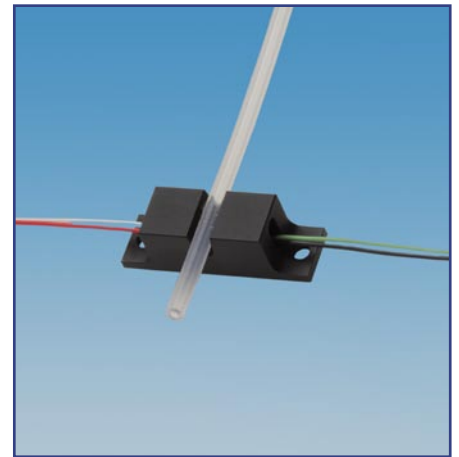


- ▶ Precision tube sensors TSD detect water and aqueous liquids in transparent tubes with high accuracy
- ▶ The built-in precision optics are matched with the light absorption effect in water
- ▶ Particularly applicable on semi-transparent tubes
- ▶ With open wire ends - for use on individual electronics
- ▶ High precision without extensive optical adjustment
- ▶ Customizing to individual dimensions possible



PRECISION TUBE SENSOR
for detection of water

▶ TECHNICAL DATA

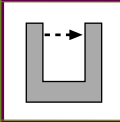
Type	TSD-L32JJ	TSD-L46JJ	TSD-L62JJ
Tube diameter	3,2mm (1/8")	4,8mm (3/16")	6,4mm (1/4")
Light type	infrared 1480nm		
Housing material	aluminium, black anodized		
Operating temperature	-10°C / +60°C		
Protection class	IP54		
Connection	4 x AWG26, PTFE coated, 100mm length		

▶ ELECTRICAL VALUES LED (at T=25°C)

Parameter	Test conditions	typ. values	Unit
Max. forward current		100	mA
Forward voltage (V _F)	I _F = 20mA	0,7	V
Pulse current (I _{FM})	t _p = 30µs, t _p /T = 0,111	180 - 200	mA
Reverse current (V _R)	I _R = 100µA	5	V
Rise- and fall time	I _F = 100mA	10	ns

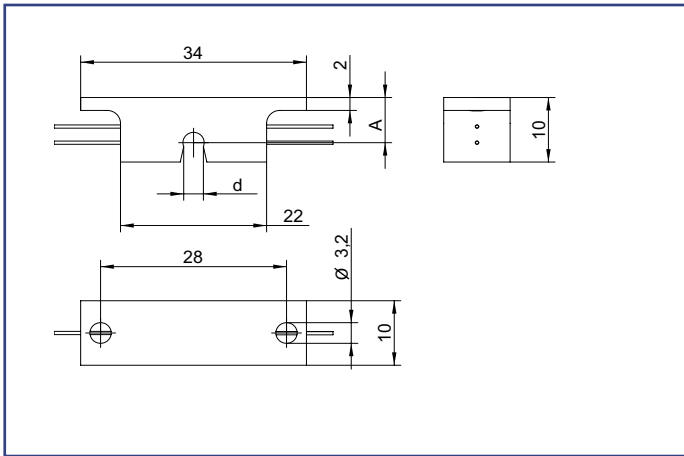
▶ ELECTRICAL VALUES PHOTODIODE (bei T=25°C)

Parameter	Test conditions	typ. values	Unit
Spectral response	V _R = 0V	0,9	A/W
Dark current (I _d)	V _R = 5V	200	pA
Forward voltage (V _f)	I _F = 10mA	1,7	V
Capacitance (C)	V _R = 0V	11	pF

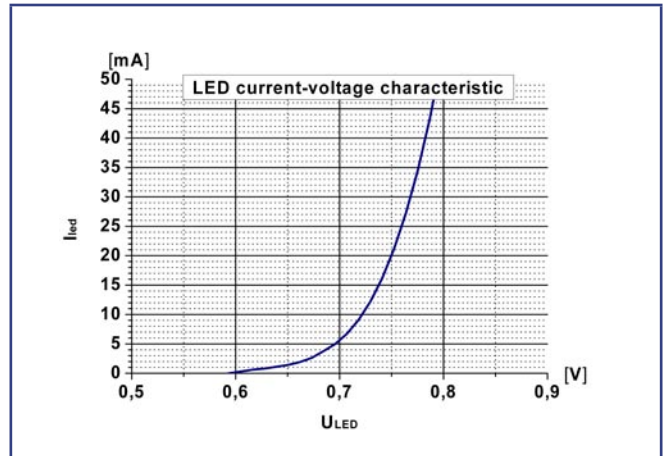


TSD-L

► **DIMENSIONS** Measurements in mm. Subject to technical change.



► **GRAPHS**



	TSD-L32JJ	TSD-L46JJ	TSD-L62JJ
d :	3,2mm	4,8mm	6,4mm
A :	4mm	4mm	4mm

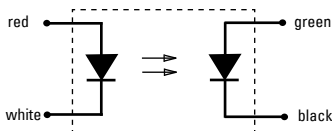
► **MODE OF OPERATION**

STM precision tube sensors type TSD utilize primarily the damping effect for light beams in the liquid column inside of the tube. They operate with a specific wavelength at which water absorbs the penetrating light. They therefore work best with water and hydrous transparent liquids.

The intergrated STM microoptics allow a very accurate detection of the air-liquid boundary surface. Due to the high repeatability of the signal the TSD tube sensors are the perfect device for exact volume determination in tubes and pipes.

The optical properties of the tube and its wall thickness can influence the range of the emerging signal strengths.

► **EQUIVALENT CIRCUIT DIAGRAM**



PART DESIGNATION	<p>Wires T : PTFE coated, AWG 26 special wires on request</p>	<p>Wire ends 99 : stripped, tinned special on request</p>	<p>Length Standard 0,1m (emitter and receiver side) for special wire lengths (specification in [m])</p>
	<p>Type - <input type="text"/> - <input type="text"/> : <input type="text"/></p>		
ORDERING EXAMPLE	<p>TSD - L32JJ - T - 99 : 0,1m = Schlauchsensor TSD - Schlauchdurchmesser 3,2mm - Teflon-Litzen - Standard-Anschlusslänge 0,1m</p>		