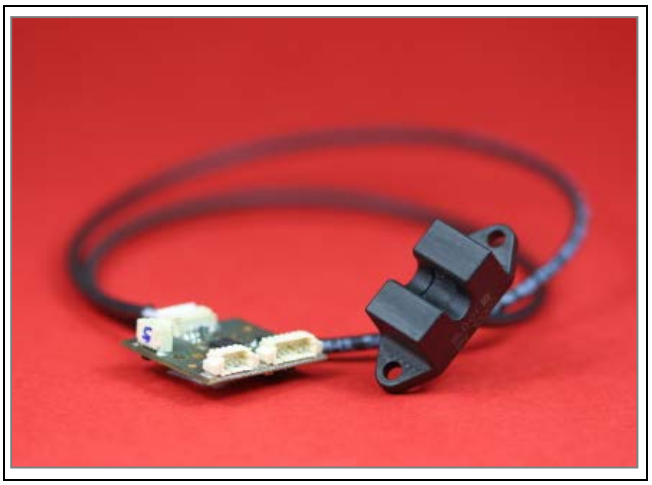

The **BLD01** is a non-invasive, **optical sensor** with remote electronics (probe and PCB) developed to detect smallest amounts of blood in a clear fluid from the outside through transparent plastic tubing. The sensor has no contact with the liquid.

The sensor with **UART interface** is designed as a component to be integrated into machines.

Technical Data

Blood Leak Detector type BLD01		
Measuring method	Optical transmission measurement	
Specification	**BLD01/50**	
Order number	Sensor: 700 01 0229	USB Data Converter Set: 700 01 0241
Blood sensitivity	0.35 ml/min at a dialysis fluid flow rate of 800 ml/min, haematocrit level of 32 % (IEC 60601-2-16:2008)	
Measuring cycle	≥13 µs	
Response time; Holding time	≤100 ms; On request: Delay for blood alarm	
Operating temperature	+5 °C to +50 °C	
Storage temperature	-20 °C to +70 °C	
Materials	Housing: ABS and PMMA; Potting: PUR	
Versions / Designs	The sensor version depends on the tube diameter. Please provide us with a sample of the tube (approx. 30 cm), so that we can select the optimal design.	
Measuring channel width	5.0 mm	
Measuring channel height	5.8 mm	

Requirements for tube	**Parameter**	**Property**
	Outer diameter	5.5 … 7.0 mm
	Material	Plastics, e.g. PVC, PE, silicone, PUR, other materials on request
	Special features	Tube must be optically transparent within the spectral range of about 420 nm
	Elasticity	Tube must be able to adjust flexibly
	Tube is inserted into sensor without any coupling fluid	
Requirements for liquid	Optically transparent liquids	
Mounting	Clamp-on sensor, free hanging on tubing	
	Ears with fixation screw holes (Ø=3.25 mm)	
Protection	IP67	
Operating voltage	3.3 … 5.5 VDC ⚠ Note: No overvoltage protection implemented.	
Current consumption	≤ 30 mA with open current output	
Directives / Standards	The sensors were developed to be tested with respect to the following standards: • Safety requirements: IEC 60601-2-16:2008 • EMC: IEC 60601-1-2:2007	
Scope of delivery	Blood leak detector type BLD01 sensor head with connection cable and external electronic board, technical data sheet	
Accessories / Options	• USB Data Converter Set (consisting of serial interface BLD01 RS232-dsub9, USB Data Converter type 002_V001 SUB-D-9-pole and CD with driver) • Description of serial interface (on request)	

Table 1: Technical data for blood leak detector type BLD01

Connectors

Interfaces / Connectors on electronic board ⚠ Note: The board needs to be protected against direct contact with external electronic potentials.				
TTL **Inputs and outputs** **(Standard mode: Logic interface)**	Wire to board connector header; 6-pin; 1.25 mm Molex: 53261-0671			
	Pin	**Colour**	**Connection**	
	1	Red	Operating voltage 3.1 … 5.5 VDC	
	2	Black	GND	
	3	Yellow	Output blood	
	4	Green	Input self-test	
	5	White	Output plausibility check	
	6	Blue	Input calibration	
Output specification **(Standard mode: default)**	**Condition**		**Signal at output Blood**	**Signal at output Plausibility check**
	Blood		H	H
	Clear liquid		L	H
	Plausibility error		L	L
	Internal error (self-test)		H	L
Serial interface (RS232) **Configuration (optional)**	Wire to board connector header; 4-pin; 1.25 mm Molex: 53261-0471			
	Pin	**Colour**	**Connection**	
	1	Red	Supply voltage 3.3 … 5.0 VDC	
	2	Blue	GND	
	3	Green	Tx	
	4	Yellow	Rx	

Technical Drawings

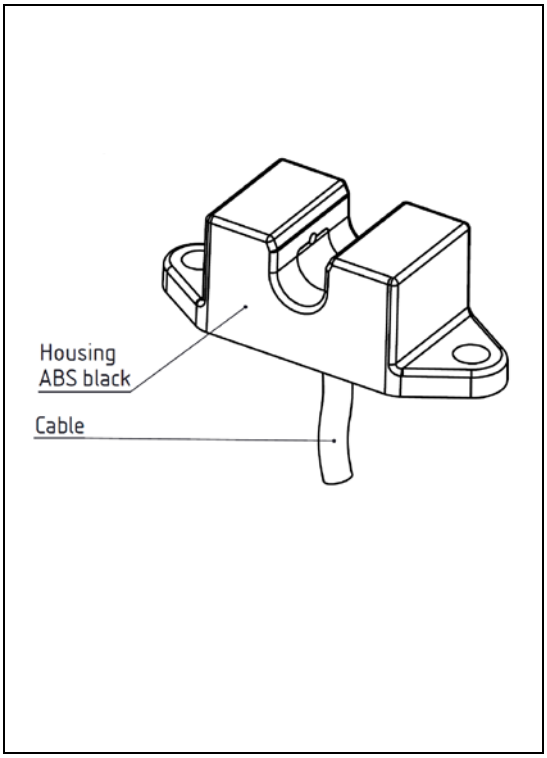

Fig. 1: Scheme of BLD01

(The drawings are not to scale)

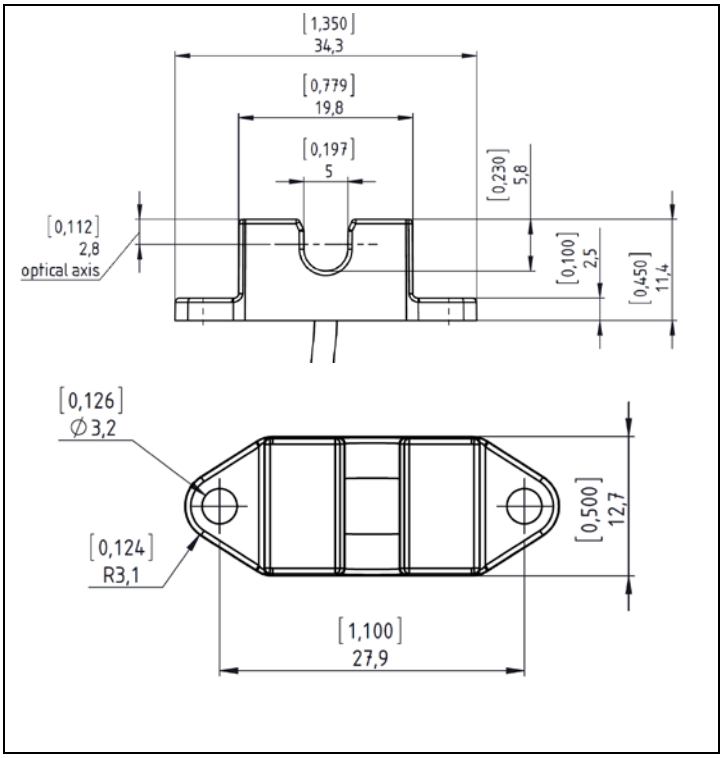

Fig. 2: Side and top view of BLD01