System overview

Diaphragm gas meter with Absolute ENCODER AE2 and communication modules ACM for smart metering

Applications

Media: natural gas, propane and butane*

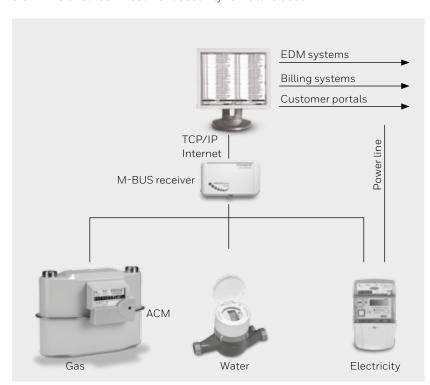Industries: gas industry

Tasks: remote data readoutBrief information

Brief information

To promote the protection of the environment, European countries aim to preserve energy resources. Private customers should be aware of and regularly informed of their energy consumption. Smart metering is a new technology that provides regular consumption values using remote rea-dout. Individual energy consumption of the customer is made more trans-parent. The customer is thus able to systematically gain energy awareness and reduce energy costs.

Article 21b of the Energy Industry Act requires that meter operators offer and install measuring devices showing the relevant connection users the actual energy consumption and the actual time of use.

Absolute ENCODER AE2 combines the positive features of a mechanical and electronic index. The Absolute ENCODER AE2's communication mo-dules ACM (Absolute ENCODER Communication Module) make it possible to cover the diverse requirements in practice.

The Absolute ENCODER's consistent modular design concept minimizes the efforts and expenditure of installation, commissioning and data provi-sion. This ensures investment security for future uses.

EDM systems

Billing systems

Customer portals

TCP/IP Internet

M-BUS receiver

Power line

ACM

Gas   Water   Electricity

Main features

- Recording and forwarding absolute meter readings.
- Cable-based or wireless data communication available as options.
- The wireless link can optionally be expanded using up to 3 ACM WAVE REPEATER RF.
- Opto-electronic scanning of the digit rollers.
- Re-calibration periods are not reduced and can continue to be increased using random sampling procedures.
- No battery in the index. Power supply via communication module.
- Battery-free cable-based communication.
- Simple plug-in installation of communication modules with immediate availability.
- Encrypted data transmission possible.
- Options
- Communication modules for Absolute ENCODER AE2 can be retrofitted in the field.
- Mechanical temperature compensation from G2.5 to G25 possible.
- Remotely switchable valve in gas meter (see Smart valve data sheet).

System description

Diaphragm gas meter with Absolute ENCODER AE2

The Absolute ENCODER AE2 records the absolute meter reading (see Absolute ENCODER AE2 data sheet). The communication module transfers the data to a downstream receiving unit that functions as M-Bus master (e.g. electricity meter, data concentrator, multi-utility controller MUC).

Depending on the local installation position, either cable-based communication modules ACM M-BUS..WIRE or the wireless communication module ACM WAVE SYSTEM RF can be selected for data transmission.

They are designed as a plug & play solution and are simply plugged into and sealed to the Absolute ENCODER AE2. The connected receiving unit is synchronized automatically. The communication modules are delivered fully programmed.

The modular connection between the communication module and the Absolute ENCODER AE2 enables modules to be replaced at any time without further programming effort. The metrology-relevant part of the gas meter thus remains unaffected.

The ACM M-BUS WIRE V-Drive and ACM WAVE SYSTEM RF V-Drive systems are optionally available for the remote switching of a valve integrated in the diaphram gas meter (see Smart valve data sheet).

ACM M-BUS WIRE/ ACM M-BUS WIRE V-DRIVE

The cable-based ACM (see ACM..WIRE data sheet) functions in accordance with EN 13757 and is directly connected to the M-BUS master (e.g. electricity meter, data concentrator).

ACM SCR+ WIRE

The cable-based ACM connects the Absolute ENCODER AE2 and the receiving unit with an SCR+ interface (see ACM..WIRE data sheet).
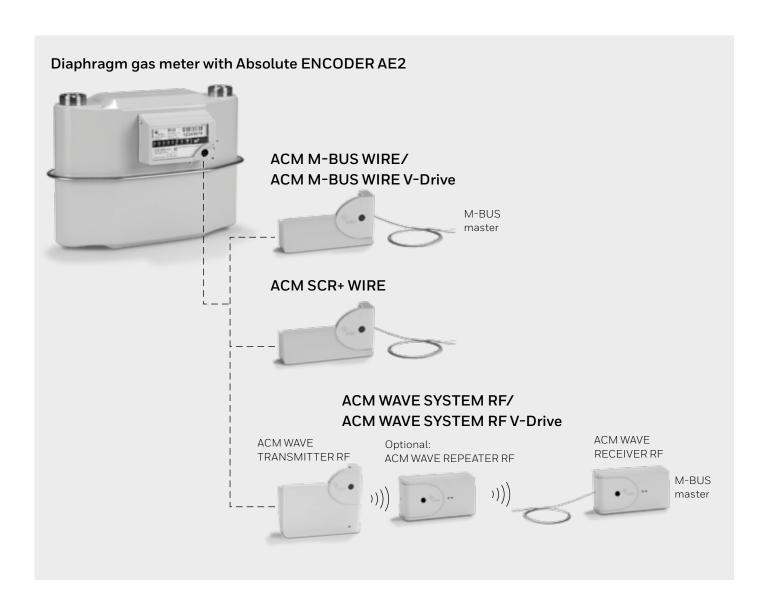
ACM WAVE SYSTEM RF/ ACM WAVE SYSTEM RF V-DRIVE

If the distance between the cable-based M-BUS master and the gas meter is too big or if another construction interrupts the connection, the ACM WAVE SYSTEM RF can be used (see ACM WAVE SYSTEM RF data sheet).

If the quality of the wireless link is not adequate, up to three ACM REPEATER RF can be connected into the link.

In the ACM WAVE SYSTEM RF, the appliances operate on the basis of a secured point-to-point connection. Only prefabricated module pairs can communicate with each other. This ensures that radio signals cannot be affected by any other appliances in the household.

The ACM WAVE SYSTEM RF supports M-Bus data transmission protocols to DSMR (Dutch Smart Meter Requirements) and OMS (Open Metering System).

Diaphragm gas meter with Absolute ENCODER AE2

ACM M-BUS WIRE/
ACM M-BUS WIRE V-Drive

M-BUS master

ACM SCR+ WIRE

ACM WAVE SYSTEM RF/
ACM WAVE SYSTEM RF V-Drive

ACM WAVE TRANSMITTER RF

Optional:
ACM WAVE REPEATER RF

ACM WAVE RECEIVER RF

M-BUS master

Differences between ACM M-BUS WIRE, ACM SCR+ WIRE and ACM WAVE SYSTEM RF

	ACM M-BUS WIRE/ ACM M-BUS WIRE V-Drive	ACM SCR+ WIRE	ACM WAVE SYSTEM RF		
			TRANSMITTER	RECEIVER	REPEATER
Energy supply	via M-BUS	via SCR+	battery powered	via M-BUS	battery powered
Powerconsumption	max. 6 mA (4 M-Bus loads)	max. 3 mA	–	max. 6 mA (4 M-Bus loads)	–
Energy accumulator charging time	< 20 min.[1]	–	–	< 5 min.[2]	–
Connection cable	2 m fireproof, flexible, two-core cable LiYY, 0.25 mm^2, 2 wire end ferrules	2 m fireproof, flexible, two-core cable LiYY, 0.25 mm^2, 2 wire end ferrules	–	2 m fireproof, flexible, two-core cable LiYY, 0.25 mm^2, 2 wire end ferrules	–
Battery service life	–	–	> 15 years	–	> 15 years
Synchronization	automatic	automatic	automatic	automatic	activation via a permanent magnet
LED display	–	–	red	red and green	red and green
Service life	> 30 years	> 30 years	> 15 years	> 15 years	> 15 years
Time stamp	via external receiving unit	via external receiving unit	internal	internal (in TRANSMITTER)	internal (in TRANSMITTER)
Data transmission to master	straightaway[1]	straightaway	–	< 5 min.[2]	–

[1] The charging process of the energy accumulator following commissioning or after a power shut-down causes a start-up time of max. 20 minutes. During this period, the ACM M-BUS WIRE V-Drive is not available for valve operation, but the meter reading can continue to be transmitted. After the charging process, the start-up time for valve operation is < 1 minute.

[2] The charging process of the energy accumulator following commissioning or after a power shut-down causes a start-up time of max. 5 minutes. During this start-up time, the ACM WAVE RECEIVER RF is not ready for operation.

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Honeywell