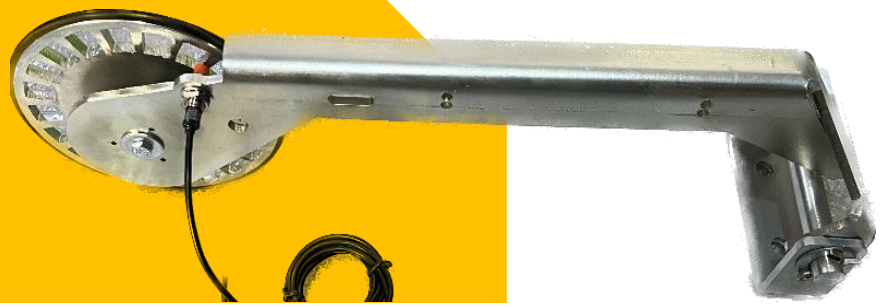
Speed Sensor JWS



Application

The JWS speed sensors are designed for measuring the belt speed of belt conveyor systems.

They are used as optional equipment for NIYANCELL-type belt weighers.

Design

The speed sensor consists of a rocker that can be pivoted around an axis. The axis is mounted in a bracket that is attached to the machine (belt conveyor) to be monitored. The measuring wheel is attached to this rocker and runs slip-free on the belt to be measured. The belt speed is measured as a frequency signal through windows in the measuring wheel and with one or two (legal-for-trade) proximity sensor/s and processed using an evaluation device.

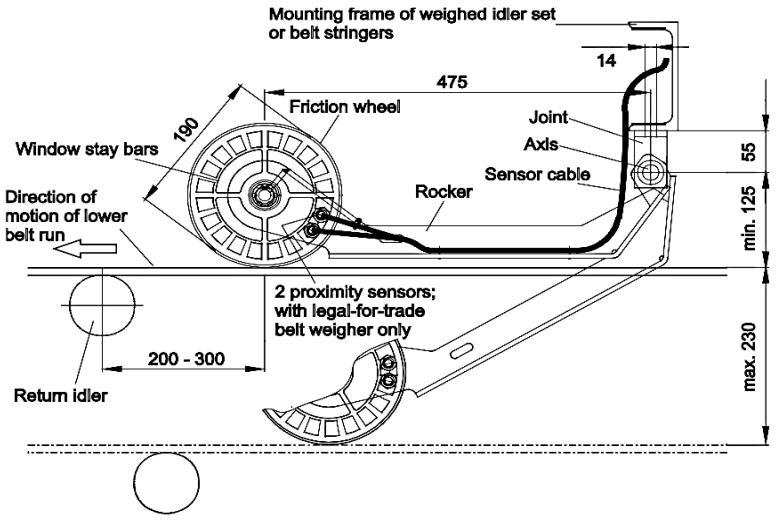
The JWS speed sensor is manufactured entirely of a highly corrosion-resistant galvanized steel and in the ATEX – certified model made of 1.4301 stainless steel.

Function

The pulse wheel runs on the interior of the empty, returning belt of a belt feeder system with a rubber ring.

Under its own weight, the wheel is friction-locked against the belt and is made to rotate by the belt movement. The non-slip motion means that the wheel circumferential velocity corresponds to the belt speed.

The rotational speed of the wheel is registered by a sensor that records the speed by means of transmitting a signal through an alternating series of windows and bars, recording a frequency that corresponds to the belt speed of the belt conveyor system. This frequency is transmitted to the evaluation electronics where it is analyzed.



Hysteresis	Max. 10% of sensing distance							
Standard sensingtarget	8×8×1mm (iron)		12×12×1mm (iron)		18×18×1mm (iron)	25×25×1mm (iron)	30×30×1mm (iron)	45×45×1mm (iron)
Setting distance	0 to 1.05mm	0 to 1.4mm	0 to 1.4mm	0 to 2.8mm	0 to 3.5mm	0 to 5.6mm	0 to 7mm	0 to 10.5mm
Power supply (operating voltage)	12-24VDC3 (10-30VDC3)							
Leakage current	Max. 0.6mA							
Response frequency※1	1.5kHz	1kHz	1.5kHz	500Hz		350Hz	400Hz	200Hz
Residual voltage※2	Max. 3.5V (non-polarity type is Max. 5V)							
Affection by Temp.	Max. ±10% for sensing distance at ambient temperature 20℃ (for PRT08 Series: ±20% Max.)							
Control output	2 to 100mA							
Insulation resistance	Over 50MΩ (at 500VDC megger)							
Dielectric strength	1,500VAC 50/60Hz for 1 minute							
Vibration	1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours							
Shock	500m/s² (approx. 50G) in X, Y, Z direction for 3 times							
Indicator	Operation indicator: Red LED							
Environ-ment: Ambient temperature	-25 to 70℃, storage: -30 to 80℃							
Environ-ment: Ambient humidity	35 to 95% RH, storage: 35 to 95% RH							
Protection circuit	Surge protection circuit	Surge protection circuit, Over-current protection circuit						
Protection structure	IP67 (IEC standard)							
Cable	Ø3.5mm, 3-wire, 2m (AWG24,Core diameter:0.08mm,Number of cores: 40, Insulator diameter: Ø1mm)	Ø4mm, 2-wire, 2m	Ø5mm, 2-wire, 2m					
		(AWG22, Core diameter: 0.08mm, Number of cores: 60, Insulator diameter: Ø1.25mm)						
Material	Case/Nut: Nickel plated brass, Washer: Nickel plated iron, Sensing surface: Polybutylene terephthalate, Standard cable (black): Polyvinyl chloride (PVC), Oil resistant cable (gray): Oil resistant polyvinyl chloride (PVC)							
Approval	CE							
Weight※3	Approx. 64g (approx. 52g)	Approx.84g (approx. 72g)	Approx.122g (approx. 110g)	Approx.207g (approx. 170g)				