Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Turbidity Measurement System

2-beam scattered light technique (11°)

measuring • monitoring • analysing

ATS-K

- Measuring range: 0 - 25 ... 500 ppm/FTU (0 - 2.5 ... 50 EBC)
- Measurement accuracy: ±2% of full scale
- p_{max}: 16 bar; t_{max}: 100 °C (short-time 120 °C) optional 150 °C (short-time 170 °C)
- Different connections and nominal sizes
- Material: stainless steel 1.4571
- Analogue output: 4 - 20 mA
- 3 alarm contacts
- Colour compensated (double beam method)
- Good product quality

A3

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Description of Turbidity Sensor

The model ATS-K is a high precision 2-beam scattered light sensor. It uses the light scattered in the forward direction (11°) and the transmitted light to measure the particles. The sensor is manufactured from stainless steel and has been designed for fitting in process pipework.

The process medium is penetrated by a focussed beam of light. The light scattered by the particles in the medium is sensed by the receiver optics at an angle of 11° by four silicone photodiodes. At the same time the unscattered light is absorbed as transmitted light by another photodiode. Unwanted light can thus be compensated for. Due to the small scattering angle, transmitted light and scattered light practically follow the same path in the medium, which means that product-specific noise variables such as colour or changes in colour of the carrier medium, as well as window soiling can be compensated for. The sensor uses visible (VIS) and near infrared (NIR) light from 400 to 1100 nm.

Applications

- Oil in water
- Separator control
- Water in oil
- Filter control
- Particle concentration
- Phase separation
- Quality control
- Crystallisation techniques
- Sedimentation
- Drinking water/waste water
- Gas bubbles

Technical Details

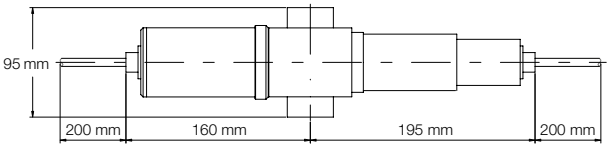
Measuring principle:	2-beam scattered light technique (11°)
Measuring range:	0 - 25 ... 500 ppm
Measurement accuracy:	±2% of set upper range value
Process temperature:	0 ... 100 °C, optional 150 °C
Ambient temperature:	0 ... 40 °C
Process pressure:	16 bar
Material:	1.4571/316 Ti, optional TFMC
Seals:	silicone / FPM / EPDM / Kalrez®
Window:	borosilicate glass, optional sapphire
OPL (optical path length):	40 mm
Process connections:	DIN- /ANSI flange / NPT / pipe thread/ dairy thread
Nominal sizes:	DN 25, DN 50, 1", 2"
Light source:	approx. 3 - 5 years service life
Wavelength:	400 - 1100 nm
Protection type:	IP 65 (optics case V4A)
Certification:	CE, GS

Weight:

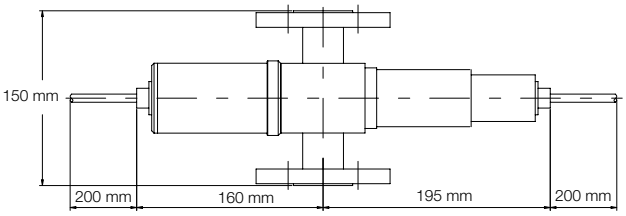
pipe thread, NPT screw thread, dairy thread DN 25:	ca. 3.5 kg
dairy thread DN 50:	ca. 4.4 kg
1" ANSI flange, DIN flange DN 25:	ca. 6.0 kg
2" ANSI flange, DIN flange DN 50:	ca. 8.8 kg

Dimensions [mm]

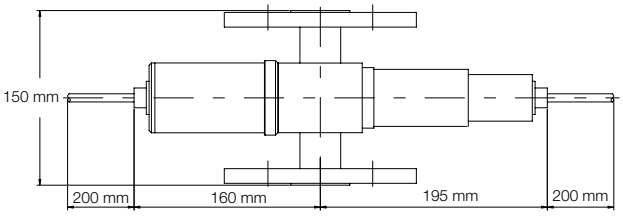
ATS-K 1" pipe thread



ATS-K flange DN 25



ATS-K flange DN 50



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Function and operation of transmitter

The transmitted light and scattered light signals generated in the sensor are amplified in the transmitter ATT-K to produce a weighted ratio. The measured variable thus created is proportional to the total volume of particles in the carrier medium.

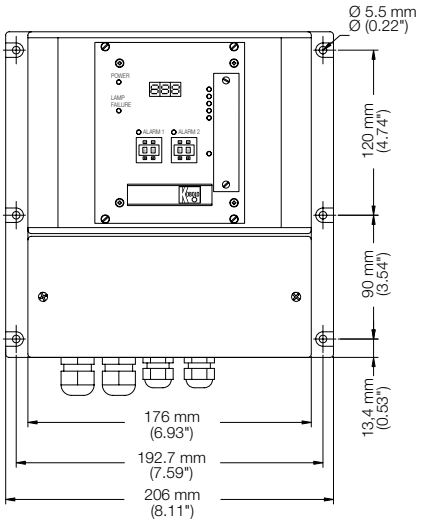
Two independently adjustable switch points as well as a mA output are available for alarm signalling, or control and regulating. An additional relay output (FAIL-SAFE) signals lamp or system failures. Basic system calibration is carried out as standard in ppm DE (mg infusorial earth / l water). The device may also be calibrated to FTU (Formazine Turbidity Standard) or to EBC (European Brewery Convention) if required.

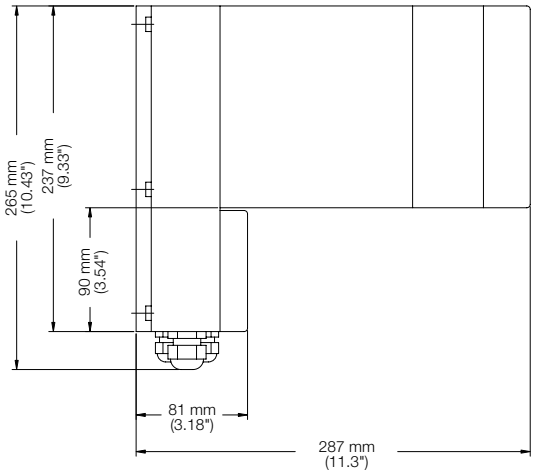
Technical Details

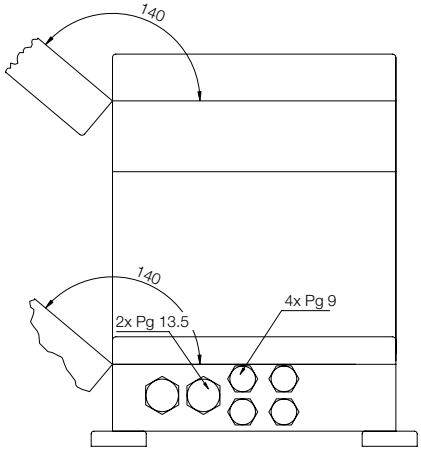
Measuring ranges:	0 - 25 ... 500 ppm 0 - 10 ... 200 FTU 0 - 2.5 ... 50 EBC
Accuracy:	<1% of full scale
Response time (T 90):	1 s
Ambient temperature:	0 ... 50 °C
Panel housing:	H x W x D: 128.4 x 106.3 x 190 mm 19" 3HE, 21 TE (panel mounting)) cut-out: 106 x 116 mm
Read-out display:	digital, 3-digits
Alarms:	2 (floating changeover contact)
Alarm setting:	in 1% steps of measuring range
FAIL-SAFE:	floating changeover contact
Cable length:	max. 150 m
Output:	4-20 mA (electrically isolated)
Load:	max. 500 Ω
Power supply:	115/230 V_{AC}, 24 V_{AC}/V_{DC}, 47 ... 64 Hz
Power consumption:	30 VA
Protection type:	panel housing IP 40 field housing IP 66
Certification:	CE, GS
Weight:	approximately 2 kg with field housing 4,1 kg

Dimensions [mm]

ATT-K field housing







Order Details Turbidity Sensor ATS-K (Example **ATS-K B S K25**)

Model	Window	Seals	Connections
ATS-K..	**B** = borosilicate glass **S** = sapphire	**S** = silicone **M** = FPM **E** = EPDM **K** = Kalrez®	**K25** = 1" pipe thread **N25** = 1" NPT **F25** = flange DN 25 (DIN 2633) **F50** = flange DN 50 (DIN 2633) **A25** = 1" ANSI flange 150 lbs RF **A50** = 2" ANSI flange 150 lbs RF **L25** = dairy thread DN 25 (DIN 11850) **L50** = dairy thread DN 50 (DIN 11850) **C25** = TFMC flange DN 25 (DIN 2576) **C50** = TFMC flange DN 50 (DIN 2576)

A complete turbidity measurement system comprises of turbidity sensor, transmitter and cable.

Order Details Transmitter ATT-K (Example **ATT-K S E C 1**)

Model	Technique	Housing	Unit	Power supply
ATT-K..	**S** = 2-beam scattered light technique **A** = absorption technique	**E** = panel-mounted housing **F** = field housing	**C** = CU (for absorption technique) **P** = ppm (for scattered light technique) **F** = FTU (for scattered light technique) **E** = EBC (for both techniques)	**1** = 115/230 V_{AC} **2** = 24 V_{AC}/V_{DC}

Order Details Cable ATK-K (Example **ATK-K S E**)

Model	Technique	Length
ATK-K..	**S** = 2-beam scattered light technique **A** = absorption technique	**E** = length in writing (5 m steps)

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