

AMTRON® E-30

Compact heat and cooling meter

Application

The compact AMTRON® E-30 meter is used for energy consumption measurements for heating and cooling applications in small premises such as apartments, offices or in transmission stations for heat transfer. Its highly accurate flow sensor has a single-jet turbine with a dynamic measuring range of 1:100. AMTRON® E-30 can be equipped with pulse output, an M-Bus interface and also pulse inputs for two external meters with pulse signals. In addition, it has special functions such as combined heat and cooling metering, surcharge metering and data logging.

Specifications: Heat carrier temperature 5 ... 90 °C, pressure rating PN16, nominal flow Qp 0.6 ... 2.5 m³/h.



Features

- Power supply from battery or M-Bus
- Available with M-Bus and 2 pulse inputs
- Mounting in horizontal and vertical piping, no inlet or outlet straight piping required
- For cooling and combined heating/cooling applications with programmable switchover point
- Surcharge meter (tariff 1), e.g. when return temperature is too high
- Data logger and memory for maximum values
- On-site settings using password

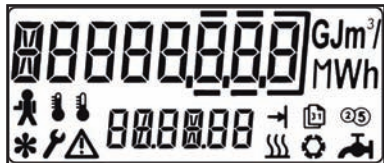
Benefits

- External power supply without additional cabling
- For connecting 2 external meters
- Simple inventory management and installation
- Combined heat and cooling measurements for, e.g. buildings with concrete core cooling or heating/cooling surfaces
- Billing costs according to specific consumers
- Supplies data for detailed analysis
- Start-up without peripheral instruments required

Totalizer and displays

Main segment
(8 characters)

Units



Symbols

Lower segment
(6 characters)

Symbols

The updated LC display shows information in both the main and lower display segments at the same time.

This ensures that the displays can be easily read:



Example 1:

Symbols: Archive level, cooling energy

Main segment: Consumption in MWh

Lower segment: date 28.02.05



Example 2:

Symbols: Service level

Main segment: M-Bus address

Lower segment: SECAr, i.e. secondary address

Information is divided into 6 levels (Level 1...6) and assigned as follows:

| Level | Description | Type | Values that are displayed or can be set |
|-------|------------------------------|-------------------|--|
| L 1 | User level | Display | <ul style="list-style-type: none"> • Cumulated energy consumption (energy, volume...) • Segment test • Instantaneous values (output, flowrate, temperatures) • Customer-specific instrument serial number |
| L 2 | Billing date level | Display | Consumption at annual billing date (programmable) |
| L 3 | Archive level | Display | Cumulated values for the current month to the present day and to the end of the last 16 months: <ul style="list-style-type: none"> • Energy • Volume of heating and cooling medium • Maximum values for output and flowrate • Downtime, if any, in hours |
| L 4 | Service level | Display | <ul style="list-style-type: none"> • Maximum values and start of operation • Date and time • Next billing date • No. of days in operation • M-Bus address |
| L 5 | Control level tariff/ | Display & setting | <ul style="list-style-type: none"> • Tariff parameter (surcharge meter) • Switchover point between heat and cooling measurements • Correction factor when used with water/antifreeze mixture |
| L 6 | Parameter level | Display & setting | <ul style="list-style-type: none"> • M-Bus addresses • Customer-specific number • Date and time • Next billing date • Resetting maximum values |

Settings with Software

With the software Minicom, from version 3.6.35, other values can be adjusted, like for instance the readings of the meters, meters connected to the puls inputs can be synchronised.

Options

AMTRON® E-30 is available from the factory with various options.
Possible combinations for the standard versions are shown in the section “Ordering”.

| Option | Abbr. | Description |
|---------------------------------------|-------|---|
| Split version | ES | Version with removable totalizer. With 0.3 m or 1.2 m cable. |
| 10+1-year battery | B10 | The instrument can be supplied with a battery with a life of 10+1 years. This ensures an extended operating lifetime if validity of calibration is not limited to 5 years. The 10-year battery cannot be used with all the options available. |
| M-Bus interface | M | The EN 1434-3 M-Bus interface can be set to 300 or 2400 baud using the keys. When delivered, the secondary address is set to an (adjustable) eight-figure number. With its update time of just 4 seconds for output and flowrate, the AMTRON® E-30 is ideal for connecting to remote heat controllers. |
| Mini-Bus | | Interface for remote reading using the Mini-Pad (up to 50 m). |
| 2 pulse inputs with M-Bus or Mini-Bus | EE | 2 pulse inputs for connecting external meters with a passive pulse output, e.g. one cooling and one hot water meter readings from these meters can be called up using the M-Bus or Mini-Bus. |
| Pulse output | A | This option provides potential-free and bounce-free pulses which are added together using a remote totalizer. This option is delivered with a data logger. |
| Data logger | - | With 1260 locations to store the values listed below. The time interval can be selected between 1 to 1440 minutes (or 1 day) so that 3 years of daily values or more than 50 days of hourly values can be recorded: <ul style="list-style-type: none"> • Consumption (including tariffs and external meters) • Volume of the heating and cooling medium • Flowrate of heating or cooling medium • Heat or cooling energy output • Temperatures in the heating or cooling lines • Temperature difference • Downtime, if any, in hours |
| Cooling meter | ws/c | For air-conditioning applications. Mount the split version on the warm side to avoid condensation. A correction factor can be factory programmed as required if the cooling medium contains antifreeze. The same version can also be used for heating applications when mounted on the cold side. |
| Combined heat and cooling meter | h&c | Heat and cooling energy are measured in two separate registers. The switchover criteria (to be set) are <ul style="list-style-type: none"> • Value of negative temperature difference for supply and return lines. • Minimum supply temperature |

Approvals

AMTRON® E-30 has type approval to EN 1434 for Germany and Switzerland.
These standards are only valid for certification and calibration of the simple heat meter function.
Other approvals on request.

Technical specifications

| Specification | Units | qp 0,6 | qp 1,5 | qp 2,5 |
|---|-------|--|---|-----------|
| Nominal flowrate qp | m³/h | 0,6 | 1,5 | 2,5 |
| Minimum flowrate qi | | 0,006 | 0,015 | 0,025 |
| Accuracy class | | Class 2 acc. to EN 1434 | | |
| Dynamic ratio qi /qp | | 1:100 | | |
| Maximum flowrate qs (< 1 h / day and < 200 h / year) | m³/h | 1,2 | 3 | 5 |
| Start-up flow rate (typical) | l/h | 1,5 | 2,5 | 3 |
| Temperature measuring range | °C | 5 ... 150, (-20 ... 150 with antifreeze, uncalibrated) | | |
| Differential temperature range | K | 3 ... 100 | | |
| Cut-off limit | K | 0.15 K | | |
| Permissible temperature in flow sensor | °C | 5 ... 90 °C (transient: 110 °C) | | |
| Flowrate at 0.1 bar pressure loss | m³/h | 0,5 | 1,2 | 1,7 |
| Pressure loss at qp | bar | 0,15 | 0,17 | 0,21 |
| kvs value (flowrate at 1 bar pressure loss) | m³/h | 1,53 | 3,65 | 5,45 |
| Update times for: | | | | |
| temperature | sec. | 2 | | |
| output and flowrate | sec. | 4 | | |
| energy and volume | sec. | 16 | | |
| Permissible operating pressure | bar | 16 | | |
| Overall length | mm | 110 | 110 | 130 |
| Nominal size | inch | R 1/2 | R 1/2 | R 3/4 |
| Connecting thread | inch | G 3/4 B | G 3/4 B | G 1 B |
| Cable length for split instrument | m | approx. 0.3 m, on request 1.2 m | | |
| Weight | kg | app. 0,8 | app. 0,8 | app. 0,86 |
| Permissible ambient temp. | °C | 5 ... 55 | | |
| Ambient class | | C acc. to EN 1434 | | |
| Protection class | | IP 54 | | |
| Power supply AMTRON® E-30... | | ... B5: ... B10: ... B5M: | battery 5+1 years battery 10+1 years via M-Bus or 24 VDC | |
| Current consumption of M-Bus interface | | max. 1.5 mA, acc. to EN 1434 corresponding to 1 M-Bus load unit | | |

Pulse inputs (...EE...)

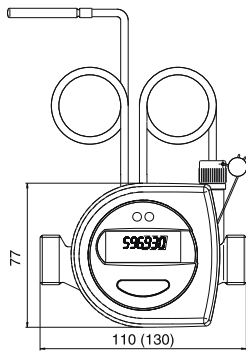
- Min. Pulse length: > 125 ms
- Max. Pulse frequency: < 3 Hz
- Terminal voltage: 3 V

Pulse output (...A...)

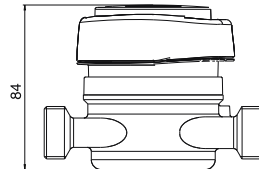
- Pulse value: 1 kWh
- Contact time: 125 ms
- Bounce: none
- Max. voltage: 28 V DC or AC
- Max. current: 100 mA

Dimensional drawings

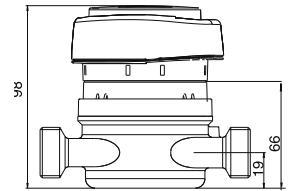
Top view



Side view

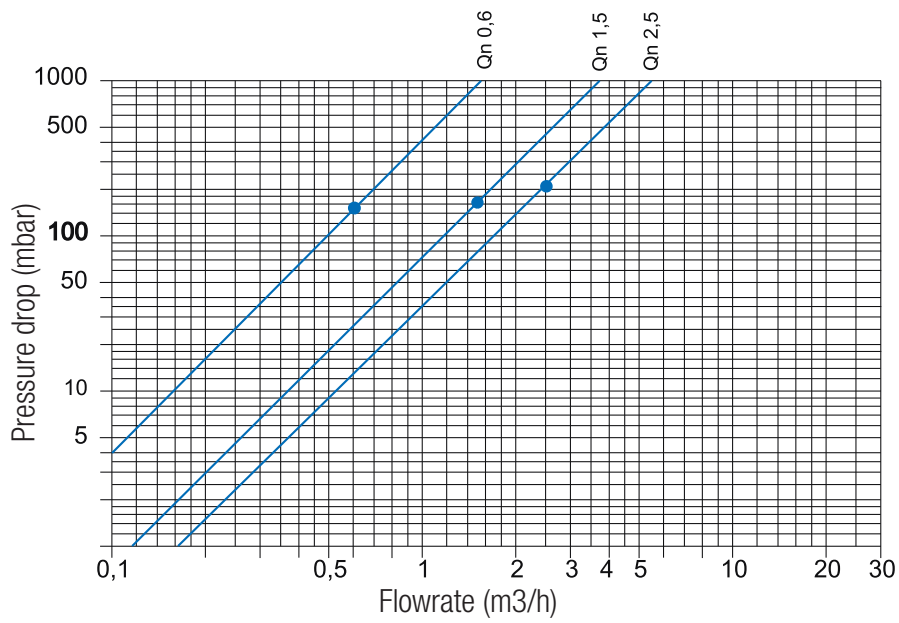


Side view of split instrument



Split instrument with 1.2 m cable:
Height 120 mm

Nomogram of pressure loss



Ordering

Standard versions with their features are given in the table. For clarity, individual type designations are not given. The designation code consists of the following

- Product name
- Nominal flowrate and
- Abbreviations for features:

Example of a typical type designation: AMTRON® ES-30 Qp 1,5, B5MEE-h&c

| Abbreviation | Key |
|---------------------|---|
| ...B5..., ...B10... | Battery life 5+1 or 10+1 years |
| ...S... | Split totalizer which can be mounted separately from the flowmeter |
| ..M.. | M-Bus |
| ..MEE.. | M-Bus and 2 pulse inputs |
| ...A... | Remote output with energy pulses in kWh, combined with data logger with 1260 data records. |
| ws/c | Instrument for heat applications with mounting on the cold side = supply flow or for cooling applications with mounting on the warm side= return flow |
| h&c | Combined hot and cooling operations |

| Application → | Heating | Heating or cooling | | | Combined heating/cooling meter | | | | | |
|---|----------------------------|----------------------------|--------|----------|--------------------------------|--------|-------------|--------|--------|--------|
| | | Cooling line / return flow | | | Return flow | | | | | |
| Mounting → | Cooling line / return flow | | | Hot line | | | Return flow | | | |
| Option ↓ | AMTRON®... ↓ → | - | | | ...ws/c | | | ...h&c | | |
| Nominal flowrate (Qp m³/h) → | 0,6 | 1,5 | 2,5 | 0,6 | 1,5 | 2,5 | 0,6 | 1,5 | 2,5 | |
| Battery 5+1 years | E-30 ...B5 ... | 93'564 | 92'547 | 92'549 | 93'892 | 93'893 | 93'894 | 93'904 | 93'905 | 93'906 |
| Battery 5+1 years, M-Bus | E-30... B5M ... | 93'567 | 92'548 | 92'550 | 93'895 | 93'896 | 93'897 | 93'907 | 93'908 | 93'909 |
| Battery 5+1 years, M-Bus, 2 pulse inputs | ES-30... B5MEE ... | 93'626 | 93'627 | 93'628 | 93'898 | 93'899 | 93'900 | 93'910 | 93'911 | 93'912 |
| Battery 10+1 years, split version with 0.3 m cable | ES-30... B10 ... | 93'565 | 92'798 | 93'566 | 93'901 | 93'902 | 93'903 | 93'913 | 93'914 | 93'915 |
| Battery 5+1 years, pulse output and data logger, split version with 0.3 m cable | ES-30... B5A ... | - | 93'945 | - | - | 93'946 | - | - | 93'947 | - |

Other features of standard versions:

- Energy meter: display in MWh
- Diameter of temperature sensor: 5 mm / cable length of temperature sensor: 1.5 m.

The appropriate sensor for the mounting on site is integrated into the housing of the flow sensor.

Other versions on request.

DISTRIBUTOR:

Contact, Address and Stamp

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