

The induction-based heat consumption meters operate on the principle of electromagnetic induction. This type of meter is used to measure rates of flow and consumption of energy of electrically conductive liquids. They are particularly suitable for applications where conventional mechanical types are not sufficiently reliable and accurate and also when pressure drop is not acceptable. The only factor limiting their applicability is a certain minimum electric conductivity of the liquid and low content of ferromagnetic particles. Measuring device consists of sensor, the pair of dual resistance thermometers and electronic converter. The micro-processor controlled converter is provided with digital display, five push buttons, interface connector RS232 and terminals for connecting the sensor to external input/output equipment.

High measuring accuracy

High accuracy of measurement is achieved by the use of very accurate converter ADC processing output signals from the sensor, SMD technology and digital correction of errors at low flows. The technological design adopted ensures high temperature and time stability of measurement.

Simple to operate

The five push buttons enable to select a wide range of modes and adjustable parameters from a well-organized menu in a two-line display. Even simpler operation is attainable by means of a detachable computer.

Damping and insensitivity

Different damping modes and magnitudes can be preset when measuring the nonhomogeneous media with highly fluctuating flows. Also selectable is the level of measurement insensitivity at very low rates of flow.

Data protection

The converter HC2 stores in its memory the measured data and prevents their loss at power failures. It memorizes also the last four recorded errors. In addition, the most important data (calibration constants, cumulated values and parameters of the selected operational modes) are also stored in the nonvolatile memory EEPROM.

Real time and sampling

The converter HC2 is equipped with a real-time clock. The memory can store up to 500 data automatically measured in the preset periods of real time and time intervals, e.g. fifteen minutes daily maximum at a preset time. It is possible to store energy and the volume of flow in both directions; two temperatures data and temperature difference (for these quantities it is possible to select the record of average, maximal or minimal value in time interval, or instantaneous values in the time of recording)

Design

The converter HC2 enables the meter to be used for dosing of a energy or volume of liquid. Dosing can be initiated by means of push button or external signal. The stop of dosing is governed by the converter. Dosing takes place on the background of flow measurement.

Inputs and outputs

The converter HC2 provides for galvanically separated connections of the input/output equipments to take place simultaneously. Available is also a galvanically separated 24 V DC power supply. The input/output equipment can be connected simultaneously to:

- the serial port input
- the serial port output
- the analogue current output
- frequency output
- initiation of dosing
- two multifunctional outputs

The independent multifunctional outputs enable transfer of selected impulses, one or two level comparison and start/stop of dosing. The outputs can be selected on-site with either open collector or on-off contact relay.

Communication

The standard HC2 converter is equipped with a complete serial interface RS232 enabling communication with PC and connection to a modem. It can be complemented also with connection of galvanically separated converter to a RS485 bus. From communication point of view the converter is designed as an open system to which other buses can be attached. Its facilities enable integration of the flowmeter into metering, regulation and data collection system.

SIMA HC2

HEAT METER

HIGH-ACCURACY BI-DIRECTIONAL FLOW

DATA BACKUP FOR BLACKOUT PROTECTION

SIMPLE MODE AND PARAMETER SELECTION

ENERGY AND VOLUME DOSING

PERIODICAL SELF-CLEANING OF ELECTRODES

REAL-TIME CLOCK

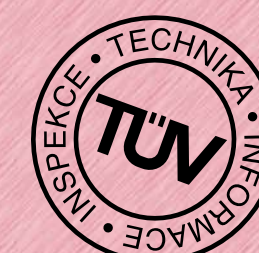
STORAGE FOR OF 500 REAL-TIME DATA POINTS

DAMPING OF SUDDEN FLOW CHANGES

EASY CALIBRATION

MULTIFUNCTIONAL OUTPUTS

SELECTABLE COMMUNICATION MODE

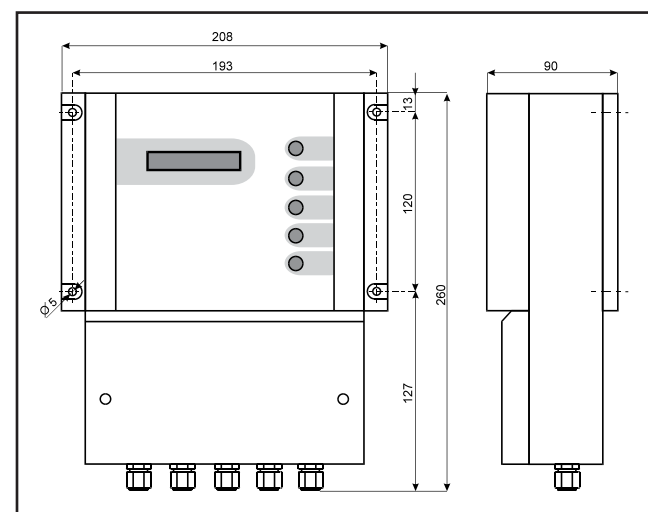


SIMA HC2

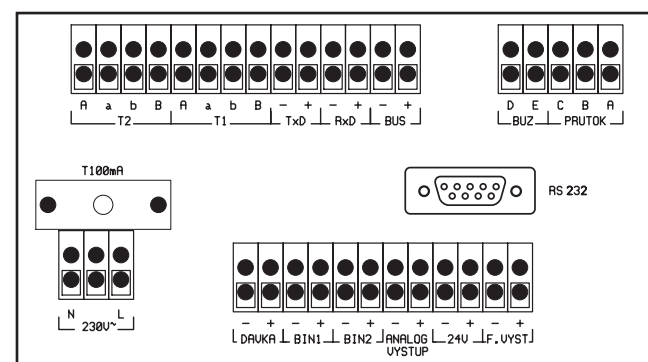
CONVERTOR

Technical data

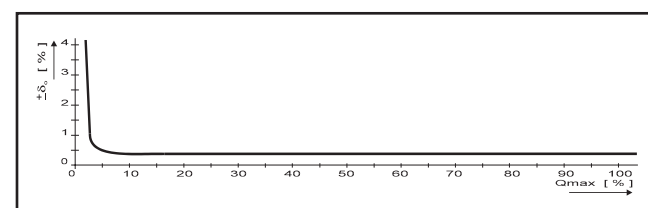
Power supply	230 V (+10 %, -15 %), 50/60 Hz 115 V (+10 %, -15 %), 50/60 Hz
Power consumption	12 VA max.
Protection category	IP 66
Working temperature	-5 °C up to +45 °C (protect against direct sun shine)
Storage temperature	-20 °C až +80 °C (relative humidity max. 85 %)
Measurement range of flow	0,1 to 10 m/s
Measurement error	≤ 0,5 % of measured value in the range 5 ÷ 100 % Q _{max} .
Measurement range of temperature	+2 °C to +150 °C
Accuracy of calculation	$E_c \leq \pm (0,5 + \Delta t \text{ min}/\Delta t) \%$
Indication	two-line alphanumeric display 2 x 16 characters five buttons
Manual control	
Input (galv. separated)	- start of the dose : 10 mA max., diode
Outputs (galv. separated)	- source 24 V_{ss}, non-stabilised (R _i = 470 W; C = 470 mF) - analogue current output, active (0÷20 mA or 4÷20 mA, load ≤ 800 W) maximal current for momentary rate of flow can be set as desired - frequency output (optional range) (2 Hz÷20 kHz, 30 V/5 mA max; max. 50 kHz, 30 V/1 mA; open collector) - 2 x multi-functional volume or energy impulses, single or double- level comparison, start and stop of dose (open collector 30 V/20 mA max., switch-on or off contact 120 V/800 mA max). optional quantities: rate of flow, energy, upper and lower temperature, temperature difference
Serial ports (galv. separated)	- current collector T x D output, 30 V/20 mA max. R x D input, 10 mA max., diode - complete serial interface RS 232 on connector Canon 9 - collector RS 485 (on request)
Casing material	ABS
Weight	2 kg



rozměry



svorkovnice elektroniky



technická přesnost průtokoměru

SIMA HC2

SENSOR; THERMOMETERS

Technical data

Sensor

Conductivity of measured liquid	$\geq 5 \mu\text{S} \cdot \text{cm}^{-1}$
Protection category	IP 65,67, 68
Lining	hard rubber, halar, teflon
PN	0,6 ÷ 4,0 MPa
Electrodes	standard: stainless steel chemical resistant: platinum, titan, hastelloy
Flanges	ČSN, DIN, ANSI
Cable length	standard: 5 m max: 30 m

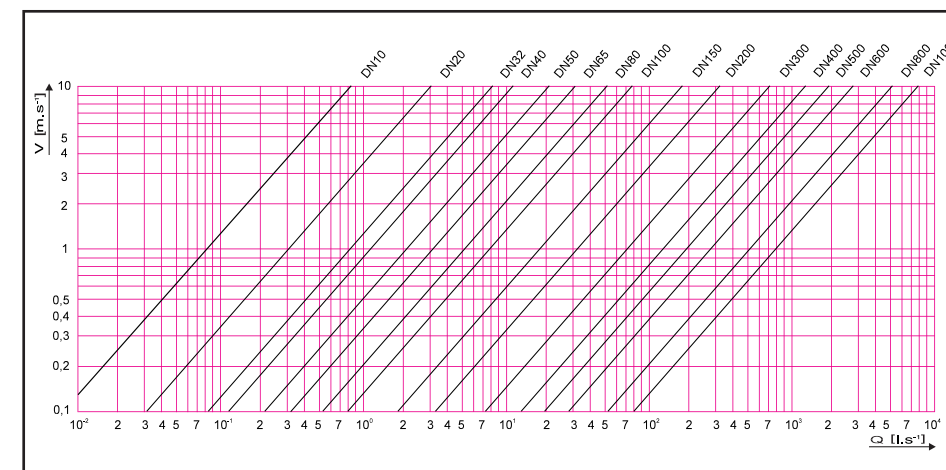
Thermometers

Type	Pt 100 - standard, Pt 500 - on request
Dual thermometer error	$E_t = \pm (0,5 + 3\Delta t \text{ min}/\Delta t) \%$
Cable length	- with connecting cable according to thermometer manufacturer - with connecting head 50 m max (quad)

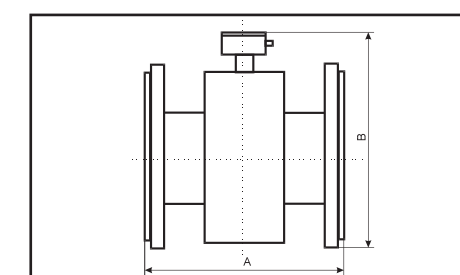


DN (mm)	DN (inch)	Q _{max} (l.s-1)	Q _{max} (l.min-1)	Q _{max} (m.s.h-1)	A (mm)	A* (mm)	B (mm)	Remark
10	3/8	0,08 ÷ 0,8	4,7 ÷ 47	0,3 ÷ 2,8	150	150	170	Flanged design
20	3/4	0,31 ÷ 3,1	19 ÷ 188	1,1 ÷ 11,3	150	150	195	Flanged design
32	1 1/4	0,8 ÷ 8	48 ÷ 485	2,9 ÷ 29	150	150	200	Flanged design
40	1 1/2	1,3 ÷ 13	75 ÷ 755	4,5 ÷ 45	150	270	215	Flanged design
50	2	2,0 ÷ 20	118 ÷ 1 180	7 ÷ 71	200	270	225	Flanged design
65	2 1/2	3,3 ÷ 33	199 ÷ 1 990	12 ÷ 120	200	300	250	Flanged design
80	3	5,0 ÷ 50	302 ÷ 3 020	18 ÷ 185	200	300	260	Flanged design
100	4	8 ÷ 80	471 ÷ 4 715	28 ÷ 285	250	300	290	Flanged design
150	6	18 ÷ 180	1 060 ÷ 10 605	64 ÷ 640	300	400	350	Flanged design
200	8	31 ÷ 315	1 885 ÷ 18 850	113 ÷ 1 135	350	450	420	Flanged design
300	12	71 ÷ 710	4 241 ÷ 42 415	254 ÷ 2 545	500	520	550	Flanged design
400	16	126 ÷ 1 260	7 540 ÷ 75 400	452 ÷ 4 525	600	520	675	Flanged design
500	20	196 ÷ 1 965	11 781 ÷ 117 810	707 ÷ 7 070	600	520	760	Flanged design
600	24	283 ÷ 2 830	16 965 ÷ 169 650	1 018 ÷ 10 180	600	600	850	Flanged design
800	32	503 ÷ 5 030	30 159 ÷ 301 595	1 810 ÷ 18 100	800	800	1035	Flanged design
1000	40	785 ÷ 7 855	47 124 ÷ 471 240	2 827 ÷ 28 275	1000	1000	1240	Flanged design

The indicated Q_{max} values are recommended values and correspond to speeds within the range of 1 m/s ÷ 10 m/s.
On request also: DN 15 (1/2"), 25 (1"), 125 (5"), 250 (10"), 350 (14"), 700 (25"), 900 (36")
The assembly dimensions in the column marked (A*) correspond to an earlier series of sensor models.
The assembly dimensions in the column marked (B) are only informative with regard to their variability.



Dependency of volume rate of flow on momentary flow speed in tubes of different inner diameters



dimensions

- 1 thermometers Pt 100 with connecting cable
- 2 thermometers Pt 100 (with connecting head)
- 3 flanged design DN 100 lining: teflon (IP 67)

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