

# SENSOR LINE SL FORPS SENSOR

Optimize rail traffic management with the SL Fiber Optic Rail Pad Sensor – enjoy a reliable rail traffic surveillance solution that promises quick and easy installation and maintenance-free longevity.

## Product Description

The SL FORPS sensor is designed to replace the intermediate layer and measure the vertical impact of a train onto the rail. It picks up vibrations and shocks in a wide frequency range and is therefore well suited for train and track maintenance diagnostics.

The vertical load applied from the track directly to the FORPS sensor causes a decrease of light transmitted through a special fiber-optic structure, which is embedded in the elastomer rail pad. This transmittance change is detected by our opto-electronic interfaces and is transformed into signals for traffic data processing.



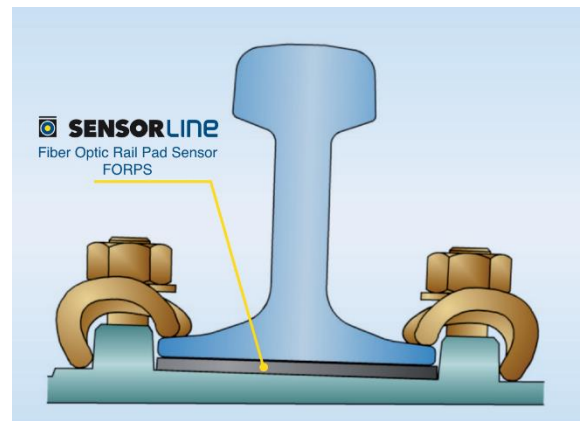
SL FORPS sensor

## Advantages

- Quick and easy installation in all weather conditions
- Excellent service life
- EMV immune
- Theft and vandal-proof
- Maintenance-free

## References

- TDDC/TDCC Marmaray-Istanbul, Ankara-Istanbul, Turkey
- High speed lane, Madrid-Barcelona, Madrid-Seville, Spain
- CNF Luxembourg
- Metro, Madrid, Spain
- Tram, Poland
- Port Authority, Hamburg, Germany



SL FORPS installation situation

## SL FORPS sensor: Easy install fiber-optic sensor for rail traffic

### Characteristics

- The SL FORPS detects vertical forces on the rail
- Typical applications by our solution partners are:
  - Vibration/Shock analysis
  - Flat wheel detection
  - Axle weight measurement (WIM)
  - Track bed analysis
  - Axle & wagon counting
  - Speed measurement
  - Direction detection
  - Train length detection
- A ready to install SL FORPS comprises the sensor pad, a fiberoptic feeder cable in a metal housing terminated with fiber optic connectors
- To operate the SL FORPS sensor, it is connected to a Sensor Line opto-electronic interface SL XD-1100

### Benefits

- Easy and fast installation without any mechanical processing of the rail / sleeper and in all weather conditions
- Available for all rail systems
- Available with integrated temperature sensor
- Fiber-optic cable is EMV immune and noise-free - no interference from electromagnetic fields or lightning
- No maintenance or calibration needed during or after installation
- Well protected against sabotage, theft and animal bites

### Different types, for different rails

Sensor type	Dimension	Rail Type
SL FORPS S 49	165 x 125 x 7 mm (6.5 x 4.9 x 0.28 in)	S49, S54, S41/10, S41/14, UIC54E
SL FORPS UIC 54	165 x 140 x 7 mm (6.5 x 5.5 x 0.28 in)	UIC54
SL FORPS UIC 60	165 x 150 x 7 mm (6.5 x 5.9 x 0.28 in)	UIC60, S64, R65
SL FORPS UIC 60 HS	220 x 150 x 9 mm (8.7 x 5.9 x 0.35 in)	UIC60 for TGV
SL FORPS ...	Customized	Customized

## SL FORPS Sensor: Technical Data

### Dimensions

Sensor element	SL FORPS	S 49	UIC 54	UIC 60	UIC 60 HS
Length		165 mm (6.50 in)	165 mm (6.50 in)	165 mm (6.50 in)	220 mm (8.66 in)
Width		125 mm (4.92 in)	140 mm (5.51 in)	150 mm (5.91 in)	150 mm (5.91 in)
Height		7 mm (0.28 in)	7 mm (0.28 in)	7 mm (0.28 in)	9 mm (0.35 in)
Weight (without feeder cable)		200 g (7.1 oz)	220 g (7.8 oz)	240 g (8.5 oz)	350 g (12.4 oz)

### Fiber optic feeder cable

Outer dimension	10 mm (0.39 in)
Length	up to 40 m (130 ft) / 20m (65 ft) with temp. sensor
Weight	135 g/m (4.4 oz/yd)
Maximum short term pull tension	50 N
Minimum bending radius	50 mm (1.97 in)
Robustness	Metal-spiral cover against animal bite

### Fiber connectors (plastic)

Length	34 mm (1.34 in)
Max. diameter	8.5 mm (0.33 in)

### Performance

Average Life (MTTF)	5+ years
Maximum speed	up to 500 km/h (310 mph)
Maximum wheel load	150 kN
Minimum detection load	1 kN
Operating / storage temperature	-30 °C to 85 °C (-22 °F to 185 °F)
Humidity	No limitation

## Accompanying Products

SL XD-1100: Digital Electronic Interface with 1 channel

## Ordering Information

SL FORPS X-Y-ZZ (T)

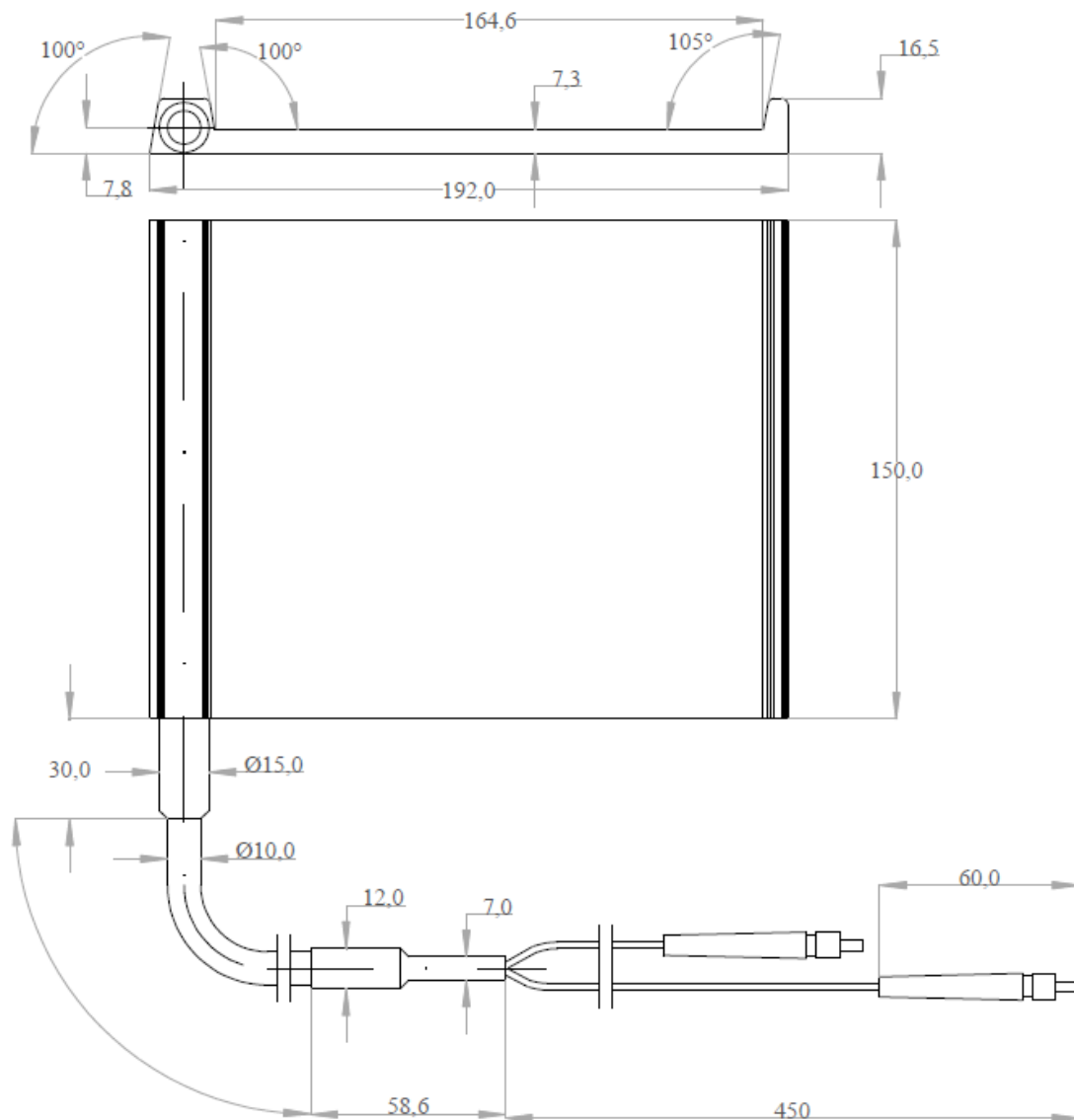
X: Rail type (UIC60, UIC60 HS, UIC54, S49, ...)

Y: Connector type (1: Plastic FSMA, 2: Metal FSMA reusable)

ZZ: Cable length (m), 10 m as standard

T: Integrated temperature sensor, analog

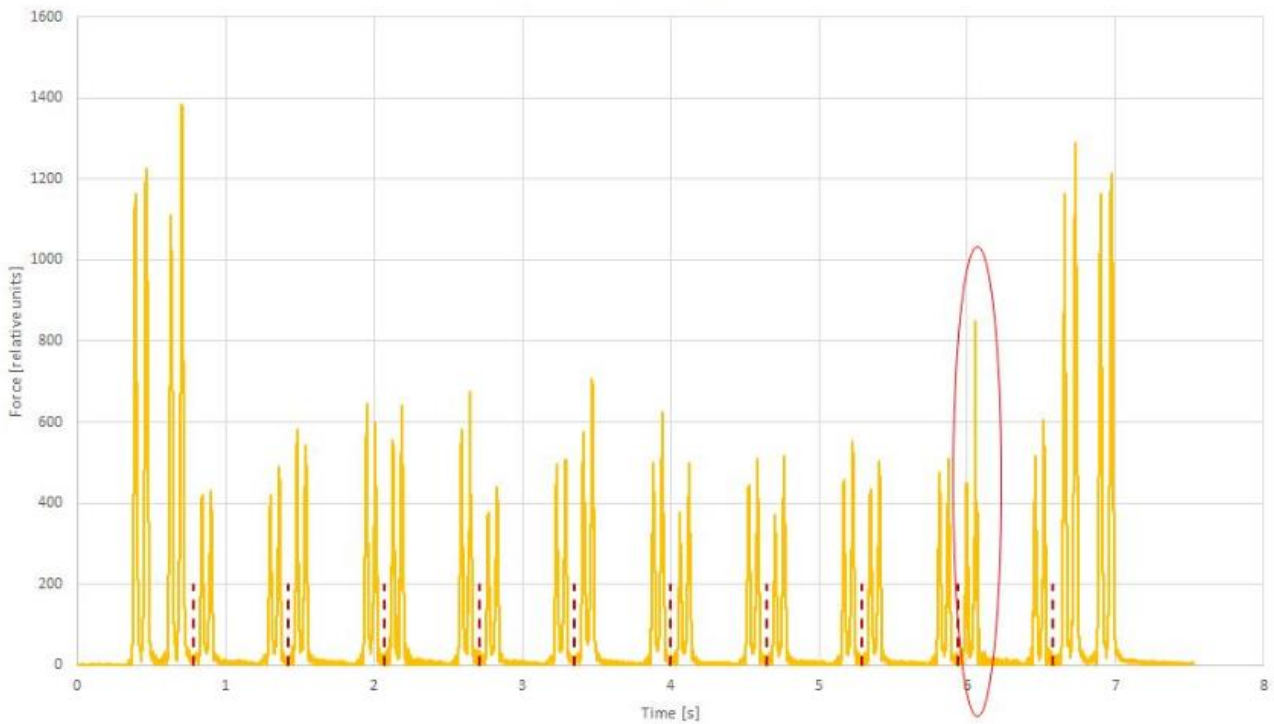
## SL FORPS Sensor: Drawings



SL FORPS UIC 60

# SL FORPS Sensor: Signals

XD1100 Train Signal, Position "Right Second"  
2 Loks, 9 Waggon, Length: 290m , Speed: 155km/h  
Waggon Nr. 2, 3 and 9 with flat wheels



XD1100 Train Signal, Position "Right Second"  
Flat wheel: Waggon No. 9, second axle, right side

