

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:

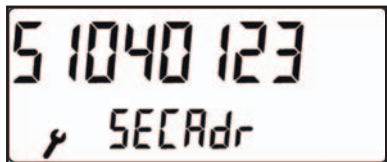


Example 1:

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

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...)

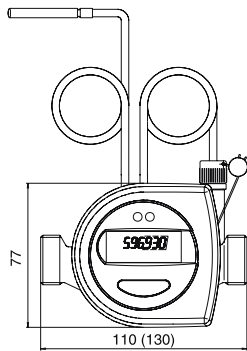
- Min. Pulse length: > 125 ms
- Max. Pulse frequency: < 3 Hz
- Terminal voltage: 3 V

Pulse output (...A...)

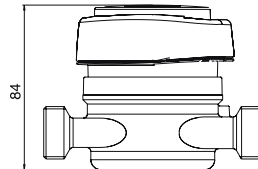
- Pulse value: 1 kWh
- Contact time: 125 ms
- Bounce: none
- Max. voltage: 28 V DC or AC
- Max. current: 100 mA

Dimensional drawings

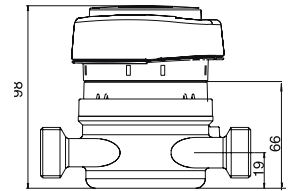
Top view



Side view

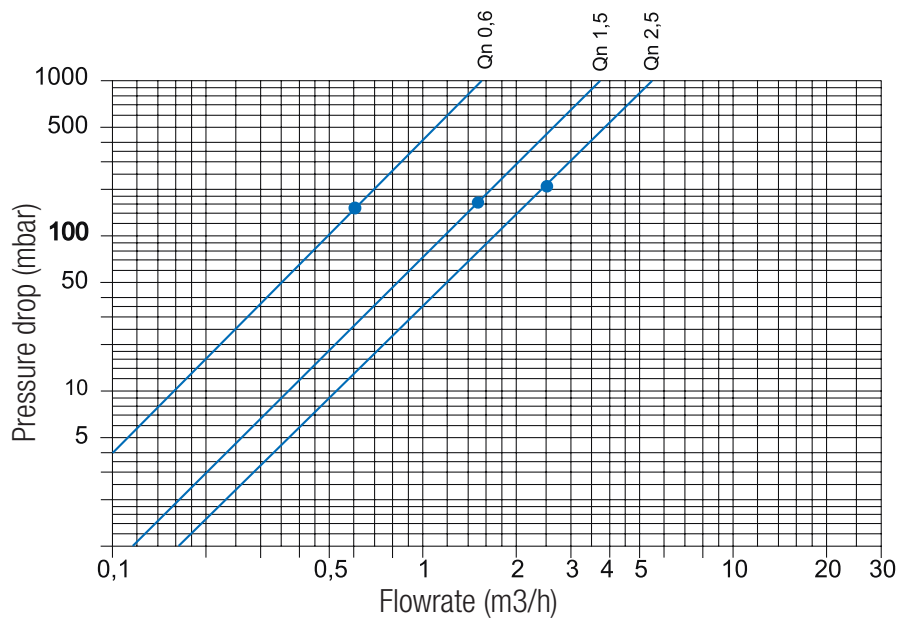


Side view of split instrument



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 hot / cooling meter					
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 split version with 0.3 m cable	ES-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, split version with 0.3 m cable	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	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.

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