

Probe housings, control units and accessories

EXNER
Process Equipment



About EXNER Process Equipment

EXNER Process Equipment GmbH, based in Ettlingen, is in the middle of the Karlsruhe technology region.
The medium-sized company has operated as an international provider of high-quality process holders for pH measurement and optical sensors for the determination of cell growth and turbidity for more than 15 years.

The owner-run company is characterised in particular by its accurate and long-lasting products, its agile and flexible way of doing things, and customer-specific solutions. The products developed and produced by the ISO9000-certified business offer the highest degree of variability and can therefore be configured to meet almost any requirement.

Customers from the chemical industry, in the bio and food technology sectors, and the pharmaceutical industry all benefit from their consulting and support services, as well as their innovative research and development division. Thanks to the combination of their expertise gained over many years and the use of new technologies, their products are being continuously developed and optimised for each area of application. So, the processes become safer, more efficient, and more accurate. In addition, EXNER products are being supplied by distribution partners and OEM customers all over the world.

Static fittings – an overview

Type	Material	Sealing material (media contact)	Process connection	Process pressure*	Process temperature*	Immersion length
EXdip 910	Stainless steel 1.4404	EPDM / FPM	Flange	0...10 bar	-10...140 °C	500 to 2500 mm
EXdip 920	PP / PVDF	EPDM / FPM	Flange / Mounting bracket	0...6 bar	-10...90 °C	500 to 2500 mm
EXstatic 310	Stainless steel 1.4404	EPDM / FPM	Ingold connection (DN25)	0...10 bar	-10...140 °C	70 mm
EXstatic 311	Stainless steel 1.4404	EPDM / FPM	Clamp	0...10 bar	-10...140 °C	45 mm / 80 mm
EXstatic 312	Stainless steel 1.4404	EPDM / FPM	VARIVENT / NEUMO BioControl	0...10 bar	-10...140 °C	40 mm
EXstatic 315	Stainless steel 1.4404	EPDM / FPM	VARIVENT / Clamp / NEUMO BioControl (all 15° angled)	0...10 bar	-10...140 °C	depends on process connection
EXstatic 340	PP / PVDF/ Stainless steel 1.4404	EPDM / FPM / FFKM	NPT thread	0...6 bar 0...10 bar	-10...120 °C -10...140 °C	35 mm / 57 mm

* depending on configuration and/or operating parameters

Immersion fittings

Immersion fittings in the EXdip series are primarily used in the energy and environmental technology sectors, in water and waste water treatment, and in the chemical and processing industries. The fittings are used to insert sensors (e.g. pH sensors) into open reservoirs, tanks, containers or channels.



EXdip 910

Stainless steel immersion fitting with flange DN50/2” or hanging system



EXdip 920

Plastic immersion fitting with flange DN50/2” or hanging system

Features:

» Protects the sensors from mechanical influences
» Choose between a version with flange or with a hanging system
» Available in stainless steel or plastic
» Integrated spray cleaning (optional)
» Suitable for sensors with 120 mm length and for PG13.5 or NPT thread connections

Static probe housings EXstatic

Static probe housings in the EXstatic series are primarily used in the pharmaceutical and biotechnology industries, as well as the food and drink sectors. The probe housings are used to insert sensors (e.g. pH sensors) into pipes, tanks or containers. They are mainly used in batch processes.



EXstatic 310

Static probe housing with Ingold connection (DN25)



EXstatic 311

Static probe housing with clamp connection



EXstatic 312

Static probe housing with VARIVENT or optionally NEUMO connection



EXstatic 315

Static probe housings with 15° slant, available with various process connections



EXstatic 340

Stainless steel or plastic probe housing with NPT external thread

Features:

- Excellent stainless steel surface qualities (up to Ra <0.37 µm)
- Available with or without protection cage
- Special 15° version (e.g. for standpipes)
- Process connections for hygiene applications
- Suitable for sensors with 120 mm length and PG13.5 connection

There’s potential for optimisation in pH measurement

In production processes where you are working with liquids, the pH value is an important variable, in most cases. If the inserted measuring devices quickly become contaminated by the process, this can lead to measurement issues. In this case, the use of retractable probe housings really pays off after a while.

Retractable probe housings don’t just allow you to automate the measurement point; they also optimise the signal availability, lifespan and accuracy of the sensors used. The EXtract series has a patented cleaning chamber with PTFE process seal which minimises maintenance costs and can be relied upon even in difficult process conditions.



When should retractable probe housings be used?

» if the pH value is an important measured variable in the process.
» if sensors become contaminated within a short time.
» if the lifespan of the sensor is shorter than 3 months.
» if the sensor cannot be cleaned manually on a regular basis.
» if the sensor must be protected from individual process stages (e.g. CIP/SIP)
» if the process cannot be interrupted for sensor calibration/inspection.
» if there are longer process interruptions (e.g. batch processes), but the sensor must still be protected, e.g. against drying off.

Manually and pneumatically operated retractable probe housings – an overview

Type EXtract	Material	Sealing material (media contact)	Process connection	Process pressure*	Process temperature*	Immersion length
810M / 810	Stainless steel 1.4404 / Alloy C22	EPDM / FPM / FFKM	Flange / Clamp / NPT thread	0...16 bar	-10...140 °C	107 mm
811M / 811	Stainless steel 1.4404 / Alloy C22	EPDM / FPM / FFKM	Flange	0...16 bar	-10...140 °C	207 mm
815M / 815	Stainless steel 1.4404 / Alloy C22	EPDM / FPM / FFKM	Ingold connection (DN25)	0...16 bar	-10...140 °C	90 mm
820M / 820	PP / PEEK / PVDF, Alloy C22	EPDM / FPM / FFKM	Flange / NPT thread	0...10 bar	-10...140 °C	94 mm
821M / 821	PEEK / PVDF, Alloy C22	EPDM / FPM / FFKM	Flange	0...10 bar	-10...140 °C	194 mm
825M / 825	PP / PEEK / PVDF, Alloy C22	EPDM / FPM / FFKM	Ingold fitting (DN 25)	0...10 bar	-10...140 °C	70 mm
830M / 830	Stainless steel 1.4404	EPDM / FPM	Ingold / Clamp / NEUMO BioControl / Dairy pipe / VARIVENT	0...16 bar	-10...140 °C	depends on process connection
840M	Stainless steel 1.4404	EPDM / FPM / FFKM	Flange / NPT thread / Whitworth thread (DIN ISO 228)	0...12 bar (operable up to 4 bar)	-10...130 °C	300 mm / 700 mm

* depending on configuration and/or operating parameters

Depending on the design of an EXtract retractable probe housing, it is suitable for a wide variety of processes. A distinction is made with regard to the cleaning chamber and process sealing, among other things:

Typ EXtract	Design of cleaning chamber	Sealing to the process
810M / 810 **811M / 811** **820M / 820** **821M / 821**	Cleaning chamber with cartridge for 4 cleaning nozzles	PTFE scraper and O-ring
815M / 815 **825M / 825**	Cleaning chamber with cartridge and annular gap	PTFE scraper and O-ring
830M / 830	Cleaning chamber with cartridge for 4 cleaning nozzles	O-ring
840M	Cleaning chamber with rinsing connection for injection of cleaning medium	Ball valve

Advantages of EXtract retractable probe housings

- Short stroke movement (36 mm) and therefore less wear, and the carryover of media is reduced to a minimum
- Targeted nozzles in the cleaning chamber for an effective cleaning process
- Compact cleaning chamber to keep the rinsing medium consumption down
- Dual sealing for the actuation & additional leakage bore
- Secure – the fitting cannot move without a sensor installed
- Cleaning of the media-contacting parts using the cleaning chamber of a corresponding size
- Easy to install, use and maintain (wear parts can be replaced quickly, for instance)
- Available as a complete system including flow-through fitting and control unit

Product example



EXtract 810M

EXtract 810M is a manually operated retractable probe housing made from stainless steel and is used for inline pH measurements in pipes and containers. During the ongoing process, it allows you to separate the pH sensor from the process, carry out cleaning or remove the sensor for reliable calibration. Its innovative design offers the greatest degree of safety while remaining very easy to use.

SAFE MEASUREMENTS DIRECTLY DURING THE PROCESS!

Features:

- Robust design, integrated scraper
- Automatic locking in both positions
- Automatic retraction block if the sensor is missing
- Stainless steel AISI 316L/1.4404 or alloy C22/2.4602
- Immersion length of up to 107 mm or 207 mm
- Can be used in potentially explosive atmospheres (ATEX)
- A broad range of different process connections and sealing materials
- Can be used up to 16 bar and 140°C
- Maintenance free drive unit
- It's possible, and simple, to convert it to pneumatic actuation retroactively



EXNER develops custom solutions – as individual as your processes!

EXtract M – Manually operated retractable probe housings

Retractable probe housings of the EXtract M series are used in a vast range of sectors and applications. Whether in processing industries, water and waste water treatment, the chemical industry or in food and pharmacy. The probe housings are used to insert sensors (e.g. pH sensors) into pipes, tanks or containers. The intelligent modular system allows to make adjustments to the configuration, so that it suits to the process in an optimal way.



EXtract 810M

Manually operated retractable probe housing made of stainless steel



EXtract 811M

Manually operated retractable probe housing made of stainless steel with extended immersion depth of up to 207 mm



EXtract 815M

Manually operated retractable probe housing made of stainless steel, specially designed for Ingold connections (DN25)



EXtract 820M

Manually operated retractable probe housings made of plastics



EXtract 821M

Manually operated retractable probe housing made of plastics with extended immersion depth of up to 194 mm



EXtract 825M

Manually operated retractable probe housing made of plastics, specially designed for Ingold connections (DN25)



EXtract 830M

Manually operated retractable probe housings made of stainless steel, specially designed for hygienic processes



EXtract 840M

Manually operated retractable probe housings made of stainless steel with ball valve, long immersion depth

Features:

- Safe insertion of a sensor (e.g. pH sensor) into the process
- Suitable for standard sensors with a diameter of 12 mm and PG13.5 thread
- The sensor can be removed while the process is running (e.g. for maintenance or replacement)
- Versions for sensor lengths 225 mm and 280 mm or 120 mm (EXtract 840M) are available
- As an option, can be fitted with inductive indicators (NAMUR)
- Integrated cleaning option for the sensor
- Sensor is protected from mechanical influences

EXtract – Pneumatically operated retractable probe housings

Retractable probe housings of the EXtract series are used in a vast range of sectors and applications. Whether in processing industries, water and waste water treatment, the chemical industry or in food and pharmacy. The probe housings are used to insert sensors (e.g. pH sensors) into pipes, tanks or containers. The intelligent modular system allows to make adjustments to the configuration, so that it suits to the process in an optimal way.



EXtract 810

Pneumatically operated retractable probe housing made of stainless steel



EXtract 811

Pneumatically operated retractable probe housing made of stainless steel with extended immersion depth of up to 207 mm



EXtract 815

Pneumatically operated retractable probe housing made of stainless steel, specially designed for Ingold connections (DN25)



EXtract 820

Pneumatically operated retractable probe housing made of plastics



EXtract 821

Pneumatically operated retractable probe housing made of plastics with extended immersion depth of up to 194 mm



EXtract 825

Pneumatically operated retractable probe housing made of plastics, designed for Ingold connections (DN25



EXtract 830

Pneumatically operated retractable probe housing made of stainless steel, specially designed for hygienic processes

Features:

- Safe insertion of a sensor (e.g. pH sensor) into the process
- Suitable for standard sensors with a diameter of 12 mm and PG13.5 thread
- The sensor can be removed while the process is running (e.g. for maintenance or replacement)
- Versions for sensor lengths 225 mm and 280 mm are available
- As an option, can be fitted with inductive indicators (NAMUR)
- Integrated cleaning option for the sensor
- Sensor is protected from mechanical influences

Control units and accessories for retractable probe housings

With the control unit EXmatic 470 in combination with the pneumatically operated retractable probe housings of the EXtract series, the user gets a robust system which is both easy to use and proven in practice for automating measurement points. The EXflow flow-through fittings are used for the optimal positioning of the retractable probe housing in the process. As well as coated versions, 90° versions are also available.



EXmatic 470

Electro-pneumatic control unit for actuating pneumatically operated retractable probe housings of the EXtract 8XX series



EXconnect

Multi connection hose for a quick and easy connection of the cleaning control unit



Diaphragm valve

Used as a media or drain valve in combination with a cleaning control unit



EXtract protective cap

Suitable for mounting onto Extract retractable probe housings to get additional protection to the sensor and cable



EXflow 710

Stainless steel flow-through fitting in different diameters and with variable connections



EXflow 720

Plastic flow-through fitting in different diameters and with variable connections

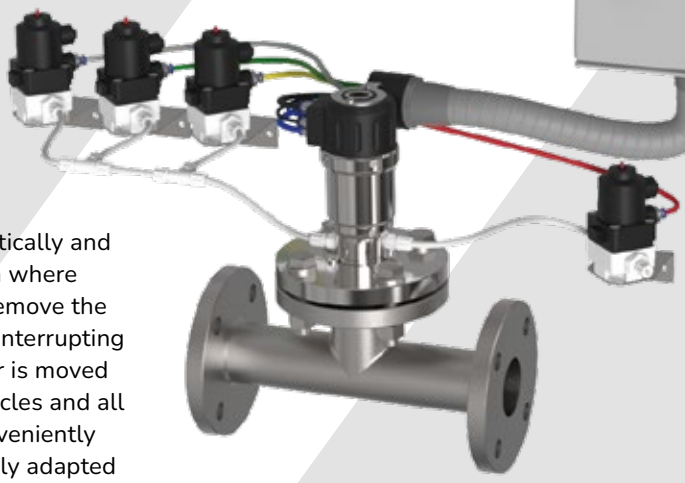
In addition to the products shown here, there are other useful accessories available.
We would also be happy to advise you on all questions relating to services and spare parts.

Product example

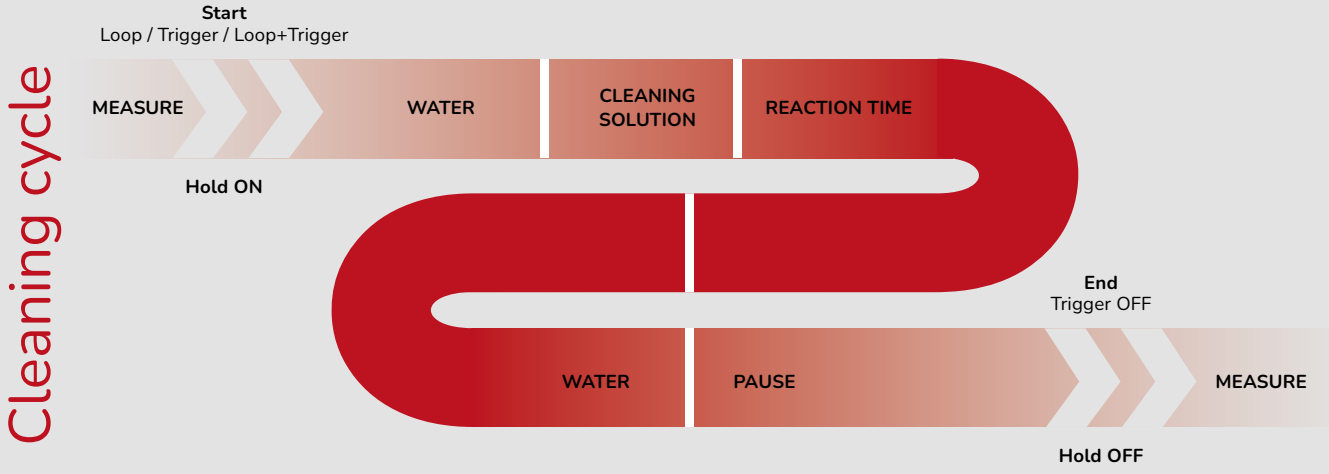
EXmatic 470



EXmatic 470 is an electro-pneumatic control unit for actuating pneumatically operated retractable probe housings of the EXtract 8XX series.



The integrated connection hose is harmonised to suit the entire system and ensures a “plug-&-play”-style installation.
In combination with a retractable probe housing, the control unit allow the sensors to be moved out of the process completely automatically and brought into the maintenance position where they are cleaned. The user can even remove the sensor entirely or calibrate it without interrupting the process. After cleaning, the sensor is moved back into the process. The cleaning cycles and all other functions can be configured conveniently via the control unit, and therefore easily adapted to suit the respective requirements. There is also the option of connecting output contacts with a process control system and transmitting status messages.



Features:

- Fully automated measurement point
- Increasing the lifespan of the sensor and minimising the maintenance work
- Safe removal of the sensor while the process conditions are ongoing
- An open and individual system, any sensor transmitter is possible
- Status signals for the process control system and sensor transmitter
- Up to three different rinsing media can be connected
- Integrated sealing water function
- Pre- and post cleaning can be activated on an individual basis
- With integrated connection hose for “plug-&-play” operation

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Compact sensors

EXspect & EXplore

EXNER
Process Equipment



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Customers from the chemical industry, in the bio and food technology sectors, and the pharmaceutical industry all benefit from their consulting and support services, as well as their innovative research and development division. Thanks to the combination of their expertise gained over many years and the use of new technologies, their products are being continuously developed and optimised for each area of application. So, the processes become safer, more efficient, and more accurate. In addition, EXNER products are being supplied by distribution partners and OEM customers all over the world.

Advantages and features of our sensor series “EXspect” and “EXplore”

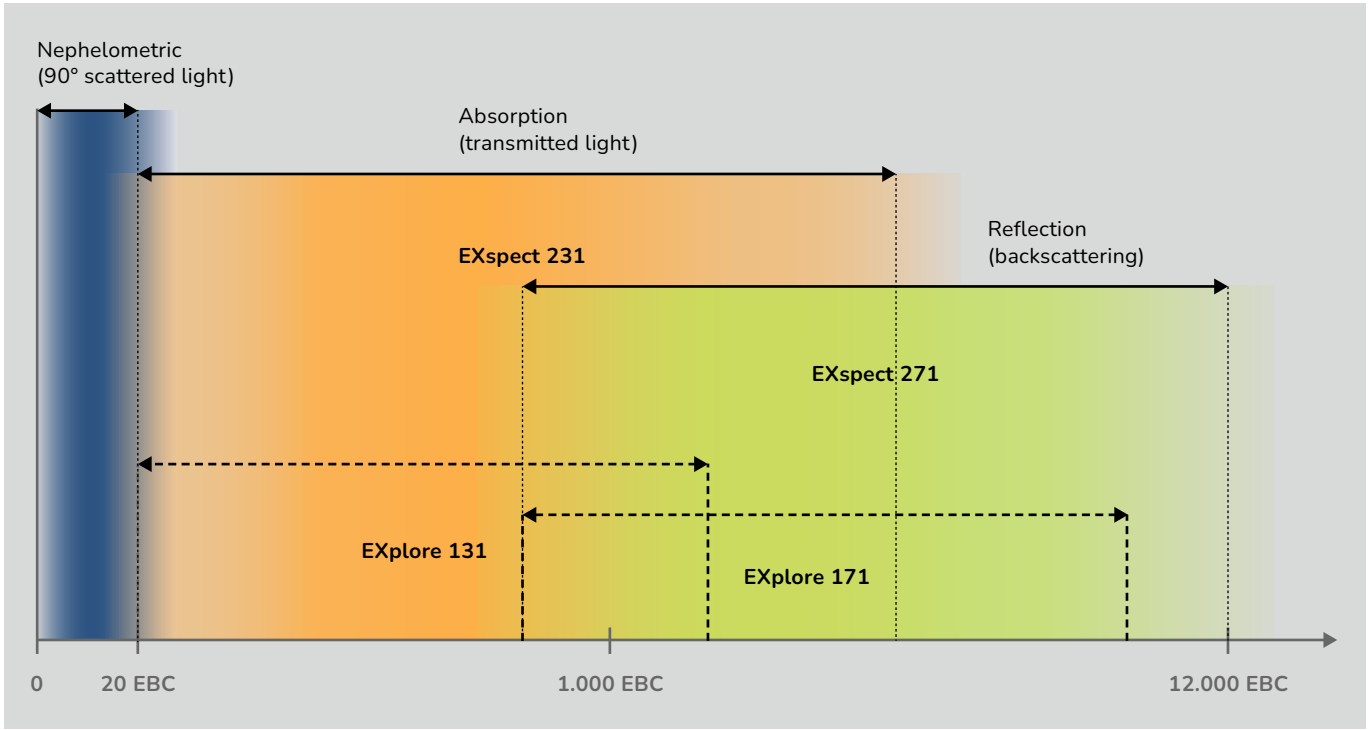
» Modern, durable LED technology guarantees a permanent and stable signal
» Different optical path lengths for the absorption measurement are available
» Compact design (depending on the version also with an integrated touch display)
» Integrated transmitter, no additional external device required
» In-line measurements in real time with a large number of measurement points
» Verification possible by means of optical solid references, no use of chemicals required
» No calibration and parameterisation necessary
» Resistant sapphire window or sapphire lens
» Depending on the sensor, different turbidity units can be selected
» Freely configurable and adjustable to customer-specific units (depending on version)
» Hygienic design, suitable for CIP/SIP

Our compact sensors at a glance

Features	EXspect 231		EXspect 271		EXplore 131	EXplore 171
	5-pin	8-pin	5-pin	8-pin		
Touch-Display	■	■	■	■	-	-
Basic settings via display	■	■	■	■	-	-
Addtional settings via software* (e.g. customer-specific-calibration)	-	■	-	■	-	-
Switching output	■	■	■	■	-	-
Adjustment input	■	■	■	■	-	-
Measuring principle	Absorption (transmitted light measurement)	Absorption (transmitted light measurement)	180°-Scatterd light (backscatter measurement)	180°-Scatterd light (backscatter measurement)	Absorption (transmitted light measurement)	180°-Scatterd light (backscatter measurement)
Output signal	4...20 mA	0/4...20 mA	4...20 mA	0/4...20 mA	4...20 mA	4...20 mA
Turbidity units	Depending on version: %-Absorption, AU, OD, EBC, FAU, TEF, mg/l	Depending on version: %-Absorption, AU, OD, EBC, FAU, TEF, mg/l, CDU (customer-specific)	%-Backscattering	%-Backscattering, CDU (customer-specific)	%-Absorption	%-Backscattering
Available accessories	Reference filter, connection cable, process adapter	Reference filter, connection cable, process adapter, USB-interface (ECI-01)	Reference normal, connection cable, process adapter	Reference normal, connection cable, process adapter, USB-interface (ECI-01)	Reference filter, connection cable, process adapter	Reference normal, connection cable, process adapter

* Software EXpert available free for download (Note: Communication interface “ECI-01 EXspect” is necessary)

Preferred measuring range



Comparison Formazin: 1 EBC ≈ 4 NTU ≈ 4 FAU

EXspect 231 NIR absorption sensor

EXspect 231 is a high-precision NIR compact sensor for monitoring production processes in the food and pharmaceutical industries as well as in many areas of further process applications. The robust and compact design in stainless steel housing and the wear-free sapphire windows make the EXspect 231 a reliable absorption sensor with integrated digital measuring amplifier and touch display.

Depending on the sensor type, the measuring units can be output in % turbidity, absorption or common turbidity units and a maximum measuring range of 0...6 AU is available, which can be output via the standard interface of 4...20 mA. Two alarm limits can be programmed and different switching outputs are available.

User-friendly
Easy to mount and service

Color-neutral
NIR light source
(wave length 850 nm)



Exact
High accuracy and reproducibility

Individual
Different turbidity units selectable

Flexible
Different path lengths possible depending on the measurement task

Precise
High surface quality
(Ra < 0,37 µm)

Application examples:
» Precise phase separation
» Control of separators
» Filtermonitoring
» Colour-independent concentration measurement
» Detection of product injections / water injections

EXspect 271 NIR backscattering sensor

EXspect 271 is a highly accurate compact NIR turbidity sensor for monitoring production processes in the food industry, e.g. in dairies, as well as in many areas of other process applications with medium and high turbidity. The robust and compact structure in the stainless steel housing and the wear-free sapphire lens makes the EXspect 271 a reliable back scattering sensor with integrated transmitter.

The turbidity value can be displayed in % or in a freely definable customer-specific unit directly in the display and output via the standard interface 4...20 mA. Two alarm limits can be programmed.

Individual
Customer-specific calibrations possible

Visable
Touch-Display integrated as standard



Protected
Protection class IP69

User-friendly
Easy to mount and service

Durable
Reliable LED light source

Standardised
Interface 4...20 mA

Application examples:
- Precise phase separation
- Colour-independent concentration measurement
- Monitoring of product changes
- Monitoring of precipitation processes
- Yeast management

EXplore 131 NIR absorption sensor

EXplore 131 is a NIR turbidity sensor for monitoring production processes in the food and beverage industries, as well as in many areas of further process applications. The robust and compact design in stainless steel housing and the wear-free sapphire windows make the EXplore 131 a reliable absorption sensor with integrated amplifier.
A %-value is used as the measuring unit. The measuring range is 0...100 %, which is output via the standard interface of 4...20 mA.

Robust
CIP/SIP-capable

Standardised
Interface 4...20 mA



Compact
Minimum installation space necessary

User-friendly
Easy to mount and service

Reliable
Durable LED light source

Exact
High surface quality (Ra < 0,37 µm)

Application examples:
» Reliable phase separation
» Filtermonitoring
» Colour-independent concentration measurement
» Monitoring of cleaning processes
» Detection of product in water

EXplore 171 NIR backscattering sensor

EXplore 171 is a NIR turbidity sensor for monitoring production processes in the food industry, e.g. in dairies, as well as in many areas of other process applications with medium and high turbidity. The robust and compact design in stainless steel housing and the wear-free sapphire lens make the EXplore 171 a reliable back scattering sensor with integrated amplifier. A %-value is used as the measuring unit. The measuring range is 0...100 %, which is output via the standard interface of 4...20 mA.

Easy
No parameterisation/ calibration necessary

Exact
High accuracy and reproducibility



Compact
Minimum installation space necessary

User-friendly
Easy to mount and service

Robust
Process pressure 0...20 bar

Innovative
Sapphire lens for precise measurements

Application examples:
- Reliable phase separation
- Monitoring of precipitation processes
- Colour-independent concentration measurement
- Monitoring of product changes
- Yeast harvesting

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Introducing Exner's In-Line Sensor

EXcell

EXNER
Process Equipment

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EXNER's Cell Growth Sensor „EXcell"







Main advantages and benefits:

» Modern, long-life LED technology with various Optical Pathlengths available
» High density measurement range up to 6 AU (Absorption Units)
» Integrated measurement amplifier, no additional (standard) transmitter required
» Real-time in-line measurements with a huge amount of data points and an outstanding rapidity and repeatability
» Revision and re-calibration by optical filters, no chemicals needed
» Simple calibration against existing off-line standards
» Switchable to all current turbidity units e. g. TEF, FTU, EBC, mg/l
» Free configurable and adjustable unit of measurement (Customer Defined Unit)
» Hygienic, maintenance free design applicable to changeover devices for automated cleaning of the optical unit such as EXNER's Extract Series
» Connectable via USB, Modbus RS485 and 4-20 mA-Interface
» Easy calibration compared to off-line measurement standards

EXNER's EXcell – Sensing your needs.

The EXcell probe is easily applicable in many industrial sectors, such as:

BioTech



Food



Pharma

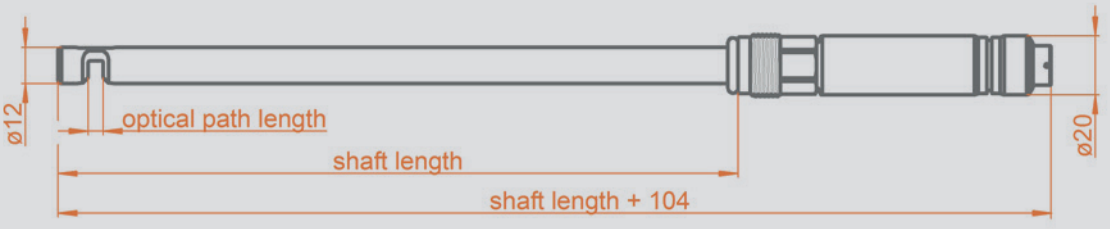


EXcell 231 Specifications

Measuring Range	0…6 AU 0…6.600 EBC
Wavelength	850 nm
Light Source	LED
Optical Path Lengths	5, 10, and 20 mm
Wetted Materials	Stainless Steel 1.4435 (316L)
Surface Finish	Ra <0.37 µm
Windows	Sapphire

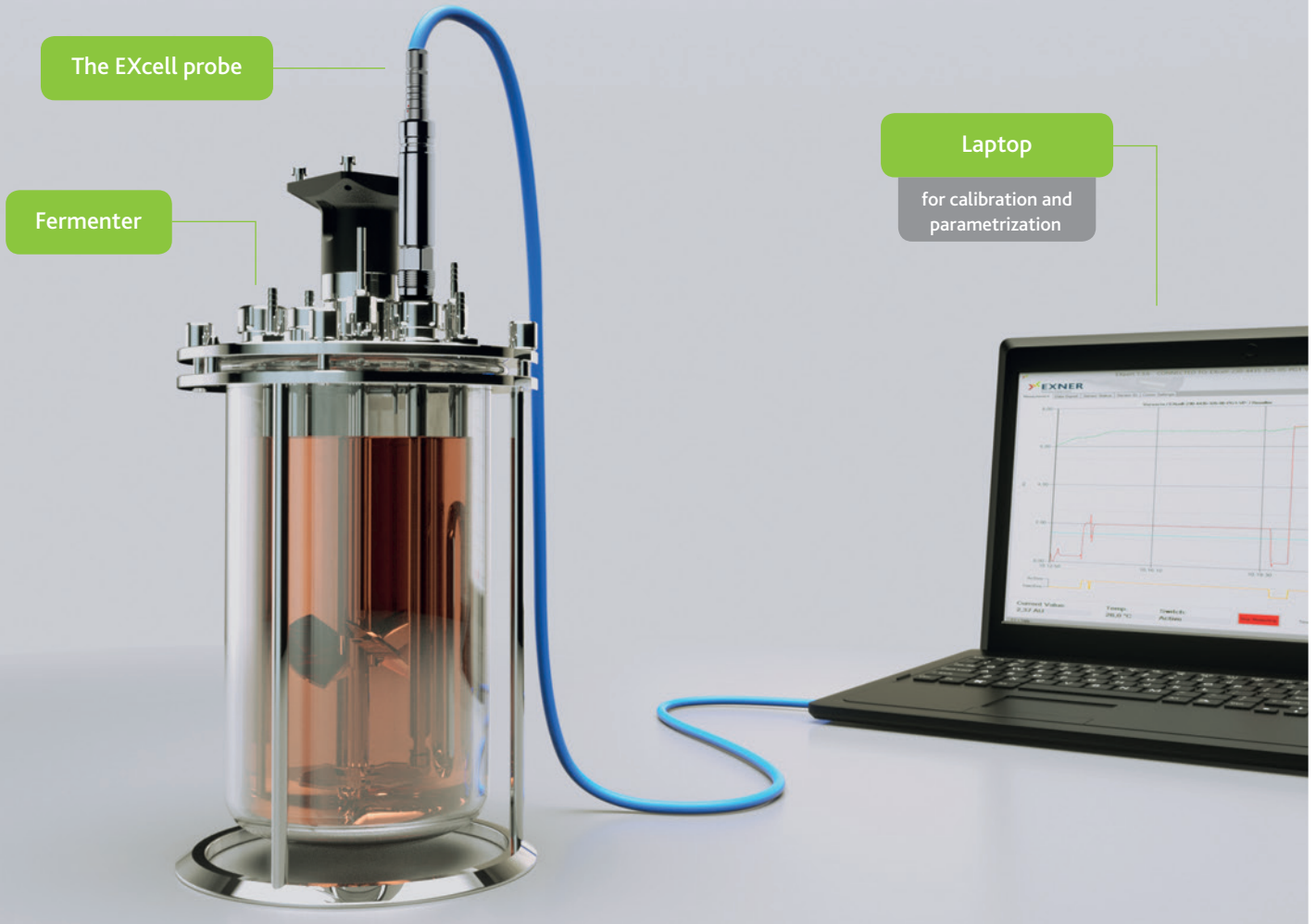
Cable Connector	Fischer Core Series
Cable Length	2 and 5 meter
Process Connection	PG 13.5 Thread
Process Temperature	0 to 90 °C, 135 °C maximum for 1 hour (SIP cycle)
Process Pressure	16 bar (232 psi)
Probe Length	120, 225, 325, 425 mm
Interfaces	USB Modbus RS485 4…20 mA

Dimensions



EXNER's EXcell – In line with Your process.

Exemplary assembly



Communication Interface ECI-02

Top Hat Rail Installation
Modbus RS485
24 V/DC



Communication Interface ECI-03

Control Panel Installation
Touch Display
0/4...20 mA / switching contacts



Set optical filters

EXcap 110
Freely selectable filters
Easy to use
NIST traceable



The compact sensor “EXcell”, which is unique in Europe and only 12 mm in diameter, embodies the ingenuity of EXNER like no other product. It is evidence use of the company’s decades of experience of what the fluid analysis market needs.



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