Baumer
Passion for Sensors

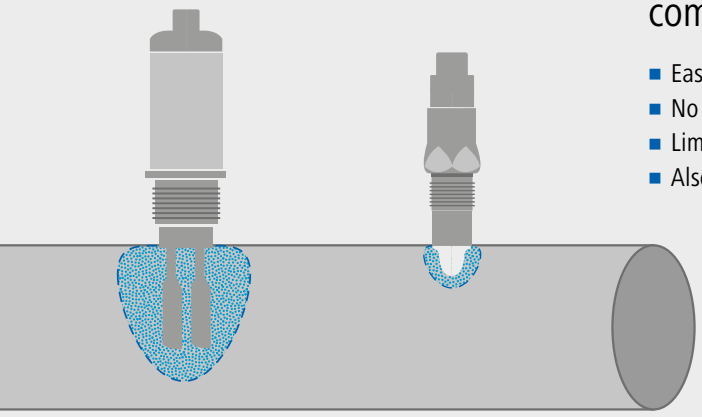
CleverLevel® level switches

Clever^3 – easier. more reliable. more intelligent.

Truly clever point level detection.

The clever alternative to vibrating forks

The level switch *CleverLevel*® is the solution for a variety of applications for which standard vibrating forks are used today. It offers a considerable advantage, especially for applications with adherence, which it automatically masks. With the Adaptive-Trigger function, the *CleverLevel*® is now one more step ahead of vibrating forks – it automatically adjusts to all media even without parameterization. Thanks to its limited installation depth it also ensures low process interference.



Advantages due to the compact design

- Easy to clean
- No alignment of the sensor tip necessary
- Limited turbulences and low flow resistance
- Also suitable for small pipe diameters

Clever^3 – your benefits

The original is one step ahead: The *CleverLevel*® series from Baumer now offers even more options – regardless of the medium or measurement task, when it comes to point level detection we always offer you the optimal solution.

Even media detection without parameterization is no problem with the innovative PL20. In addition, thanks to the optional analog output, media differentiation is also possible.

1 Quick and easy integration

- A variety of process connections and adapters facilitates installation and allows quicker commissioning
- Easy to integrate into control systems – digital via IO-Link, classical or via analog output
- Limited installation depth without alignment – minimal process interference and easier integration in the machine construction
- Various approvals – high process safety and reliable operation

2 Robust, durable, with process safety

- Robust stainless steel sensor body – for challenging production situations with changing temperatures
- Sensor tip with a PEEK design – hygienic and easy to clean
- Unaffected by adherence – no faulty messages, minimized downtimes
- Universally suited to all media – whether liquid, pasty, viscid, or granular

3 Intelligent design and functions

- 360° LED – multi-colored, visual process indication
- Graphic evaluation of the switching state – increased process safety and transparency
- Several switching outputs and analog value – flexible switching applications
- Easy commissioning – no adjustment to media

Learn more about the benefits of *CleverLevel*® level switches

www.baumer.com/cleverlevel

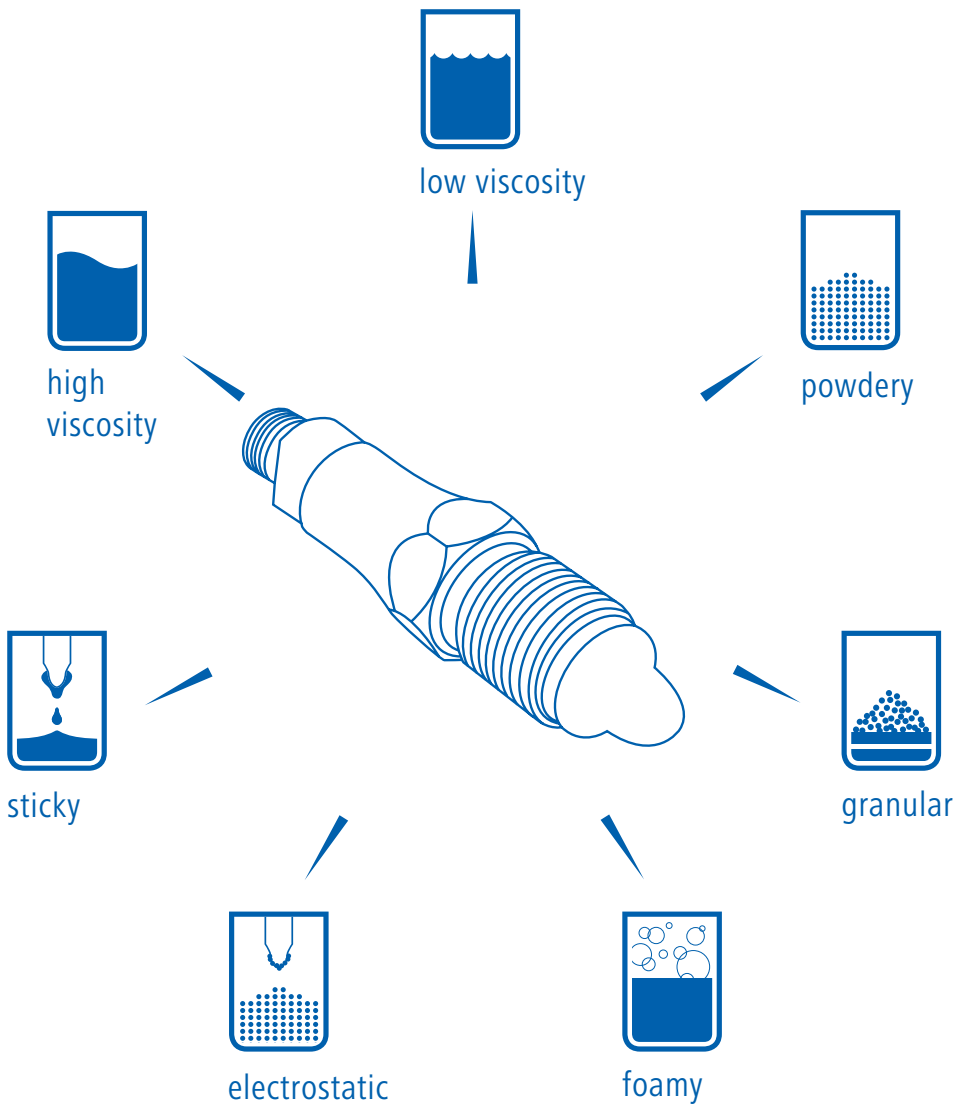
The right solution for your application.

A single sensor for all media. Regardless of whether they are liquid, pasty, viscid or solid

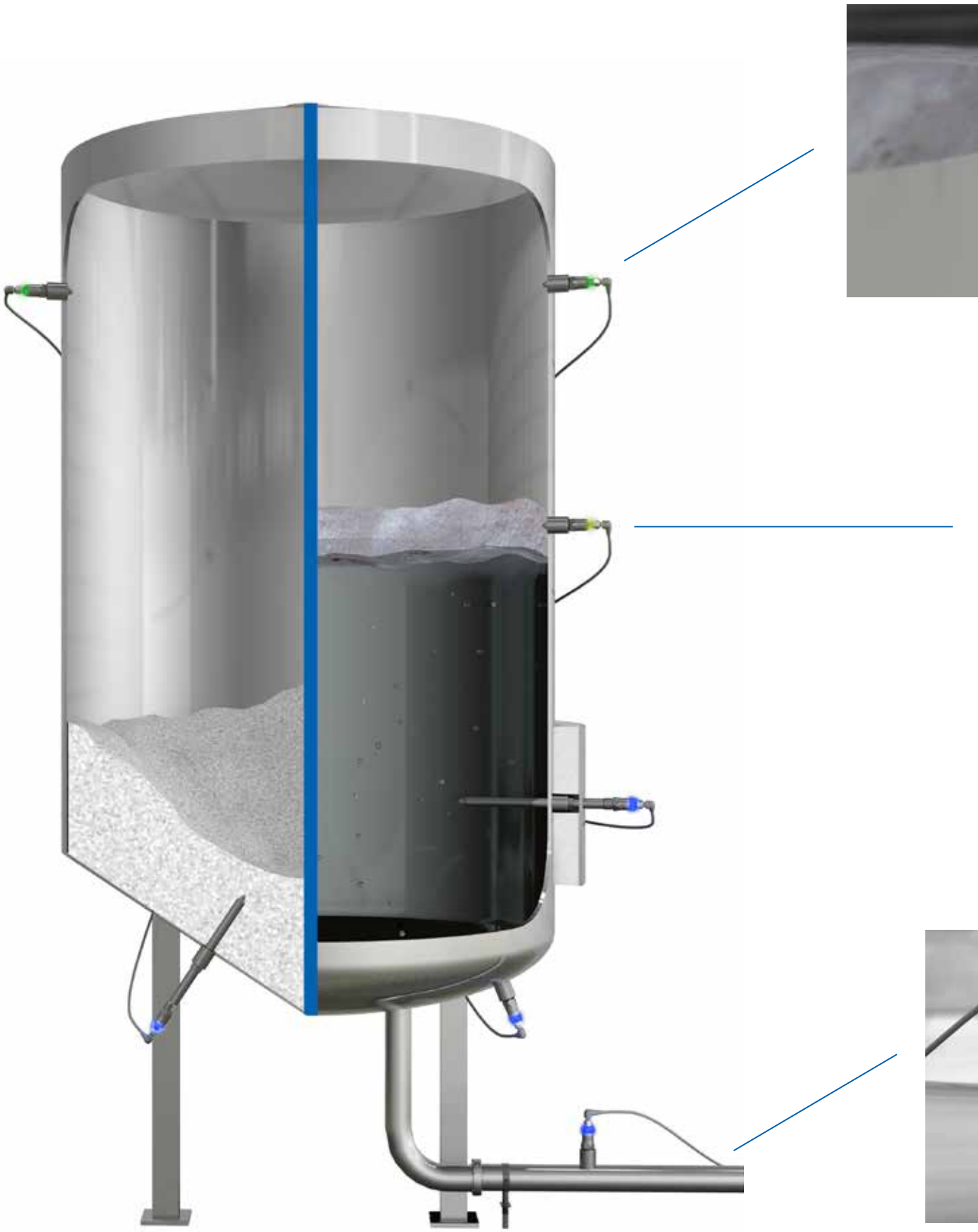
Requirements for sensors are just as diverse as the media the sensors are supposed to detect. Applications vary from dry running protection for pumps through reliable overfill protection or leak detection to the selective detection and masking of foam or separating layers. For the first time, Baumer has made it possible to meet all of these requirements with one single sensor technology. Here it does not matter whether we are dealing with bulk goods, powders, liquids or foam, or whether the medium is sticky or has high or low viscosity.

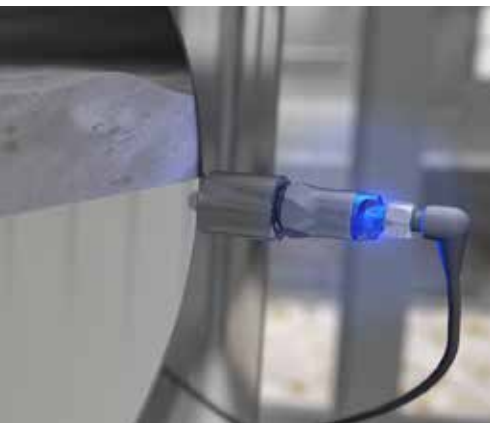
Improvement through simplification

The reduction of the confusing variety of components through the use of the same sensor type has many advantages. Procurement and spare parts logistics as well as maintenance cost less. The development of new plant and machinery is also more efficient. Multiple usage also reduces the amount of documentation required. The large number of available process connections and adapters simplifies integration into existing systems.


low viscosity
high viscosity
powdery
sticky
granular
electrostatic
foamy

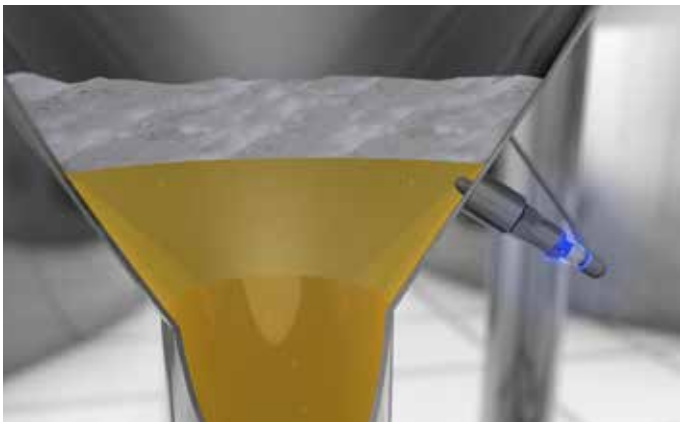
Point level detection – universal for all media.





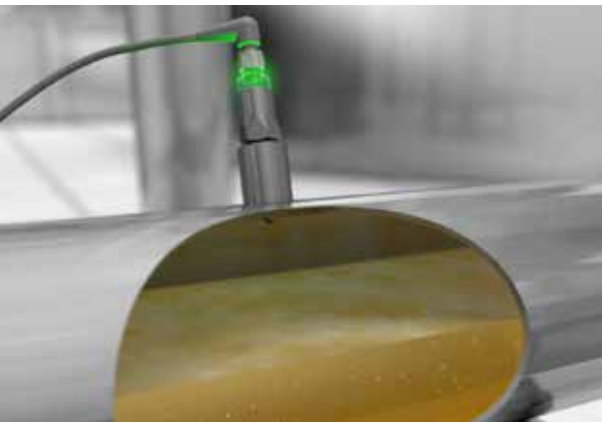
Point level detection

Regardless of the media, *CleverLevel*® level switches reliably and precisely detect the point level of tanks, containers, and pipes. This way, the possibility of running empty can be detected early on and overfilling is prevented.



Foam and separating layer detection

With the Window-Trigger, separating layers – for example, beer and foam or oil and water – can be detected. Thanks to the two switching outputs, the *CleverLevel*® can be parameterized in such a way that the medium is reliably detected and the different liquids differentiated. The graphic evaluation allows the process to be tracked and optimized even more effectively.



Dry-run protection for pumps

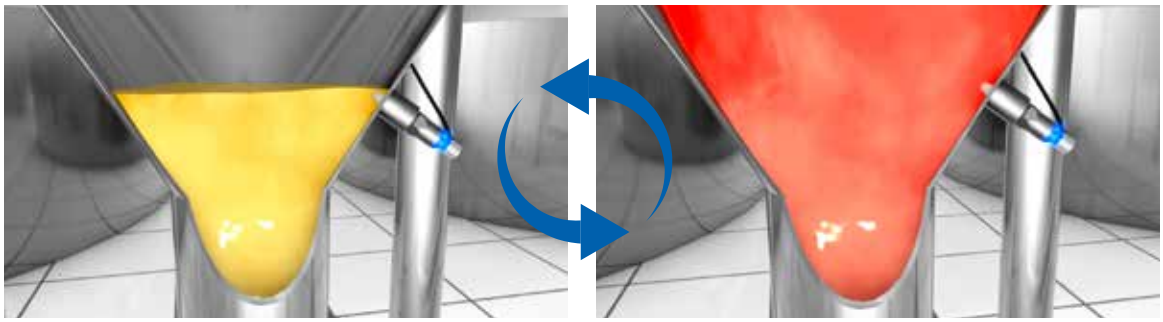
Dry running of pumps is a critical process problem. It can result in dosage deviations or even damage. With its quick response time, the *CleverLevel*® easily masters this challenge. Faster switching off saves valuable resources.

Adaptive point level detection without parameterization.

The flexible adjustment of systems to short-term requirement changes is an increasingly common production challenge that affects system and machine constructors as well as the food processing industry. Ensuring this flexibility requires sensor technology that can meet these challenges. With our Adaptive-Trigger, we can now provide you with the solution:

Automatic media adjustment

For applications in the food production sector with changing recipes or batch production, the PL20 offers true added value with adaptive setting of the switching point. Without the need for parameterization, the sensor adjusts the switching point to the medium and detects it reliably. This ensures maximum flexibility with minimum set-up times.



Unaffected by adherence

Even adherence, which occurs with pasty materials, does not affect the performance of the sensor. It adjusts the switching level without the need for any parameterization even in the case of adherence, thus increasing process safety.

Optimized for cleaning processes

During cleaning processes, such as CIP cleaning, sensors frequently switch incorrectly as they cannot differentiate between the process media and the cleaning media. The *CleverLevel*® PL20 masters this challenge by ignoring cleaning media such as caustic soda solution and acids during the cleaning process.

Interested? In our video you will learn everything about point level detection without parameterization

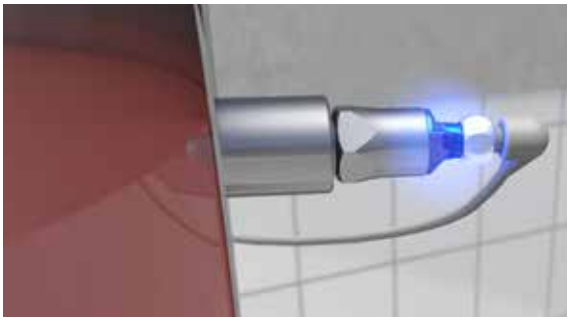
www.baumer.com/adaptive

Added value with an additional analog output.

In addition to the switching signal, analog values ranging from 4 … 20 mA can be read out. This way, in addition to the point level, other measured values are also available that provide additional information about the process.

Media differentiation

With the 4 … 20 mA signal, media such as oil and water or different powders can be differentiated. With the help of the Baumer FlexProgramer, these can also be presented graphically when setting the system. It is also possible to invert the measured analog values.



Water	18.46 mA
Oil	14.90 mA
Air	8.27 mA

Cleaning process evaluation

The 4 … 20 mA analog signal can be used to evaluate whether the sensor tip has been cleaned or if remnants of the medium are adhered to it. In addition it is possible to detect whether the single cleaning steps have taken place.

Moisture determination

The analog signal can be used to determine the moisture content or degree of dryness of the medium, especially in the case of solids and granulates.

Baumer *KingCrown* – we make metal glow.

Robust 360° process indication

Process transparency – anytime, anywhere. The robust visual process indication provides real-time information about the status of the process. Five defined colors indicate whether the process is proceeding as intended, the sensor is switching, or if there is a malfunction. Additionally, the color can be used to visualize the medium being measured. Thanks to the 360° LEDs, this information is visible from all locations, allowing reliable processes. With its electrical stainless steel connection in combination with the visual process indication, the Baumer *KingCrown* is a robust, reliable solution. The *proTect+* impermeability concept ensures the long-term impermeability of the sensor technology.

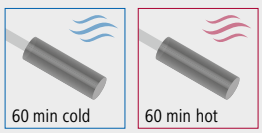
For more information visit www.baumer.com/kingcrown

360° process indication

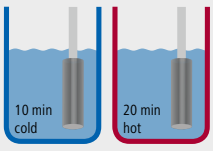
The 360° LED crown with five defined colors provides immediate visual indication of the system's operating status at all times. At the same time, potential sensor failures can be indicated and directly located.

- Five defined colors for real-time status display
- Visible from a distance from all directions – without a blind spot
- Clearly visible during daytime

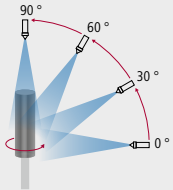
proTect+ test series



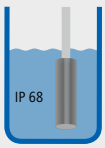
Air temperature cycle test
–40° C up to at least +85° C with 50 temperature cycles



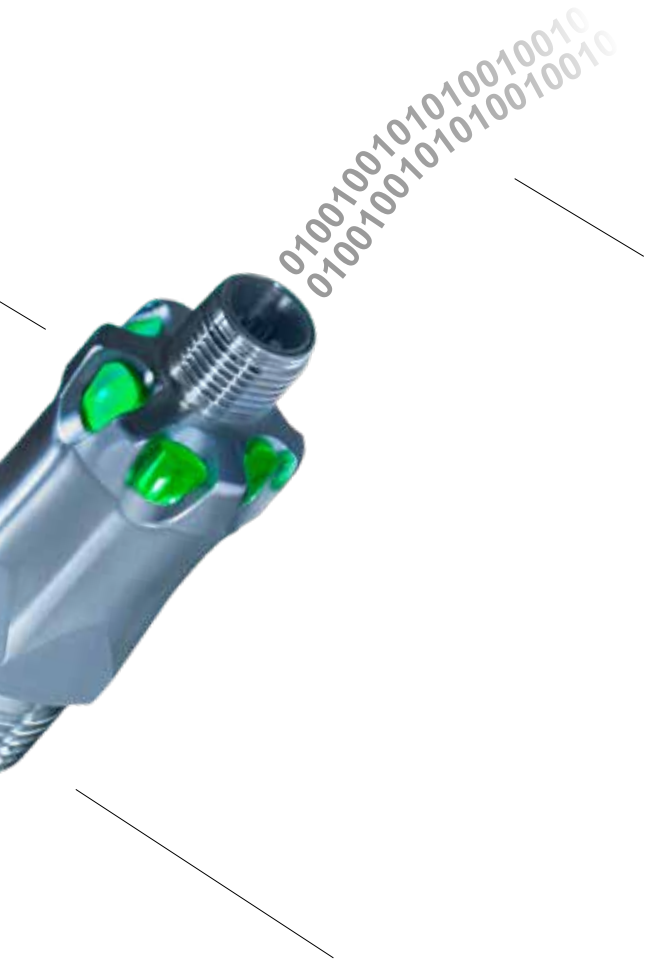
Water temperature cycle test
50 temperature changes within seconds



IP 69K test
Protected against spray water and high-pressure cleaning



IP 68 immersion test
One meter below the water surface for 168 hours



Added value through digital sensor data

IO-Link interface provides easy access to valuable additional data. In addition, it allows easy, location-independent parameterization of the sensor.

- Easy and fast commissioning
- Digital additional data

For more information about IO-Link, see www.baumer.com/io-link

Reliable in demanding environments

In production conditions involving high humidity or water spray, greater impermeability and robustness are needed to prevent sensor technology malfunctions. With the robust *KingCrown*, we offer you the right solution for such challenges. The stainless steel sensor housing with LED crown for process indication protects the electronics from environmental influences, thus minimizing downtime and failures.

- Long-term impermeability according to the *proTect+* impermeability concept, which exceeds the IP protection class
- Impact- and fracture-resistant

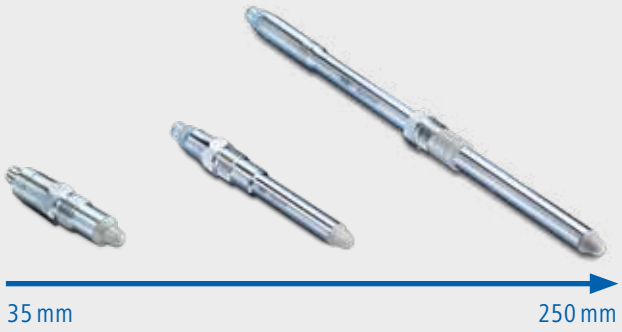
For more information about *proTect+*, see www.baumer.com/proTect+

One sensor – different designs.

Various connection options

M12 stainless steel, M12 plastic with LED, cable gland stainless steel with LED

Different lengths



Different versions

Compact industry variant, hygienic field housing or Baumer Hygienic Connection (BHC), Field housing with sliding connection, high temperature variant with cooling neck

More configuration options on the website www.baumer.com/cleverlevel

Your application – our solution.




IO-Link IO-Link

	Typical application	Trigger variants	*CleverLevel*® LBFS	*CleverLevel*® LBFH/LBFI	*CleverLevel*® PL20	*CleverLevel*® LFFS
Functional overview	For all point level applications, especially suited to separating layer detection and dry-run protection of tanks and pipes	Window-Trigger: Pre-parameterized for different media by factory settings – adherences can be taught in	■	■	■	■
	For all point level applications, especially suited to adherence, CIP cleaning, and for media with different dk values	Adaptive-Trigger: Adjusts automatically to different media – even in the case of adherence.		■	■	
	Media differentiation, evaluation of cleaning processes, moisture determination	Additional analog output: 4 … 20 mA			■	
Visual status indication		Multi-colored LED status indication		■	■	
Electrical connection		M12	■	■	■	■
		Cable outlet	■			
		Cable screw connection				■
More information		Quicklink	www.baumer.com/lbfs	www.baumer.com/lbfx	www.baumer.com/pl20	www.baumer.com/lffs

More about IO-Link www.baumer.com/io-link-process-automation

The perfect partner for industrial and hygienic applications.

Reliable even in challenging settings

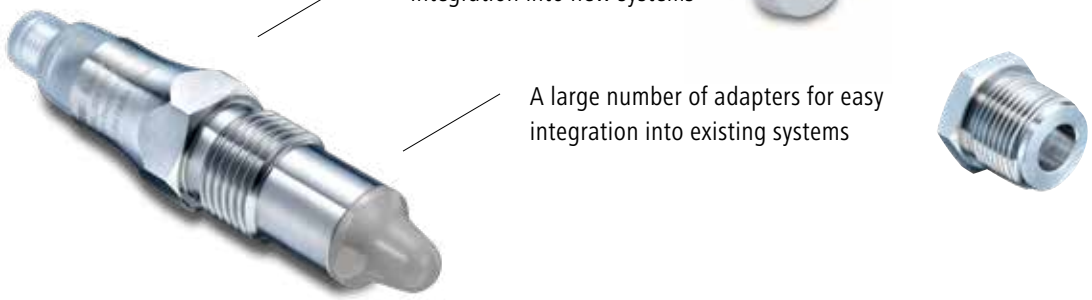
The *CleverLevel*® series complies with the requirements of process automation and the specifications for mobile systems and marine applications. Even in explosive areas, we offer the appropriate solution with the ATEX-certified level switches.

Highest food safety coupled with maximum overall system effectiveness

With their hygienic design and the use of high-quality materials such as stainless steel and PEEK, our sensors comply with the requirements of the food, beverage, and pharmaceutical industry while being in line with relevant standards and directives:

Suitable for every type of process – easy to integrate into existing or new systems.

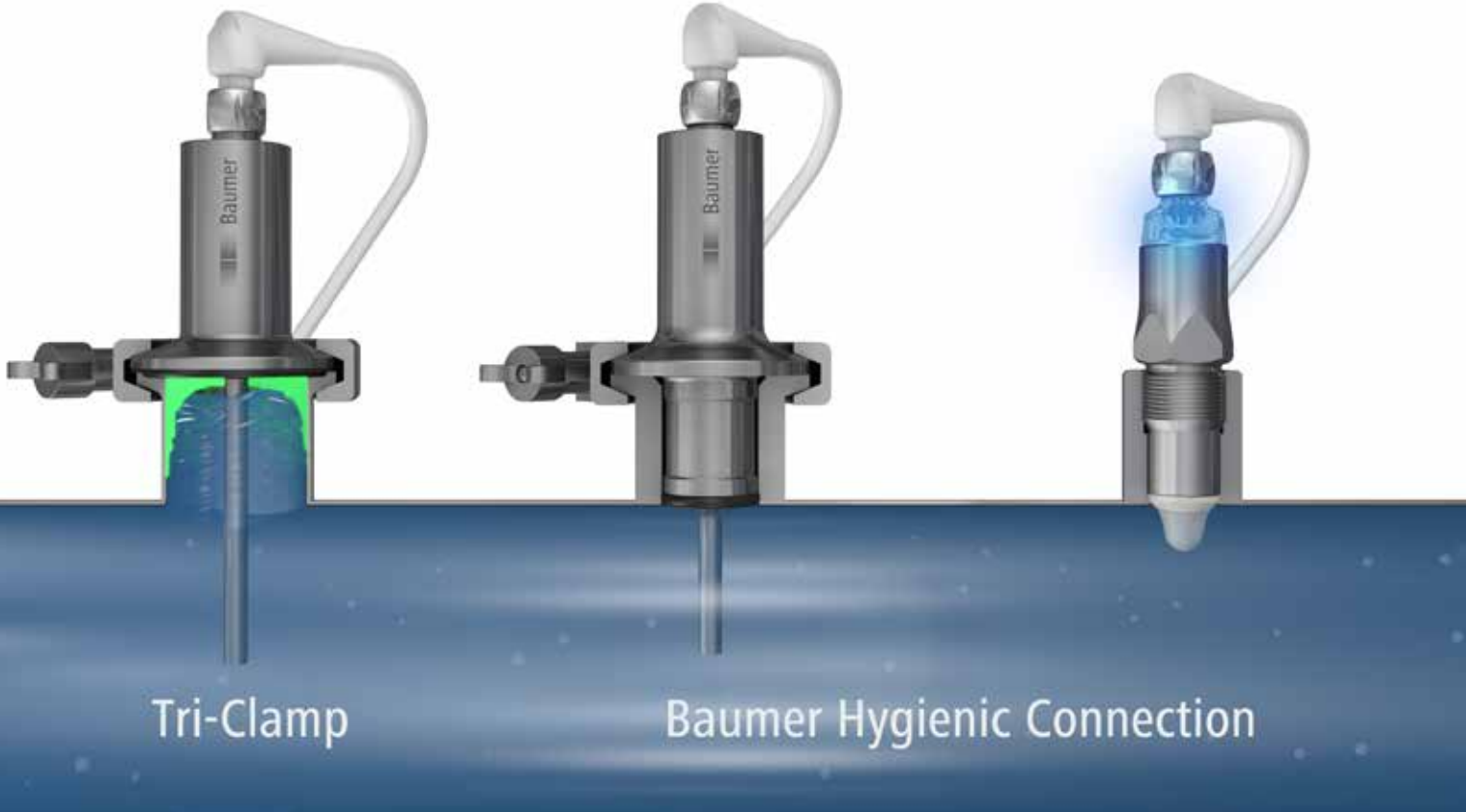
The sensors from Baumer are suitable for almost all process connections. Thanks to our more than 40 connection types, you do not have to change your system design at all.



Read more in our Whitepaper www.baumer.com/connection-guaranteed

Hygienic design from Baumer

Based on its many years of experience, Baumer has created a process connection that complies with the specifications of the food industry and allows easy dead space-free cleaning. The Baumer hygienic connection (BHC) is an example of how clever design can help reduce the bacterial contamination in your processes and actively contribute to food safety.



Baumer

Passion for Sensors

More information about our level sensors can be found at:
www.baumer.com/level