Product family overview

MWS120

Precise measurement of linear movements with adjustable contact pressure

MEASURING WHEEL ENCODERS

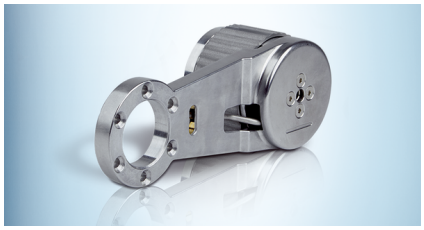
SICK
Sensor Intelligence.

Advantages

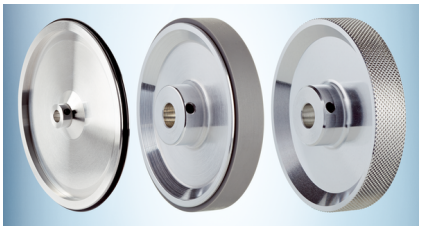
Innovative, convenient handling, reliable operation

The MWS120 is an innovative measuring wheel system for exact measurements and is characterized by very simple operation. Installation of the measuring wheel system is quick, easy and reliable and does not require any special tools. Thanks to the versatile interface options, the MWS120 can be integrated into nearly any control environment. The individually adjustable MWS120 reduces damage to sensitive measurement surfaces caused by pressure as well measurement inaccuracies caused by high-speed changes with high acceleration. The measuring wheel system can be moved into maintenance position manually and without tools when maintenance work is needed. The spring tension can then be adjusted quickly to the desired spring tensioning force by hand and without tools, meaning the MWS120 can be put back into operation faster. The intelligent and rugged design make the MWS120 the ideal and powerful solution for many linear measuring tasks.

Whether IO-Link, EtherNet/IPTM or incremental interface – the MWS120 offers a number of different interfaces.



The spring tensioning force can be adjusted flexibly from 0 N to 24 N to fit the respective requirements of the measuring task.



Different measuring wheel options – with different measuring wheel surfaces and scopes – prevent material damage and effectively reduce slippage.

Easy, convenient and reliable: The MWS120 is quick to integrate and can be put into operation manually without tools thanks to the intelligent design. This makes operating the measuring wheel system particularly easy.

Smart design for quick mounting and reliable integration

The MWS120 is designed for the highest level of usability. That means that the measuring wheel system is installed with only four short mounting steps and is ready for operation right away.

Thanks to the clever design of the MWS120, the spring tensioning force can be flexibly adjusted by hand from 0 N to 24 N – in 6 increments of 4 N each, and without using any tools. This means the measuring wheel system can be optimally adjusted to the measuring surface. In addition to protection from damage, the MWS120 guarantees constant contact to the measurement surface. The device has the right measuring wheel surfaces for any material the MWS120 measures. This also improves the reliability and process quality of linear measurements.

The clever device design enables the combination of different measuring wheel surfaces, scopes and encoders. This makes possible quick mechanical and electrical integration of the MWS120 into the respective application and control environment. Encoder and measuring wheel can be mounted flexibly on both sides of the spring arm. The measuring wheel system can be installed clockwise or counterclockwise, from above or below in reference to the measurement surface – the MWS120 delivers reliably precise values in any position.

The spring tensioning force can be limited to a maximum of 8 N, 16 N or 24 N using a screw in the housing. This prevents damage caused by excessive spring tensioning force.

The spring tensioning force can be adjusted between 0 N and 24 N in 6 increments of 4 N, making it easy to adjust it to respective measuring task for the best measurement results.

Moving the gage arm into maintenance position in order to replace the measuring wheel or work on the measurement surface is very easy, as is resetting it to the desired spring tensioning force.

Mounting and handling in no time: The MWS120 can be integrated into systems without great effort. Adjustments to the spring tensioning force are done in seconds.

IO-Link CANopen SSI RS-422 TTL / HTL EtherCAT EtherNet/IP PROFINET

One measuring wheel system, many communication interfaces

The MWS120 can easily be integrated into existing control environments. All common industrial interfaces such as IO-Link, CANopen, SSI, incremental interface, EtherNet/IPTM, EtherCAT® and PROFINET are available for the measuring wheel system. Whether for Smart Tasks via IO-Link, mobile parameterization via CANopen interface or extensive diagnostic functions via EtherCAT® or PROFINET, the MWS120 takes advantage of all the possibilities offered by the respective industrial environment and can therefore be very easily integrated into Industry 4.0 processes. Computer-supported programming of the MWS120 using the SOPAS configuration software is also possible.

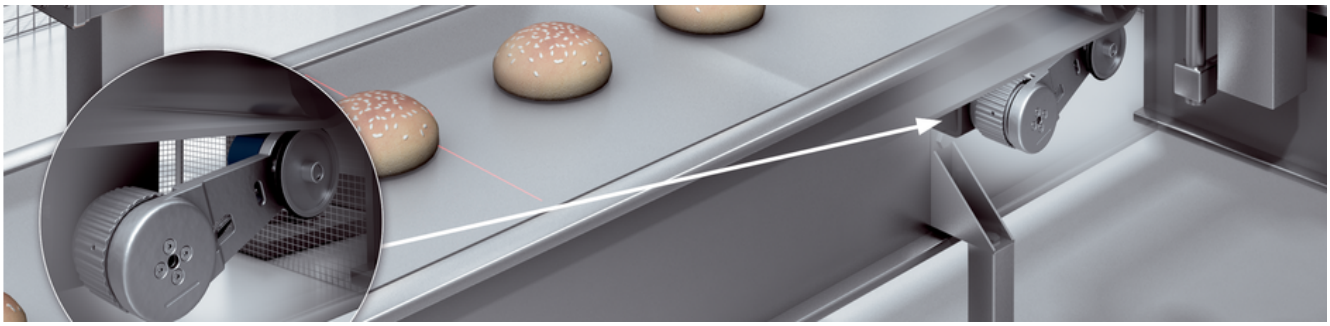
Tailor-made configuration: The MWS120 is available with a wide range of interfaces and is therefore suitable for nearly any control environment.

Ensuring future security: Thanks to the decentralized intelligence of IO-Link, diagnostic data can be saved, Smart Tasks such as length measurements can be executed and production processes with Industry 4.0 concepts can be designed with high efficiency.

PROFINET

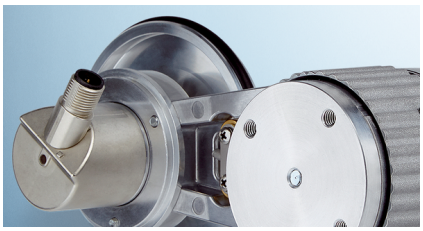
Detecting faults early on: Extensive diagnostic functions are available with the PROFINET standard which improve the reliability of the measurement process and therefore increase machine availability and productivity.

At home in nearly any surroundings: Thanks to the freely-selectable interface, the MWS120 can be integrated into nearly any control environment, thereby providing all possibilities for individualized on-site process optimization.

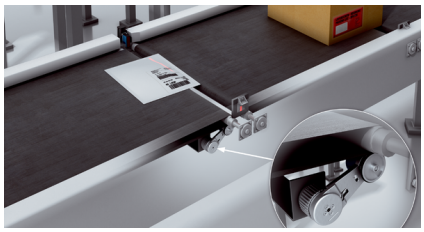


From measuring wheels to non-contact sensors – SICK has a wide range of devices for linear measurement of endless material or piece goods.

Whether endless materials or piece goods, paper, plastic, metal, wood or textiles: Exact position and speed data is essential for industrial automation. You decide on the quality and productivity of fully-automated processes. That is why SICK offers a wide range of solutions for linear measurements, from measuring wheel encoders with incremental or absolute interface to encoders, motor feedback systems, pulley systems and the SPEETEC 1D non-contact motion sensor. The latter provides high-precision data on piece goods and endless material. This is what creates the optimal combination of performance and economic efficiency for any application.



The MWS120 measuring wheel systems is the solution for many common measurements of endless material and offers very convenient handling as well as diverse configuration options.



Whether for printing processes, cutting machines, conveyor belts or supply processes: Many applications rely on exact position or speed monitoring of endless materials or piece goods. The SICK portfolio therefore includes encoders for a wide range of requirements and ambient conditions.

Without making contact, the SPEETEC 1D motion sensor detects the length, position and speed of all types of objects and surfaces. In particular in applications with sensitive and soft materials, the SPEETEC 1D scores with high process reliability and measurement accuracy.

Optical or tactile measurement, endless material or piece goods, incremental interface or IO-Link: SICK offers the right solution for any challenge in linear position and movement measurement and helps make industrial processes even more efficient.

Technical data overview

Spring deflection spring arm	± 10 mm
Measuring wheel circumference	300 mm [1)] 200 mm [1)] 500 mm [1)] (depending on type)
Measuring wheel surface	Smooth polyurethane surface Knurled polyurethane surface O-ring NBR70 Studded polyurethane surface Cross knurled aluminium (depending on type) (depending on type)
Programmable	– / ✓ (depending on type) (depending on type)
Communication interface	Incremental SSI CANopen IO-Link EtherCAT® EtherNet/IP™ PROFINET (depending on type) (depending on type)
Communication Interface detail	TTL / HTL / IO-Link V1.1 / CoE (CAN over EtherCAT®) (depending on type) (depending on type)
Connection type	Male connector, M23, 12-pin, radial Male connector, M12, 8-pin, radial Cable, 8-wire, universal Male connector, M12, 8-pin, universal Male connector, M12, 5-pin, universal Male connector, M12, 4-pin, universal Male connector, M12, 4-pin, axial Female connector, M12, 4-pin, axial (depending on type)
Supply voltage	4.5 V ... 32 V (depending on type) (depending on type)

[1)] The surface of a measuring wheel is subject to wear. This depends on contact pressure, acceleration behavior in the application, traversing speed, measurement surface, mechanical alignment of the measuring wheel, temperature, and ambient conditions. We recommend you regularly check the condition of the measuring wheel and replace as required.

Product description

The MWS120 is a measurement systems which detects linear movements directly and reliably. With a spring travel of 10 mm and the contract pressure with easy manual adjustment, movements of the measurement surface can be compensated for vertical to the measurement direction. This enables precise measurement while ensuring gentle contact with the measurement surface. Changing to the maintenance position is also done easily and securely by hand. This makes it possible to do maintenance work is a short amount of time. Thanks to the smart design and an axle spacing of only 120 mm, the MWS120 can be integrated optimally into the application. A large selection of different encoders and interfaces as well as measuring wheels with different surfaces and diameters offers individual solutions.

At a glance

- Contact pressure can be adjusted manually from 0-24 N in 6 steps
- Compact axle spacing (120 mm) for flexible installation options
- Maintenance position can be reached manually
- Selection of various measuring wheel surfaces and diameters
- Incremental or absolute encoder interfaces can be combined

Your benefits

- Finely-adjustable contract pressure enables high process quality and process reliability on various surfaces
- Each linear measuring task can be optimally solved due to different measuring wheel surfaces and adjustable contact pressure
- Customized combinations possible thanks to a wide selection of encoders, interfaces and measuring wheels
- Smart design for easy integration into the application and control environment
- Time-saving thanks to easy integration and quick commissioning
- Contact pressure and maintenance position can be adjusted without tools

Fields of application

- Direct measurement of the position, speed and path of linear movements, e.g. with endless material
- Laser and inkjet printers for labels, packaging and bottles
- Process control, e.g. for cutting processes
- Wood industry
- Volume and weighing systems
- Packaging machines
- Conveyor belt systems
- Material handling

Type code

Other models and accessories ➜ www.sick.com/MWS120

Measuring wheel circumference

Measuring wheel surface and mounting position

Mounted Encoder

0	0 Without encoder [1]
A	1 DBS60E (HTL, TTL, HTL/TTL), Pulses per revolution 0 ... 5000
A	2 DBS60B (HTL, TTL, HTL/TTL), Pulses per revolution 5.001 ... 10.000
B	1 DFS60E (HTL, TTL), Pulses per revolution 0 ... 2.048
B	2 DFS60B (HTL, TTL, programmable), Pulses per revolution 0 ... 10.000
B	3 DFS60A (HTL, TTL, programmable), Pulses per revolution 0 ... 65.536
M	1 AHS36A (IO-Link, CANopen, SSI)
M	2 AHM36A (IO-Link, CANopen, SSI)
M	3 AHS36B (IO-Link, CANopen, SSI)
M	4 AHM36B (IO-Link, CANopen, SSI)
N	1 AFS60A (Ethernet/IP, PROFINET, EtherCAT, SSI)
N	2 AFM60A (Ethernet/IP, PROFINET, EtherCAT, SSI)
N	3 AFS60B (SSI programmable / not programmable)
N	4 AFM60B (SSI programmable / not programmable)
N	5 AFS60E (SSI programmable / not programmable)
N	6 AFM60E (SSI programmable / not programmable)

Encoder communication interface

0	Without Encoder
1	TTL / RS-422, 6 channel, 4.5 V ... 5.5 V
2	TTL / RS-422, 6 channel, 10 V ... 30 V
3	TTL / RS-422, 6 channel, 10 V ... 32 V
5	HTL / Push Pull, 6 channel, 10 V ... 27 V
6	HTL / Push Pull, 6 channel, 10 V ... 32 V
7	TTL / HTL universal, 6 channel, 4.5 V ... 30 V
9	TTL / HTL, 4.5 V... 32 V, programmable
A	SSI, gray, 4.5 V ... 32 V
B	TTL / HTL, programmable with 0-set function on PIN 7 on M23 male connector, 4.5 V ... 32 V
C	CANopen
E	EtherCAT
I	EtherNet/IP™
N	PROFINET
P	SSI, gray, binary, programmable, 4.5 V... 32 V
Q	IO-Link

Connection type

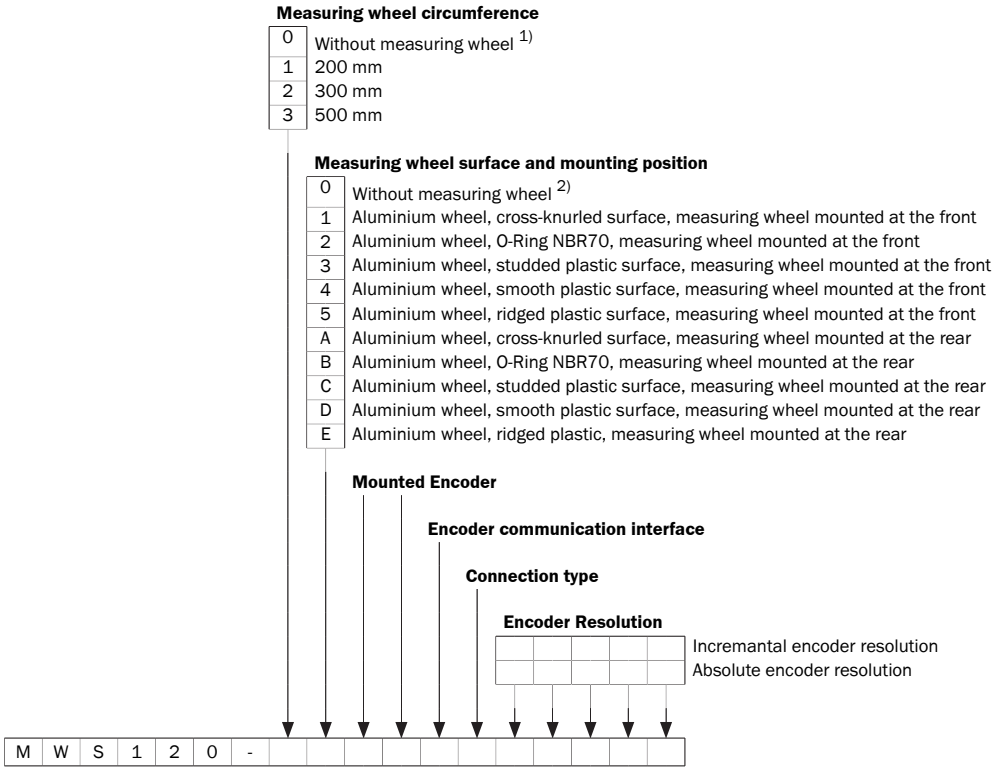
0	Without Encoder
A	Male connector, M23, radial
B	Male connector, M23, axial
C	Male connector, M12, radial / universal
D	Male connector, M12, axial
F	Male connector, 1 x M12, axial, female connector, 2 x M12, axial
J	Cable, 0.5 m, universal
K	Cable, 1.5 m, universal
L	Cable, 3 m, universal
M	Cable, 5 m, universal
N	Cable, 10 m, universal
P	Cable, universal, with male connector, M23, 0.5 m, universal
Q	Cable, universal, with male connector, M12, 0.5 m, universal

Encoder Resolution

					Incremantal encoder resolution
					Absolute encoder resolution

M	W	S	1	2	0	-											

[1] Not in combination "Measuring wheel circumference" 0 and "Measuring wheel surface and mounting position" 0.



1) Not in combination "Measuring wheel surface and mounting position" 0 and "Mounted encoder" 00.

2) Not in combination "Measuring wheel circumference" 0 and "Mounted encoder" 00.

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com