KISTLER

measure. analyze. innovate.

Lineas® Quartz Sensor

Type 9195E...

For Weigh in Motion

The Lineas sensor is a quartz sensor to measure the wheel- and axle loads and to determine the vehicle gross weight under rolling traffic conditions.

- Excellent long-term stability.
- Huge measuring range: from slow to fast freeway speed.
- Very high natural frequency and signal dynamic.
- Protected from the intrusion of water (degree of protection IP68).
- Insensitive to temperature changes.
- Quick and easy installation.
- Adaptive to different pavement characteristics.
- Safe mounting into the pavement.
- The sensor surface can be ground up to 10 mm in case of pavement deformations.

Description

The Lineas WIM sensor Type 9195E... is a force sensor with quartz elements. It consists of a light metal profile of which quartz disks are fitted under preload.

When a force is applied to the sensor surface, the quartz disks yield an electric charge proportional to the applied force through the piezoelectric effect.

The electric charge is converted by a charge amplifier into a proportional voltage which then has to be further processed as required.

The sensor has to be integrated into the road surface and is only for permanent installation.

Applications

- Traffic data acquisition (statistics)
- Overload detection
  - Pre selection for static weight controls
  - Auto weight enforcement
  - Bridge protection
- Weigh dependent tolling
- Road research
- Pavement management system (PMS)

Technical Data

Sensor		
Measuring range wheel load At a reference tire contact area 200 x 320 mm (tread length x tread width)	kN	0 ... 150
Max. load-bearing capacity of the sensor surface	N/mm²	4,6
Sensitivity, nominal	pC / N	–1,76 ±5 %
Max. sensitivity shift over sensor length	%	<±3
Threshold	N	<0,5
Linearity	% FSO	≤±2
Hysteresis	% FSO	≤2
Cable chunking resistance	N	300
Operating temperature range	°C	–40 ... +80
Temperature coefficient of sensitivity	% / °C	–0,02
Insulation resistance	Ω	$>1 \cdot 10^{10}$
Capacitance		
E1, E2 with 40 m cable	nF	6
E1, E2 with 100 m cable	nF	12

General Data			
Cable length (Cable Type K02232D01)		m	40/100
Connector			BNC pos.
Weight	E1 with 40 m cable	kg	4,5
	E1 with 100 m cable	kg	5,8
	E2 with 40 m cable	kg	3,7
	E2 with 100 m cable	kg	5,0
Degree of protection		EN60529	IP68

1 bar = 10^5 Pa = 10^6 N · m^{-2} = 1,0197... at = 14,503... psi; 1 psi = 0,06894... bar; 1 g = 9,80665 m · s^{-2}; 1 Nm = 0,73756... lbft; 1 g = 0,03527... oz