Factsheet

Strain & Position Sensor with I²C Communication
(incl. Connection cable)

The I²C Strain and Position Sensor from Delfa Systems enables precise detection of motion, strain, angles, or surface deformation – ideal for development, laboratory, and prototyping applications.

The capacitive measuring principle ensures high accuracy and repeatability, while the integrated temperature sensor provides additional environmental data. All measurement values can be conveniently read via the I²C interface with high temporal resolution.

Thanks to its fully digital integration, no additional electronics are required. The sensor can be easily connected to Arduino, Raspberry Pi, microcontrollers, or a PC.

An integrated LED provides a visual indication of strain by changing its color according to the measured value. When a threshold is exceeded, the LED begins to blink. This feature is user-configurable and ideal for quick visual feedback in development or testing environments.

Highlights

- Precise detection of strain, motion, and position
- Compact, robust design with elastic sensing element
- Easy I²C connectivity – no analog signal processing required
- Compatible with QWIIC, STEMMA, and STEMMA QT systems
- Integrated temperature sensor
- Built-in strain-dependent LED with color-change and blinking functionality (configurable)
- Configurable I²C address – ideal for multi-sensor applications
- JST connection cable included
- Software examples and libraries available

The sensor is also available in variants for industrial or mobile applications and can be customized on request.

For more information, downloads, and application notes, please visit our website: www.delfasys.de

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[102710] REV003 –21.10.2025

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Technical Data

Mechanical and Environmental Data

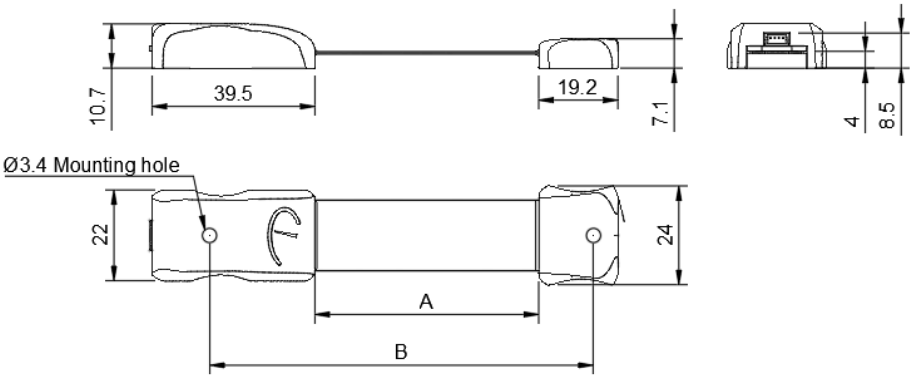
Parameter	Symbol	Value	Unit	Comments
Measurement Range	l	50	mm	
Weight	m	~ 16	g	Sensor with electronic
Elongation Force	F_e	< 12	N	when stretched 100%
Electrical Connection		JST SH 4 pin and solder pads		
Temperature range	T	10 … 40	°C	Storage and operation

Electrical Data

Parameter	Symbol	Value	Unit	Comments
Supply Voltage	V_{sup}	3.3 … 5.0	V	
Power Consumption	P_{tot}	~ 60 … 130	mW	Dependent on LED configuration
Communication		I^2C		
Digital IOs	V_{IL}	< 0.3 x V_{sup}	V	Logical Low
	V_{IH}	> 0.7 x V_{sup}	V	Logical High
	R_{pull}	3.3	kΩ	Internal Pullup for SDA/SCL

Performance

Parameter	Symbol	Value	Unit	Comments
Read-Out frequency	f_r	100	Hz	Maximum refresh rate of output register values
Resolution		0.2	%FS	Smallest detectable output change
Repeatability		<0.2	%FS	Maximum error when stretched to same value
Accuracy		0.5	%FS	Including Hysteresis, Noise, Non-Linearity



Range [mm]	A* [mm]	B* [mm]
50	54,6	93

**Values including necessary pre-stretch.*