

SWS-02 Spot-weldable strain sensor

Basic characteristic

- ▲ SWS-02 is a short gauge spot-weldable strain sensor measuring strain changes in $\mu\epsilon$ or extensions (elongation) in μm .
- ▲ Integrated temperature compensation.
- ▲ SWS-02 can be connected in a series configuration.



Benefits

- ▲ One-body design for both strain and temperature measurement.
- ▲ Surface-mountable using mounting screws, spot-welding, or gluing to the surface.
- ▲ Adjustable pre-strain during installation.
- ▲ In-line (Figure 1) or twin (Figure 2) pigtail design.

Applications

- ▲ Strain changes detection
- ▲ Steel deformations, etc...
- ▲ It can be mounted on different surfaces including pipelines, walls, etc.

Performance properties

Strain range	$\pm 2000\mu\epsilon^5$
Accuracy (guaranteed) ¹⁾	$<0.5\% \text{ FS}^3$
Accuracy (typical) ¹⁾	$<0.23\% \text{ FS}^3$
Precision (guaranteed) ²⁾	$<0.25\% \text{ FS}^3$
Precision (typical) ²⁾	$<0.15\% \text{ FS}^3$
Temperature compensation	Integrated
Temperature accuracy ¹⁾	$<1^\circ\text{C}$
Temperature precision ²⁾	$\pm 0.3^\circ\text{C}$
Temperature sensitivity	$28\text{pm}/^\circ\text{C}$
Strain sensitivity	$1,2\text{pm}/\mu\epsilon$
Operating Temperature range ⁴⁾	-20°C to $+60^\circ\text{C}$
Ingress Protection rating	IP 67

¹⁾ Accuracy is established for each sensor under laboratory conditions and it includes hysteresis, non-linearity, and repeatability of the sensor.

²⁾ Precision is established on a batch basis and it includes hysteresis, non-linearity, repeatability, and reproducibility of the sensor.

³⁾ FS: full-scale range

⁴⁾ The temperature range can be utilized for operation at -35°C to $+60^\circ\text{C}$.

⁵⁾ The strain range is dependent on the installation method. By using high energy TIG or MIG welding technology for installation of the sensor to the surface, the possible sensor range can be increased for up to $\pm 5000\mu\epsilon$.

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Physical properties

Housing material	SS316L – 1.4404
Anchoring distance	39 ± 2 mm
Dimensions (without cable) ¹⁾	123 x 35 x 8.5 mm
Weight (without cable)	100g
Cable type	3mm Dyneema reinforced cable
Cable length ²⁾	1mtr
Cable Bend Radius (dynamic)	40mm
Cable Bend Radius (static)	30mm
Connector type ³⁾	FC/APC
Mounting method	Screws, glue, or spot welding ⁴⁾

¹⁾ For further dimensions, details see the product drawing

²⁾ Cable length is extendable on request

³⁾ Other connector types available on request

⁴⁾ For details of how the spot-weldable plate looks like, see [Figure 1](#)

Packaging

Cardboard box with dimensions: 370x290x45mm¹⁾

Quality statement

SWS-02 sensor is compliant with IEC 61757-1-1:2016/Ed1.0 and IEC 61757:2018

All sensors are 100% tested and calibrated at SYLEX

The sensor is manufactured according to ISO 9001:2008 and ISO 14001:2004



Figure 2: SWS-02 equipped with the spot-weldable plate in a twin pigtail design.

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Optional accessories

- ▲ **PST-02 Pre-strain setup installation dial tool** – used for pre-strain setup during the installation.
- ▲ **WCP-01 Watertight connector protection** – used for FC/APC connector protection during the installation against dust and water – IP67 rated.
- ▲ **LCP-03 Longer cable pigtails** – used to extend the cable lengths from 1mtr up to 20mtr.

¹⁾ Every sensor is equipped with a Transportation fixture

For more information contact our sales team at sales@sylex.sk

* Specifications are subject to change without notice