

## themis<sup>®</sup>evo – ESMR5

Electronic index EI5.02 for  
diaphragm gas meters BK-G..ETeB

### Scope of application

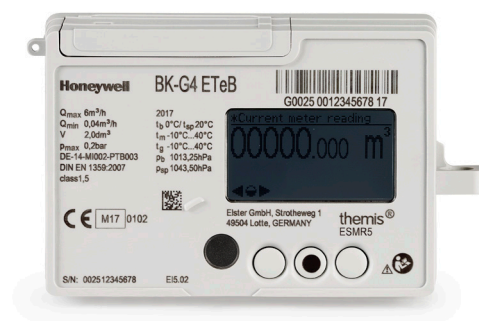
Smart electronic index for Honeywell residential and commercial diaphragm gas meters (BK-G..ETeB, G1.6 to G25)

### Brief information

The themis<sup>®</sup>evo index variant EI5.02 has been specifically developed for the Dutch market and complies with the requirements of ESMR5 (Enexis Smart Meter Requirements). This is an integrated electronic index with a single key controlled LCD matrix display to act as the user interface. The index has a maximum battery life of 20 years, depending on meter usage, however the battery is replaceable in the field.

The themis<sup>®</sup>evo equipped gas meter connects to an electricity meter using a wireless M-Bus short-range interface (868 MHz) complying with ESMR5. As well as the gas meter reporting the measured volume at regular intervals to the electricity meter, events and alarm messages are also sent on occurrence. Protective measures to ensure integrity, confidentiality and authenticity during data exchange between the communication partners is state of the art. A secure, over the air firmware update guarantees that the technology is future-proof and can be updated to meet new requirements if necessary.

The display of the volume at base conditions is a specific feature of the themis<sup>®</sup>evo index. Using an integrated electronic temperature measuring system and a fixed value for the pressure, the measured volume is converted into a volume at base conditions (base temperature  $t_b = 0^\circ\text{C}$ , base pressure  $p_b = 1013.25 \text{ hPa}$ ), shown on the display, saved in the index and transferred to communication partners.



### Main features

- Integrated concept: cost-efficient solution delivering a high level of reliability
- Indication of volume at base conditions
- Long battery life
  - Up to 20 years, depending on usage profile
  - If required, battery can be replaced in the field without loss of data
- Communication
  - Wireless M-Bus (868 MHz)
  - Internal antenna
- Other smart metering functions
  - Event and alarm messages
  - Time synchronization
- Safety
  - State-of-the-art data security and data protection (AES-128 symmetric keys)
  - Supports secure, over the air firmware updates
- Simple operation and installation
  - Clearly legible LCD matrix display
  - Intuitive menu navigation using a single key
  - Simple commissioning due to delivery of individually pre-configured meters without programming unit

## Technical data

### Display and entry

- LCD display
- Intuitive menu navigation using a single key (e.g. for the installer or end user)

### Languages

- Dutch

### Short-range communication

- Wireless M-Bus (868 MHz) compliant with Enexis Smart Meter Requirements (ESMR5) based on EN 13757
- Integrated antenna

### Communication profile

- Wireless M-Bus, T2 mode according to EN 13757-4
  - Hourly transfer of the data (e.g. current hourly value of the volume at base conditions with time stamp and the last 3 hourly values) to the electricity meter
  - Bidirectional communication once per day (e.g. for time synchronization)
  - Push message (e.g. if alarms occur)
- Wireless M-Bus, C1 mode according to EN 13757-4
  - Transfer of the current volume and the time stamp every 5 minutes

### Indication of volume at base conditions

- Calculated conversion to the volume at base conditions ( $t_b$ ,  $p_b$ ) on the basis of a fixed value  $p_{sp}$  for the pressure during volume measurement
- Base temperature  $t_b$ :  $273.15K \pm 0^\circ C$
- Base pressure  $p_b$ : 1013.25 hPa
- Fixed value  $p_{sp}$ : 1043.25 hPa

### Scope of application

- Residential and commercial gas meters (BK-G..ETeB, G1.6 to G25)
- Permitted gases: natural gas, town gas, propane, butane; gases of the first to third families pursuant to DIN EN 437:2003 (DVGW Code of Practice G260)

### Degree of protection

- IP 54 to DIN EN 60529

### Gas/Ambient conditions

- Gas temperature range:  $-10^\circ C$  to  $+40^\circ C$
- Ambient temperature range:  $-10^\circ C$  to  $+40^\circ C$
- Storage temperature range:  $-25^\circ C$  to  $+60^\circ C$

### Data logging in the index

- Integrated data logging function records the gas volume at base conditions in conjunction with the current time and temperature
- Storage capacity:
  - Hourly consumption values: 1224 records ( $\pm$  51 days)
  - Permanent (quasi metrological) logbook: 285 records
  - First-In-First-Out (FIFO) logbook: 285 records

## **Current approvals**

MID Class 1.5, EN 1359, CE, EMC, RED

## **Delivery/Installation**

- Delivered in pre-configured form to ensure minimum installation work negating the need of a programming unit or similar
- Easy commissioning: the connection process with the electricity meter is controlled using a single key and the display

## **Service mode**

- Information about meter-specific operating data (e.g. battery diagnosis, firmware version, status of wireless M-Bus connection) and completion of tests (e.g. display test)
- Control using three keys and the display

## **Data security and data protection**

- Secure state-of-the-art encryption and authentication of data:
  - Symmetric encryption using AES-128 (GCM) and authentication (GMAC) according to EN 13757-3 (security mode 9)
  - Keys can be replaced
- Future-proof due to secure firmware update
- Notification to a downstream device if a tamper attempt is detected
- Daily transmission of status reports

## The Honeywell smart meter solution

themis® – the new generation of electronic indexes for residential, commercial and industrial diaphragm gas meters – is part of the Honeywell smart meter solutions package. From mechanical meters and smart index technologies to complete meter data collection and meter data management systems, Honeywell can supply everything required for an efficient, coordinated all-in-one smart metering solution.



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