Turbidity Measurement System

Absorption principle (infrared)

- Measuring range:
  0 - 0.5 to 4 CU (concentration unit)
- Measurement accuracy: ±2 % f.s.d.
- p_{max}: 16 bar
  t_{max}: 100 °C (short-time 120 °C)
- Different connections and nominal sizes
- Material: stainless steel 1.4571
- Analogue output: 4 - 20 mA
- 3 alarm contacts
- Good product quality

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Model:
ATA-K

Description of turbidity sensor:

The high precision KOBOLD single-beam turbidity sensor ATA-K measures the degradation of light (in the near infrared range, NIR) passing through the process medium. The sensor has been manufactured from stainless steel and designed for fitting in the process piping. The process medium is penetrated by a suitably focussed, constant beam of light. The intensity of the incoming light is measured by a silicon photodiode and routed to the transmitter as a photoelectric current. The changes of intensity in this light, caused by absorption and/or scattering by substances (dissolved and undissolved) in the medium, is measured and outputed by the transmitter. Concentration can thus be measured in the ppm range as well as in the % range.

Application Examples:

- Oil in water
- Separator control
- Solids concentration
- Filter aids
- Product identification
- Quality control
- Lime milk
- Polymerisation
- Gas bubbles
- Yeast cell count/dosing
- Phase separation

  Milk/water

  Water/milk

  Water/suspension

  Water/emulsion

  Water/milk products

  Beer/yeast

  Filter backdating

  Water/rinsing water

Technical Details:

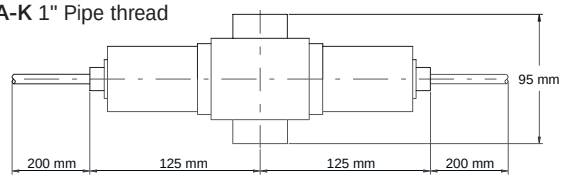
Principle of measurement:	absorption principle
Measuring range:	0-0.5 to 4 CU (concentration unit)
Measurement accuracy:	±2% of set upper range value
Process temperature:	0-100 °C (short-time 120 °C)
Ambient temperature:	0-40 °C
Process pressure:	10 mbar to 16 bar
Material:	1.4571/316 Ti, optional TFMC (PTFE/coal compound)
Seals:	silicone/FPM/EPDM/Kalrez®
Window:	borosilicate glass, sapphire optional
OPL (optical path length):	5-40 mm
Process connections:	DIN /ANSI flange/NPT/pipe thread/dairy thread (other connections upon request)
Nominal sizes:	DN 25, DN 50, 1", 2"
Light source:	approx. 3-5 years service life
Wavelength:	NIR, 730-970 nm
Protection type:	IP 65 (optics case V4A)
Certification:	CE, GS

Weight:

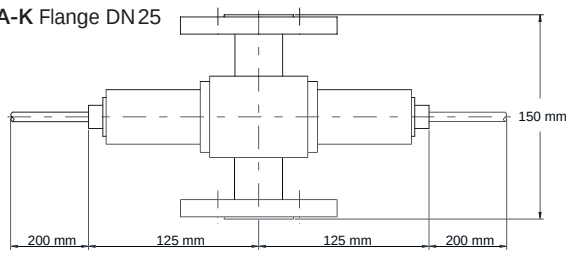
pipe thread, NPT screw thread, dairy thread DN 25:	approximately 2.8 kg
dairy thread DN 50:	approximately 3.7 kg
1" ANSI flange, DIN flange DN 25:	approximately 4.8 kg
2" ANSI flange, DIN flange DN 50:	approximately 8.1 kg

Dimensions:

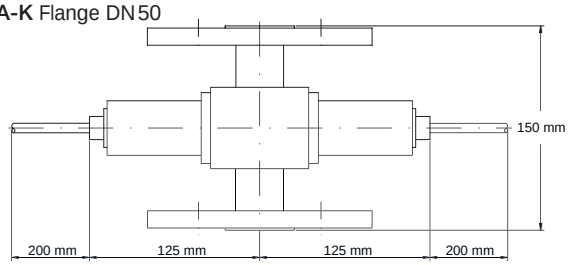
ATA-K 1" Pipe thread



ATA-K Flange DN 25



ATA-K Flange DN 50



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Operation and function of transmitter:

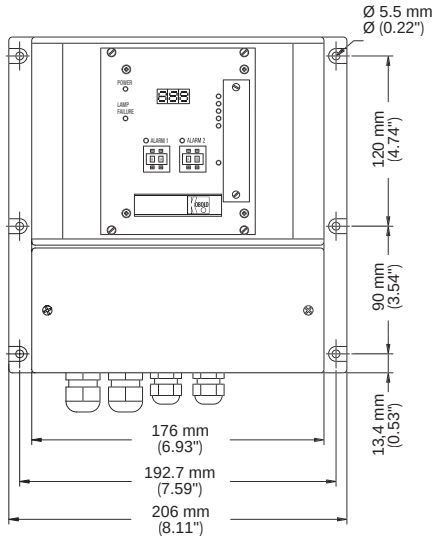
The change in light intensity is determined in the KOBOLD transmitter ATT-K from the photoelectric current and a measuring signal proportional to the concentration in the process medium is obtained after. Two independently adjustable switch points as well as an analogue output are available for alarm signalling, or control and regulating. An additional relay output (FAIL-SAFE) signals lamp / system failures.
Basic system calibration is carried out in concentration units (CU). The unit CU is defined as the negative decadic logarithm of the change in light intensity. This means: an increase in measured value of 1 CU corresponds to a 90% degradation of the light beam.

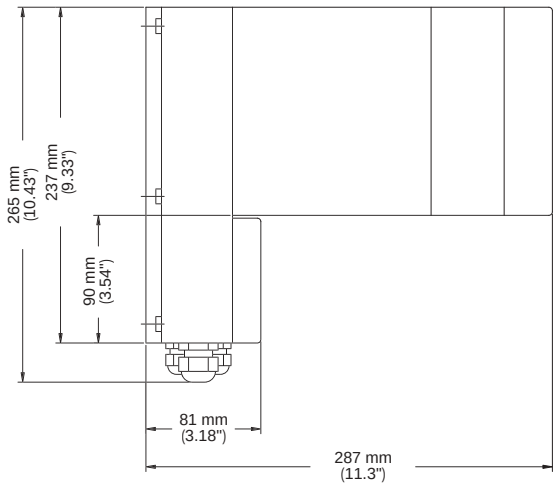
Technical Details:

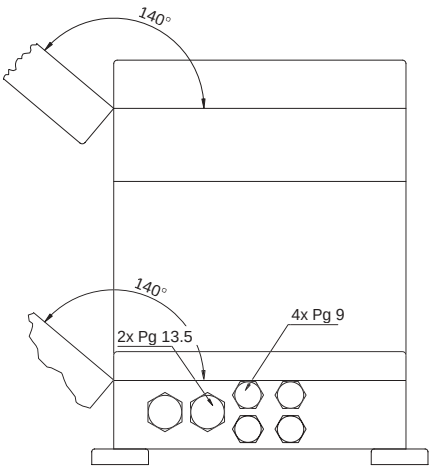
Measuring ranges:	0 - 0.5 to 4 CU (= ca. 30% TS) 0 - 100 to 5000 EBC
Accuracy:	< 1% f.s.d.
Response time (T90):	1 second
Ambient temperature:	0 - 50 °C
Panel housing:	H x W x D: 128.4 x 106.3 x 190 mm 19" 3HE, 21 TE (panel mounting) cut-out: 106 x 116 mm
Read-out display:	digital, 3-position
Alarms:	2 (floating changeover contacts)
Alarm setting:	in 1% steps of the measuring range
FAIL-SAFE:	floating changeover contact
Cable length:	max. 100 m
Output:	4 - 20 mA (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:

ATT-K field housing

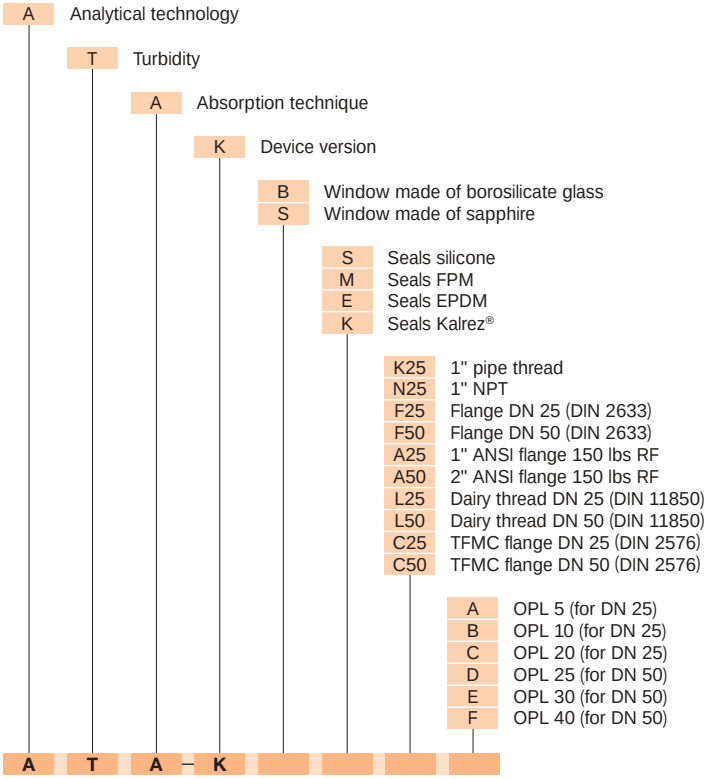






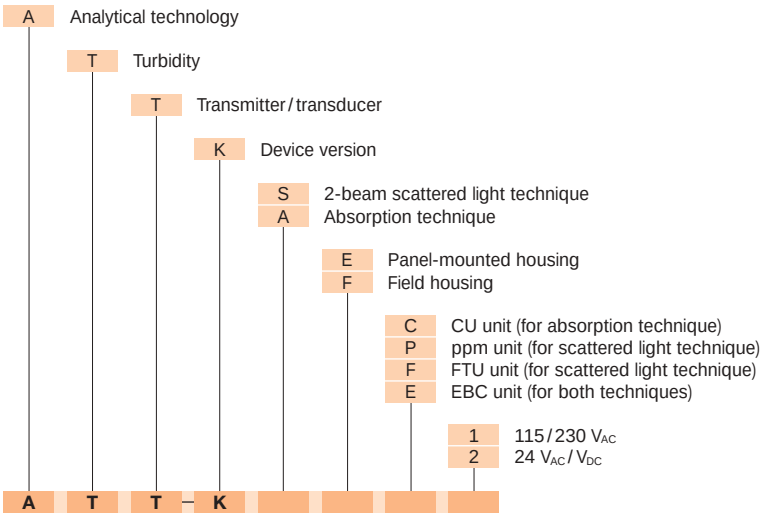
Order code:

Type code Turbidity sensor ATA-K

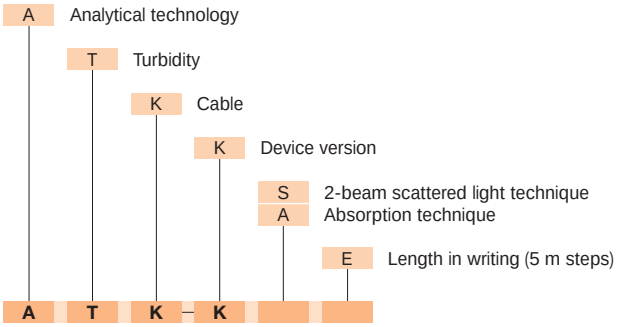


A complete turbidity measurement system comprises of turbidity sensor, transmitter and cable.

Type code transmitter ATT-K



Type code cable ATK-K



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