

Strain Monitor Type ED21/KL66



Strain Monitor KL66 is used as a force and deformation monitoring element for all types of structures

General

As in all DIGISENS transducers, an oscillating-wire sensor is used to convert the force/load into an electrical signal. This patented element is able to deliver a signal that can be directly processed by a computer.

Application

Surveying the stress of any kind of structure like bridges, cranes, machines or tanks. Overload protection for elevators, platform, robots, vehicles, etc.

Description

The Strain Monitor KL66 is threaded on the structure to be surveyed and allows a precise and reproducible measurement of its stress changes. Using DIGISENS vibrating wire technology instead of a strain gauge, means having a simple mechanical mounting combined with a very accurate measurement. This technology also offers an extremely high resolution.



Deformations of fractions of a μm can be measured.

Since the KL66 is adapted to the material of the structure to be surveyed, differential thermal expansion has no negative influence on the precision.

The DIGISENS technology is also standing for a very good long-term stability. Since no organic material is involved in the measurement chain, creeping or other influences are reduced to the minimum.

The KL66 delivers a 5V-TTL frequency signal, proportional to the displacement measured. The frequency is a square root

function of the displacement. In most applications it can be considered linear.

This frequency signal is easy to transmit, immune to perturbations and can be treated directly by any processor.

Fit and function

The Strain Monitor KL66 is delivered with all fixing parts needed. This allows a simple mounting on the desired structure.

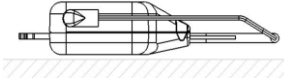
No special tooling is needed. No surface conditioning, no glues drying in clean room condition. No maintenance is needed.

Just tighten the screw and you are ready to measure.

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Technical Data

1. Technical specification				2. Cable																					
Dimensions LxWxH	79x53x17.5 mm	Temperature drift of zero on steel	typical ± 0.25 Hz/K	Type	AWM 2464 AWG 26 shielded or AWM 2464 AWG 26 unshielded or AWG 26 (replacement)																				
Weight (without cable)	20 g	Recommended mounting distance on steel (ex. S235, E295)	64.8mm	Length	6 m or 8.5m or 35 mm (replacement)																				
Housing	IP53 ⁽¹⁾ according IEC 60529:2001	Temperature mounting distance dependency	-0.5 Hz/(K·mm)	Cable Connection																					
 orientation for IP53		Temperature influence on span	typical 0.1%/10°K	<table border="1"> <thead> <tr> <th></th> <th>open</th> <th>JST-PH3</th> <th>Wago 231-103</th> <th>JST-ZMR-03</th> </tr> </thead> <tbody> <tr> <td>GND</td> <td>wh</td> <td>1</td> <td>2</td> <td>1</td> </tr> <tr> <td>VCC</td> <td>bn</td> <td>3</td> <td>3</td> <td>2</td> </tr> <tr> <td>frequ</td> <td>gn</td> <td>2</td> <td>1</td> <td>3</td> </tr> </tbody> </table>			open	JST-PH3	Wago 231-103	JST-ZMR-03	GND	wh	1	2	1	VCC	bn	3	3	2	frequ	gn	2	1	3
	open	JST-PH3	Wago 231-103	JST-ZMR-03																					
GND	wh	1	2	1																					
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frequ	gn	2	1	3																					
Power supply	3-5 VDC (opt. 24 V)	Vibration sensitivity	According to ICE 68-2-34	Bending radius																					
Requirements on the power supply unit: · Class PS2 as per IEC 62368-1 – or – Limited Power Source (LPS) as per IEC 60950-1 · Short-circuit current: < 8 A · For devices with UL certification: NEC Class 2		Shock resistance	According to ICE 68-2-34	15x diameter of cable																					
Nominal	5 mA (max. 10 mA)	Hysteresis (for ideal structure)	= 2 f.s.d. Hz ⁽²⁾	3. Standards																					
Overvoltages (UL-Standard): Transient overvoltages according Installation Categories I For mains supply the min. category is II		Reproducibility (for ideal structure)	= 2 f.s.d. Hz ⁽²⁾	residential: EN 61000-6-1 and -3 industrial: EN 61000-6-2 and -4 elevator: EN 12015 and EN12016																					
Elongation nominal	+90 / -45 μ m	Relative Air Humidity	$\leq 98\%$ not condensing	Standards for ED21/KL66 (10.037840.3, 10.038747.0, 10.037127.1) (UL-certified)																					
Elongation overload	+135 / -120 μ m	Pollution degree	2	Power Supply ⁽³⁾ : 3-5 VDC max 10mA																					
Traction nominal	+60 / -30 N	Indoor use		USR: UL 61010-1 Second Edition CNR: CAN/CSA-C22.2 No. 61010-1 Second Edition: E313793																					
Traction overload	+90 / -80 N			4. Scope of Delivery																					
Signal nominal	12000-18000 Hz (5 V TTL)			Clip for earthing Fixing screw 3pcs DIN912-M3x6 Fitting instruction Shrinking tube (replacement only)																					
Signal overload	9000-21000 Hz (5 V TTL)																								
Base frequency	16500 Hz ± 500 Hz																								
Sensitivity	~4 Hz / μ ϵ @ 12 kHz ~2 Hz / μ ϵ @ 18 kHz																								
MTBF	13'000'000 h																								
Functional temperature range	-10 to +70°C																								

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired

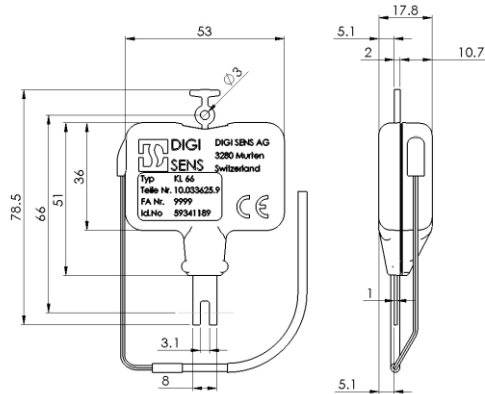


- ⁽¹⁾ Into evaluated by UL
⁽²⁾ full scale deviation
⁽³⁾ The device is intended to be supplied by an isolated Limited Energy Source per UL61010-1 or Limited Power Source per UL60950-1/UL62368-1 or Class 2 per NEC

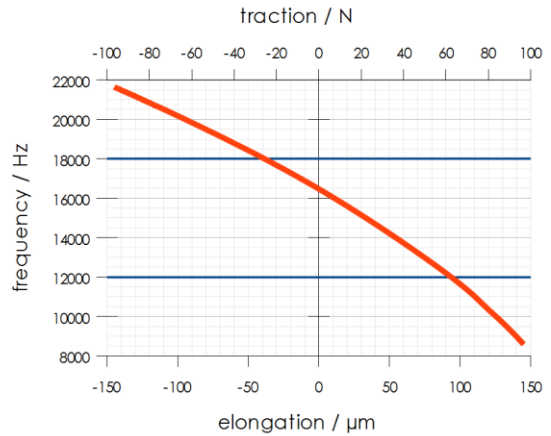
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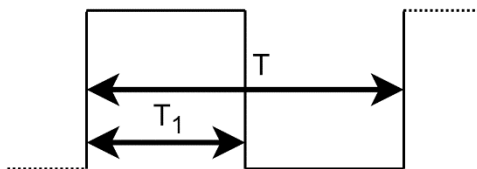
Dimensional drawing



Characteristic (typical)



Output signal



$$\text{DutyCycle} = T_1/T$$

$$f = 1/T$$

duty cycle: 50 % ± 5 %
 frequency: 9000 Hz to 21000Hz
 amplitude: input voltage - 0.2 V

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