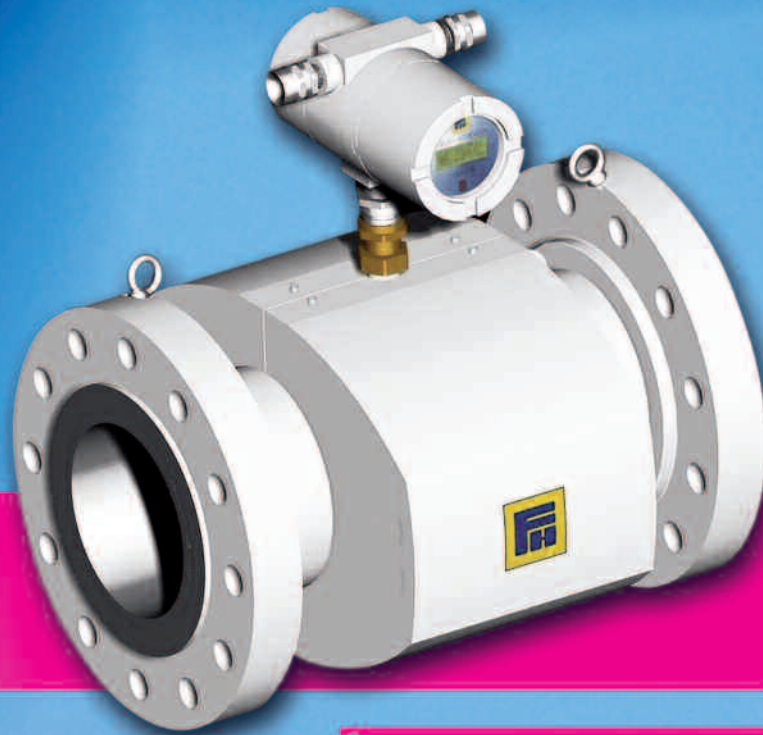


FH8400

OIML R117-1 / MID
Class 0.3

The Ultrasonic Custody Transfer Flowmeter for Light & Medium Viscosity Products

The Solution to Secure your Revenues



Main Applications

- Refined Products Transfer
- Pipeline Measurement
- Tank Farm Management
- Tanker Loading / Unloading



FAURE HERMAN
Mastering the Flow

IDEX
LIQUID CONTROLS GROUP



FH8400

The FAURE HERMAN FH8400 Ultrasonic Flowmeter is dedicated to the custody transfer measurement of low and medium viscosity products. The FH8400 complements the actual FH8000 product line for liquid measurement.

FH8000 Product Line



FH8500

- Custody transfer applications
 - 18 beams
 - Multi products
 - Low to high viscosities
 - Severe flow conditions : vortices, asymmetric profiles



FH8400

- Custody transfer applications
 - 3 beams
 - Multi products
- Low and medium viscosities



FH8300

- Process applications
 - 1 or 2 or 3 beams
 - Single product
- Low and medium viscosities



FAURE HERMAN

High Performances for Custody Transfer Applications

Key Technological Features

- High accuracy
- High measurement reproducibility
- Curve linearization
- Multi viscosities measurement
- Bi-directional measurement
- No pressure drop
- Removable transducers under service conditions
- Fully integrated electronics
- Infrared remote control
- Predictive maintenance software
- Modbus & Hart communication

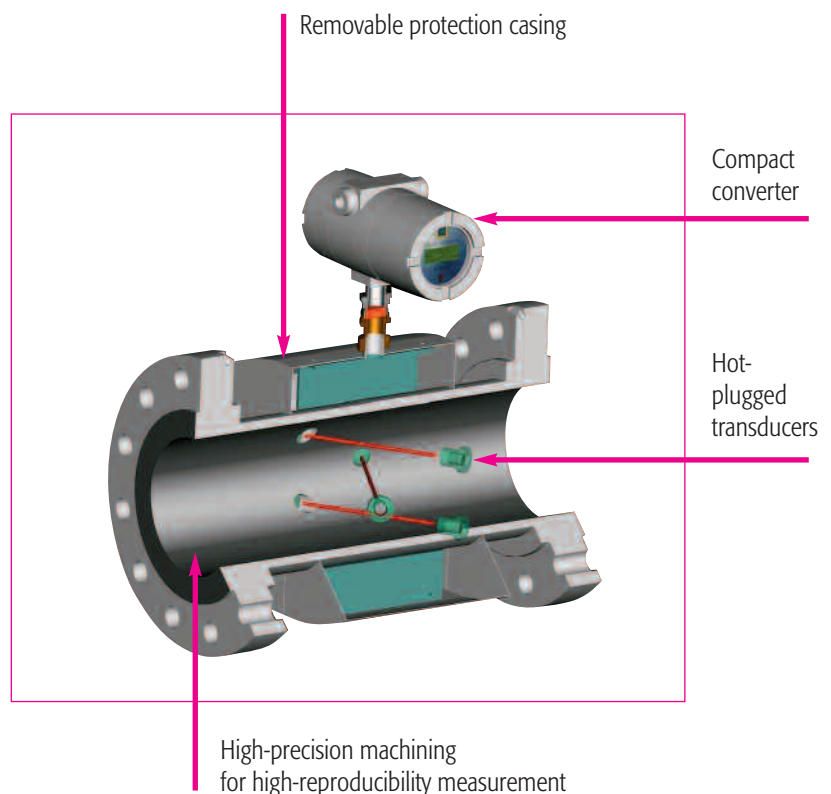
Key Customer Advantages

- Suitable for custody transfer applications in compliance with API and OIML recommendations
- Multi products measurement
- Bi directional flow measurement
- Interface detection
- Long term stability
- Full integrated metering solution
- Energy savings
- Low and easy maintenance
- Low cost of ownership
- Easy to be integrated
- Process integrity
- Easy to be flushed



FH8400 Design

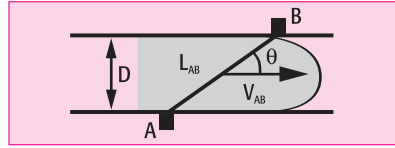
- 3 beams
- +/- 0.15% accuracy
- flow profile compensation for multi products measurement



Measurement Principle and Operating Range



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



Ultrasonic Transit Time Method

The FH8400 operation principle measurement is based on the Ultrasonic Transit Time Method. Basically, this method gives access to the difference in propagation time between ultrasonic pulses transmitted along and against the flow between A and B, T_{AB} and T_{BA} respectively. The average flow velocity V_{AB} along AB is proportional to $(T_{BA} - T_{AB})$.

Meter size in mm/(inch)

Maximum viscosity (cSt)	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*										
	8	10	15	20	25	30	35	40	45	50	60
	Turndown ratio of 5:1*										
	15	20	30	40	50	60	70	80	90	100	120
Turndown ratio of 3:1*											
22	30	45	60	75	90	105	120	135	150	180	

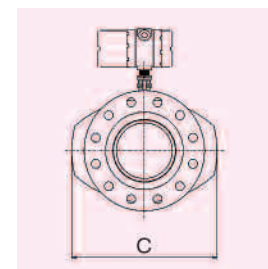
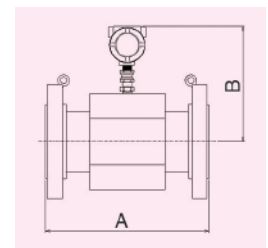
* For any other application or other size, please call your FAURE HERMAN representative.

Meter Selection

Standard dimensions : ANSI 150 to ANSI 900 RF WN flanged

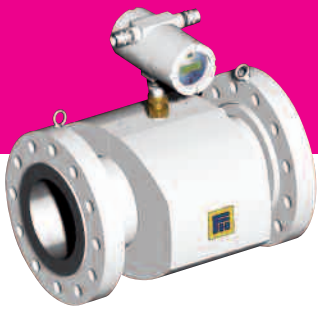
Sizes		A : Length*		B		C		Approx. Weights (ANSI 150)		Minimum flowrates (1 m/s)		Maximum flowrates (10 m/s)	
in.	mm	in.	mm	in.	mm	in.	mm	kg	lbs	m ³ /h	Bbl/h	m ³ /h	Bbl/h
3	80	17.7	450	13.1	332	14.2	361	36	79	16	100	160	1000
4	100	20.5	520	14.4	366	15.3	390	38	84	27	170	270	1700
6	150	18.9	480	15.6	397	17.7	450	57	126	60	380	600	3800
8	200	21.3	540	16.7	424	20	506	92	203	110	680	1100	6800
10	250	23.6	600	17.8	452	22.2	565	123	271	170	1100	1700	11000
12	300	25.6	650	18.8	478	24.4	620	190	419	240	1500	2400	15000
14	350	27.6	700	19.5	495	25.8	656	221	487	290	1800	2900	18000
16	400	29.5	750	20.5	521	28	711	288	635	380	2400	3800	24000
18	450	31.5	800	21.5	546	30.2	767	355	783	480	3000	4800	30000
20	500	33.5	850	22.5	572	32.2	817	442	974	600	3700	6000	37000
24	600	37.4	950	24.5	623	36.8	936	652	1437	850	5400	8500	54000

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



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Specifications



The FHview Software

FHview is the PC software for the configuration and operation of the FAURE HERMAN FH8400 ultrasonic product line. The communication between FHview and the FH8400 is using MODBUS protocol via a RS485 serial link.



Environment	
Ambient temperature range	- 40 to + 60 °C (- 40 to + 140 °F)
Process temperature range	- 45 to + 120 °C (- 49 to + 248 °F)
Climatic protection	IP66, NEMA 4X
EMC	EN 61000 & EN 5502
Safety : ATEX II 2 G (compatible with installation in zone 1, division 1, groups C & D)	
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	
Pressure range	ANSI 150 / 300 / 600 / 900
Meter body materials	Carbon steel ASTM A 216WCB / ASTM A 105 (upon request) Low temperature steel ASTM A 352 LC2 / ASTM A 350 LF2 Class 1 (upon request) Austenitic stainless steel ASTM A 351 CF8M / ASTM A 182 F316 (upon request) Duplex ASTM A890 CD3MN Gr 4 A / ASTM A 182 F51
Performances	
Accuracy	±0.15 % (10:1) : refer to paragraph "Measurement Principle and Operating Range" page 3
Repeatability	In compliance with API recommendations
Standard fluid velocity range	1 m/s to 10 m/s (3.28 fts to 32.8 fts)
Viscosity range	Refer to paragraph "Measurement Principle and Operating Range" page 3
Density range	400 to 1,500 kg/m ³
Reynolds number range	≥10 000
Electronics	
Power supply	18 to 36 Vdc 8W – 110 to 220 Vac ± 15 %
Inputs	2 off 4-20 mA (temperature, pressure) 1 off dry contact
Outputs	2 off 4-20 mA (Flowrate and/or VOS) 2 off pulses with galvanic separation 2 dry contacts (Alarms)
Serial link	RS 485 with galvanic separation
Software	Configuration and analysis PC software FHview
Installation conditions	
Standard	10D & flow conditioner upstream, 5D downstream
Options	
Communication	HART, Modbus
LCD Local display	4 alphanumeric lines
Data & Event logger	Flowrates, VOS, Gain,...
Remote converter	Distance < 5m
Calibration	Multi-product
Interface detection	Through 4-20 mA and/or Modbus
Approvals	
Custody transfer	OIML R117-1 / MID (Class 0.3)
PED	97/23/CE & ASME compliant
ATEX	94/9/CE compliant



FAURE HERMAN

www.liquidcontrolsgroup.com

FAURE HERMAN - Route de Bonnétable - BP 20154 - 72406 La Ferté-Bernard Cedex - France
Tel. : + 33 (0)2 43 60 28 60 - Fax : + 33 (0)2 43 60 28 70

Direct Sales - Tel. : +33 (0)2 43 60 28 95 – Fax : +33 (0)2 43 60 28 89
E-mail : fhprojects@idexcorp.com

FAURE HERMAN METER Inc. - 6961 Brookhollow West Drive – Houston TX. 77040 (U.S.A.)
Phone : +1713 623 0808 – Fax : +1713 623 2332 – E-mail : FHH-Sales@idexcorp.com