



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Bubble Detection Sensor OUSAF13

Flow through optical sensor for monitoring the presence of gas bubbles or foam in process liquids



Application

Measurement in process liquids:

- Bubble and foam detection
- Protects expensive chromatography columns
- Detection of full/empty pipe conditions

Transmitter used with the OUSAF13:

- OUM611 single beam photometer and OUK10 cable set

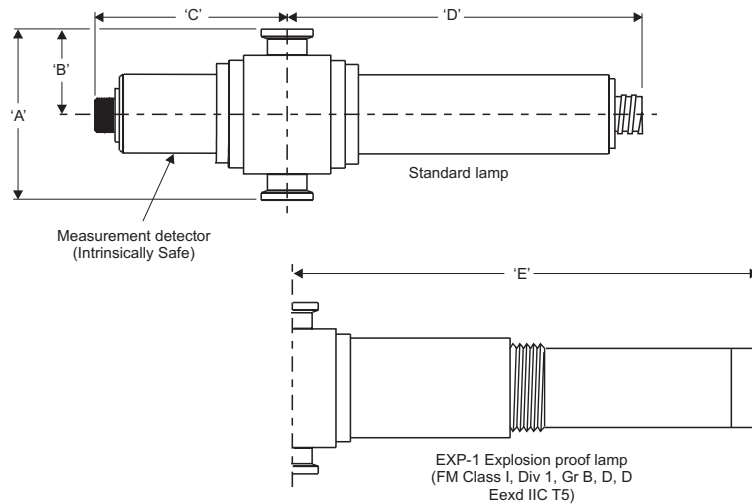
Your benefits

- Measures light transmittance from 0 to 100%
- Pyrex optics deliver accurate and reproducible performance
Fire polished Quartz or sapphire, an option for harsh conditions
- Low voltage incandescent lamp provides long dependable life
- Utilizes a 950 nm optical filter to detect liquid phase variations such as alcohol/water
- Ultra-hygienic, CIP and SIP resilient flow cell design attains the highest level of cleanability; material finish R_a 16 μ inch or better
- Customize sensor to suite your process connection and line size requirements
- Air purge ports available for preventing condensate buildup on optical windows
- Ideally suited for biopharmaceutical applications
- FM approved explosion proof lamps for hazardous applications
- All sensors are pre-tested at the factory and delivered with certification for validated process compliance

Technical data, OUSAF13

Path lengths available:	10, 30, 40 mm and 60 mm standard, dependent on process line size
Line size:	1/4" to 4" diameter
Wavelength:	Broadband visible/NIR light
Signal output:	Single micro-amp current output from the measurement detector
Process connections:	Tri-clamp, ANSI flange, FNPT, DIN flange and others
Sensor housing materials:	316L SS (standard), Kynar®, AL6XN®, Hastelloy®, Teflon® (carbon impregnated), CPVC, PEEK, Nickel, Monel®, Inconel®, Tantalum, Titanium and others
Sensor housing finish:	Electropolished sensor interior R_a 16 μ inch (0.4 μ m) or better for 316L sanitary sensors
Window O-ring materials:	EPDM, Viton®, Silicone, Teflon® coated Viton®, Kalrez®, Buna-N
Window materials:	Pyrex®, fire-polished quartz; quartz or sapphire optional
Lamp type:	Low wattage incandescent lamp, explosion-proof version rated for FM Class I, Div. 1, Grps. B, C, D or ATEX EEx d IIC T5
Lamp power:	4 watts maximum
Filter:	950 nm interference filter
Detector type:	Precision hermetically sealed silicone detectors
Signal cables:	Two - lamp power supply and measurement detector outputs
Cable connection:	TMW Nickel plated brass standard, AMP plastic and AN metallic optional
Cable material:	PVC jacketed multi-conductor cable
Cable length:	Standard lengths; 10, 15, 25 standard, up to 300 ft maximum (3, 5, 7 meter, up to 100 m)
Maximum pressure:	1500 psig (100 bar) dependent on material of construction, line size and process connection
Maximum temperature:	32 to 194°F (0 to 90°C); up to 266°F (130°C) for 2 hours (stainless steel flowcells)
Options:	High temperature PEEK optical isolators, cleaning port, air purge

Mechanical construction



Line Size	Connection	'A'		'B'		'C'		'D'		'E' *	
		Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
1/4"	Tri-Clover	3.25	82.6	1.63	41.3	3.47	88.0	7.06	179	9.26	235
1/2"	Tri-Clover	3.25	82.6	1.63	41.3	3.47	88.0	7.06	179	9.26	235
3/4"	Tri-Clover	3.25	82.6	1.63	41.3	3.47	88.0	7.06	179	9.26	235
1"	Tri-Clover	3.25	82.6	1.63	41.3	3.67	91.3	7.26	184	9.45	240
1 1/2"	Tri-Clover	3.25	82.6	1.63	41.3	3.67	91.3	7.26	184	9.45	240
2"	Tri-Clover	3.25	82.6	1.63	41.3	4.06	103	7.65	194	9.85	250
2 1/2"	Tri-Clover	3.5	88.9	1.75	44.5	4.31	104	7.90	200	10.1	256
3"	Tri-Clover	4.5	114	2.25	57.2	4.41	112	8.00	203	10.2	259
4"	Tri-Clover	4.88	124	2.44	62.0	4.89	124	8.47	215	10.7	271

* Dimension "E" given less Explosion Proof Fittings and/or Flexible Conduit

Ordering information

To receive a complete sensor, you must order the OUSAF13 and OUA260 together. To receive a complete loop, you must add the OUM611 transmitter and OUK10 cable set. Refer to TI922C for OUM611 and OUK10.

Product structure OUSAF13 sensor

Wave length	
A	950 nm
Y	Special version, to be specified
Lamp approval	
0	Standard
1	FM Class I, Div 1, Grps B, C, D
2	ATEX II 2G Eexd IIC T5
Assembly	
A	Isolated order / spare part
B	Assembled to flow cell order position
9	Special version, to be specified
OUSAF13	complete order code

Product structure flow cell OUA260

Sensor type	
C	For AF13
Process connection	
A1	Triclover 316L SS
A2	Triclover kynar
B1	Flange ASME RF Class 150, 316 SS
B2	Flange ASME RF Class 300, 316 SS
D1	Female NPT, 316 SS
D2	Female NPT, Kynar
E1	Swagelock BVCO
E2	Swagelock tube
F1	Tube stub
Y9	Special version, to be specified
Mean diameter	
A	0.25" (only available for Triclover, Swagelock process connections)
B	0.375" (only available for Triclover, Swagelock, tube stub process connections)
C	0.5" (only available for Triclover, female NPT, Swagelock)
D	0.75" (only available for Triclover, female NPT 316 SS, Swagelock tube process connections)
E	1" low volume (only available for Triclover, Swagelock tube process connections)
F	1" standard (only available for flange ASME, Swagelock process connections)
G	1.5" low volume (only available for Triclover process connections)
I	2" (only available for Triclover, flange ASME, female NPT 316 SS process connections)
J	2.5" (only available for Triclover process connections)
K	3" (only available for Triclover, flange ASME process connections)
L	4" (only available for Triclover, flange ASME process connections)
Y	Special version, to be specified
Optical pathlength (OPL)	
08	10 mm standard (not available for TF10, B60x; 3", 4")
99	Special version, to be specified
Window material	
A	Pyrex (not available for AF4x, B60x; optical pathlengths with POPL)
B	Quartz (not available for B60x sensors)
C	Sapphire (not available for B60x sensors)
Sealing material	
1	EPDM - FDA (not available for AF4x sensors)
2	Kalrez - FDA
3	Silicone - FDA
4	Viton - FDA
9	Special version, to be specified
Air purge	
A	Not used
B	Standard (not available for B60x sensors)
Y	Special version, to be specified
Certification	
1	No certificate
2	Mill certificate
3	Inspection certificate according to EN 10204-3.1
4	Certificate for surface finish
9	Special version, to be specified
Options	
A	No options (only available for Triclover process connections)
B	Mounting threads
Y	Special version, to be specified
OUA260	C
complete order code	

USA

Endress+Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143
Tel. 317-535-7138
Sales 888-ENDRESS
Service 800-642-8737
Fax 317-535-8498
inquiry@us.endress.com
www.us.endress.com

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Canada

Endress+Hauser, Canada
1075 Sutton Drive
Burlington, ON L7L 5Z8
Tel. 905-681-9292
800-668-3199
Fax 905-681-9444
info@ca.endress.com
www.ca.endress.com

Mexico

Endress+Hauser México, S.A. de C.V.
Fernando Montes de Oca 21 Edificio A Piso 3
Fracc. Industrial San Nicolás
54030. Tlalnepantla de Baz
Estado de México
México
Tel. +52 55 5321 2080
Fax +52 55 5321 2099
eh.mexico@mx.endress.com
www.mx.endress