

## Operating instructions

### Communications module ACM WAVE SYSTEM RF for gas meters with Absolute ENCODER AE2 with and without smart valve



Translation from the German

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## Safety

### Please read and keep in a safe place



Please read through these instructions carefully before installing or operating. Following the installation, pass the instructions on to the operator. This unit must be installed and commissioned in accordance with the regulations and standards in force. These instructions can also be found at www.docuthek.com.

### Explanation of symbols

 **1, 2, 3**... = Action  
 > = Instruction

### Liability

We will not be held liable for damages resulting from non-observance of the instructions and non-compliant use.

### Safety instructions

Information that is relevant for safety is indicated in the instructions as follows:

#### **DANGER**

Indicates potentially fatal situations.

#### **WARNING**

Indicates possible danger to life and limb.

#### **! CAUTION**

Indicates possible material damage.

All interventions may only be carried out by qualified gas technicians. Electrical interventions may only be carried out by qualified electricians.

### Conversion, spare parts

All technical changes are prohibited. Only use OEM spare parts.

### Transport

On receipt of the product, check that the delivery is complete (see Part designations). Report any transport damage immediately.

### Storage

Store the product in a dry place. Ambient temperature: see Technical data.

### Disposal

Components, particularly batteries, are to be disposed of separately.

On request, old units may be returned carriage paid to Elster GmbH in accordance with the relevant waste legislation requirements (for Germany: KrW-/AbfG [Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal]).

## Checking the usage

### Communications module ACM WAVE SYSTEM RF for gas meters with Absolute ENCODER AE2

ACM WAVE SYSTEM RF for recording and forwarding absolute meter readings.

The "V-Drive" option allows additional activation and status messaging of the valve incorporated in the gas meter. The valve is designed for the remote connection and disconnection of the gas supply.

The ACM WAVE SYSTEM RF comprises the TRANSMITTER and the RECEIVER. The TRANSMITTER is directly connected to the index. The RECEIVER is connected to the receiving unit.

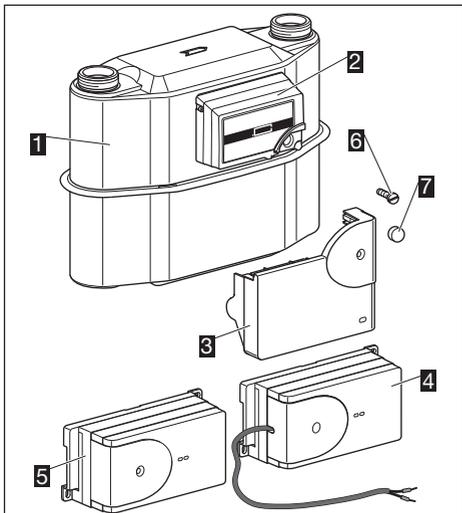
As an option for supporting the wireless link, a REPEATER can be additionally connected.

This function is only guaranteed when used within the specified limits – see page 6 (Technical data). Any other use is considered as non-compliant.

#### Type code

Code	Description
<b>ACM</b>	Absolute ENCODER communications module
<b>WAVE SYSTEM RF</b>	Radio system
<b>V-Drive</b>	Smart valve control

#### Part designations

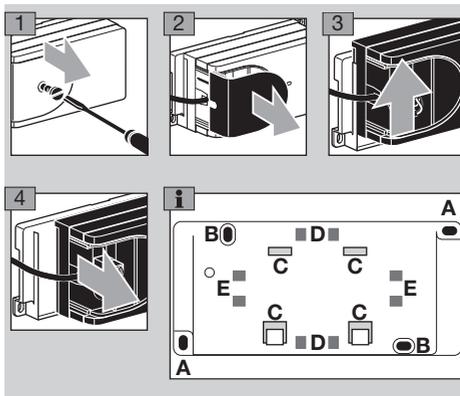


- 1 Gas meter
- 2 Absolute ENCODER AE2
- 3 ACM WAVE TRANSMITTER RF
- 4 ACM WAVE RECEIVER RF with base plate
- 5 ACM WAVE REPEATER RF with base plate
- 6 Retaining screw
- 7 Calibration seal

## Installation

### Attaching the RECEIVER base plate

- ▷ The RECEIVER RF/REPEATER RF base plate offers a wide range of mounting options.
- ▷ To attach, excepting the oblong holes **A**, the open upper housing must be removed from the base plate.



### Fitting the base plate to a wall

- ▷ Use oblong holes **A** or **B** for 3 mm diameter screws.

### Fitting the base plate to a DIN rail

- ▷ Use **C** to snap onto a DIN rail.

### Fitting the base plate to a pipe

- ▷ For attaching to a vertical pipe with cable ties, use holes **D**, and for attaching to a horizontal pipe, use holes **E**.
- 5 Push the upper housing back onto the base plate.

## Wiring the RECEIVER

### WARNING

Electric shocks can be fatal! Before working on possible live components ensure the unit is disconnected from the power supply.

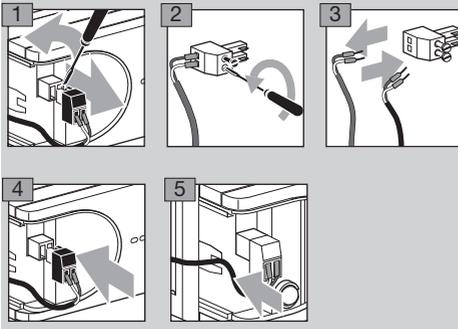
- ▷ For the electrical connection between the RECEIVER and the receiving unit, polarity is inconsequential.
- ▷ The RECEIVER is delivered with a prefabricated connection cable. The RECEIVER may optionally be delivered without a connection cable.

#### **1** Wire the RECEIVER to the receiving unit.

- ▷ If a connection cable is already routed to the receiving unit at the installation location, the prefabricated connection cable on the RECEIVER may be removed, as described below.

### Removing the prefabricated connection cable

- ▷ Use the connection plug from the RECEIVER for further wiring with the already routed connection cable.



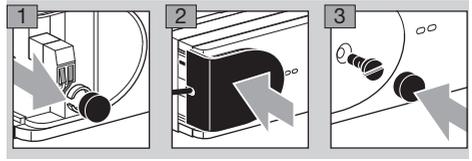
- ▷ Feed the new connection cable into the strain relief facility, see figure **5**. Otherwise, the RECEIVER cannot be closed.

### Wiring completed

- ▷ Once wiring is completed, the RECEIVER requires a charging time of < 5 min. During this time, there is no communication with the other units of the ACM WAVE SYSTEM.
- ▷ At the end of the charging time, the green LED on the RECEIVER blinks every 10 s and the red LED blinks at a rate of 1 Hertz.
- ▷ The charging time can be used for further installation work, see page 3 (Closing and sealing the RECEIVER) and 3 (Installing the gas meter).

### Closing and sealing the RECEIVER

- ▷ Secure the RECEIVER against external access with the seal.

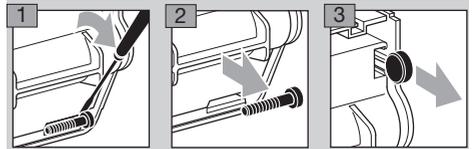


### Installing the gas meter

- ▷ For installing the gas meter in the pipework, refer to the operating instructions for diaphragm meters BK-G1.6 to BK-G25T, see [www.docuthek.com](http://www.docuthek.com) → Elster-Instromet → Products → Gas measuring devices → Diaphragm meters → Diaphragm meters BK-G1.6 to BK-G25T operating instructions.

### Attaching the TRANSMITTER

- ▷ The TRANSMITTER is connected to the Absolute ENCODER AE2 index after the gas meter has been installed in the pipework.
- ▷ The retaining screw and the calibration seal are found at the rear of the TRANSMITTER housing.



- ▷ When connecting the TRANSMITTER to the index, avoid bending the contacts.



- ▷ The red LED on the TRANSMITTER blinks.
- ▷ If the red LED does not blink, see page 5 (Assistance in the event of malfunction).

## Commissioning

### Installing the TRANSMITTER/RECEIVER

- ▷ The ACM WAVE SYSTEM RF units are delivered fully programmed.
- ▷ Once the RECEIVER has been wired and the TRANSMITTER has been connected to the index, the units and the connected receiving unit are synchronized automatically. The RECEIVER and the TRANSMITTER are in installation mode.
- ▷ When the units have “found” each other, all the LEDs go out after a maximum of 20 s. The red LED on the RECEIVER now blinks once every 20 s.
- ▷ The LEDs do not go out? See page 4 (Synchronizing the TRANSMITTER/RECEIVER failed).

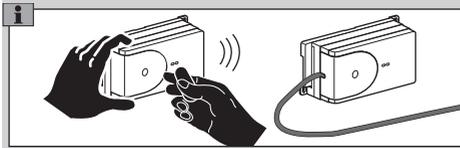
### Synchronizing the TRANSMITTER/RECEIVER failed

- ▷ If the distance between the RECEIVER and the TRANSMITTER is too large, the units will not “find” a sufficient signal. This can be identified by the continued blinking of the LEDs on the RECEIVER and the TRANSMITTER.
- ▷ To support the wireless link, a REPEATER can be connected. Up to 3 REPEATERS can be used. See page 4 (Installing the REPEATER).

### Installing the REPEATER

#### Synchronizing the REPEATER with the RECEIVER

- 1** Hold the REPEATER close to the RECEIVER.
  - 2** Activate the REPEATER. To do this, place a permanent magnet in close proximity to the two LEDs for approx. 10 s. A magnetic flux density of  $B \geq 40$  mT directly on the housing surface is needed for identification purposes.
- ▷ The REPEATER is activated when the red LED blinks every 2 s.



- ▷ When the green LEDs on the REPEATER and the RECEIVER blink simultaneously every 10 s, it means that the units have found each other.
- ▷ The green LEDs do not blink simultaneously? See page 5 (Assistance in the event of malfunction).
- 3** Confirm that both units have been synchronized. To do this, hold the permanent magnet on the LEDs on the REPEATER for approx. 10 s.
- ▷ The green LEDs on the REPEATER and the RECEIVER no longer blink simultaneously.
- ▷ The red LED on the REPEATER now blinks at a rate of 1 Hertz.
- ▷ The REPEATER now “seeks” the TRANSMITTER.

#### Synchronizing the REPEATER with the TRANSMITTER

- 4** Move the REPEATER in the direction of the desired installation location and the TRANSMITTER.
- ▷ When doing this, the signal between the REPEATER and RECEIVER must not be “lost”. The green LED must continue to blink.



- ▷ When the green LED on the REPEATER blinks twice within 10 s, it means that the REPEATER and the TRANSMITTER have found each other.

#### Synchronizing the REPEATER failed

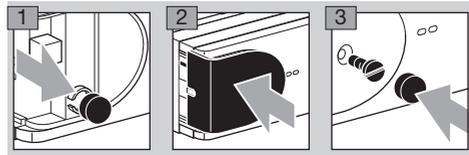
- ▷ If the REPEATER is too far away from the RECEIVER, the green LED goes out. The signal from the RECEIVER is “lost”. Move the REPEATER back in the direction of the RECEIVER until the green LED blinks again.
- ▷ It is not possible to position the REPEATER so that the green LED on the REPEATER blinks twice within 10 s? See page 5 (Assistance in the event of malfunction).

#### Finishing installation

- 5** Confirm installation. To do this, hold the permanent magnet on the LEDs on the REPEATER for approx. 10 s.
- ▷ The red LED on the REPEATER briefly blinks more quickly. Afterwards, all the LEDs on the RECEIVER, REPEATER and TRANSMITTER go out.
  - 6** Secure the REPEATER, see page 2 (Attaching the RECEIVER base plate).

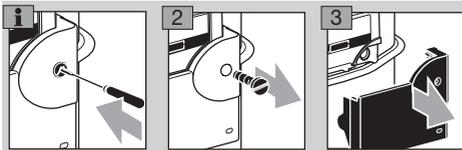
#### Closing and sealing the REPEATER

- ▷ Secure the REPEATER against external access with the seal.



## Replacement

- ▷ The ACM WAVE SYSTEM RF units are matched together in pairs. This means that once the battery life has expired, the complete ACM WAVE SYSTEM RF must be replaced.
  - ▷ The units can be replaced without further programming effort.
  - ▷ The relevant calibrated part of the meter remains unaffected.
- 1** For removing the TRANSMITTER, the seal must be pierced and broken with a screwdriver.



- ▷ If the RECEIVER/REPEATER needs to be opened for removing the base plate, the seals on the units must also be pierced and broken with a screwdriver.
- 4** Install the new ACM WAVE SYSTEM RF according to the enclosed operating instructions.

## Maintenance

The ACM WAVE SYSTEM RF for gas meters with Absolute ENCODER AE2 requires little servicing.

## Assistance in the event of malfunction

### **WARNING**

Electric shocks can be fatal! Before working on possible live components ensure the unit is disconnected from the power supply.

- ? Fault**
- ! Cause**
- Remedy**

### Possible faults and suggested solutions

- ? The red LED does not blink after connecting the TRANSMITTER.**
- !** The contacts on the index are bent.
- Remove the TRANSMITTER from the index and straighten the contacts. Re-attach the TRANSMITTER.
- !** The TRANSMITTER has been incorrectly fitted.
- Fit the TRANSMITTER according to the enclosed operating instructions.

### **? M-Bus communication with the RECEIVER is disturbed.**

- !** The connection plug in the RECEIVER is not plugged in.
- Check the connection plug and plug in.
- !** The connection cable on the RECEIVER is incorrectly connected.
- Check the connection cable, see page 2 ( ).

### **? The green LEDs on the REPEATER and the RECEIVER do not blink simultaneously.**

- !** The REPEATER has found a “foreign” RECEIVER, e.g. in a neighbouring room.
- Hold the REPEATER closer to the RECEIVER.

### **? If the REPEATER is too far away from the RECEIVER, the green LED goes out.**

- !** The wireless link is too large.
- To support the wireless link, use an additional REPEATER. Position the first REPEATER where it will receive a sure signal from the RECEIVER. The second REPEATER must now be synchronized with the first REPEATER. To do this, follow the instructions on page 4 (Synchronizing the REPEATER with the RECEIVER).

### **? The network operator cannot receive any data, despite successful installation?**

- !** The wireless link has subsequently been interrupted, e.g. by a door being closed that was open during installation.
- To support the wireless link, use a REPEATER. To install, the RECEIVER and the TRANSMITTER must be set back to installation mode.

### Activating installation mode

- 1** Loosen the flat head screw on the TRANSMITTER and pull the TRANSMITTER off the index.
- ▷ The dismantled TRANSMITTER will return to installation mode after one hour.
- 2** Now reconnect the TRANSMITTER to the index.
- ▷ When connecting the TRANSMITTER to the index, avoid bending the contacts.
- ▷ The red LED on the TRANSMITTER blinks.
- 3** Loosen the housing cover on the RECEIVER and pull it off.
- 4** Place a jumper on both pins.
- 5** Wait until the red LED blinks.
- ▷ The RECEIVER is once again in installation mode.
- 6** Pull the jumpers off the pins.
- 7** Place the housing cover on the RECEIVER and tighten the screws.
- 8** Now synchronize the REPEATER first with the RECEIVER and then with the TRANSMITTER, see page 4 (Installing the REPEATER).

## Technical data

Enclosure: IP 54.

Ambient temperature: -25 to +55°C.

M-BUS transfer of status and error messages in accordance with EN 13757.

### ACM WAVE RECEIVER RF

Power supply via M-BUS: 6 mA (4 M-Bus loads).

Connection cable design: 2 m (other dimensions on request), flexible, two-core cable LiYY, fireproof pursuant to IEC 60332-1,  $\varnothing = 0.25 \text{ mm}^2$ .

The free cable end has 2 wire end ferrules.

Energy accumulator charging time:

ACM WAVE RECEIVER RF: < 5 min.

### ACM WAVE TRANSMITTER RF, ACM WAVE REPEATER RF

Battery power supply,

battery service life: 15 years.

The TRANSMITTER is designed for max. 4 control commands per hour.

### Smart valve

Diaphragm meter BK-G4

Ambient temperature: -10 to +40°C.

Opening time from closed to open/released state:

$\leq 4 \text{ s}$ ,

closing time:  $\leq 0.5 \text{ s}$ .

Min. inlet pressure: 17.5 mbar.

Allowed leakage flow in the customers' piping:

valve released:

max. 13 l/h at 35 mbar  $\Delta p$ ,

valve closed: 5 l/h.

## Declaration of conformity

We, the manufacturer, hereby declare that the accordingly labelled products Absolute ENCODER AE2 with communications module ACM WAVE SYSTEM RF, ACM WAVE SYSTEM RF V-Drive and ACM WAVE REPEATER RF for gas meters BK-G comply with the requirements of the listed Directives and Standards:

Directives:

– 2004/108/EC, 1999/5/EC.

Standards:

– EN 61000-4-2, EN 61000-4-3, EN 301489-3, EN 60950-1, EN 300220-2.

The production is subject to the stated Quality System pursuant to DIN EN ISO 9001, TÜV NORD CERT. Elster GmbH

Scan of the Declaration of conformity (D, GB) – see [www.docuthek.com](http://www.docuthek.com)

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