WayCon
Positionsmesstechnik

SENSORS FOR AGRICULTURAL MACHINERY

Powerful sensors to meet growing demands

Attachments for tractors

In industrial livestock farming, pallet forks are used as attachments for tractors for transporting feed. Draw-wire sensors are used to measure and control the raising and lowering of the pallet forks. When it comes to storing and stacking hay bales in particular, the ability to control the attachments precisely speeds up the work process, saving time and money.

Draw wire sensors

Draw wire sensors are inexpensive and compact sensors that precisely measure the position or change in position of objects. The core components of a draw-wire potentiometer are a precision measuring wire and a sensor element that converts the change in position into a proportional electrical signal. The maintenance-free draw wire encoders are particularly quick and easy to install and are used in all areas of industry due to their reliability.

Technical Data

SERIES ► CHARACTERISTICS ▼	MH60	MH120
Measurement range max.	4000 mm	10000 mm
Linearity max.[1)]	±0.5 %	±0.25 %
Sensor element	Potentiometer	
Output	Potentiometer / 0.5...4.5 V / 0...5 V / -5...+5 V / 0...10 V / 4...20 mA / CANopen	
Displacement speed	≤3 m/s	
Protection class max.	IP67, IP69K	
Operating temperature	-20...+85 °C (optional -40...+85 °C)	
Additional options	Housing, redundant output signals, rope fixation	
Link	Data sheet MH60	Data sheet MH120

[1)] based on the measurement range

Combine harvester

Combine harvesters are harvesting machines that are used to cut and thresh grain. Modern combine harvesters make it possible to harvest grain on a huge scale. Angle sensors, such as the WPH series with its wear-free Hall-effect sensor element, are installed in the cutting unit to monitor whether the cutting angle and alignment are correct. This is crucial in ensuring that the cutter bar always remains in the optimum position to guarantee consistent harvesting performance. Angle sensors are also used in the steering systems of self-propelled mowers.

Rotary Sensors

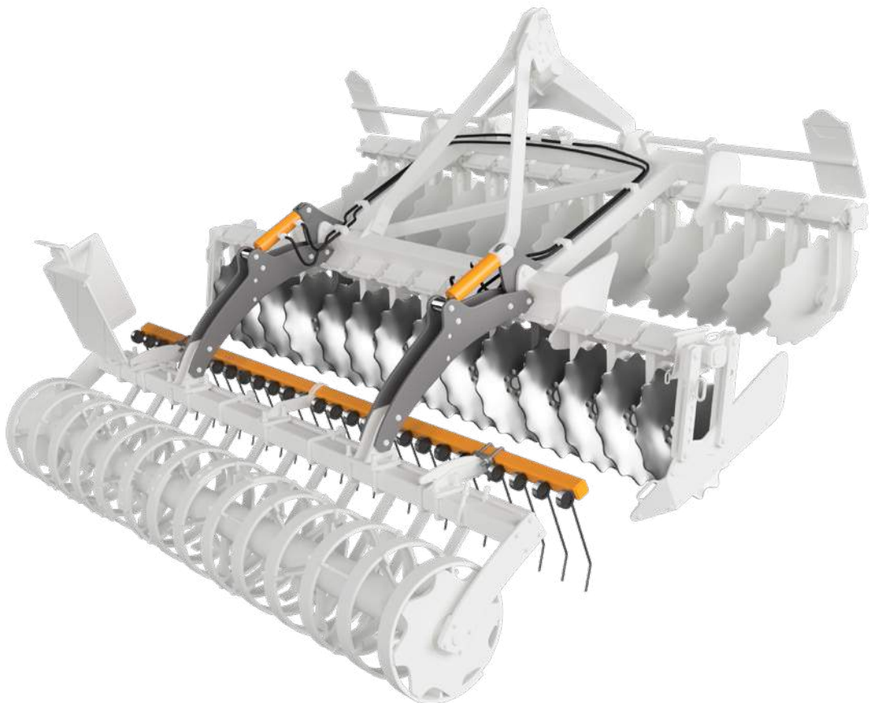
Rotary sensors, also known as encoders, detect angular changes in rotating parts with maximum precision. The WPH series is equipped with a Hall-effect sensor element that allows wear-free measurement. In addition, the WPH series can be provided with increased corrosion protection to protect the sensor from aggressive media. The M36/M58 series also has a wear-free measuring principle with its magnetic sensor element.

Technical Data

SERIES ▶ CHARACTERISTICS ▼	WPH-M	WPH	M36	M58
Measurement range max.	360°		16 revolutions	
Linearity max.	0.2 % [1]		±1°	
Resolution max.	12 bit			
Sensor element	Hall-Effect		Magnetic	
Output analog	0.5...4.5 V / 0...5 V		0...5 V / 0...10 V / 4...20 mA	
Protection class max.	IP67			IP65
Operating temperature	-20...+85 °C (optional -40...+85 °C or -20...120 °C)		-40...+85 °C	
Shaft type	Solid shaft		Solid shaft, Blind hollow shaft	Solid shaft
Housing Ø	40 mm	60 mm	36 mm	39 mm
Link	Data sheet WPH		Data sheet M36	Data sheet M58

[1] based on the measurement range

Disc harrow



Disc harrows are used in farming to plough up and aerate the soil. This encourages volunteer grains to germinate more quickly. Linear potentiometers are mounted on disc harrows to ensure efficient soil cultivation. The durable linear sensors measure the alignment of the harrow and use this to determine the cultivation depth. Optimum alignment can increase the operating speed and reduce the amount of working time.

Linear potentiometer

Linear potentiometers are a cost-effective and reliable way of measuring distances or positions. The linear potentiometers work as voltage dividers via a hybrid plastic layer and are available with a protection class of up to IP67. Linear potentiometers combine simple design with maximum precision. A wide variety of designs and mounting options allow them to be used in countless applications.

Technical Data

SERIES ▶ CHARACTERISTICS ▼	LZW	LZW-IP
Measurement range max.	750 mm	
Linearity max.[1)]	±0.05 %	
Repeatability	0.01 mm	
Displacement speed	≤5 m/s	≤3 m/s
Resistance	5 kΩ for measurement ranges up to 600 mm, 10 kΩ for measurement ranges up to 750 mm	
Protection class max.	IP65	IP67
Operating temperature	-30...+100 °C	
Housing material	Anodised aluminium, Nylon 66 G 25	Anodised aluminium
Push rod material	Stainless steel AISI 303	C45 steel, chromium plated 20 µm
Link	Data sheet LZW	

[1)] based on the measurement range

Field sprayers

Field sprayers are agricultural machines that are used to apply pesticides and fertilisers. The height control mechanism of the spray booms relies on ultrasonic sensors and is important to ensuring the product is applied as evenly as possible. Maintaining the optimum distance from crops and soil reduces costs and protects the environment. Ultrasonic sensors can also be used to automate field sprayers.

Ultrasonic sensors

Ultrasonic sensors measure the distance to the target without contact, regardless of colour and material. The ultrasound is a high-frequency oscillation emitted by the sensor, which is reflected by the measurement object and received again in the form of an echo. The sensor calculates an analog output signal proportional to the distance from the transit time of the sound. A classic application for ultrasonic sensors is level measurement.

Technical Data

SERIES ► CHARACTERISTICS ▼	UFP	UFA2
Measurement range max.	300...3500 mm	600...6000 mm
Linearity max.[1)]	<0.3 %	±0.5 %
Repeatability	±2 mm	4 mm
Resolution max.	0.125 mm	1 mm
Output analog	0...10 V / 4...20 mA	
Switching output	PNP, NPN	
Protection class max.	IP67	
Operating temperature	-20...+70 °C	-25...+70 °C
Link	Data sheet UFP	Data sheet UFA2

[1)] based on the measurement range

Grape harvester

Grape harvesters are self-propelled machines that are used to harvest grapes. Careful handling of the delicate grapes is of the utmost importance, but the vines must not be exposed to too much stress either. Magnetostrictive sensors are used to adjust the shaking rods and the guidance system. The precise sensors ensure that grapes and vines are not damaged during the harvest.

Hydraulic & pneumatic sensors

The stroke measurement of cylinder pistons places special demands on the sensor technology. Magnetostrictive encoders from the MSB series and linear potentiometers from the LME and LMI series are installed directly in cylinder pistons. The MSB series enables contactless and wear-free distance measurement and can withstand working pressures of up to 350 bar. The LME and LMI series are suitable for pneumatic applications up to 20 bar (LME) and hydraulic applications up to 250 bar (LMI).

Technical Data

SERIES ► CHARACTERISTICS ▼	MSB	LME	LMI
Measurement range max.	2500 mm	1000 mm	
Linearity max.[1)]	±0.02 %	±0.05 %	
Repeatability	<0.01 mm	≤0.08 mm	
Output	0,1...10,1 V / 0,1...5,1 V / 4...20 mA / RS422 (start/stop)	Potentiometer: 5 / 10 / 20 kΩ	
Displacement speed	≤10 m/s	≤5 m/s	
Protection class max.	IP67		
Operating temperature	-30...+90 °C	-30...+100 °C	
Operating pressure max.	350 bar	20 bar	250 bar
Link	Data sheet MSB	Data sheet LME/LMI	

[1)] based on the measurement range

Product Overview

Draw Wire Sensors

- Measurement ranges 50 mm to 42.5 m
- Linearity up to ±0.02 %
- Resolution up to ±0.02 %

Inductive Sensors LVDT

- Measurement ranges 2 mm to 500 mm
- Linearity up to ±0.1 %
- Resolution up to 0.8 µm

Laser Sensors

- Measurement ranges 0.5 mm to 500 m
- Linearity up to ±1 µm
- Resolution up to 0.2 µm

Linear Potentiometer

- Measurement ranges 10 mm to 2000 mm
- Linearity up to ±0.05 %
- Output: potentiometer, analog

Digital Magnetic Scales

- Measurement ranges up to 99.99 m
- Linearity up to ±2 µm
- Resolution up to 0.5 µm

Inductive Sensors

- Measurement ranges 2 mm to 24 mm
- Linearity up to ±25 µm
- Resolution up to 0.012 µm

Eddy Current Probes

- Measurement ranges 0.8 mm to 4 m
- Linearity up to ±8 µm
- Resolution up to 0.4 µm

Magnetostrictive Transducer

- Measurement ranges 50 mm to 2500 mm
- Linearity up to ±0.02 %
- Resolution up to 2 µm

Encoder

- Singleturn and Multiturn
- Solid-, hollow- and through hollow shaft
- Outputs: analog, digital, incremental

Ultrasonic Sensors

- Measurement ranges 100 mm to 6000 mm
- Linearity up to ±0.3 %
- Resolution up to 0.125 mm

Capacitive Sensors

- Measurement ranges 0.05 mm to 10 mm
- Linearity up to ±0.2 %
- Resolution up to 0.01 %

Digital Length Gauges

- Measurement ranges 10 mm to 50 mm
- Linearity up to 0.8 µm
- Resolution up to 0.1 µm

Digital Linear Scales

- Measurement ranges 150 mm to 2000 mm
- Linearity up to ±20 µm
- Resolution up to 10 µm

Signal Conditioners and Displays

- Amplifiers for LVDTs
- Teaching of potentiometer outputs
- Multifunctional displays

WayCon
Positionsmesstechnik GmbH

Headquarters
Mehlbeerenstr. 4
82024 Taufkirchen
Phone +49 (0)89 67 97 13-0
Fax +49 (0)89 67 97 13-250

Office
Auf der Pehle 1
50321 Brühl
Phone +49 (0)2232 56 79-44
Fax +49 (0)2232 56 79-45

Email: info@waycon.de
Internet: www.waycon.biz