Fig.1

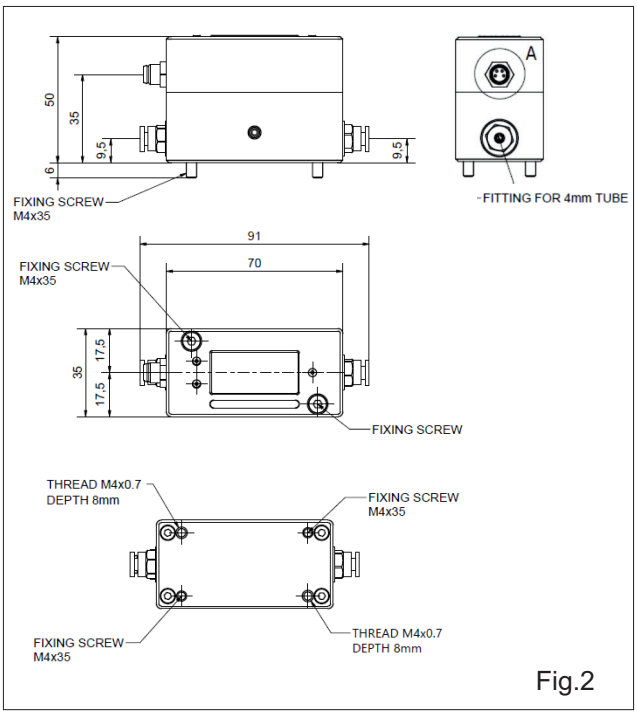

Fig.2

Application example
Oil micro lubrication for bearing

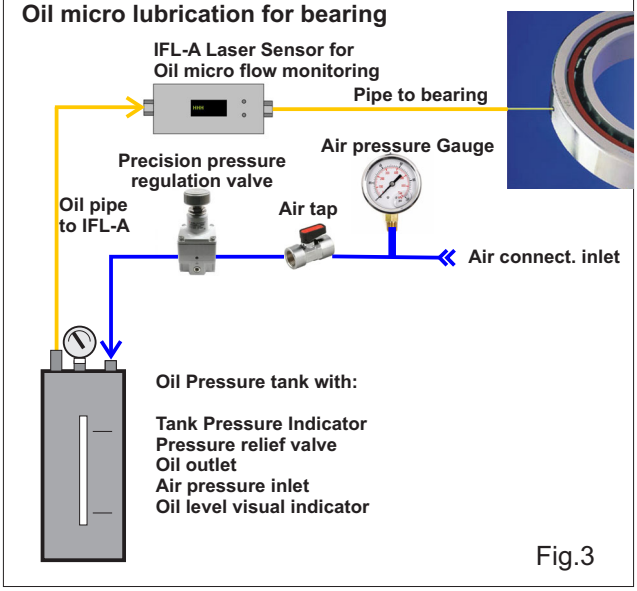

Fig.3

Micro flow sensor

IFL-A (EU Patent)
for pipes Ø 4 mm

AMB AWARD 2024 NOMINEE

Application:

To monitor micro flow rate. Unmatched detection of micro flow rate of viscous liquids or sanitary liquids.
E.g. monitor lubricating lines to prevent overheating or damage as minimal lubrication, monitor for clogs in spraying lines to ensure the proper amount of liquid has been applied, for spraying and coating, for chemical mixing as monitoring of mixing fluid, in product filling to verify the correct amount of fluid has been added to a package or container.

- **Electronic and optical control through LED**
- **High measuring precision**
- **Full scale calibration**
- **Programmable by means of external terminal or application software**
- **Easy installation and compact construction.**
- **Functional mode: dispensing and flowmeterig**

Function:

The IFL-A sensor allows the immediate detection of micro flow rate. The sensor is based on laser interferometry technology and is designed so that it can measure extremely low flow rates as low as a few drops per hour with extreme accuracy, thus ensuring effective and instantaneous detection of minimum micro flow rates.
The detection of pre-set value of flow rate causes the turning on of green LED. Any flow interruption or change (increase or decrease) in fluid flow compared to the target value generates an external signal and a red LED light turns on. Configurable control range with min and max value thresholds. The check reference flow rate is set at first programming stage; a programming software PC compatible can also be used.

Technical data:

Rated flow range:	0,5 to 15 ml/h 500 to 15.000 mm^3/h
Output (pin 4):	configurable signal (flow out of range) analogic 4-20 mA or 0-10 V
Visual warning:	digital or PNP
Electrical connection:	M8 x 4 poles
Lubricant connection:	for 4mm diameter pipe
Power supply voltage:	24 VDC ±10%
Max. absorption at 24 V:	45 mA
Connection:	PNP
Installation:	any position
Operating temperature:	+10 ÷ +60 °C
Max. operating pressure:	6 bar
Housing material:	Aluminum
Protection class (according to EN 60529):	IP 50

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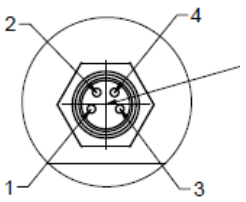
Leaflet dd: 09.09.2024
Replaces that of: 14.03.2024

POWER CONNECTOR	
PIN	SIGNAL
1	V DC
2	Rx Tx (progr.)
3	GND
4	OUT

Connection scheme



M8 Male Conn.4 PIN
BINDER 718 SERIES
PANEL MOUNT

Fig.4

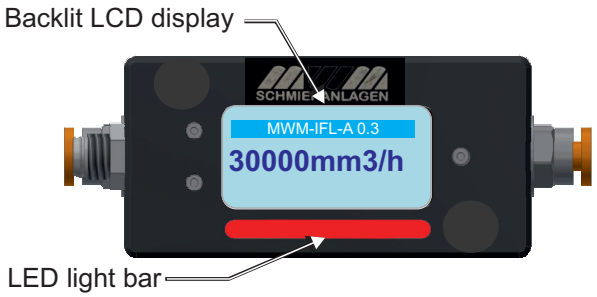


Fig.5

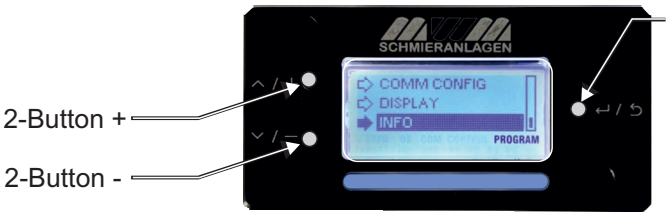


Fig.6

Explanation of LED light bar

Green LED steady on	Normal operation condition. The measured flow rate is within the set min/max thresold. No error message detected.
Orange LED steady on	The measured flow is below the minimum threshold or above the maximum threshold (if one or both are enabled) for a time not exceeding the set limit.
Red LED fast blink	Flow above the maximum threshold (if enabled) for a time exceeding the set limit.
Red LED slow blink	Flow below the minimum threshold (if enabled) for a time exceeding the set limit.
Red LED steady on	Calibration error; or measurement error; or maximum measurement range exceeded (overflow); sensor full-scale exceeded, either below the minimum (low cut-off) or above the maximum (high cut-off) limits
Blue LED steady on	Target reached when in dispenser mode.

Operation - output signal:

When the sensor is used in detection of micro flow rate mode, the detection of pre-set value of flow rate causes the turning on of green LED. Any flow interruption or change (increase or decrease) in fluid flow compared to the tar-get value generates an external signal and a red LED light turns on. The output signal (pin 4 - fig.4) type can be configured as digital or analog in the sensor settings menu.

The digital output type can be further configured to switch when the flow is above/below a threshold, or within a window. When the sensor is used in dispensing mode, the digital output activates when reaching the configured amount of fluid.

The analog output can be configured as a voltage or current output. The output signal is proportion al to the instantaneous flow, or to the dosed amount of fluid, if the sensor is used in dispensing mode.

The IFL-A micro flow sensor is equipped with a backlit dispaly that indicates flow measurement or functional status (flow rate detection or dispenser mode) and an LCD control light bar for visual indication of functional conditions (fig.5)

Programming menu:

Use the right-hand button (1) next to the display to select the main MENU and configure the sensor (fig.6). Options can be selected using the + and - selection buttons (2) to the left of the display. The buttons also have an up and down scroll function.

The main menu items are four: MEASURE SETTINGS; I/O CONFIG; ALARMS and INFO. Specific sub-folders correspond to each main item (see instruction manual).

LED light bar

Explanation of light signals:
- GREEN: Normal measurement
- ORANGE: Pre-alarm,
- RED fast blink: Flow Alarm max
- RED slow blink: Flow Alarm min
- RED FIXED: Error condition
- BLUE: Target reached (dispenser mode)

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