HEAT MEASUREMENT

ELF

THE COMPACT HEAT METERS 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; 2,3 m³/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.

A modern multifunctional microprocessor heat meter
that enables plentiful data archive and parameter configurations according to user`s requirements

Handling by using one and only push-button
placed centrally under the LCD display

Measurement system of flow transducer enabling **detection of even ¼ rotor rotation**

Independent from the network
(battery powered)

Total resistance to strong external magnetic fields

Exchangeable communication modules
M-Bus with 4 impulse inputs, M-Bus with 2 impulse inputs and impulse output, radio with four impulse inputs; impulse inputs can be configured for water meters or energy counter-currents or gas meters; impulse output can be configured as test or measurement output

Flat characteristics of flow transducer error
in the whole range of flow rate changes thanks to application of electronic calibration.

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:

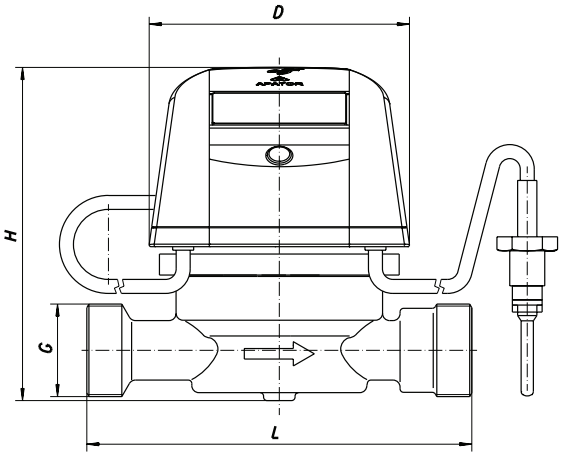
of quality, of environmental protection and security.

TECHNICAL DATA

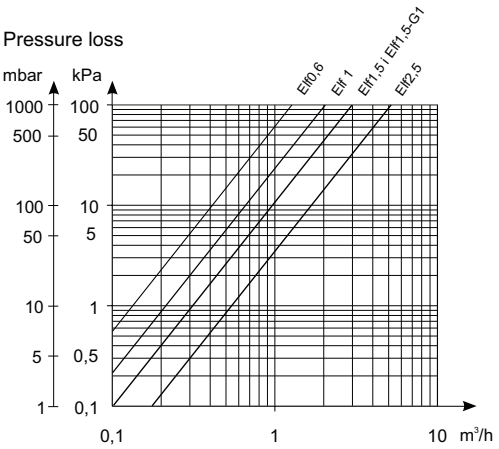
Electronic calculator with temperature sensors							
Unit of energy (to be chosen)		–	GJ or kWh				
Display type		–	LCD 7 digits with 7mm height				
Mounting type of converter with water part		–	Rotary, rotation angle 0 - 360°				
Electronic transducer		–	Integrated with electronic transducer				
Indication 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_{min} = 1°C Θ_{max} = 105°C				
Limits of temperature range differences	accor. PN-EN 1434-1:2007	°C	$\Delta\Theta_{min}$ = 3°C $\Delta\Theta_{max}$ = 104°C				
Permissible limit errors MPE	E_c	%	$E_c = \pm(1 + 4\Theta_{min}/\Delta\Theta)$				
Temperature sensors		–	PT 500 (TOPE42)				
Power		–	Lithium battery 3,6 V				
Battery life		years	5+1				
Degree of protection IEC-529		–	IP 54				
Environment temperature	t_a	°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	0,8				
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				
Impulse output, test mode Basic mode – thermal energy		imp/dm^3 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-G1-NI	JS90-2,5-NI
Nominal diameter	DN	mm	15	15	15	20	20
Assembly position		-	H, V				
Nominal flow rate	q_p	m^3/h	0,6	1,0	1,5	1,5	2,5
Maximum flow rate	q_s	m^3/h	1,2	2,0	3,0	3,0	5
Minimum flow rate – horizontal mounting position H	q_i	dm^3/h	6	10	15	15	25
Minimum flow rate – vertical mounting position V	q_i	dm^3/h	12	20	30	30	50
Starting flow	q_r	dm^3/h	2,5	2,5	4,5	4,5	7,5
Measuring range q_p/q_i – vertical mounting position V		-	50				
Maximum permissible errors MPE	E_f	%	$E_f = \pm(2 + 0{,}02\ q_p/q)$ not more than ±5%				
Maximum permissible working pressure	accor. PN-EN 1434-1:2007	bar	PS16, MAP16				
Nominal pressure	accor. PN-EN 1434-1:2007	bar	PN16				
Maximum pressure loss at q_p	accor. PN-EN 1434-1:2007	kPa	ΔP 25				
Limits of temperature range	accor. PN-EN 1434-1:2007	°C	Θ_{min} = 0,1°C Θ_{max} = 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	

TECHNICAL DATA

DIMENSIONS AND PRESSURE LOSS CHARACTERISTIC



	Dimension	
G	G ¾	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

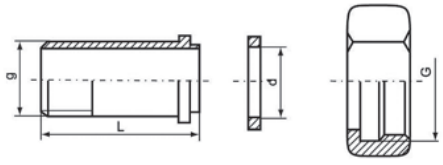
BUILDING OF TEMPERATURE SENSORS

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

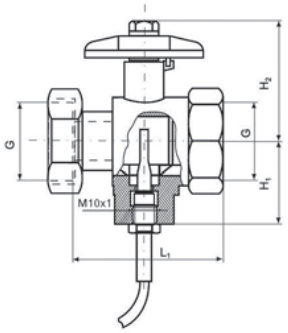
Connecting elements



tie pad nut

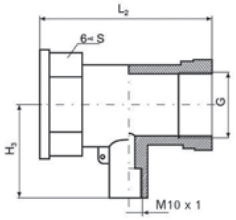
DN	G	g	d	L
	Inches	Inches	mm	mm
15	3/4	1/2	17	40
20	1	3/4	23	50

Ball valve



G	L_1	H_1	H_2
Inches	mm	mm	mm
3/4	58	32	45
1	64	34	50

Tee



G	L_2	H_3	S
Inches	mm	mm	mm
1/2	56	29,5	25
3/4	64	26,5	32

Metronfmc Ltd
15 Firs Road, Houghton on the Hill, Leicester. LE7 9GU
tel: **0116 241 3172** fax: **0116 241 3367** **www.metronfmc.com** email: **sales@metronfmc.com**