

# POSITION SENSORS

TRANSMITTERS FOR ANGULAR  
POSITION AND INCLINATION  
TRANSMITTERS



ROBUST ■ RELIABLE ■ FLEXIBLE



The correct position decides

## YOUR BENEFITS AT A GLANCE

- RELIABLE OPERATION DUE TO ROBUST DESIGN AND HIGHEST PRECISION
- LOW INSTALLATION COSTS DUE TO EASY AND FAST ASSEMBLY
- TIME SAVINGS DUE TO THE INTEGRATION VIA STANDARD INTERFACES
- LOW LIFE CYCLE COSTS DUE TO THE HIGHEST USEFUL LIFE WITH CONSTANT MEASURING ACCURACY

CHEMICALS AND PETROCHEMICALS



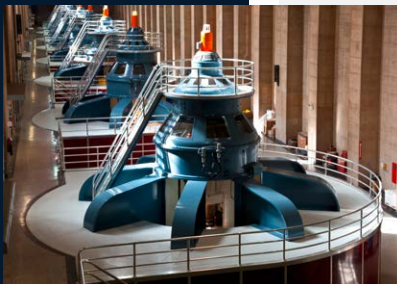
AUTOMATION AND LOGISTICS



MACHINE AND PLANT CONSTRUCTION



ENERGY GENERATION AND DISTRIBUTION



OIL AND GAS



SHIPS AND TRANSPORT



Operating as a leading provider of high-quality instrumentation, we have pursued the goal of making electric engineering processes safer, more transparent and thus more efficient for more than 70 years.

Our products are designed especially for industrial use and ensure the smooth operation of plants, production and processes due to their high quality in terms of accuracy, reliability and longevity.

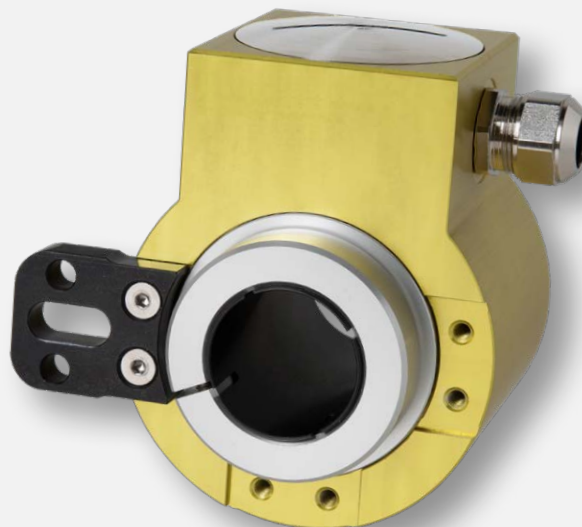
Our **POSITION SENSOR** portfolio offers solutions for angle, position and inclination measurement. The program covers simple installation devices through to robust applications in rough conditions. The angle and inclination measuring systems serve as an important link between mechanical and control facilities.

# WE KNOW ALL THE ANGLES

## ABSOLUTE ANGULAR POSITION TRANSMITTERS

High reliability and safety requirements exist in all areas of machine and plant construction. Safety-related demands on positioning tasks are constantly increasing, particularly if failures can endanger people and the environment. To meet these demands, Camille Bauer Metrawatt offers a range of high-quality absolute angular position transmitters. They acquire a rotatory or translatory movement without contact and transform it into an electrical output signal. The devices excel with these attributes:

- Unique, patented capacitive measuring method
- Absolute measured value is always available
- Time-consuming reference runs are not required
- Robust design for rough conditions
- On-site parameterisation
- Non-wearing and low maintenance
- Different versions and approvals are available



Hollow-shaft transmitter KINAX HW730

# WE HAVE A NEW SLANT

## ABSOLUTE INCLINATION TRANSMITTERS

Inclination transmitters are an excellent alternative to traditional angular position transmitters. There is hardly any moveable object the position of which cannot be determined by inclination transmitters. They acquire – similar to a plummet – the deviation from the horizontal or vertical line within the reference point provided by the direction of the earth's gravitational force. Compared to rotary encoders, inclination transmitters have the advantage of acquiring the inclination values directly while not requiring any mechanical coupling with the drive elements. They excel with these attributes:

- One-dimensional inclination measurement with oil-damped pendulum system or with MEMS technology
- Absolute measured value is always available
- Time-consuming reference runs are not required
- High absolute accuracy
- Very robust design with high ingress protection of housing
- High-quality materials
- On-site parameterisation
- Different versions are available



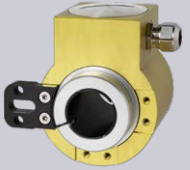


Inclination transmitter  
KINAX N702-INOX HART





## OVERVIEW TRANSMITTERS FOR ANGULAR POSITION

Type	WT720 THE INDUSTRIAL	WT720 WITH FLANGE ADAPTER THE ALTERNATIVE	HW730 THE FLEXIBLE
			
Features	<ul style="list-style-type: none"> <li>• Robust industrial housing</li> <li>• High ingress protection</li> <li>• On-site parameterisation</li> </ul>	<ul style="list-style-type: none"> <li>• Alternative to WT707 / WT717, if on-site parameterisation</li> </ul>	<ul style="list-style-type: none"> <li>• Analogue and digital interface</li> <li>• No shaft adaption required</li> <li>• On-site parameterisation</li> <li>• Redundancy development possible</li> </ul>
Measuring principle	capacitive	capacitive	capacitive
Housing design	ø 58 mm	ø 58 mm / ø 102 mm	ø 78 mm
Type of shaft	solid shaft	solid shaft	hollow-shaft
Shaft diameter	ø 10 mm	ø 19 mm	ø 10 mm ... ø 30 mm
Measuring range	singleturn 0...360°	singleturn 0...360°	singleturn 0...360°
Electrical interface	analogue 4...20mA	analogue 4...20mA	analogue 4...20mA MODBUS TCP
Operating voltage	12 ... 30 VDC	12 ... 30 VDC	12 ... 30 VDC PoE with Modbus TCP
Linearity	±0.5%	±0.5%	±0.1% / ±0.04%
Reproducibility	0.1°	0.1°	0.1°
Permitted shaft load	max. 80 N radial max. 40 N axial	max. 80 N radial max. 40 N axial	– –
Mounting position	any	any	any
Housing material	anodized aluminum	anodized aluminum	anodized aluminum
Operating temperature	–40 ... +85 °C	–40 ... +85 °C	–40 ... +85 °C
Protection	IP67 / IP69K	IP67 / IP69K	IP67 / IP69K
Approvals			
ATEX	yes	yes	yes (for analogue version)
IECEX	yes	yes	yes (for analogue version)
Maritime execution (formerly GL, Germanischer Lloyd)	yes	yes	yes (for analogue version)



**WT707**

**THE ROBUST**



- Analogue
- Suitable for rough conditions

capacitive

∅ 102 mm

solid shaft

∅ 19 mm and ∅ 12 mm

singleturn 0...355°

analogue 0 / 4...20mA

12 ... 30 V DC/AC  
24...60 / 85...230 VDC

≤0.5%

0.1°

max. 1000 N radial  
max. 500 N axial

any

Steel / stainless steel flange  
plastic / aluminium hood

-25 ... +70 °C

IP 66

yes  
yes  
yes

**WT717**



- Parameterisation via software

capacitive

∅ 102 mm

solid shaft

∅ 19 mm and ∅ 12 mm

singleturn 0...355°

analogue 4...20mA

12 ... 30 V DC/AC

≤0.5%

0.1°

max. 1000 N radial  
max. 500 N axial

any

Steel / stainless steel flange  
plastic / aluminium hood

-25 ... +70 °C

IP 66

yes

**3W2**

**THE COMPACT**



- Almost infinite resolution
- No wear and maintenance

capacitive

∅ 48 mm

solid shaft

∅ 2 mm and ∅ 6 mm

singleturn 0...355°

analogue 0 / 4...20mA

12 ... 30 V DC/AC

≤0.5%

0.1°

max. 16 N radial  
max. 25 N axial

any

aluminium

-25 ... +70 °C

IP 50

yes  
yes  
yes

**2W2**



- Parameterisation via software

capacitive

∅ 48 mm

solid shaft

∅ 2 mm and ∅ 6 mm

singleturn 0...355°

analogue 4...20mA

12 ... 30 V DC/AC

≤0.5%

0.1°

max. 16 N radial  
max. 25 N axial

any

aluminium

-25 ... +70 °C

IP 50

yes





## OVERVIEW INCLINATION TRANSMITTERS

Type	N702 THE ANALOGUE	N702-SSI THE COMMUNICATIVE
		
Features	<ul style="list-style-type: none"> <li>• Analogue interface 4...20 mA</li> <li>• Programmable on site via push-button</li> </ul>	<ul style="list-style-type: none"> <li>• Communication interface SSI</li> <li>• Programmable on site via push-button</li> </ul>
Measuring principle	magnetic with pendulum	magnetic with pendulum
Housing design	∅ 60 mm	∅ 60 mm
Measuring range	0 ... 360°	0 ... 360°
Pendulum damping	at 25° tilt <1 sec.	at 25° tilt <1 sec.
Electrical interface	4...20 mA	SSI / binary
Operating voltage	9...33 VDC	9...33 VDC
Linearity	0.05%	0.05%
Resolution	14 Bit	14 Bit
Mounting position	Vertical to the measured object	Vertical to the measured object
Housing material	aluminium coated	aluminium coated
Operating temperature	-30 to +70 °C	-30 to +70 °C
Protection	IP66	IP66
Connection	sensor plug M12	sensor plug M12



## N702-INOX

### THE EXTREMELY ROBUST



- Seawater resistant stainless steel housing
- Analogue interface 4...20 mA
- Programmable via signal line

magnetic with pendulum

ø 60 mm

0 ... 360°

at 25° tilt <1 sec.

4...20 mA

8...33 VDC

0.05%

14 Bit

Vertical to the measured object

stainless steel INOX AiSi 316Ti (1.4571)

-30 to +70 °C

IP68

Threaded cable connection with fix connection cable

## N702-INOX HART



- Seawater resistant stainless steel housing
- Digital HART interface
- Programmable via HART interface

magnetic with pendulum

ø 60 mm

0 ... 360°

at 25° tilt <1 sec.

4...20 mA / HART

12...30 VDC

0.05%

14 Bit

Vertical to the measured object

stainless steel INOX AiSi 316Ti (1.4571)

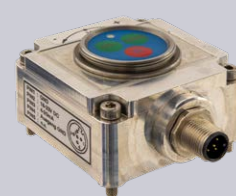
-30 to +70 °C

IP68

Threaded cable connection with fix connection cable

## N705-MEMS 4...20mA

### THE ANALOGUE



- Analogue interface 4...20 mA
- Free on-site parameterization

Microelectromechanical capacitive tilt angle system

60 x 60 x 30 mm

0 ... 360°

—

4...20 mA

18...33 VDC

0.05%

14 Bit

Perpendicular to the measurement object

Aluminium

-30 to +70 °C

IP67

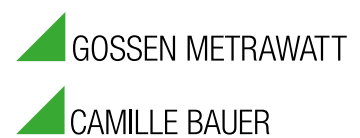
Connector M12

WHAT MOVES US ...

BEING ALWAYS IN TUNE WITH THE TIMES AND PROVIDING CUSTOM-MADE  
SOLUTIONS FOR PRECISE AND RELIABLE POSITION MEASUREMENT IN ANY APPLICATIONS.

NOW AND IN FUTURE.

**GMC INSTRUMENTS**



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INDUSTRIAL TECHNOLOGY



PHOTOGRAPHY



TEST AND MEASUREMENT



MEDICAL ENGINEERING

