

HEAT MEASUREMENT

**ELF****THE COMPACT HEAT MEATERS  
OF THE HIGHEST GENERATION**

A precise, reliable, high class heat meter with archive of many measurement data, characterizes by modern design.

#### Characteristics

- flow rates 0,6; 1,0; 1,5; 2,5 m<sup>3</sup>/h available
- flow transducer in second accuracy class according to standards PN-EN-1434
- electronic detection of rotor rotation – total resistance to strong magnetic fields
- wide communication possibilities, inter alia M-Bus, radio, impulse output, possibility of connecting 4 additional devices (4 additional impulse inputs)
- plentiful archive of measurement data configured by the user
- archive of failure situations

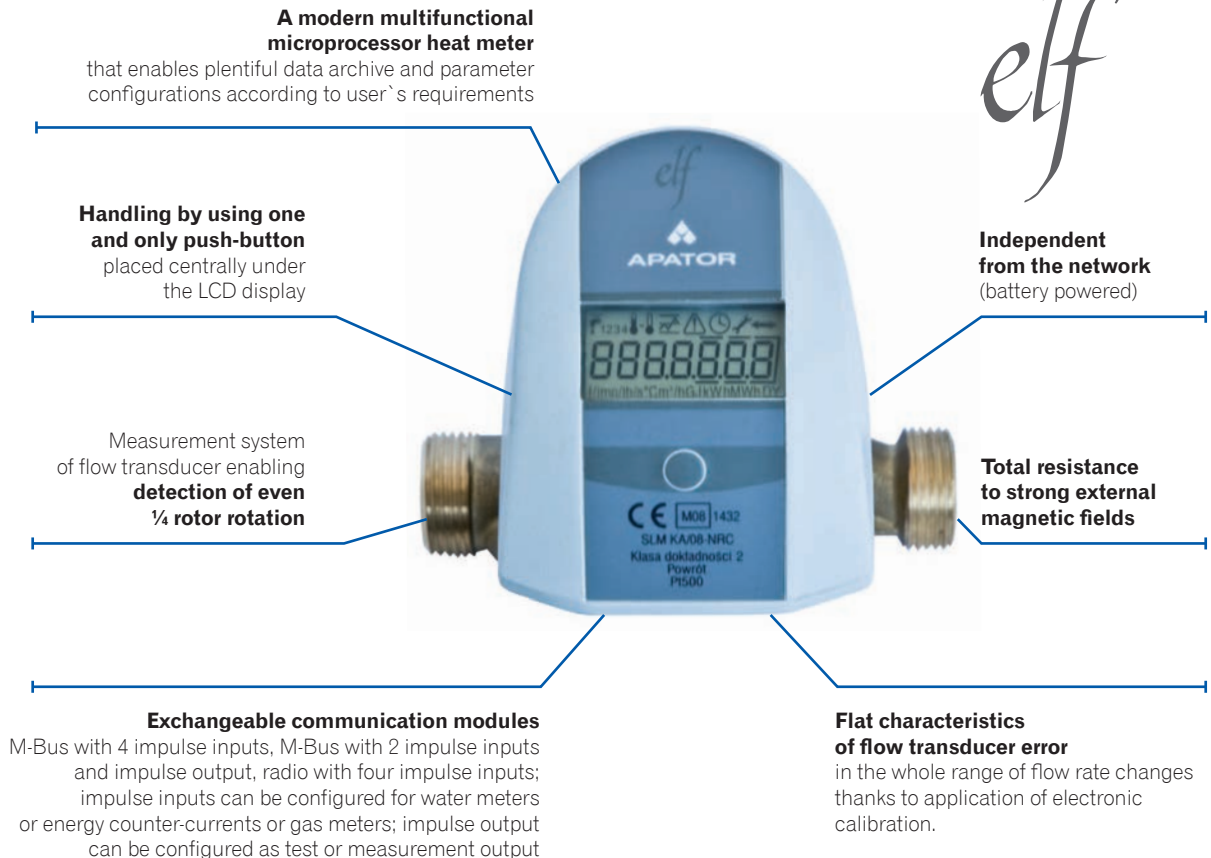
#### Application

ELF heat meter is designed for measurements of thermal energy consumption collected from heat networks out of small buildings, as flats or detached houses, etc. It can work in remote systems of building automation readings.





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## HEAT METER FUNCTIONS

- display of current data: heat consumption, water volume, temperatures of power and return, power, instantaneous flow, impulse inputs states (additional volumes of water meters), error codes, real-time,
- display of average data – averaging period set by the user with possibility of set-up every 15, 30, 45 and 60 minutes,
- data archive in 4 time cycles. In every cycle after the given time, the current data are transferred to the archive (from RAM of the processor to the non-volatile FLASH). Cycles 1 and 2 have a registration period set by the user counted in minutes starting from 1 to 1440 (24h). Cycles 3 and 4 are structurally defined as monthly and annual. Data from cycle registration 1 and 2 can be read only electronically, monthly and annual data can be read on the display.
- archive of failure situations – the appearance and disappearance of the failure situation (electronic reading),
- display of configuration data (service), which can be set up in the non-metrological part by the user
- self-diagnosis – detection and signaling of failure situations of the measurement system, e.g. failure of impulse from the water meter, damage of the temperature sensor, too high flow, battery voltage drop

## COMPATIBILITY WITH STANDARDS AND REGULATIONS

- directive 2004/22/WE of The European Parliament and The Council of Europe dated on 2004, March 31 regarding measuring instruments, in particular MI-004 Heat Meters,
- PN-EN-1434 – Heat Meters, Part 1 – 6
- PN-EN 61000 – electromagnetic compatibility, part 2-4

## DESIGNED IN COMPLIANCE WITH REQUIRED STANDARDS:

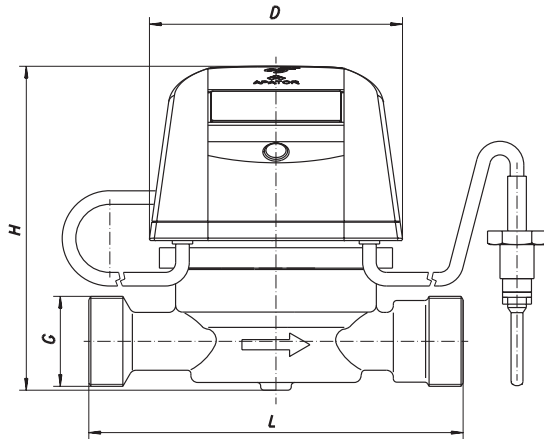
of quality, of environmental protection and security.

## TECHNICAL DATA

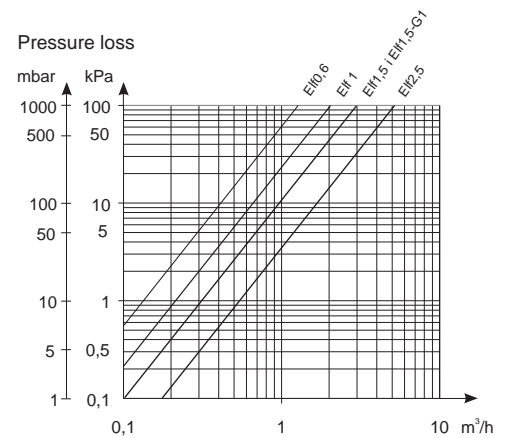
Electronic calculator with temperature sensors							
Unit of energy (to be chosen)		–	GJ or kWh				
Display type		–	LCD 7 digits with 7mm height				
Mounting type of converter with water part		–	Rotary, rotation angle 0 - 360°				
Electronic transducer		–	Integrated with electronic transducer				
Indication changes		–	By means of one single push-button				
Interface systems		–	RF module, M-Bus, 4 impulse inputs				
Limits of temperature range	accor. PN-EN 1434-1:2007	°C	Θ <sub>min</sub> = 1°C   Θ <sub>max</sub> = 105°C				
Limits of temperature range differences		°C	ΔΘ <sub>min</sub> = 3°C   ΔΘ <sub>max</sub> = 104°C				
Permissible limit errors MPE		E <sub>c</sub>	E <sub>c</sub> = ±(1 + 4Θ <sub>min</sub> / ΔΘ)				
Temperature sensors		–	PT 500 (TOPE42)				
Power		–	Lithium battery 3,6 V; minimum 2,1 Ah; size AA				
Battery life		years	5+1				
Degree of protection IEC-529		–	IP 54				
Environment temperature	t <sub>a</sub>	°C	5 ÷ 55				
Relative humidity	W	%	<90				
Dimensions		mm	57 x 75 x 88				
Control of additional impulse inputs		–	By means of potential-free contact or transistor key				
Maximum frequency of additional impulse inputs		Hz	0,5				
Maximum resistance of control or key		kΩ	10				
Maximum resistance of open control or key		MΩ	10				
Velocity of serial transmission, adjustable		Baud	300, 600, 1200, 2400, 4800, 9600				
Stop bit		–	1				
Data bit		–	8				
Parity		–	Even, Odd, None				
Average power consumption in the basic working mode / in test working mode		μA	~ 35 / ~100				
Impulse output, test mode Basic mode – thermal energy		imp/dm³ imp/GJ	According to flow sensor table conforms the smallest displayed digit or 0,1 of the smallest displayed digit				
Flow transducer							
Trademark		-	JS90-0,6-NI	JS90-1-NI	JS90-1,5-NI	JS90-1,5-1-NI	JS90-2,5-NI
Nominal diameter	DN	mm	15	15	15	20	20
Assembly position		-	H, V				
Minimum flow rate – horizontal mounting position H	q <sub>i</sub>	dm³/h	6	10	15	15	25
Minimum flow rate – vertical mounting position V	q <sub>i</sub>	dm³/h	12	20	30	30	50
Nominal flow rate	q <sub>p</sub>	m³/h	0,6	1,0	1,5	1,5	2,5
Maximum flow rate	q <sub>s</sub>	m³/h	1,2	2,0	3,0	3,0	5
Measuring range q <sub>p</sub> /q <sub>i</sub> – horizontal mounting position H		-	100				
Measuring range q <sub>p</sub> /q <sub>i</sub> – vertical mounting position V		-	50				
Maximum permissible errors MPE		E <sub>i</sub>	E <sub>i</sub> = ±(2 + 0.02 q <sub>p</sub> /q) not more than ±5%				
Maximum permissible working pressure	accor. PN-EN 1434-1:2007	bar	PS16, MAP16				
Nominal pressure		bar	PN16				
Maximum pressure loss at q <sub>p</sub>		kPa	ΔP 25				
Limits of temperature range		°C	Θ <sub>min</sub> = 0,1°C   Θ <sub>max</sub> = 90°C				
Accuracy class 2 accor. to PN-EN-1434-1:2007		-	Class 2				
Thread diameter of the water meter	G	mm	G 3/4			G1	
Lenght of the water meter	L	mm	110			130	
Height	H	mm	39			43,7	
Diameter	D	mm	65				
Mass		kg	0,38			0,48	



## DIMENSIONS AND PRESSURE LOSS CHARACTERISTIC



G	Dimension	
	G 3/4	G 1
L	110 mm	130 mm
H	95,5 mm	99,9 mm
D	74,4 mm	74,4 mm
Mass	0,6 kg	0,7 kg



## TEMPERATURE SENSORS

PT500 / TOPE42/	
✓	computer selected sensors in pairs
✓	evaporation accuracy
✓	temperature measuring range: 0 – 105 °C
✓	connecting elements: ball valve or tee
✓	Torsion cord; standard length 1,5 m

## BUILDING OF TEMPERATURE SENSORS

Flow transducer of ELF heat meter has a nest for installing one temperature sensor. The second temperature sensor can be installed in the ball valve or in the tee.

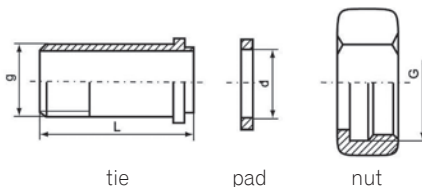
## Example of order:

Should you decide to buy an electronic heat meter ELF, we would like to ask you to give the exact technical parameters according to the schema: (heat meter's name) – (flow transducer type) – (realization). Example: heat meter ELF with flow transducer JS90-1,5-NI, realization for building in supply pipeline or return.

## Accessories – as required

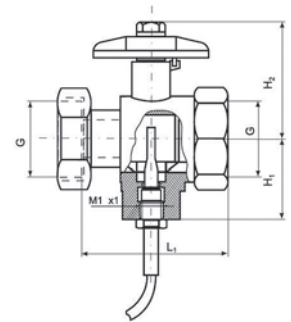
- ball valves or tees for assembly of temperature sensors
- connecting elements for assembly of flow transducer

## Connecting elements



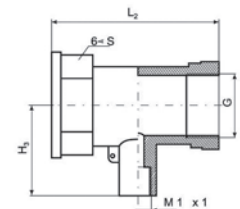
DN	G	g	d	L
	Inches	Inches	mm	mm
15	3/4	1/2	17	40
20	1	3/4	23	50

## Ball valve



G	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>
Inches	mm	mm	mm
3/4	58	32	45
1	64	34	50

## Tee



G	L <sub>2</sub>	H <sub>3</sub>	S
Inches	mm	mm	mm
1/2	56	29,5	25
3/4	64	26,5	32