

Baumer



Cranes and heavy vehicles
Robust sensors made by Baumer

Passion for Sensors

You think of robust and dependable sensor products? Think of us.

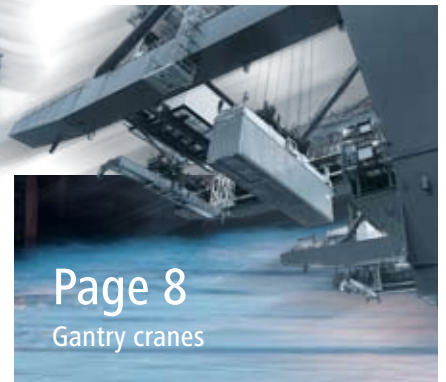
Hardly any other application demands more from a sensor than outdoor deployment. Very low temperatures, heavy impacts by shocks and vibrations or water in all its forms – sensors installed at cranes and heavy vehicles must be always prepared for the worst. The all-encompassing Baumer portfolio provides solutions that are specifically conceived to match these demanding requirements. Extreme robustness, reliability and efficiency are the hallmarks of our products and the attributes often named by our customers. We at Baumer focus on in-depth understanding of your application. This is the only way to make sure that our application engineers will pick out the optimal task-matching sensor product and to provide you with adequate expert support.



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Pioneering technologies

Info-click

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www.baumer.com/crane-vehicle



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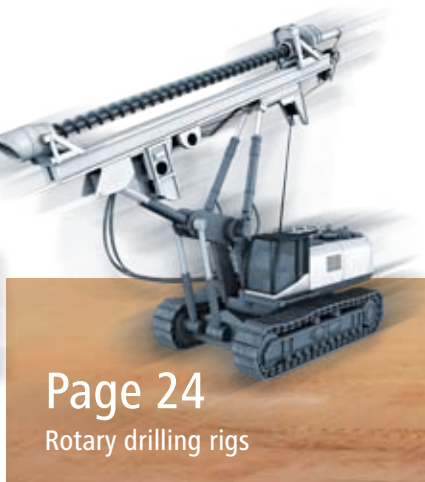
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Are you a global player? Baumer is close to you worldwide.

Groups with production facilities throughout the world expect their suppliers to be on site. The globe-spanning net of Baumer locations ensures immediate support. Our committed local engineers provide long-term expertise. We take our customers' needs seriously and help at source.

Aerial lifting platforms



- 1 Anti-tilt protection
Versatile and cost-efficient

Strain link DSRT

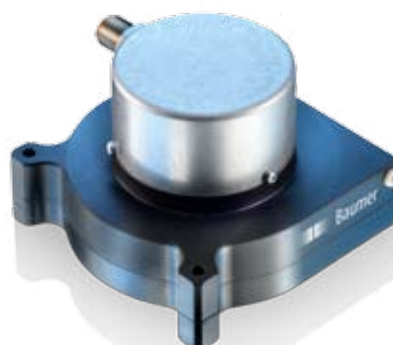
- Versatile application options by extended temperature range -40 to +85°C
- Cost-efficient and safe thanks to fieldbus interfaces
- Robust design with IP 67 protection
- Quick and easy commissioning due to default calibration
- Interference-immune, integrated electronics



- 2 Angle measurement of the boom
Wear-free, compact and robust

Bearingless encoder *HDmag* MHAD

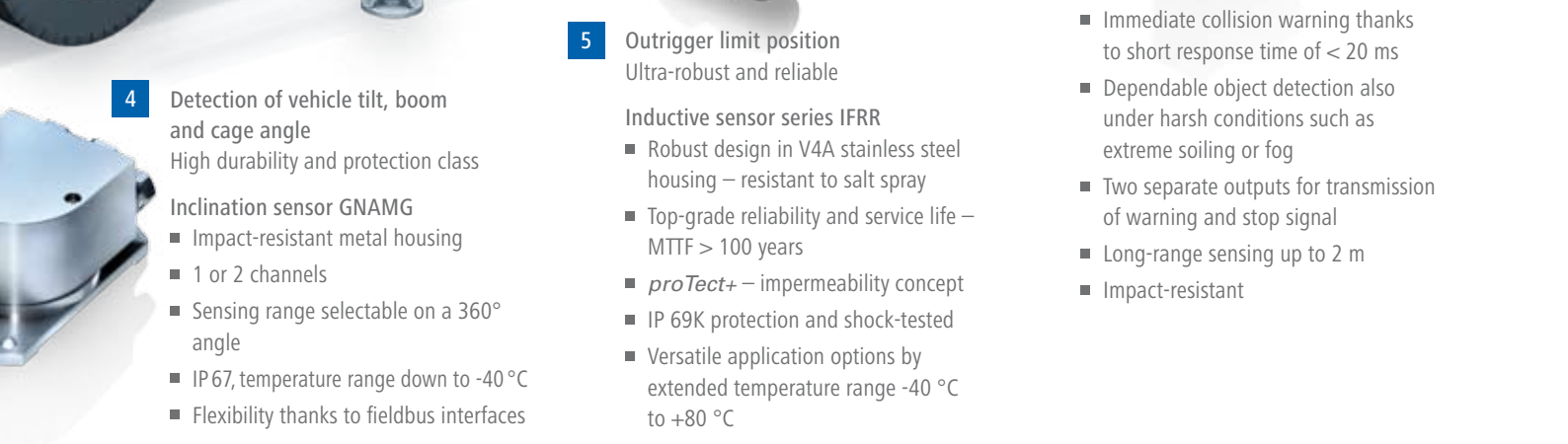
- Absolute position and incremental signal in a single device
- Impervious to dust, humidity and vibration
- IP 67, temperature range down to -40 °C
- Extremely narrow 20 mm housing



- 3 Position detection for outrigger and boom extension
Safe and cost-efficient

Encoder with cable-pull *MAGRES* BMMS 58

- Ultra-compact design
- Cable length 5 m
- CANopen or analog output
- IP 67, temperature range down to -40 °C
- Redundant versions for max. safety



4 Detection of vehicle tilt, boom and cage angle
High durability and protection class
Inclination sensor GNAMG

- Impact-resistant metal housing
- 1 or 2 channels
- Sensing range selectable on a 360° angle
- IP 67, temperature range down to -40 °C
- Flexibility thanks to fieldbus interfaces

5 Outrigger limit position
Ultra-robust and reliable

Inductive sensor series IFRR

- Robust design in V4A stainless steel housing – resistant to salt spray
- Top-grade reliability and service life – MTTF > 100 years
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Versatile application options by extended temperature range -40 °C to +80 °C

6 Collision monitoring at the working cage
Rapid and safe

Ultrasonic sensor series UZDK

- Immediate collision warning thanks to short response time of < 20 ms
- Dependable object detection also under harsh conditions such as extreme soiling or fog
- Two separate outputs for transmission of warning and stop signal
- Long-range sensing up to 2 m
- Impact-resistant

Do you require increased durability? Reliable sensors in stainless steel housing.

To our customers, "HeavyDuty carwash" is a thing of course. Aggressive detergents call for Baumer sensor products in stainless steel design. Several alloys up to V4A ensure that our sensors provide the requisite properties for the application.



Mobile cranes



- 1** Piston position feedback at hydraulic cylinders
High-pressure proof and durable

Inductive sensor series IFRP

- Capable of extreme pressure up to 500 bar
- Ultra-reliable thanks to stainless steel housing with active zirconium oxide surface
- Robust design with IP 68 protection, unaffected by hydraulic oils
- Flexible installation thanks to M12 and M18 output and various housing dimensions

- 2** Outrigger limit position
Ultra-robust and reliable

Inductive sensor series IFRR

- Robust design in V4A stainless steel housing – resistant to salt spray
- Top-grade reliability and service life – MTTF > 100 years
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Versatile application options by extended temperature range -40 °C to +80 °C

- 3** Load and overload measurement
Reproducible and precise

Load pin DLRx

- Extremely versatile by extended temperature range -40 to +85 °C
- Reliable thanks to fieldbus interface
- Robust design with IP 67 protection
- Quick and easy commissioning due to default calibration
- Interference-immune, integrated electronics



4 Monitoring and regulation of the hydraulic systems
Ultra-reliable and precise up to 1600 bar

Pressure sensor PDxx

- CANopen or analog output
- Compact design
- Extremely resistant against soiling and corrosion

5 Position detection for outrigger and boom extension
Safe and versatile

Versatile cable-pull encoders

- Absolute and incremental
- Measuring length up to 50 m
- High degree of linearity, typically $\pm 0.02\%$ of the measuring range
- Convenient plug-and-play installation thanks to pre-assembled cable-pull
- Numerous interface options
- Measuring cable made of ultra-flexible, stainless steel cores

6 Detection of the boom's rotating angle
Absolute, with fieldbus interface

Absolute Multiturn encoder
MAGRES BMMH

- Varied designs from 30 to 58 mm
- Ultra-robust, patented magnetic sensing technique
- CANopen or SAE J1939 interface
- IP 67 protection and optionally temperature-resistant down to $-40\text{ }^{\circ}\text{C}$
- Redundant configurations for maximum safety

Your systems run around the clock? So do our sensors.

Service life and reliability of the deployed sensors are crucial in systems with high operating costs. Installed in gantry cranes as well as overhead cranes, in production lines or steel plants, the Baumer sensors have been evidencing top performance for many decades – in particular our HeavyDuty encoders that set new benchmarks in this industry.

Gantry cranes



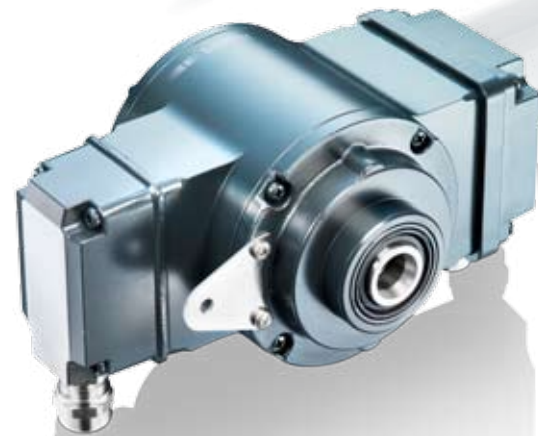
- 1** Motor feedback
High degree of availability and long-term durability

- Incremental encoder HOG 10.2
- HeavyDuty design
 - Function monitoring system EMS (Enhanced Monitoring System)
 - Cable length up to 500 m
 - Terminal box
 - Hybrid bearings for enhanced protection against inductive shaft currents



- 2** Position feedback at cable drum
Absolute and dependable detection

- Absolute encoder AMG 11
- HeavyDuty design
 - SSI, Profibus, CANopen, DeviceNet
 - Multiturn sensing with microGen technique – no gears, no battery
 - Available with redundant absolute signals
 - Specific corrosion protection



- 3** Motor feedback and overspeed monitoring
Robust and dependable

- Combinations: HOG 10 + DSL and HOG 10 + FSL
- HeavyDuty design
 - Combination of encoder with either electronic (DSL) or mechanical (FSL) speed switch attached to the shaft
 - Dependable overspeed detection
 - Tripped at either programmed (DSL) or permanent speed (FSL)



4 Position feedback spreader
Absolute position detection with high protection ratings

- Absolute multiturn encoder
MAGRES BMMV 58
- Ultra-durable, patented magnetic sensing technique
 - SSI-, CANopen and many more fieldbus interfaces
 - IP 67 protection and optionally temperature-resistant down to -40 °C
 - Redundant versions for max. safety

5 Load and overload measurement
Reproducible and precise

- Load pin DLRx
- Extremely versatile by extended temperature range -40 to +85 °C
 - Cost-efficient and reliable thanks to fieldbus interface
 - Robust design with IP 67 protection
 - Quick and easy commissioning due to default calibration
 - Interference-immune, integrated electronics

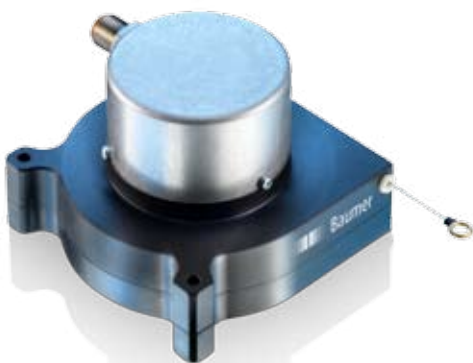


Are safety concepts important to you? Sensors with SIL and PL certification.

Functional safety has become a key term since new machinery directives became effective. Aside from SIL- and PL-certified products, the Baumer portfolio includes sensors with MTF > 100 years properties which are designed for integration in overall certified systems.



Grapple trucks



- 1** Position detection for outrigger and boom extension
Safe and cost-efficient
- Encoder with cable-pull
MAGRES BMMS 58
- Ultra-compact design
 - Cable length 5 m
 - CANopen or analog output
 - IP 67, temperature range down to -40 °C
 - Redundant versions for max. safety
 - Cost-efficient solution



- 2** Detection of vehicle tilt and boom extension angle
High durability and protection class
- Inclination sensor *GNAMG*
- Impact-resistant metal housing
 - 1 or 2 channels
 - Sensing range selectable on a 360° angle
 - IP 67, temperature range down to -40 °C
 - Flexibility thanks to fieldbus interfaces



- 3** Load and overload measurement
Reproducible and precise
- Load pin *DLRx*
- Extremely versatile by extended temperature range -40 to +85 °C
 - Cost-efficient and reliable thanks to fieldbus interface
 - Robust design with IP 67 protection
 - Quick and easy commissioning due to default calibration
 - Interference-immune, integrated electronics



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4

Monitoring and regulation of the hydraulic systems
Extreme robustness and precision

Pressure sensor PBMN/PDxx

- CANopen or analog output
- Top-grade precision and availability
- IP 68 ratings as an option

5

Position feedback of slew ring
Shock and vibration proof

Hall sensor series MHRM

- Extremely robust thanks to completely sealed all-metal enclosure
- Extremely shock and vibration proof
- Two-channel output A and B to identify the direction of rotation
- Excellent IP 68 impermeability properties at pressures up to 20 bar

6

Boom tilt angle acquisition

Compact housing and top-grade precision

Magnetoresistive angle sensor series MDRM/MDFM

- Wear-free acquisition of the rotation angle with maximum resolution 0.09°
- Very compact designs (for example rectangular-shaped) with only 8 mm installation depth
- Unaffected by dirt and humidity
- Sensing range through a 360° angle, no dead zones
- Impact-resistant



What is the sensor's condition? Diagnostic functionalities by Baumer.

Diagnostic-capable systems for condition-related or preventive maintenance cycles come to the forefront. The Baumer EMS functionality (Enhanced Monitoring System) ensures continuous monitoring of system-relevant parameters and will give a pre-warning of failure to avoid downtimes.

Overhead cranes



- 1** Motor feedback
High degree of availability and long-term durability

Incremental encoder HOG 10.2

- HeavyDuty design
- Function monitoring system EMS (Enhanced Monitoring System)
- Cable length up to 500 m
- End shaft diameters up to $\varnothing 20$ mm
- Terminal box
- Hybrid bearings for enhanced protection against inductive shaft currents



- 2** Motor feedback and overspeed monitoring
Robust and dependable

Combinations: HOG 10 + DSL and HOG 10 + FSL

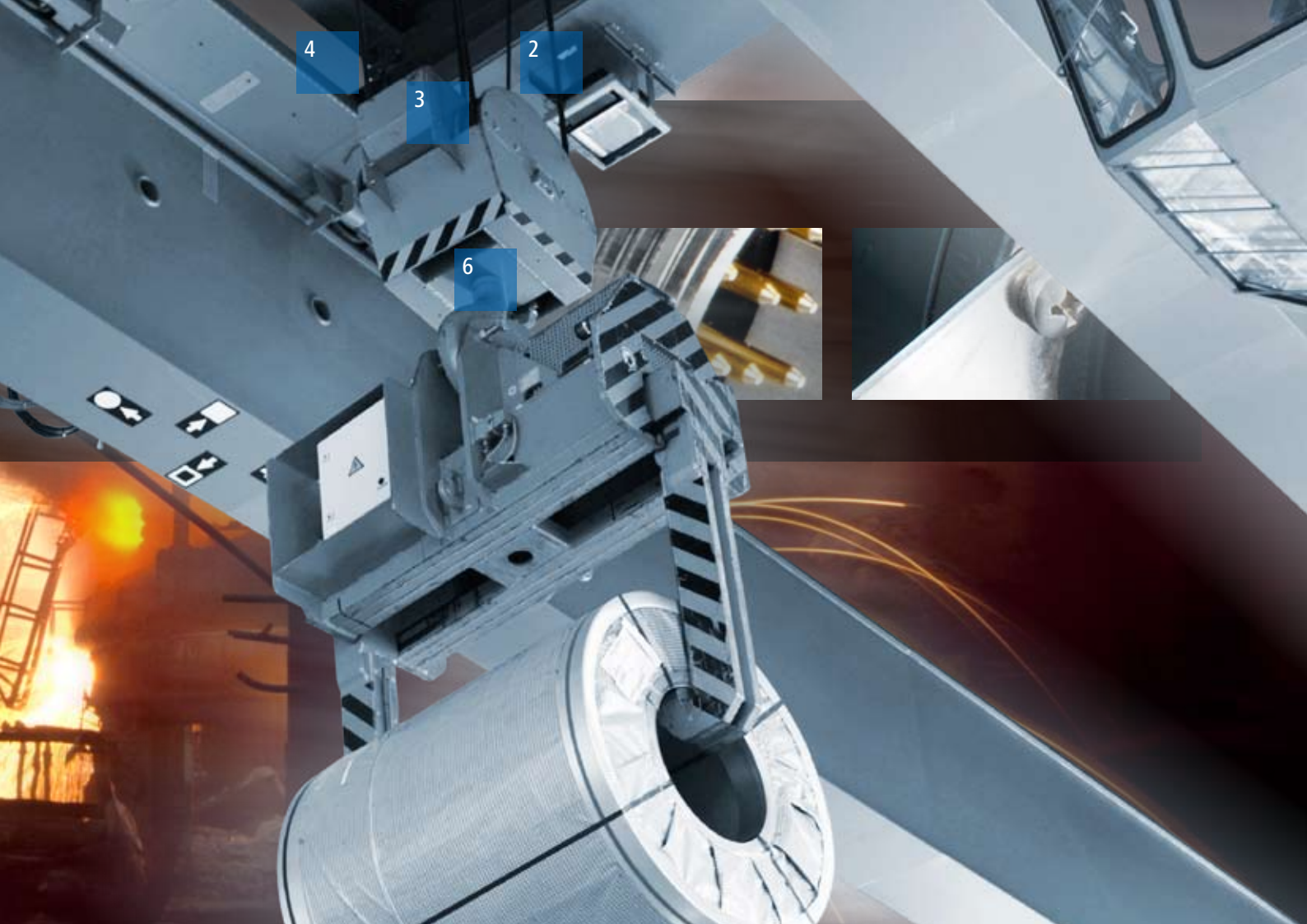
- HeavyDuty design
- Combination of encoder with either electronic (DSL) or mechanical (FSL) speed switch attached to the shaft
- Dependable overspeed detection
- Tripped at either programmed (DSL) or permanent speed (FSL)



- 3** Position feedback at cable drum
Absolute and dependable detection

Absolute encoder AMG 11

- HeavyDuty design
- SSI, Profibus, CANopen, DeviceNet
- Multiturn sensing with microGen technique – no gears, no battery
- Available with redundant absolute signals
- Specific corrosion protection



4 Motor feedback
Cost-efficient, large hollow shaft diameters

Incremental encoder ITD 70

- Hollow shaft diameters up to $\varnothing 65$ mm with shallow installation depth
- Cost-efficient solution



5 Motor feedback
Utmost reliability and long-term durability

Incremental encoder HOG 9.2

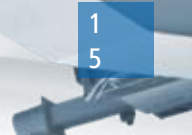
- HeavyDuty design
- Monitoring functionality EMS (Enhanced Monitoring System)
- Cable length up to 500 m
- Hybrid bearings for enhanced protection against inductive shaft currents



6 Load and overload measurement
Reproducible and precise

Load cell DLRx

- Extremely versatile by extended temperature range -40 to $+85$ °C
- Cost-efficient and reliable thanks to fieldbus interface
- Robust design with IP 67 protection
- Quick and easy commissioning due to default calibration
- Interference-immune, integrated electronics



Temperatures down to -40 °C? For us, that's standard.

Extremely low temperatures are an everyday occurrence in crane and heavy vehicle applications. To meet the demanding requirements of harsh environments, most Baumer sensor products endure temperatures down to -40° either in their standard or in a specialized configuration. The use of certified components and materials combined with ingenious tweaks of design in terms of movable parts ensure absolute product reliability in outdoor applications.

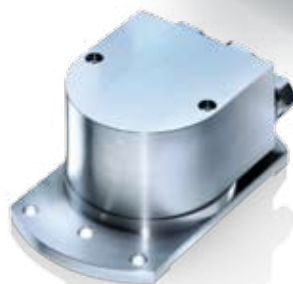
Harvesters



- 1** Detection of clamp position and saw blade angle, monitoring feed and speed of the trunks
Unaffected by shocks and vibration

Incremental encoder BRIV 30 R

- Compact 30 mm housing
- Ultra-durable magnetic sensing technique
- IP 67 and temperature-resistant down to -40 °C thanks to stainless steel flange and shaft seal
- Top-grade system availability and long-term durability



- 2** Detection of vehicle tilt and boom extension angle
High durability and protection class

Inclination sensor GNAMG

- Impact-resistant metal housing
- 1 or 2 channels
- Sensing range selectable on a 360° angle
- IP 67, temperature range down to -40 °C
- Flexibility thanks to fieldbus interfaces



- 3** Dry running hydraulics protection
Versatile and oil-resistant

Level switch LBFS

- Programmable switching sensitivity
- Short response time
- Maintenance-free
- Extended temperature range from -40 to +115 °C



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4 Monitoring and regulation of hydraulics
Absolute reliability and precision

Pressure sensor PBMN/PDxx

- CANopen or analog output
- Outstanding robustness and resistance against shocks and vibrations
- IP 68 variants

5 Position detection of steering wheel and pedal
Compact housing and top-grade precision

Magneto-resistive angle sensor series MDRM/MDFM

- Wear-free acquisition of the rotation angle with maximum resolution 0.09°
- Very compact, e.g. rectangular-shaped with only 8 mm installation depth
- Unaffected by dirt and humidity
- Sensing range over 360° angle, no dead zones

6 Position feedback of slew ring
Durable, with high switching distance

Inductive sensors series IFRR

- Extremely reliable and durable – MTF > 100 years
- Convenient installation thanks to high switching distance up to 12 mm
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Versatile application options by extended temperature range -40 °C to +80 °C
- Robust design in V4A stainless steel housing – resistant to salt spray

Do you stay current with technology? We utilize leading-edge sensing techniques.

Our sensors may look similar from the outside, but the detail makes the difference. Baumer is leading in the development of new innovative sensing principles thanks to basic research, and all expertise gained is implemented in the product design. You can always be sure that Baumer products are at the cutting edge of technology.

Fire trucks



- 1** Rotation angle acquisition boom/ladder
Angle detection straight at large shafts
- Bearingless rotary encoder *HDmag*
- Wear-free by non-contact sensing technique
 - Large hollow shaft diameters
 - Incremental or absolute output
 - Top-grade robustness and precision
 - Operational safety thanks to wide air gap
 - Easy and flexible installation



- 2** Water gun positioning
Ultra precise, with fieldbus interface
- Absolute encoder *GXP5W*
- CANopen interface
 - Optical sensing principle for utmost precision
 - LED status indicator as diagnostic functionality
 - Optionally temperature-resistant down to -40 °C



- 3** Dry running hydraulics protection
Versatile and oil-resistant
- Level switch *LBFS*
- Programmable switching sensitivity
 - Short response time
 - Maintenance-free
 - Extended temperature range from -40 to +115 °C



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4 Monitoring and regulation of the hydraulic systems, water pressure monitoring
Absolute reliability and precision

Pressure sensor PBMN

- Utmost precision and availability
- IP 68 configurations
- Damping element against pressure peaks



5 Lock control at equipment compartments
Durable, with utmost switching precision

Inductive sensors series IFRM/IFFM

- Robust and absolutely reliable – MTTF > 100 years
- Very high switching and repeat accuracy
- Convenient and quick installation thanks to extended switching distance up to 20 mm
- Cylindrical and rectangular designs to perfectly match the prevailing installation conditions



6 Collision monitoring at the working cage/boom
Rapid and safe

Ultrasonic sensor series UZDK

- Immediate collision warning thanks to short response time of < 20 ms
- Dependable object detection also under harsh conditions such as extreme soiling or fog
- Two separate outputs for transmission of warning and stop signal
- Long-range sensing up to 2 m
- Impact-resistant



Are you a pioneer in your market? So are we.

Innovation is a vital criterion for most of our customers. When it comes to enhanced performance, simplified operation or increased efficiency, sensors often take center stage in the deliberations. The experienced Baumer application engineers will help you to implement new concepts and customized solutions to save time and avoid flaws in the planning stage.

Tower Cranes

- 1** Position acquisition at slew ring
Shock and vibration proof

Hall sensor series MHRM

- Outstanding robustness thanks to completely sealed all-metal enclosure
- Extremely shock and vibration proof
- Two-channel output A and B to identify the direction of rotation
- Excellent IP 68 impermeability properties at pressures up to 20 bar



- 2** Load and overload measurement
Reproducible and precise
Load cell DLRx



- 3** Anti-tilt protection
Versatile and cost-efficient
Strain link DSRT



- Versatile application options by extended temperature range -40 to +85°C
- Safe thanks to fieldbus interfaces
- Robust design with IP 67 protection
- Quick and easy commissioning due to default calibration
- Interference-immune, integrated electronics



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- 4** Boom angle acquisition
High durability and protection class
- Inclination sensor GNAMG
- Impact-resistant metal housing
 - Sensing range selectable on a 360° angle
 - IP 67, temperature range down to -40 °C
 - Flexibility thanks to fieldbus interfaces



- 5** Detection of the crane's rotational angle
Absolute and reliable acquisition
- Absolute encoder series ATD2
- Highly precise signals
 - Outstanding analog models – measuring range can be parameterized
 - IP 67, temperature range down to -40 °C, integrated self diagnosis
 - Stainless steel models for maximum corrosion resistance



- 6** Overspeed monitoring at cable drum
Reliable tripping of switching signal in case of overspeed
- Mechanical speed switch FS
- Mechanical speed monitoring using the centrifugal principle
 - Permanent switching speed
 - Absolute reliability



Do you want to reduce the number of suppliers? Sensors, encoders and process instruments by Baumer.

A trusted partnership between supplier and customer provides mutual benefit. The all-encompassing Baumer portfolio in the segments Sensor Solutions, Motion Control, Process Instrumentation and Vision Technologies makes us your one-stop partner for an overall solution to reduce costs as well as administrative and logistic overhead.

Industrial trucks

- 1** Position feedback of steering wheel
Compact housing and top-grade precision

Magneto-resistive angle sensor series MDRM/MDFM

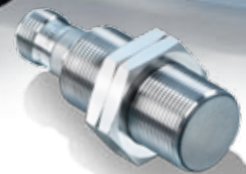
- Wear-free acquisition of the rotation angle with maximum resolution 0.09°
- Very compact, e.g. rectangular-shaped with only 8 mm installation depth
- Unaffected by dirt and humidity
- Sensing range through a 360° angle, no dead zones
- Impact-resistant



- 2** Pallet position feedback
Rapid and safe

Ultrasonic sensor series UNDK/UNAM

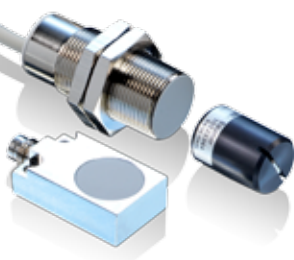
- Immediate collision warning thanks to short response time < 10 ms
- Dependable detection of wooden pallets and other objects also under adverse conditions
- Impact-resistant
- Long-range sensing up to 2,5 m
- Cylindrical and rectangular designs to perfectly match the prevailing installation conditions

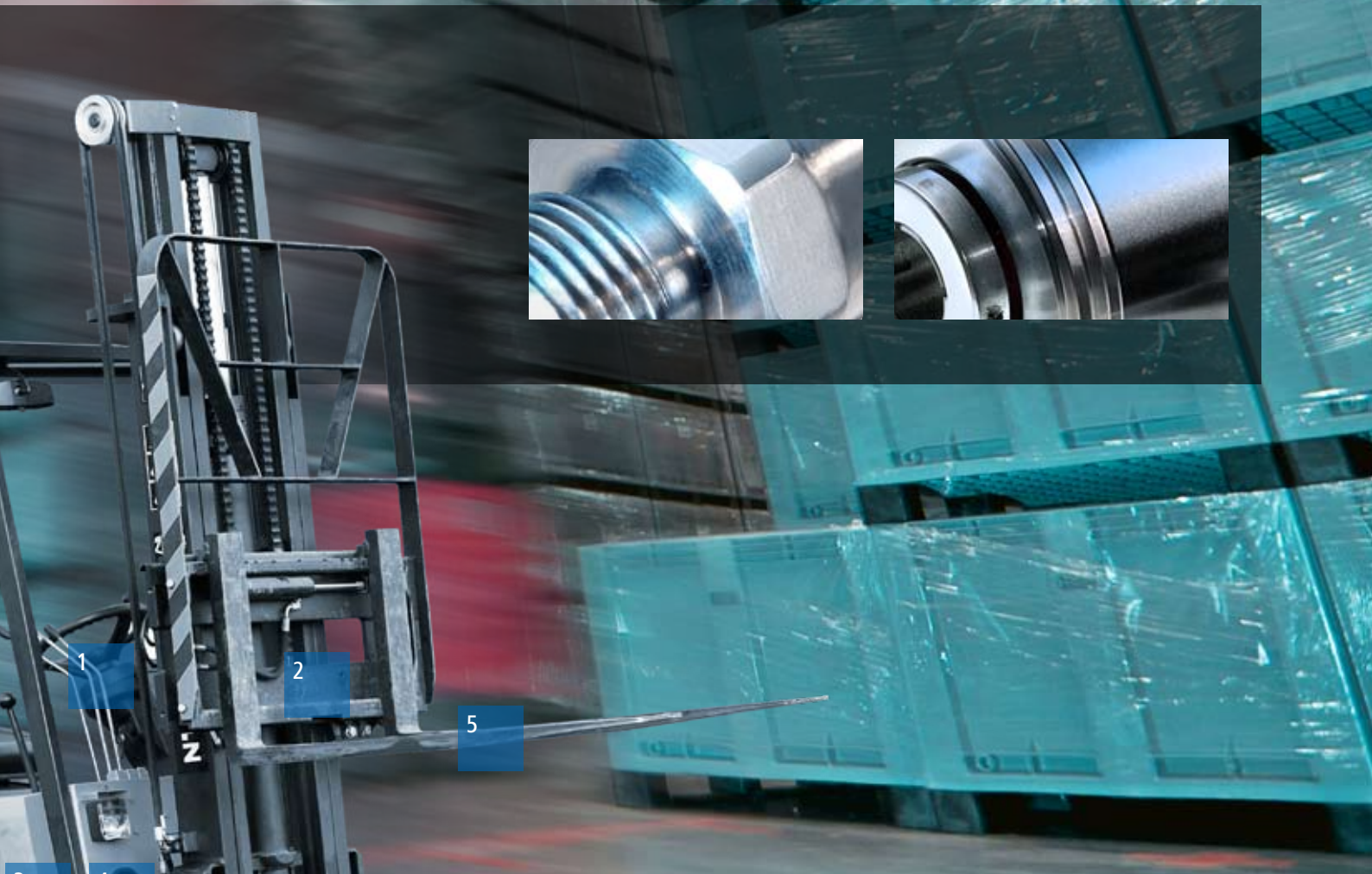


- 3** Position detection at brake and accelerator pedal
Extremely robust and reliable

AlphaProx inductive sensor series IWRR

- Robust designs in V4A stainless steel housing – resistant to salt spray
- Very short response time < 2 ms for rapid position detection
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Versatile application options thanks to extended temperature range -40 °C to +70 °C





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- 4** Monitoring and regulation of hydraulics
Absolute reliability and precision
- Pressure sensor PDxx
- CANopen or analog output
 - Outstanding robustness and resistance against shocks and vibrations
 - IP 68 variants

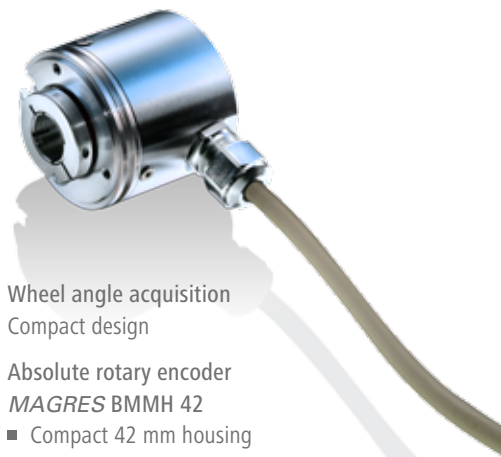


- 5** Load measurement and overload protection
Versatile and cost-efficient



- Strain link DSRT
- Versatile application options by extended temperature range -40 to +85°C
 - Cost-efficient and safe thanks to fieldbus interfaces
 - Robust design with IP 67 protection
 - Quick and easy commissioning due to default calibration
 - Interference-immune, integrated electronics

- 6** Wheel angle acquisition
Compact design
- Absolute rotary encoder
MAGRES BMMH 42
- Compact 42 mm housing
 - Ultra-robust, patented magnetic sensing technique
 - CANopen interface
 - IP 67 protection and optional temperature-resistant down to -40 °C



Do you implement SAE J1939? No problem.

Baumer recognized early on the ever-growing significance of the vehicle bus standard SAE J1939, and thus many of our products provide this interface. That way, we have further enhanced our forefront position in fieldbus technology. The modular bus cover concept allows for the required fieldbus interface electronics to be combined at will with a mechanical encoder design and thus provides the ultimate degree of flexibility.

Concrete pumps

- 1** Boom tilt angle acquisition
Compact housing and top-grade precision

Magneto-resistive angle sensor series MDRM/MDFM

- Wear-free acquisition of the rotation angle with maximum resolution 0.09°
- Very compact, e.g. rectangular-shaped with only 8 mm installation depth
- Unaffected by dirt and humidity
- Sensing range through a 360° angle, no dead zones
- Impact-resistant

- 2** Piston position feedback at hydraulic cylinders
High-pressure proof and durable

Inductive sensor series IFRP

- Capable of extreme pressure up to 500 bar
- Ultra-reliable thanks to stainless steel housing with active zirconium oxide surface
- Robust design with IP 68 protection, unaffected by hydraulic oils
- Flexible installation thanks to M12 and M18 output and various housing dimensions

- 3** Boom overload monitoring
Versatile and cost-efficient

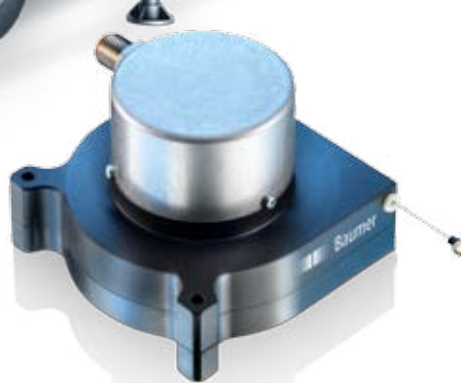
Strain link DSRT

- Versatile application options by extended temperature range -40 to +85°C
- Cost-efficient and safe thanks to fieldbus interfaces
- Robust design with IP 67 protection
- Quick and easy commissioning due to default calibration
- Interference-immune, integrated electronics





- 4** Detection of vehicle tilt and boom extension angle
High durability and protection class
- Inclination sensor GNAMG
- Impact-resistant metal housing
 - 1 or 2 channels
 - Sensing range selectable on a 360° angle
 - IP 67, temperature range down to -40 °C
 - Flexibility thanks to fieldbus interfaces



- 5** Position detection for outrigger and boom extension
Safe and cost-efficient
- Encoder with cable-pull
MAGRES BMMS 58
- Ultra-compact design
 - Cable length 5 m
 - CANopen or analog output
 - IP 67, temperature range down to -40 °C
 - Redundant versions for max. safety
 - Cost-efficient solution



- 6** Detection of the crane's rotational angle
Absolute acquisition, high protection standard
- Incremental encoder GI 342
- End shaft or hollow shaft up to ø15 mm
 - Flange and housing made of high-grade plastic
 - Tangential cable output
 - Shallow installation depth of only 40 mm
 - Cost-efficient solution

You cannot afford to compromise? Customized solutions made by Baumer.

From simple adaptation of electrical connections up to an utterly innovative product that is made to measure – we are on stand-by to put into practice what you have in mind. Thanks to our high in-house range of manufacture, we are able to provide prototypes very quickly that will allow you to speed up the implementation of new plant concepts.



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Rotary drilling rigs



- 1** Drilling angle acquisition
High durability and protection class

Inclination sensor GNAMG

- Impact-resistant metal housing
- Sensing range selectable on a 360° angle
- IP 67, temperature range down to -40 °C
- Flexibility thanks to fieldbus interfaces



- 2** Motor feedback
Compact design

Incremental encoder GI 355

- Capable of high speed up to 10'000 rpm
- Compact design
- Excellent regulation quality thanks to optical sensing technique

- 3** Detection of drilling feed
High durability and protection class

Absolute encoder *MAGRES BMMK 58*

- Extremely robust, patented magnetic sensing technique
- No ball-bearings, ensuring very high protection ratings
- CANopen or SAE J1939 interface
- IP 67, temperature range down to -40 °C





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- 4** Monitoring and regulation of hydraulics
Absolute reliability and precision
- Pressure sensor PDxx
- Flexible interface options
 - 4 to 20 mA, 0 to 10 VDC, CANopen
 - Robust thin-film technology

- 5** Dry running hydraulics protection
Versatile and oil-resistant
- Level switch LBFS
- Programmable switching sensitivity
 - Short response time
 - Maintenance-free
 - Extended temperature range from -40 to +115 °C

- 6** Piston position feedback at hydraulic cylinders
High-pressure proof and durable
- Inductive sensor series IFRP
- Capable of extreme pressure up to 500 bar
 - Ultra-reliable thanks to stainless steel housing with active zirconium oxide surface
 - Robust design with IP 68 protection, unaffected by hydraulic oils
 - Flexible installation thanks to M12 and M18 output and various housing dimensions

Completely tight? *proTect+* – ensures impermeability.

Utility vehicles have to endure the most different and demanding ambient conditions: frequent temperature changes, road salt, rain, snow and regular cleaning. The *proTect+* concept by Baumer ensures absolute impermeability even under harsh conditions. Thanks to the specifically conceived technique and the use of high-end materials, sensors with *proTect+* provide IP 69K protection and ensure absolute stability and have been shock-tested over the entire temperature range.

Garbage trucks

- 1** Inclination angle control at loading system
Compact housing and top-grade precision

Magneto-resistive angle sensor series MDRM/MDFM

- Wear-free acquisition of the rotation angle with maximum resolution 0.09°
- Impact-resistant
- Unaffected by dirt and humidity
- Sensing range through a 360° angle, no dead zones



- 2** Presence check of garbage containers
Extremely robust and reliable

Photoelectric sensor series FHDR 14

- Extremely robust by V4A stainless steel housing
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Safe object detection independent of color or shape
- Compact design and long-range sensing up to 400 mm



- 3** Tailgate lock control
Durable, with high switching distance

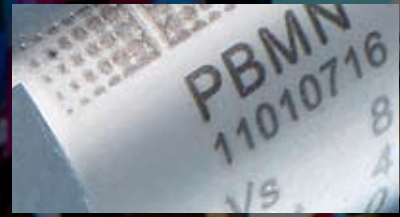
Inductive sensor series IFRR

- Absolute reliability and long-term durability – MTTF > 100 years
- Convenient installation thanks to extended switching distance up to 12 mm
- *proTect+* – impermeability concept
- IP 69K protection and shock-tested
- Versatile application options thanks to extended temperature range from -40 °C to +80 °C
- Robust designs in V4A stainless steel housing – resistant to salt spray



5

4



1

6

2

3



6

Position detection at garbage containers
Extreme durability and high protection ratings

- Absolute encoder *MAGRES BMSK 58*
- Ultra-robust, patented magnetic sensing technique
 - High protection thanks to bearingless design
 - CANopen- or SAE J1939 interface
 - IP 67 and temperature-resistant down to -40 °C

- 4 Dry running hydraulics protection
Versatile and oil-resistant
- Level switch *LBFS*
- Programmable switching sensitivity
 - Short response time
 - Maintenance-free
 - Extended temperature range from -40 to +115 °C

- 5 Monitoring and regulation of hydraulics
Absolute reliability and precision
- Pressure sensor *PBMN*
- Utmost precision and availability
 - IP 68 configurations
 - Damping element against pressure peaks

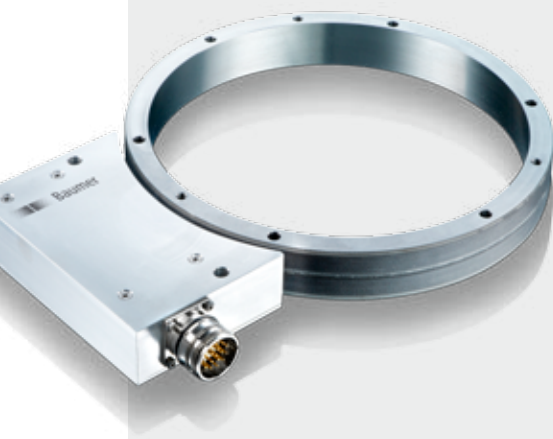
Pioneering in technology

Baumer dedicates itself to pioneering technologies. Aside from conventional product research, several expert teams in our R&D constantly seek out new approaches, ideas and tendencies that will provide the basis for future product innovations. Any promising technology potential that may emerge is recognized early on to be implemented, into new innovative concepts. We keep up with the times – to your benefit and profit.

Wear-free hollow shaft encoders without bearing

HDmag – Concentrated advantages

Key attributes like contact-free magnetic sensing, ultra-high resolution, utmost precision and convenient installation define the *HDmag* Series as top of the line technology. Designed for large shaft diameters, the encoders detect the rotary motion where it is actually generated – also in an absolute manner.



- Maintenance-free and wear-free thanks to non-contact sensing method
- Incremental and absolute configurations
- Reliable operation by unrivalled wide air gap tolerances
- Convenient installation with high degree of flexibility
- Limited space consumption
- High durability and protection class

Ultra-precise and robust pressure sensors

PBMN – Durability meets precision

Ultra-precise evaluation electronics interacting with extremely robust metal thin-film technology make sure that the new pressure sensor Series PBMx will always provide the signal quality required for safe and reliable vehicle operation even under most demanding conditions.



■ Ultra-robust and absolutely impermeable inductive sensors



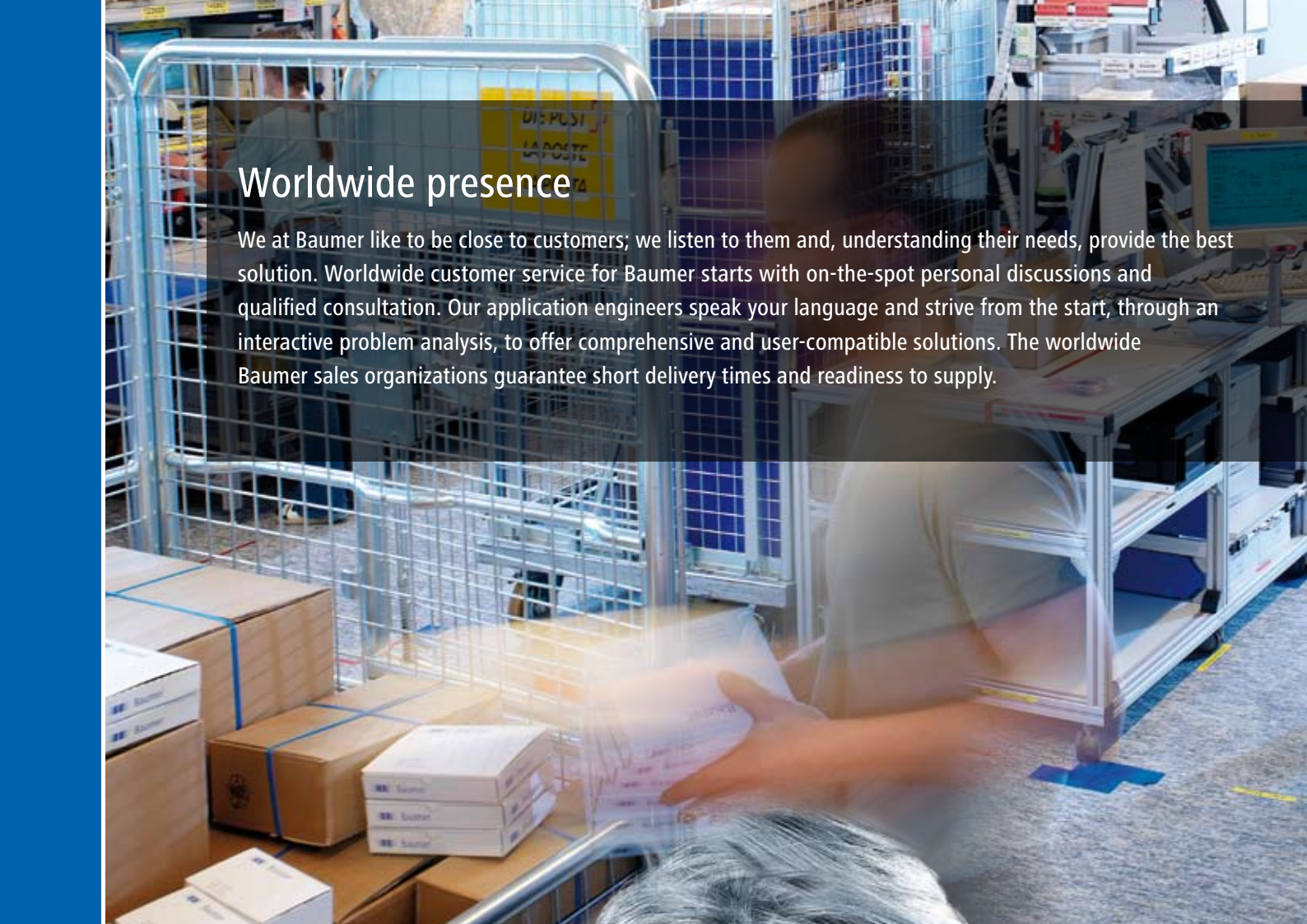
- Extremely corrosion-proof thanks to high-grade materials
- Top-grade precision and long-term durability
- Little space consumption thanks to limited dimensions
- Absolute or relative configurations
- Parameterizable pressure range allows for individual customized solutions

Series IxRR – Performance in any situation

Hosted in an extremely robust housing and featuring the unique impermeability concept *proTect+* – IP 69K compliant and shock-tested – these inductive sensors imply top-grade process safety. Even under the most demanding ambient conditions they provide excellent and dependable properties in terms of switching distance, switching point accuracy, EMC immunity and precision.

- Switching and distance measuring configurations
- Absolute reliability and long-term durability
- Extended temperature range
- Extreme robustness and high protection
- Resistant to salt spray
- *proTect+*





Worldwide presence

We at Baumer like to be close to customers; we listen to them and, understanding their needs, provide the best solution. Worldwide customer service for Baumer starts with on-the-spot personal discussions and qualified consultation. Our application engineers speak your language and strive from the start, through an interactive problem analysis, to offer comprehensive and user-compatible solutions. The worldwide Baumer sales organizations guarantee short delivery times and readiness to supply.

Many of our customers are directly linked via our electronic order system with the JIT logistics process. A worldwide network coupled with the most modern communication techniques enable us to deliver information quickly and transparently to decision makers in all Baumer locations.

Closeness to the customer for Baumer means being available for your needs anywhere and at any time.

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