

Supercal 5 S

Fluidíkový merač tepla



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Použitie

Supercal 5 S je ďalšou generáciou kombinovaných meračov tepelnej energie z produkcie švajčiarskej spoločnosti Sontex a nahrádza známy fluidíkový merač tepla Superstatic 440. Osvedčená fluidíková technológia prietokomera Superstatic 440 je tu kombinovaná s novým kalorimetrickým počítadlom Supercal 5 I od spoločnosti Sontex.

Táto nová séria kalorimetrických počítadiel Supercal 5 I sa vyznačuje najmodernejšími multifunkčnými technológiami.

Je založený na užívateľsky optimálnejšej modulárnej koncepcii a plne vyhovuje špecifickým požiadavkam zákazníka, ako sú zjednodušená systémová integrácia, tarifné a dátové funkcie, univerzálny prenos dát a napojenie na riadiace systémy.

Pretože konštrukcia merača Supercal 5 S bola vo veľkej miere zameraná na vysokú mieru flexibility a zároveň na budúce štandardy, je ideálny ako merač tepla alebo chladu, ale aj ako kombinovaný merač tepla a chladu.

Prídavné impulzné vstupy umožňujú pripojenie vodomeroch na teplú alebo studenú vodu, plynomerov, meračov oleja a elektromerov.

Vďaka svojim rozsiahlym možnostiam pre dátovú komunikáciu ako aj jeho flexibilitu pri získavaní a zaznamenávaní dynamických systémových dát, je Supercal 5 vhodný tiež na použitie v sieťach diaľkového vykurovania a priemyselných zariadeniach.

Konštrukcia

Merač tepla a chladu Supercal 5 S pozostáva z fluidíkového prietokomera, batériovo alebo sieťovo napájaného kalorimetrického počítadla a párovaných snímačov teploty Sontex 460. Hodnoty spotreby možno odčítať jednoducho z displeja alebo pomocou softvéru Superprog Windows alebo Superprog Android. K dispozícii je optické rozhranie a rovnako aj komunikačné rozhrania NFC, M-Bus, BACnet, Modbus, obojsmerné rádio SONTEX, wM-Bus alebo LoRaWAN.

Technical Data

Temperature Measurement	<ul style="list-style-type: none"> ■ Type of temperature sensor ■ Cabling ■ Absolute temperature range ■ Approved range ■ Homologation range ■ Response limit ■ Temperature resolution t ■ Temperature resolution Δt ■ Environmental class A 	Pt500 according to EN60751 2- or 4-wires -20°C to 200°C 1°C to 200°C 3 K to 150 K 0,2 K 0,1 K 0.01 K E1/M1
Measuring Cycle	<ul style="list-style-type: none"> ■ Temperature measurement ■ Battery operated ■ Mains operated 	10 – 30 s 3 – 30 s
Temperature	<ul style="list-style-type: none"> ■ Operation ■ Storing and transport 	5°C to 55°C -20°C to 70°C (dry environment)
Display	<ul style="list-style-type: none"> ■ Illuminated dot-matrix 	128 × 64 pixels
Display Units	<ul style="list-style-type: none"> ■ Energy ■ Volume ■ Additional pulse inputs ■ Temperature 	kWh, MWh, MJ, GJ, kBtu, MBtu, Mcal, Gcal L, m ³ , gal (US), kgal (US), ft ³ Energy or volume °C, °F
Lifespan Supply Modules	<ul style="list-style-type: none"> ■ D battery ■ Mains 230 VAC ■ Mains 24 VDC / 24 VAC 	12 + 1 years – –
Degree of Protection	<ul style="list-style-type: none"> ■ IP-Code 	IP 65 in accordance to IEC 60529
Pulse Inputs	Frequencies <ul style="list-style-type: none"> ■ Without supply ■ D battery ■ Mains Input voltage	maximum 5 Hz maximum 200 Hz maximum 200 Hz 0 to 30 V
Pulse Outputs	Frequencies <ul style="list-style-type: none"> ■ Without supply ■ D battery ■ Mains Output voltage	maximum 5 Hz maximum 200 Hz maximum 200 Hz 0 to 60 V
Optical Interface	<ul style="list-style-type: none"> ■ Interface 	according to IEC 62056-21:2002
NFC Interface	<ul style="list-style-type: none"> ■ Interface 	according to ISO/IEC 14443 Type A
M-Bus Interface	<ul style="list-style-type: none"> ■ Interface ■ Baud rate 	according to EN 13757-2/3 300 to 9600 baud

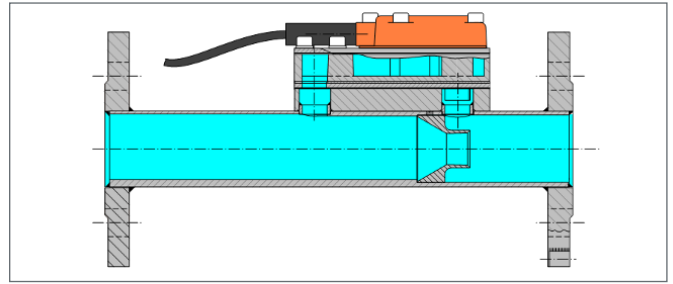
Flow Meter Supercal 5 S

Fluid Oscillator Flow Sensor: The principle

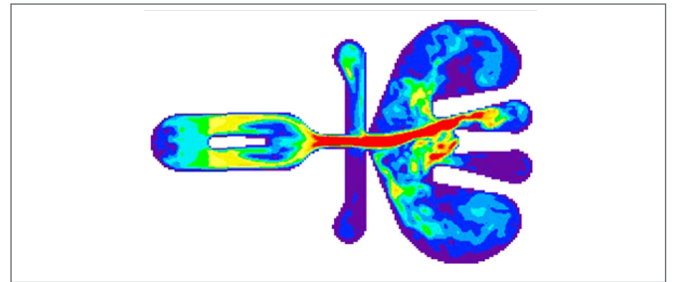
Picture 1: The main part of the flow passes through a Venturi nozzle in the pipe, creating the differential pressure to bypass the other part of the flow through the fluid oscillator.

In the oscillator the liquid is led to a nozzle and accelerated to a jet. Opposite of the nozzle the jet is redirected to the left or right into a channel that leads upwards to the sensor head equipped with a piezo sensor. The pressure of the liquid on the sensor creates an electrical pulse. The liquid flows back to the pipe through a return loop and redirects the jet into the other channel where the action is repeated and fluid oscillation is created. The frequency of this oscillation is linear proportional to the volume flow. A supplementary benefit is the self cleaning effect due to the oscillating character.

Picture 2: The animated top view on the oscillator shows the differences of velocity of the liquid. The jet accelerated by the nozzle with the highest velocity in red, slow velocity in blue.



Picture 1: Section through the flow sensor



Picture 2: fluidic oscillation with jet (RED)

Main Features

The thermal energy meters Supercal 5 S are optimized for the measurement and calculation of energy consumption in district heating systems. They are also extremely well suited to use purely as volumetric flow meters for various media.

- Interchangeable measuring head
- Complete range of pipes 1 – 1500 m³/h
- Purchase and maintenance costs are reasonable compared with other static flow sensors
- Corrosion resistant materials
- Protection degree of flow sensor IP68
- Threaded and flanged fittings
- Straight sections of piping of 3 DN in flow and return of any flow meter or heat meter must be respected. For the Supercal 5 S up to DN 40 (qp10) the straight sections of piping of 3 DN are already included in the length of the flow sensor
- No moving parts, therefore no wear
- Not sensitive to dirt
- Stable
- For horizontal, upstream and downstream pipes, independent mounting position
- Common spare parts qp 1 – 1500 m³/h
- Dynamic range: 1:100 at qp 1 – 25 m³/h
1:50 at qp 40 – 400 m³/h
1:25 at qp 800 – 1500 m³/h
- Direct pick-up of voltage pulses without reflectors
- Measurement independent of medium
- Long-term, stable, accurate and reliable measurement, even with poor water quality

Technical Data Flow Meter Supercal 5 S

Dimensions

Material : Brass (DN 15 – DN 40)

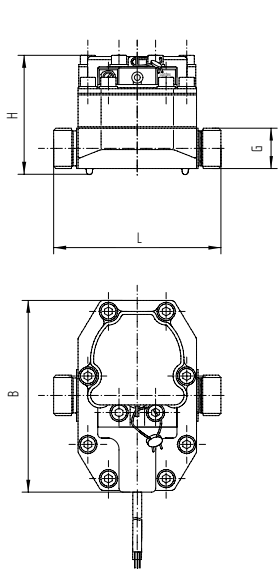


Fig1

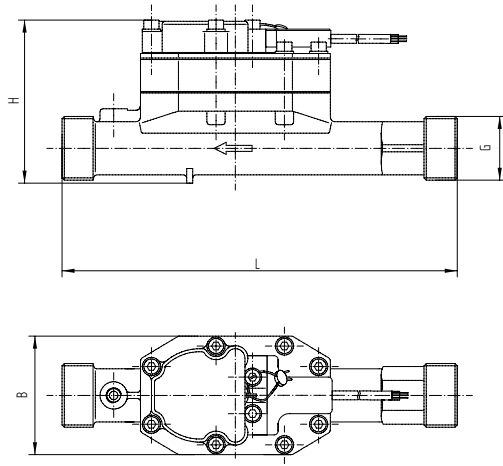


Fig2

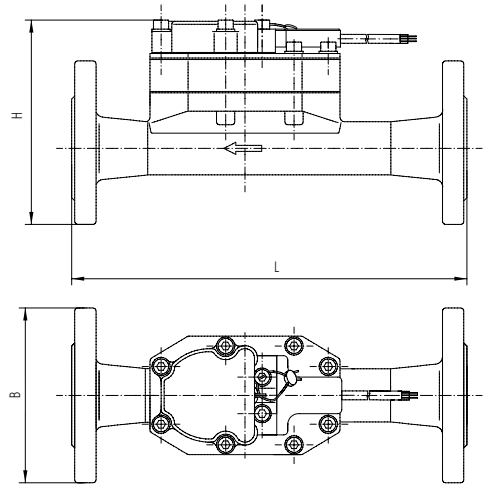


Fig3

qp	DN	G	PN	Fig.No	B (mm)	H (mm)	L(mm)	h (Ø mm)	# bolts (M)
1 m ³ /h	-	¾"	16/25	1	125	79	110		
1 m ³ /h	-	1"	16/25		125	79	190		
1,5 m ³ /h	-	¾"	16/25		125	79	110		
1,5 m ³ /h	-	1"	16/25		125	79	190		
2,5 m ³ /h	-	1"	16/25		125	79	190		
3,5 m ³ /h	-	1 ¼"	16/25	2	78	105	260		
3,5 m ³ /h	25	-	16/25	3	115	134	260	Ø 85	4 (M 12)
6 m ³ /h	-	1 ¼"	16/25	2	78	105	260		
6 m ³ /h	25	-	16/25	3	115	134	260	Ø 85	4 (M 12)
10 m ³ /h	-	2"	16/25	2	78	122	300		
10 m ³ /h	40	-	16/25	3	150	157	300	Ø 110	4 (M 16)

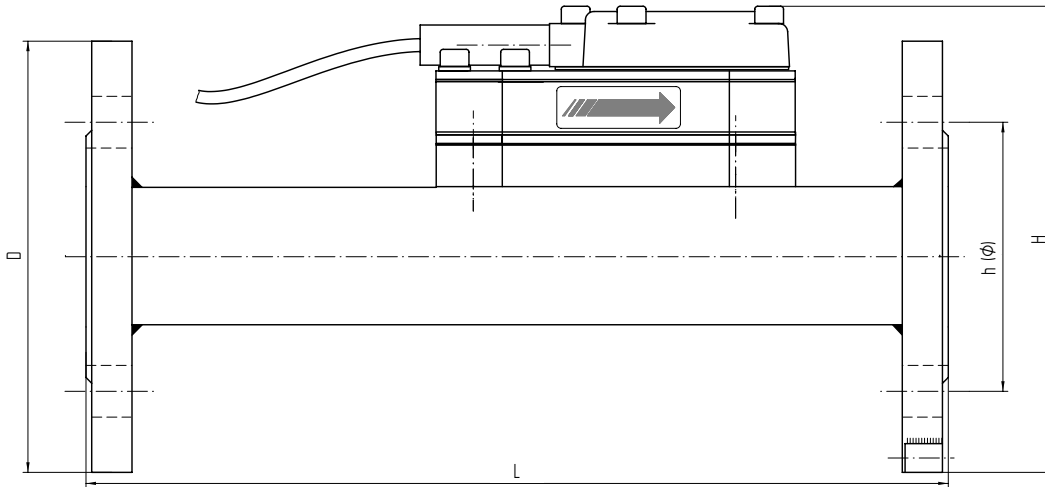
Technical Data Flow Meter Supercal 5 S

Dimensions:

Material: Stainless steel (DN 50 – DN 250)

Material: Spheroidal cast iron (DN 50 – DN 150)

Material: Steel (DN 350 – 500)



qp	DN	PN	L (mm)	D (mm)	H (mm)	h (Ø mm)	# bolts (M)
15 m ³ /h	50	16,25	270	165	171	Ø 125	4 (M 16)
25 m ³ /h	65	16,25	300	185	189	Ø 145	8 (M 16)
40 m ³ /h	80	16,25	225	200	203	Ø 160	8 (M 16)
40 m ³ /h	80	16,25	300	200	203	Ø 160	8 (M 16)
60 m ³ /h	100	16	250	220	226	Ø 180	8 (M 16)
60 m ³ /h	100	25	250	235	235	Ø 190	8 (M 20)
60 m ³ /h	100	16	360	220	226	Ø 180	8 (M 16)
60 m ³ /h	100	25	360	235	235	Ø 190	8 (M 20)
100 m ³ /h	125	16	250	250	254	Ø 210	8 (M 16)
100 m ³ /h	125	25	250	270	270	Ø 220	8 (M 24)
150 m ³ /h	150	16	300	285	286	Ø 240	8 (M 20)
150 m ³ /h	150	25	300	300	300	Ø 250	8 (M 24)
150 m ³ /h	150	16	500	285	286	Ø 240	8 (M 20)
150 m ³ /h	150	25	500	300	300	Ø 250	8 (M 24)
250 m ³ /h	200	16	350	340	340	Ø 295	12 (M 20)
250 m ³ /h	200	25	350	360	360	Ø 310	12 (M 24)
400 m ³ /h	250	16	450	405	405	Ø 355	12 (M 24)
400 m ³ /h	250	25	450	425	425	Ø 370	12 (M 27)
800 m ³ /h	350	10	500	505	505	Ø 460	16 (M 20)
800 m ³ /h	350	16	500	520	520	Ø 470	16 (M 24)
1,500 m ³ /h	500	10	500	670	670	Ø 620	20 (M 24)
1,500 m ³ /h	500	16	500	715	715	Ø 650	20 (M 30)

Flanges according to standard DIN-EN 1092-1/DIN 2501/ISO 7005-1

Technical Data Flow Meter Supercal 5 S

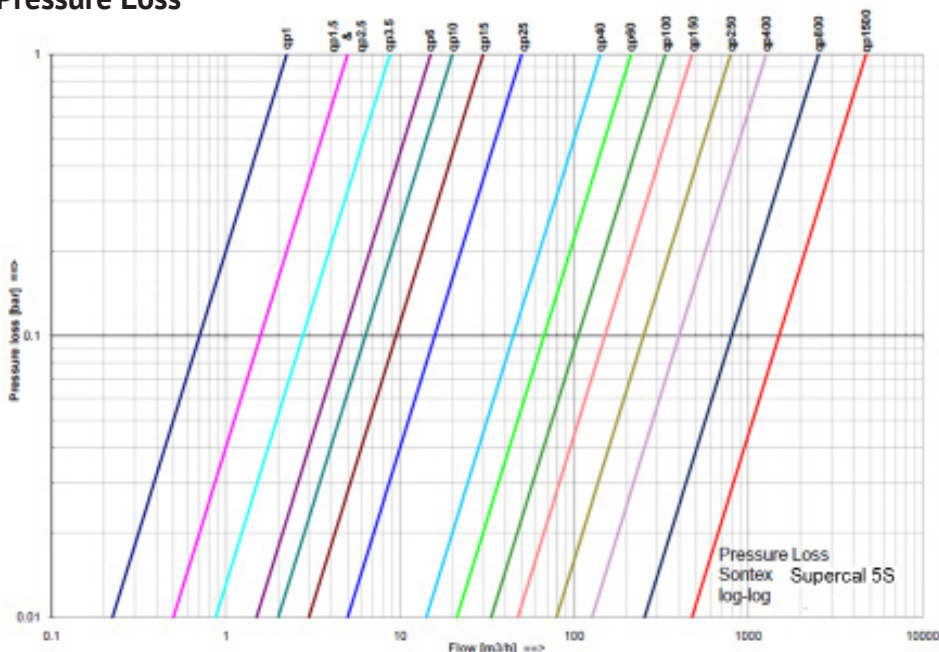
qp	Threaded connection	Flanged connection	Length	Mat.	PN	Maximal flow qs	Minimal flow qi	Low flow threshold value (50°C)	Threaded hole for sensor	Weight.	Kvs value (at 20°C)	Pressure loss at qp
m³/h	G"	DN	mm		PN	m³/h	l/h	l/h		kg	m³/h	bar
	(EN ISO 228-1)	(ISO 7005-3)										
1	3/4"	(15)	110	Brass	16/25	2	10	4	Yes	2,9	2,09	0,20
1	1"	(20)	190	Brass	16/25	2	10	4	Yes	3,2	2,09	0,20
1,5	3/4"	(15)	110	Brass	16/25	3	15	10	Yes	2,9	2,06	0,25
1,5	1"	(20)	190	Brass	16/25	3	15	10	Yes	3,2	5,44	0,09
2,5	1"	(20)	190	Brass	16/25	5	25	10	Yes	3,2	5,21	0,25
3,5	1 1/4"	(25)	260	Brass	16/25	7	35	15	Yes	3,5	7,46	0,16
3,5		25	260	Brass	16/25	7	35	15		5,4	7,46	0,16
6	1 1/4"	(25)	260	Brass	16/25	12	60	30	Yes	3,5	13,4	0,16
6		25	260	Brass	16/25	12	60	30		5,4	13,4	0,16
10	2"	(40)	300	Brass	16/25	20	100	50	Yes	4,5	20,9	0,25
10		40	300	Brass	16/25	20	100	50		8,1	20,9	0,25
		(ISO 7005-1)										
15		50	270	SS/CI	16/25	30	150	75		9,1	31,6	0,25
25		65	300	SS/CI	16/25	50	250	125		11,2	51,8	0,25
40		80	225	SS	16/25	80	800	400		14,4	142	0,09
40		80	300	SS/CI	16/25	80	800	400		13,1	142	0,09
60		100	250	SS	16/25	120	1,200	600		NA	210	0,10
60		100	360	SS/CI	16/25*	120	1,200	600		19,0	210	0,10
100		125	250	SS/CI	16/25*	200	2,000	1,000		NA	343	0,10
150		150	300	SS/CI	16/25*	300	3,000	1,500		27,2	514	0,10
150		150	500	SS	16/25	300	3,000	1,500		NA	514	0,10
250		200	350	SS	16/25	500	5,000	2,500		NA	857	0,10
400		250	450	SS	16/25	800	8,000	4,000		38,1	1'372	0,10

SS: Stainless Steel; CI: Spheroidal cast iron*: PN 25 only SS

						m³/h	m³/h	m³/h				
800		350	500	Steel	10/16	1,600	32	16		90/105	2,667	0,10
1,500		500	500	Steel	10/16	3,000	60	30		130/195	5,000	0,10

Degree of protection	■ Standard	IP68
Ambient Temperatures	■ Operation	5... 55°C
	■ Storing and transport	-25... 70°C
Measurement	■ Approved temperature range	5... 130°C

Pressure Loss



CE Conformity

according to Directive MID 2014/32/EU
according to RED 2014/53/EU

Technical Support

For technical support, please contact your local Sontex agent or Sontex SA directly.

Sontex Hotline

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Specifications are subject to change without notice.