



Turbidity Probe

absorption principle



measuring
•
monitoring
•
analysing

ATL



- Inline real time process monitoring
- Superior sapphire window with no seals, gaps or crevices
- Concentration measurement insensitive to colour changes
- Extremely low maintenance
- CIP/SIP-compatible
- All wetted material and surface finishes are certifiable



Analysis

KOBOLD companies worldwide

ALGERIA, ARGENTINA, AUSTRALIA, AUSTRIA, BELGIUM, BULGARIA, CANADA, CHILE, CHINA, COLUMBIA, CZECHIA, DOMINICAN REPUBLIC, EGYPT, FRANCE, GERMANY, GREAT BRITAIN, HUNGARY, INDIA, INDONESIA, ITALY, MALAYSIA, MEXICO, MOROCCO, NETHERLANDS, PERU, PHILIPPINES, POLAND, ROMANIA, SINGAPORE, SLOVAKIA, SOUTH KOREA, SPAIN, SWITZERLAND, TAIWAN, THAILAND, TUNISIA, USA, VENEZUELA, VIETNAM

KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
Head Office:
+49(0)6192 299-0
Sales DE:
+49(0)6192 299-500
+49(0)6192 299-23398
info.de@kobold.com
www.kobold.com

149



Description

ATL-F

The KOBOLD Turbidity Probe ATL-F is a high-precision, single channel absorption probe. The probe uses the light in the visible (VIS) range at a selected wavelength of 430 nm. An optical filter on the lamp side adapts the wavelength for specific applications and allows colour measurements with great accuracy (e.g. phase separation beer/water) at 430 nm.

ATL-N

The KOBOLD Turbidity Probe ATL-N is a high-precision NIR-single channel absorption probe. The ATL-N uses light in the Near Infrared (NIR) from 730 to 970 nm. The optical filter on the lamp side adapts the wavelength for specific applications and allows colour-insensitive concentration measurements in the near infrared range. The ATL-N probe comes with two different optical path lengths (OPL) for process versatility.

General

The ATL-F as well as the ATL-N are designed for direct use in inline applications or vessels. The installation can be carried out by a 25 mm long standard port or by one of the various optional adaption possibilities.

A precisely defined, constant light beam penetrates the process medium. The attenuation of the light intensity, caused by absorption and/or scattering by dissolved and undissolved substances, is detected by a hermetically sealed photodiode.

The seal-less, sapphire window design eliminates crevices and gaps to assure the highest level of sterility, cleanability and sensor integrity. The sapphire window provides superior resistance to all abrasive and corrosive media. The probe body demonstrates extreme durability and fulfils the CIP/SIP requirements demanded by ultra-sanitary process environments.

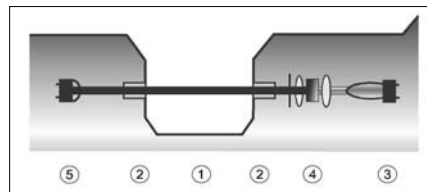
Application Areas

ATL-F

- Phase separation
- e.g. in breweries

ATL-F

- Phase separation
- yeast - beer
- milk – water
- concentration measurement (e.g. yeast dosage)



Sensor Schematic

- 1 Optical path length (OPL)
- 2 Sapphire windows
- 3 Lamp
- 4 Optics module with filter
- 5 Detector



Technical Details

Measuring principle: absorption

Measuring range: sensor specific 0–1 CU for ATL-F
freely selectable 0–3 CU for ATL-N

Permitted process temperature TS: permanent: 0°C to +90°C, (+32°F to +194°F)
peak (60 min/day): 0°C to +100°C, (+32°F to +212°F)

Ambient temperature: operation: 0°C to +40°C, (+32°F to +104°F)
transportation: -20°C to +70°C, (-4°F to +158°F)

Pressure rating: PN10 (test pressure PT 15 bar)

Permitted pressure PS: 10 mbar – 10 bar with TS 0°C/+90°C

Permitted pressure at elevated temperature:

TS (°C)	< 90	100
PS (bar)	10	8

Material:

Wetted parts: stainless steel 1.4435 (SS 316 L)

Surface: electro-polished $R_a < 0.8 \mu\text{m}$ (standard)

Windows: sapphire (without gasket)

Housing: stainless steel 1.4571 (SS 316 Ti)

Adapter: stainless steel 1.4435 (SS 316L)

Port gasket: O-ring $\varnothing 18.64 \times 3.53 \text{ mm}$

Gasket material: application specific, selection by end user
permitted:
EPDM (FDA), silicone (FDA), Kalrez® 6375, Chemraz® (FDA), others on request

Port connection: for ports AS25-GS60 (similar to Ingold-Ports)
diameter: 25 mm ($\varnothing 25 \text{ H7}$)
nominal length: 60 and 30 mm
thread: G1¼" ISO 228/1

Insertion depth maximal: OPL + 35 mm mm with port length 60 mm

Opt. path length (OPL): 5 or 10 mm

Air purge: connections M5 available as standard

Light source: incandescent tungsten lamp: 5.0 V_{DC}, 775 mA

Wavelength range: 430 nm for ATL-F
730–970 nm for ATL-N

Detector: silicone photodiode, hermetically sealed

Cable connection: probe cable ASx6-TT, end splice on both sides probe cable ASx6 SCT, with stainless steel plug and socket 2, 3, 5, 10, 15, 20, ... 45 oder 50 m (7, 10, 16, 33, 49, 66, ... 148 or 164 ft.)

Weight: probe: approx. 2.0–2.5 kg, depending on version
cable set: approx. 1.5 kg / 10 m

Type of protection: IP65

Certificates: ISO 9001:2000, PED, CE, HPO



Order Details Probe (Example: ATL-F E A)

Model	Wavelength	Gasket	Optical path length
ATL-*	F = 430 nm N = 730 - 970 nm (NIR)	E = EPDM (FDA) I = silicone (FDA) K = Kalrez® 6375 C = Chemraz® (FDA) X** = other material on request	A = OPL 5 mm B = OPL 10 mm

* The connection cable between probe and converter and between the adapter has to be separately ordered as accessories.

** Please specify material when ordering.

Order Details Adapter (Example: ATL-Z T50)

Model	Adapter	
	Connection	Size
ATL-Z	T50 = Tri Clamp® 2" V50 = Varivent® d=68 mm S90 = weld-in port 90°, cone S9K = weld-in port 90°, short S15 = weld-in port 15°	
	R1 = T-piece with tube, acc. DIN 11850 R2 = T-piece with tube OD, acc. BS 4825	9 = DN50/2" 0 = DN65/2 ½" B = DN80/3" C = DN100/4" D = DN125/5" E = DN150/6"

Order Details Accessories

Model	Description
ATL-ZK-10 ATL-ZK-20 ATL-ZK-30 ATL-ZK-40 ATL-ZK-50	connection cable between probe ATL and evaluation electronics ATT-K
ATL-ZF	sealing flange for probe connection

Converter for 1-Channel Absorption Probe



Description

The KOBOLD converter model ATT-K combined with the probe ATL provides continuous inline, real-time measurement and control of concentrations, colour changes or turbidity in a variety of industrial processes.

With four fixed measuring ranges and one variable measuring range, the converter can be set to match your specific process parameters. The 3-digit LED indicator displays the percentage of the selected measuring range.

Two independent setpoints and one mA output are provided by the converter for alarms and real-time process monitoring when wired to the plant's process control system. An additional failsafe relay output is built in for remote sensing of lamp or power failure.

Technical Details

Measuring range:	0-1 CU, 0-2 CU, 0-3 CU, 0-4 CU, 0-0.5...4 CU variable (factory-set)
Resolution:	< ±0.5% of respective measuring range
Repeatability:	< ±1% of respective measuring range
Linearity:	specific to application, < ±2% of respective measuring range
Response time:	1 second
Ambient temperature:	
Operation	0...+50°C (+32...+122°F), (no direct light)
Transport	-20...+70°C (-4...+158°F)
Housing:	19" version for rack mounting 3HE/21 TE dimensions 106 x 116 x 190 mm deep Weight 2.0 kg
Display:	digital, 3-digits
Alarm output:	2 independent adjustable SPDT contacts
Failsafe:	1 SPDT contact to alarm in case of lamp or system failure (active)
Cable lengths:	combined with ATL max. 50m (max. 164 ft.)
Output:	0/4 – 20 mA (galvanically isolated)
Load:	max. 500 Ω
Power supply:	115/230 V _{AC} selectable or 24 V _{AC/DC}
Power consumption:	30 VA
Protection:	front IP40/rear IP20 when mounting in optional available field housing higher protection is possible
Certificates:	CE, GS

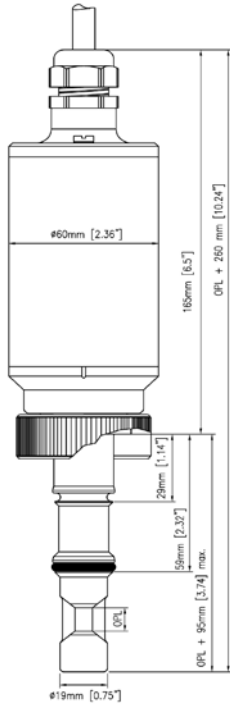
Order Details Converter (Example: ATT-K A E C 1)

Model	Measuring principle	Housing	Unit	Power supply
ATT-K*	A = absorption	E = panel mounting F = field housing	C = CU	1 = 115/230 V _{AC} switchable 2 = 24 V _{AC/DC}

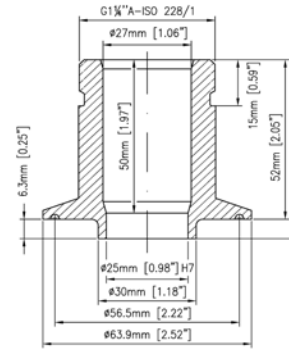
* The connection cable between probe and converter has to be separately ordered as accessories.

Dimensions

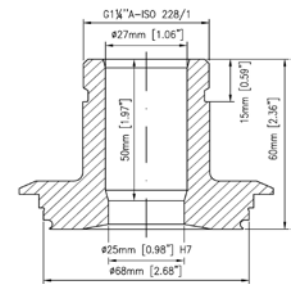
Probe ATL-F / -N



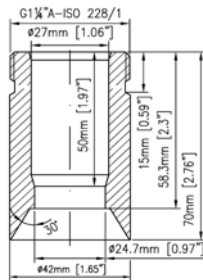
Adapter Tri-Clamp® 2" (ATL-ZT50)



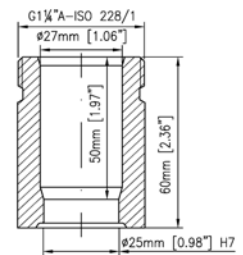
Adapter Varivent®, Ø = 68 mm (ATL-ZV50)



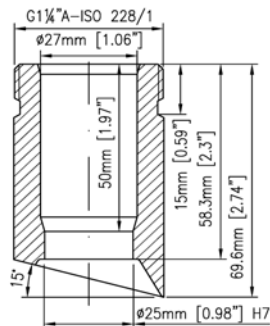
Weld-in port 90°, cone (ATL-ZS90)



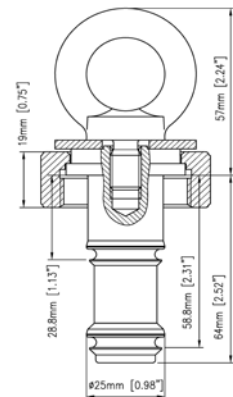
Weld-in port 90°, short (ATL-ZS9K)



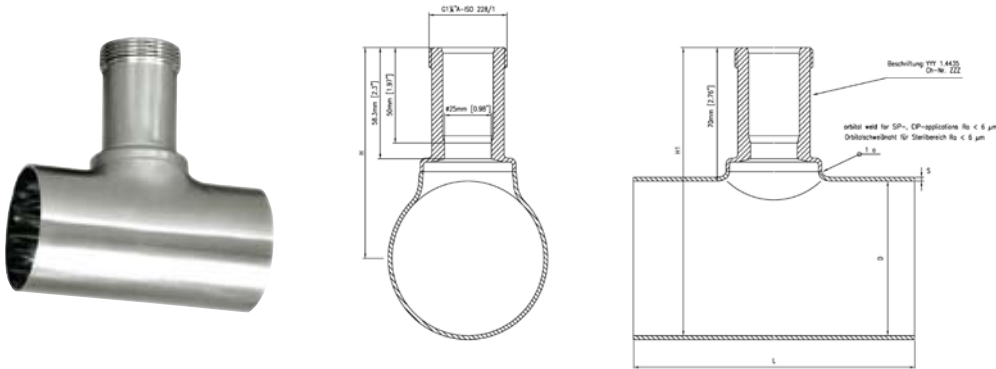
Weld-in port 15° (ATL-ZS15)



Sealing flange for probe connection (ATL-ZF)



Adapter T-piece with tube acc. DIN 11850
resp. with tube OD acc. BS4825 (ATL-ZR...)



Permitted Pressure at Elevated Temperature

ATL-ZR1

TS [°C]	≤120	150	200
PS [bar]	16	14	13

ATL-ZR2

TS [°C]	≤120	150	200
PS [bar]	20	18	16

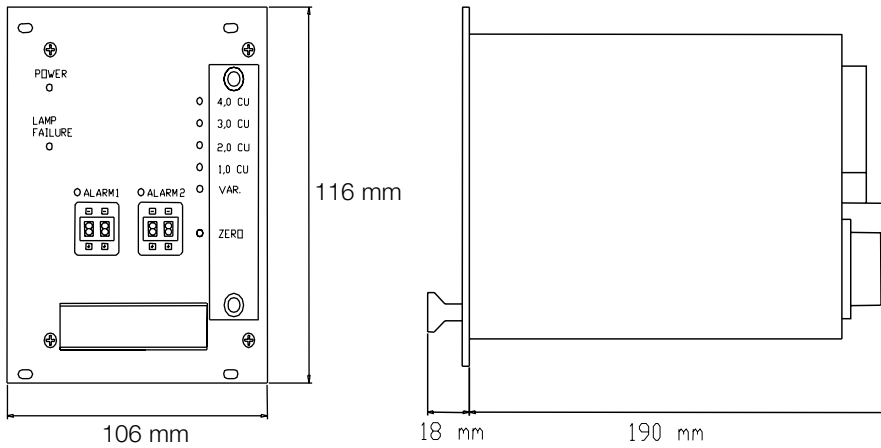
Dimensions and maximum OPL of the Probe for T-piece with Tube acc. DIN 11850

Nominal diameter	Length L [mm]	Tube size $\phi \times S$ [mm]	Inner- ϕ D [mm]	Height H [mm]	Depth H1 [mm]	Maximal OPL [mm]	Model
DN 50	150	53.0 x 1.5	50.0	94.5	120	20	ATL-ZR19
DN 65	150	70.0 x 2.0	66.0	103.0	136	20	ATL-ZR10
DN 80	150	85.0 x 2.0	81.0	110.5	151	40	ATL-ZR1B
DN 100	250	104.0 x 2.0	100.0	120.0	170	40	ATL-ZR1C
DN 125	250	129.0 x 2.0	125.0	132.5	195	40	ATL-ZR1D
DN 150	250	154.0 x 2.0	150.0	145.0	220	40	ATL-ZR1E

Dimensions and maximum OPL of the Probe for T-piece with Tube OD acc. BS4825

Nominal diameter	Length L [mm]	Tube size $\phi \times S$ [mm]	Inner- ϕ D [mm]	Height H [mm]	Depth H1 [mm]	Maximal OPL [mm]	Model
2.0"	150	50.8 x 1.65	47.5	93.5	117	20	ATL-ZR29
2.5"	150	63.5 x 1.65	60.2	100.0	130	20	ATL-ZR20
3.0"	150	76.2 x 1.65	72.9	106.0	142	40	ATL-ZR2B
4.0"	250	101.6 x 2.1	97.4	118.5	167	40	ATL-ZR2C
5.0"	250	127.0 x 2.1	122.8	131.5	193	40	ATL-ZR2D
6.0"	250	152.4 x 2.8	146.8	144.0	217	40	ATL-ZR2E

Converter with Panel Mounting Housing ATT-KAE



Converter with Field Housing ATT-KAF

