-2013, EN 61000-4-2, EN 61000-4-3, EN 55011
Measuring principle	2-sensor system / (1-sensor system)
Temperature operating limits 2-sensor (1-sensor)	Compact $t_{min/tmax}$ = 35°C/95°C (55°C/95°C) Remote sensor $t_{min/tmax}$ = 35°C/105°C
Operating temperature	0°C…55°C
Storage temperature	-25°C…55°C, briefly 70°C
Processor	32-bit controller
Temperature sensor	2 NTC sensors
Display	LCD with $7^{(1)}/_{2}$ digits
Operation	Optical interface
Door open detection	Mechanical via seal; electronic via contact
Scaling	Standard or product scale
Power supply	3 V DC lithium battery
Delivery	Sleep mode (measurement and radio not active)
Operating time on a single battery	12 years + reserve
Heater output	up to 10,000 W
Storage	Last 18 monthly values & fortnightly values
Measurement cycle	4 minutes
Error display	Display, interface and via radio
Reading	Via LCD / optical interface or radio
Radio interface	868–870 MHz frequency band
Transmitted power	< 14 dBm
wM-Bus specification	OMS
Number of messages per day	Freely adjustable within the energy budget
Data security	Wireless with AES 128 Mode 5/7, optical via PIN (adjustable)
Self-monitoring	Tampering, sensors, operating time, reset, data
Certification	Approved in accordance with HKVO, CE in accordance with Directive 2014/53/EU (RED)
Protection rating to DIN 40050	IP 41

12 Warning and safety instructions

The EHKV EURIS 3 must not be used with steam, underfloor and radiant ceiling heating systems, or with combined valve- and damper-controlled radiators, unless the damper control has been removed or deactivated. For radiators with auxiliary fans or heating elements, installation is only permitted if these electrical auxiliary equipment.

The EHKV contains a battery and must be disposed of properly.

13 List of Figures