

Fluo Sens Integrated – Fluorescence Detector

CE



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ESMO30-DF-1001

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1 Introduction

The Fluo Sens Integrated is highly suited for integration into compact and mobile fluorescence detection systems or for online measurements in automated processes.

Based on DIALUNOX' unique technology, the confocal optics allow contact free measurements on surfaces and in liquids, sometimes even in the presence of ambient light. The highly sensitive detector measures fluorescent samples that are present in low concentrations and is easy to integrate as a component into your instrument.

The compact and robust module contains a complete fluorescence measurement device comprising precise micro optics, powerful excitation light sources, highly sensitive sensors, no movable parts and microprocessor controlled electronics.

Calibration data and correction factors can be stored in the detector as software parameters and applied directly to the raw data. Measurement results can be accessed via a simple serial interface through external devices such as personal computers, embedded controllers (ECs) or programmable logic controllers (PLCs).

2 Technical specifications

Performance

Definition	Description
Absolute lower detection limit LLOD	e.g. @ 470nm excitation and 520nm detection 15 pMol fluorescein-sodium in 0.1 M sodium hydroxide
Dynamic range	3.6 orders of magnitude (0 .. 2500 arb. u.* 1 linear range) Adjustable range via Software by factor 10 Adjustable range via hardware by factor 1000
Noise level	< 0.2% at max. range
Excitation	High performance-LED with feedback loop for stabilization
Detection	High amplification with high signal-to-noise ratio (between 98.5% and 99.95% depending on multiple factors), precision Si-Photodiode
Measurement intervals	0.1 seconds to hours Signal settling time ("On-Delay"): 300 ms Signal fall time ("Off-Delay"): 300 ms Measurement frequency in "scan mode": 200 Hz
Detection area	1 mm ² to 25 mm ² (depends on working distance and used front lens)
Distance (detector/object)	6 mm to 18 mm (depends on used front lens)
Available excitation wavelengths**	365 nm .. 980 nm (two different spectral excitation ranges per detector)
Available detection wavelengths**	460 nm .. 980 nm (two different spectral detection ranges per detector)

* arb. u. = arbitrary unit

**Typical dyes: Alexa Fluor® 647, Pacific Blue EGFP, 5-FAM™, ROX, HEX, Cy®3, Cy5, TAMRA, FITC



Environmental operating conditions

Definition	Description
Temperature range	+10°C to +40°C
Air humidity	20% - 70% rel. humidity, without condensation
Air pressure	300 - 1060 hPa

Mechanics

Definition	Description
Housing	Aluminum
Dimensions (without adapter)	64 x 47 x 17.8 mm
Weight	< 90 g

Electronics

Definition	Description
Power supply	+5 V DC $\pm 5\%$, ripple ≤ 20 mV
Power input	Detector: 50 mA max LED: ≤ 150 mA (depending on LED)
Interface	Serial, 57600 baud, 1 start byte, 8 data bytes, no parity, 1 stop byte
Interface models	TTL-level (3.3 V / 5 V tolerant) RS232-level (± 6 V)
Connectors	10-way flex cable, MOLEX 98267-0257, adjustable length

3 Physical dimensions

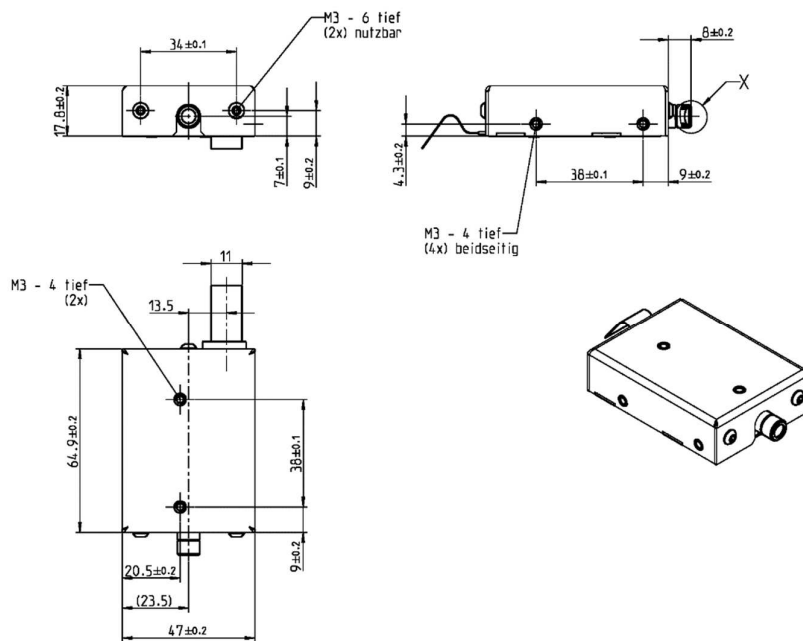


Figure 1: ESMO40-MB-xxxx detector dimensions (front side optical output)

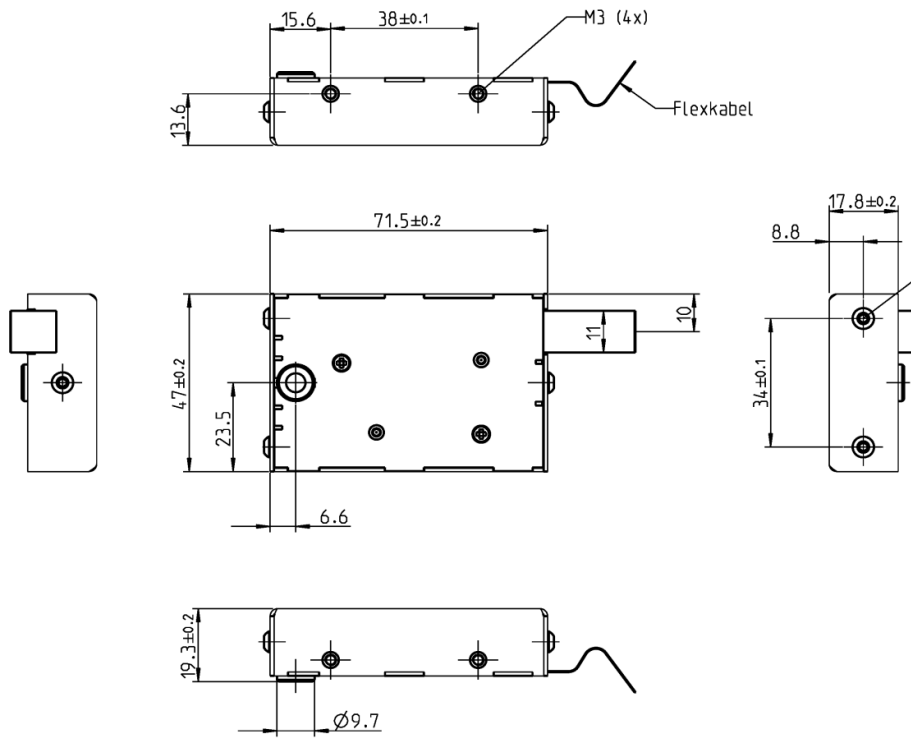


Figure 2: ESMO30-MB-xxxx detector dimensions (downside optical output).

4 Connections





Overview

Pin number	Name	Description
1	Ground	Ground return for supply and communication signals
2	Ground	Ground return for supply and communication signals
3**	TxD	Output of the serial interface
4*	#Trigger	Low active input to trigger a measurement by hardware
5**	RxD	Input of the serial interface
6	Ground	Ground return for supply an communication signals
7*	#RESET	Low active input to reset the detector
8	+5 V	Detector supply voltage +5 V DC, $\pm 5\%$, acceptable ripple <20 mV power consumption ≤ 40 mA
9	Ground	Ground return for supply an communication signals
10	VLED	LED supply voltage +5VDC

* These inputs do not provide internal pull up resistors. In normal operation they should be tied to +5 V/+3.3 V.

** The levels of the serial interface are with respect to the detector type either ± 6 V (RS232), 0/+3.3 V (TTL).

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Not for use in diagnostic procedures.

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