

FH8300

The Versatile Ultrasonic Flowmeter for Liquid Applications

A Solution to meet your Needs



Main Applications

- Oil Production
- Pipeline Leak Detection
- Oil Refineries
- Chemical & Petro-chemical Plants
- Energy / Power Plants
- Water & Wastewater
- Other Process Industries



FAURE HERMAN
Mastering the Flow

IDEX
LIQUID CONTROLS GROUP



A Flowmeter Range Adapted to your Needs

The FAURE HERMAN FH8300 Ultrasonic Flowmeter is designed to measure liquids – both conductive and non-conductive. Thanks to its variety of digital and analog inputs/outputs, the FH8300 is a versatile flowmeter which easily interfaces with any process management system.

Key Technological Features

- Curve linearization
- High measurement repeatability
- Bi-directional measurement
- No pressure drop
- Communication
- Removable transducers under pressure and flowing conditions

Key Customer Advantages

- Extended turndown ratio
- Lower cost of ownership
- Simplified maintenance
- Simple integration into existing systems
- Measurement of all liquids
- Process integrity
- Easily cleaned



Transducers

Transducers are based on cutting-edge technology which ensures a high level of measurement reproducibility. The stability of the measurement over time is a very important characteristic for applications such as leak detection. The possibility to replace transducers under pressure and flowing conditions maintains the continuity of production and makes field maintenance simpler.



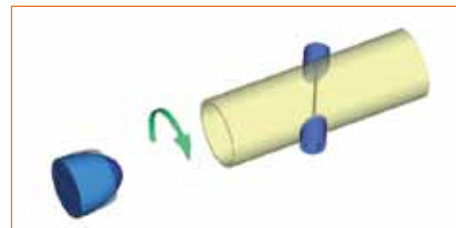
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FH8300 Configurations



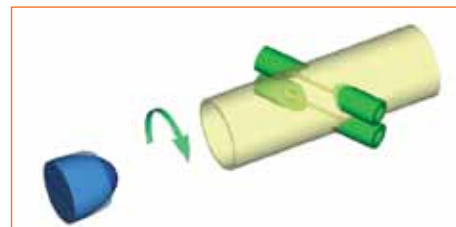
FH8300-1

- 1 beam
- $\pm 1\%$ accuracy
- DN 50 to DN 600 (2" to 24")



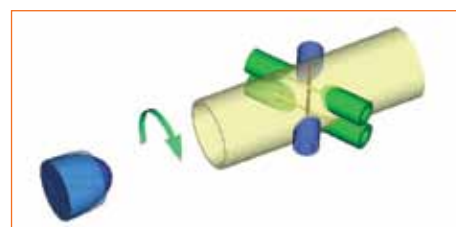
FH8300-2

- 2 beams
- $\pm 0.5\%$ accuracy
- DN 80 to DN 600 (3" to 24")
- anti-swirl effect
- extended dynamic range



FH8300-3

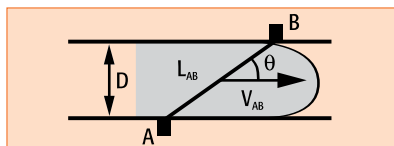
- 3 beams
- $\pm 0.25\%$ accuracy
- DN 100 to DN 600 (4" to 24")
- anti-swirl effect
- flow profile compensation (multi-product)



Measurement Principle and Operating Range



$$V_{AB} = \frac{L_{AB}}{2 \cdot \cos\theta} \times \frac{T_{BA} - T_{AB}}{T_{BA} + T_{AB}}$$



Operating Range

Maximum viscosity (cSt)	Meter size in mm/(inch)											
	50/(2)	80/(3)	100/(4)	150/(6)	200/(8)	250/(10)	300/(12)	350/(14)	400/(16)	450/(18)	500/(20)	600/(24)
Turndown ratio of 10:1*												
Class 1	1	2	2	3	4	5	6	7	8	10	11	12
Class 2	5	7	11	14	22	25	30	35	40	48	50	60
Turndown ratio of 5:1*												
Class 1	2	3	4	6	8	10	12	14	16	19	22	24
Class 2	10	14	21	28	44	50	60	70	80	86	100	120
Turndown ratio of 3:1*												
Class 1	3	6	7	9	12	15	18	21	24	30	33	36
Class 2	15	30	35	45	60	75	90	105	120	150	165	180

* For any other application, please call your FAURE HERMAN representative

Meter Classes

Beams	Class 1	Class 2
3	0.25%	0.5%
2	0.5%	1%
1	1%	2%

Ultrasonic Transit Time Method

The FH8300 measurement is based on the Ultrasonic Transit Time Method.

Basically, this method measures the difference in propagation time between ultrasonic pulses transmitted along and against the flow between A and B, T_{BA} and T_{AB} respectively.

The average flow velocity V_{AB} along AB is proportional to $(T_{BA} - T_{AB})$.

Meter Selection

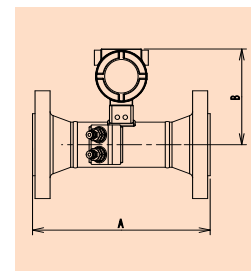
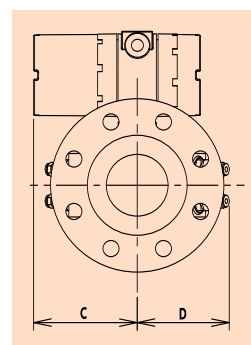
Standard Dimensions : ANSI 150 to ANSI 900 WN Flanges (a)

Sizes		A : Length*		B		C (ANSI 600)		D (ANSI 600)		Approx. Weights (ANSI 150)		Minimum Flowrates Detection (0.05 m/s)		Maximum Flowrates (10 m/s) (b)		Maximum Design Flowrates (13 m/s)	
in.	mm	in.	mm	in.	mm	kg	lbs	m³/h	Bbl/h	kg	lbs	m³/h	Bbl/h	m³/h	Bbl/h	m³/h	Bbl/h
2	50	11.8	300	10.9	278	5.4	138	5.2	133	15	33	0.4	2.5	70	440	90	570
3	80	11.8	300	11.5	292	5.4	138	6.1	155	20	44	0.8	5	160	1010	210	1320
4	100	17.7	450	12.0	305	5.4	138	7.4	187	34	74.8	1.3	8.2	270	1700	350	2200
6	150	21.7	550	13.1	332	5.4	138	9.0	228	52	114.4	3	18.9	600	3770	780	4910
8	200	23.7	600	14.1	358	5.4	138	10.2	260	85	187	5.5	34.6	1100	6920	1430	8990
10	250	29.5	750	15.2	385	5.4	138	12.0	304	115	253	8.5	53.5	1700	10690	2210	13900
12	300	27.6	700	16.1	410	5.4	138	13.0	329	170	374	12	75.5	2400	15100	3120	19620
14	350	27.6	700	16.8	426	5.4	138	13.9	352	210	462	14.5	91.2	2900	18240	3770	23710
16	400	29.5	750	17.8	451	5.4	138	15.5	393	275	605	19	120	3800	23900	4940	31070
18	450	31.5	800*	18.8	477	5.4	138	16.6	421	340	748	24	151	4800	30190	6240	39250
20	500	33.5	850*	19.8	502	5.4	138	18.0	456	425	935	30	189	6000	37740	7800	49060
24	600	37.4	950*	21.8	553	5.4	138	20.5	520	630	1386	42.5	267	8500	53460	11050	69500

(a) For Welding-Neck (W/N) flanges only. For Slip-On (SO), please contact us.

(b) Extended flowrate up to 2 x max. flowrate upon request.

* For ANSI 150 and 300 only. For ANSI 600 and 900 : please consult us.



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Specifications



The FHview Software

FHview is the PC software used to configure and operate the FAURE HERMAN FH8300 ultrasonic product line. The FH8300 product line includes ultrasonic flowmeters for both fiscal and process applications. The communication between FHview and the FH8300 occurs using MODBUS protocol via a RS485 serial link.



Environment	
Ambient temperature range	-40 to +60°C (-40 to +140°F)
Process temperature range	-40 to +120°C (-40 to +248°F)
Storage temperature	-40 to +60°C (-40 to +140°F)
Climatic protection	IP 66 / NEMA 4X
Safety : ATEX II 2 G	
Transducer classification	Ex d IIB T6 to T3 / LCIE 04 ATEX 6047 X
Enclosure classification	Ex d IIB T6 / LCIE 04 ATEX 6071 X
Remote control	Ex ia IIC T4 / LCIE 03 ATEX 6240 X
Mechanical	
Meter size	DN 50 to DN 600 (2" to 24") (higher upon request)
Maximum operating pressure	150 bar (2180 PSI)
Meter body material	Carbon steel Stainless steel Other material upon request
Flanges	ANSI 150/300/600/900
Transducers	Removable under service conditions
Performances	
Accuracy FH8300-1 FH8300-2 FH8300-3	± 1 % (1 to 10m/s) ± 0.5 % (1 to 10m/s) ± 0.25 % (1 to 10m/s)
Repeatability	± 0.1 %
Minimum flow velocity detection	0.05 m/s
Viscosity range	Please refer to the tables paragraph "Measurement Principle and Operating Range"
Density range	400 to 1,500 kg/m ³
Pressure drop	No pressure drop
] Refer to paragraph "Measurement Principle and Operating Range"	
Electronics	
Power supply	18 to 36 Vdc 8W, or 100 to 250 Vac
Inputs	1 4-20 mA (pressure) 1 dry contact (batch management)
Outputs	1 or 2 off 4-20 mA (Flowrate and/or VOS) 1 or 2 off pulses with galvanic separation Frequency 10Hz – 10 kHz with galvanic separation
Communication / Serial link	1 or 2 dry contacts (Alarms)
Software	1 RS 485 (Modbus) (other upon request) Configuration and analysis PC software FHview
Installation conditions	
Standard	10 to 30D straight line upstream depending on flow conditions, 3D straight line downstream
Options	
LCD Local display	4 x 20 car. alphanumeric display
Data & Event logger	Flowrates, VOS, Gain,...
Remote converter	Distance < 5m
Calibration	Multi-product
Approvals	
ATEX	94/09/EC compliant
PED	97/23/EC & ASME compliant
EMC	2004/108/EC compliant



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