The Art of Measuring. Knick

Ready for the Future.

Protos II

The New Modular Premium Transmitter
For All Requirements. Versatile.
Expandable. Ensuring Process Safety.

Multiparameter Transmitter
Protos II 4400 (X)

True Modularity.

The new Protos II 4400 (X) premium transmitter is a flexible, 4-wire device for the following process variables: pH, ORP, conductivity and oxygen.
For monitoring and controlling processes even in the most complex applications — also in hazardous areas. With modular hardware and firmware concept.

Retrofits Possible, Future-Proof.

Protos II 4400 (X) features a unique modular design and freely accessible wiring with a clear layout.
The option for easy retrofitting and upgrading ensure planning security today and in the future.
Different Ethernet and Fieldbus modules enable digital communication and seamless integration into automation systems.

Wide Sensor Selection

Protos II 4400 (X) is the only process analysis system that can be flexibly combined with Memosens and other digital or analog sensors — in multi-channel mode as well.
With Memosens technology, up to 4 measuring channels can be implemented in parallel.

Status Messages acc. to NE 107

All status messages for maintenance requests, failure, out of specification, and function check (HOLD) are output as specified in NE 107.

Protos is well established in the following industries

- Chemistry
- Pharmaceuticals
- Food & Beverage
- Power plants
- Water / Wastewater

3-year warranty!

Reliable and Safe Thanks to Memosens Technology

Digital sensors with inductive signal transmission — contactless sensor couplings ensure the reliable analysis of liquid in all environments. Sensors that are pre-calibrated in the laboratory deliver maximum availability and reduced maintenance efforts at the point of measurement. Sensors can be replaced on site in just a matter of seconds.

- Perfect galvanic isolation
- Fully resistant to moisture, dirt, corrosion, and interference potentials
- Easy to use, even under harsh conditions
- Up to 100 m cable length

MEMOSENS

Facts and Features

- Stainless steel design with hygienically optimized surface. Ideal for pharmaceutical or food production
- Stainless steel design with corrosion-proof powder coating for harsh industrial areas
- Universal broad-range power supply 24 ... 230 V AC/DC
- Rugged; can also be used outdoors (with IP 65 protection and UV resistance)
- Panel, wall or post/pipe mounting
- High-contrast graphic LC display
- USB memory card concept for data recording, firmware updates, and Audit Trail
- Freely combinable measuring, control, and communication modules

Multiparameter Transmitter
Protos II 4400 (X)

The Benchmark for Even the Most Demanding Measuring Tasks.

Simultaneous measurement of multiple parameters in one device and perfect control of fully automatic measuring points open a broad range of applications. Its modular design and easy retrofitting make the Protos II perfectly positioned for future demands.

Protos II in a Fully Automatic Measuring, Cleaning and Calibration System

In conjunction with the Unical/Uniclean probe controller and a SensoGate or Ceramat retractable fitting, the Protos II provides the ideal functionality of a complete system for automatic process control — also in hazardous areas. Highly accurate measurements can be taken under difficult process conditions such as high pressure, high temperatures and high levels of impurities. Long sensor life is achieved even in critical processes.

CHEMISTRY

- Control of various chemical processes
- Use in explosive and aggressive environments
- Industrial wastewater

For Example:
Production of Azo Dyes

During the uninterrupted dye synthesis process that is part of azo dye production, all of the key reaction steps depend on precise pH measurement. Even in this highly hydrochloric, corrosive environment, Protos transmitters, Unical probe controllers and wear-resistant Ceramat retractable fittings ensure reliable, automatic pH measurement and long sensor service life. And a significant reduction in maintenance costs as well.

Stainless steel design for hygienic applications

Powder-coated design for corrosive areas

FOOD & BEVERAGE

- Monitoring and control of the entire production process
- Monitoring CIP systems / increasing the concentration of alkaline or acidic solutions
- Monitoring water treatment

For Example:
Monitoring Sugar Production

In sugar production, continuous pH measurement in 2nd carbonatation is a major challenge — with high proportions of solids, temperatures of over 90 °C/194 °F, and extreme buildup from lime, non-sugar particles and sticky syrup. In conjunction with Unical controllers and Ceramat or SensoGate retractable fittings, Protos has set new global standards in the industry, ensuring fully automated measuring point operation during the entire sugar campaign.

PHARMACEUTICALS / BIOTECHNOLOGY

- Seamless process monitoring in production and upstream and downstream areas
- Process control of pH values and oxygen content in the fermentation operation
- Monitoring CIP systems / increasing the concentration of alkaline or acidic solutions
- Ultrapure water monitoring (WFI) acc. to USP

For Example:
Insulin Production

In the complex insulin production process, the pH value, temperature and oxygen content must be measured simultaneously to precisely control the fermentation process.
In the S Sepharose and high performance liquid chromatography (HPLC) phases, the pH value and conductivity must be simultaneously measured.
Due to their high reliability and unique flexibility, Protos multiparameter transmitters are used in this process on a daily basis.

POWER PLANTS

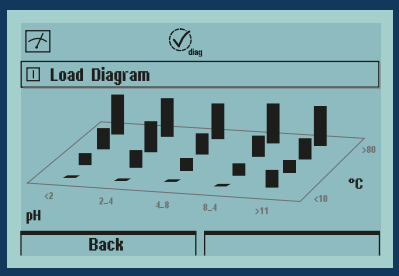
- Reliable water/steam monitoring
- Precise detection of oxygen traces
- Control of alkali feed to minimize corrosion

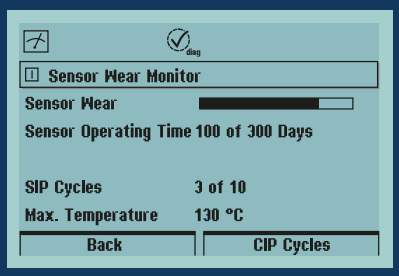
For Example:
Flue Gas Purification

The extreme conditions in a gas scrubber require high-maintenance measuring points, especially for flue gas desulfurization. Alongside incrusting deposits, abrasive sludge is a special challenge for pH measurement in this process.
The Protos measuring system also measures under extremely harsh conditions. For the care and extension of its service life, the sensor is automatically extended into the process medium for a short time only, and is then cleaned.

User-Friendly Functionality.

Conveniently simple operation: Users are guided through all menus and receive error messages and troubleshooting information on a clearly arranged display. Text can be displayed in a wide range of languages.





High-Resolution Graphic Display

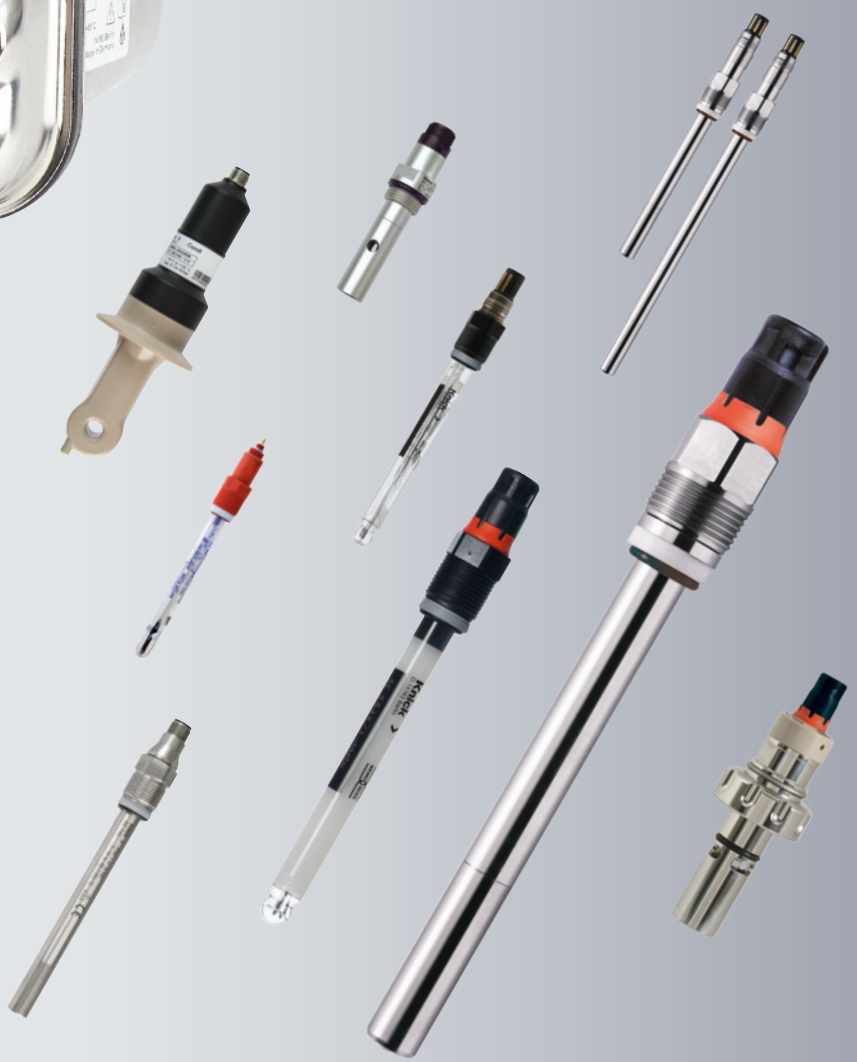
White backlighting ensures optimal legibility even under poor light conditions. The self-explanatory plain text user interface in accordance with NAMUR ensures easy, intuitive handling and a clearly arranged display of sensor data — in multi-channel mode as well.

Expandable Multi-Lingualism

The menu texts are easy to switch among German, English, French, Portuguese, Italian, Spanish, and Asian languages.

Facts and Features

- 4-wire system with active current outputs (standard in BASE module)
- Application in Zone 1 / Cl 1 Div 2 hazardous locations
- High-resolution graphic display
- Parameter set changeover for greater process control flexibility
- KI recorder for signaling faulty processes
- Softkeys for flexible, intuitive operation
- Flexible combination of sensors and process variables



Sensor Flexibility

Protos II 4400 (X) can operate Memosens, digital and analog sensors.
For the following process variables:
– pH, ORP
– Contacting and inductive conductivity
– Amperometric and optical oxygen
Flexibly combined with one another.

Multiparameter Transmitter
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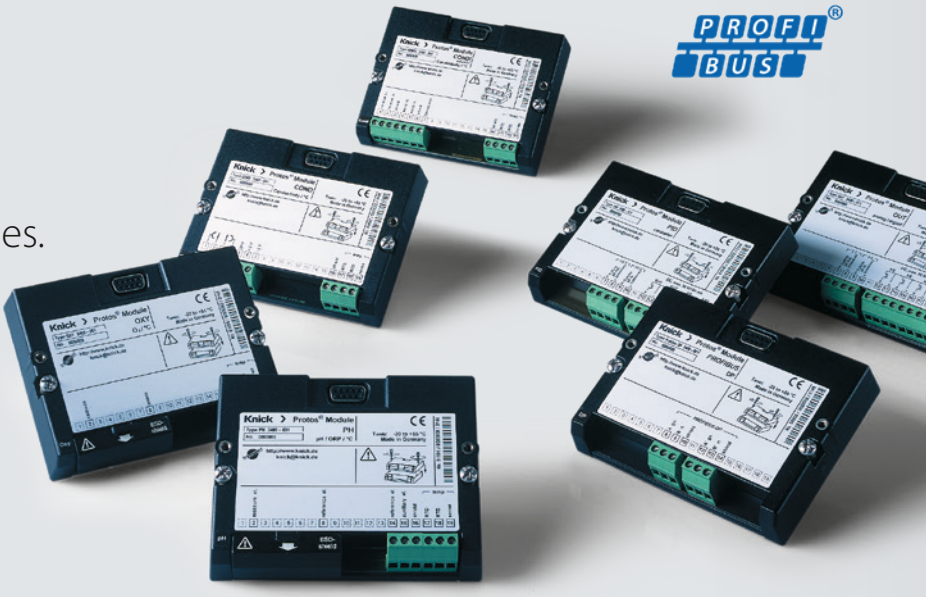
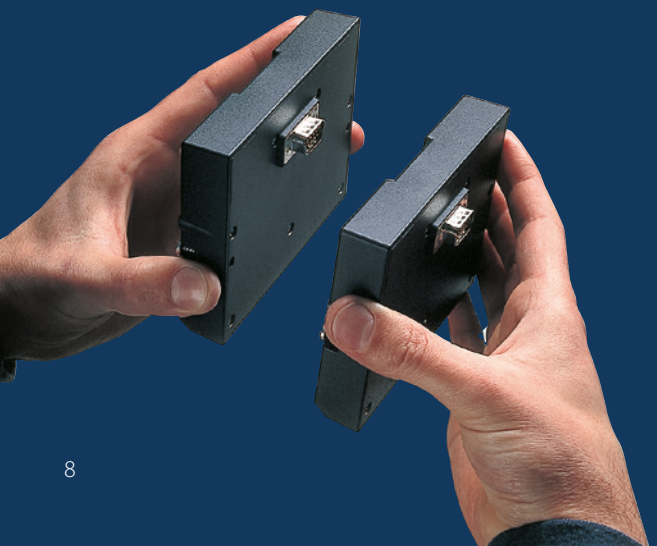
Comprehensive Variety.

Modular concept: Protos II offers space for a total of three different, freely combinable measuring, control and communication modules. Later retrofits and modifications are no problem.



Plug & Play

The modules are simply plugged into slots in any sequence and are automatically detected.
This enables easy retrofitting and conversion — always adapted to the special requirements of the measuring point.
A wide range of different measuring, control, and communication modules with various functions are available.



Measuring Modules

Multi

Multiparameter measuring modules for Memosens sensors, 1-, 2-, or 4-channel as required.
For all parameters; expandable for new sensors.

pH Measurement

Modules for operation with analog or digital sensors as required: for simultaneous measurement of pH value, ORP and temperature. Available in designs for glass, ISFET, and double high-resistance differential sensors (pNa).

Control modules enable the fully automated measurement of pH/ORP values using Unical 9000 / Uniclean 900. Available for operation with analog or digital sensors.

EtherNet/IP

Fieldbus Foundation

Conductivity Measurement

Modules for conductivity measurement with 2-/4-electrode or toroidal sensors; module versions for analog and digital sensors. Simultaneous measurement of electrical conductivity, resistivity, concentration, salinity and temperature.

Oxygen Measurement

Modules for measuring oxygen using the amperometric and optical measurement principles. For analog and digital sensors. Simultaneous measurement of the oxygen partial pressure, saturation and concentration. For standard applications and trace measurements in both aqueous media and gases.

More information at www.knick.de

Communication Modules

Ethernet and Fieldbus modules for digital communication and seamless integration into automation systems.

Output Modules

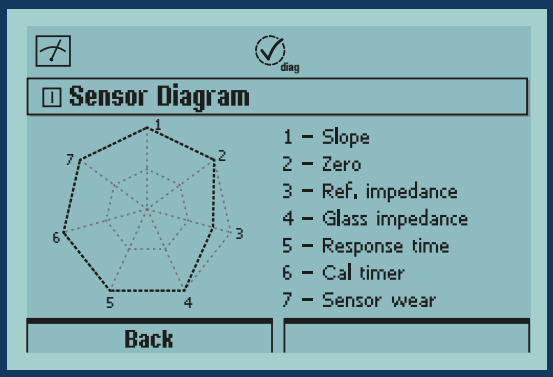
For expanding the outputs available as standard by adding passive 4–20 mA outputs and relay outputs.

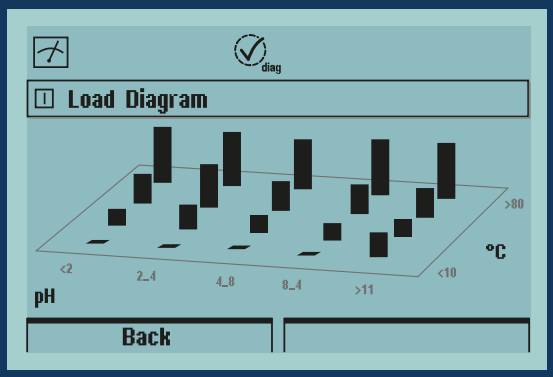
PID Controller Modules

For actuating control valves, straightway valves or metering pumps. With 2 free limit contacts for 3-point control of secondary control processes, for example.

Digital Intelligence.

The smart diagnostic functions that Protos II provides for analyzing sensor life cycles mean a significant increase in sensor service life and availability.





Sensor Diagram

Graphical presentation of the current sensor parameters for pH, ORP, and oxygen on the display in a clearly arranged radar chart — for pH measurement with slope, zero point, reference impedance, glass impedance, response time, calibration timer and sensor wear.

Smart Diagnostics Management for Optimal Process Control

- CIP, SIP and autoclave counters and information from the sensor load matrix optimize the maintenance cycle.
- Sensor wear monitor
- Display of the sensor's remaining service life
- Adaptive calibration timer
- Guided calibration procedures
- Sensoface as a sensor status indicator, can be configured to alarm message

USB

Reliable Writing and Reading with USB Memory Cards

Data Card
For recording measured values, reading out and further processing recorded measurement data on a computer and saving the configuration data of the device.

Firmware Update Card
Easy on-site update of device firmware in the case of function expansion.

Firmware Repair Card
Easy on-site update of device firmware for trouble-shooting in warranty cases.

Audit Trail Card
For seamless data recording in accordance with FDA 21 CFR Part 11. With the electronic signature function, all changes on the device are recorded and saved on the card.

ProgaLog 4000 Software

The computer software tool for offline configuration of Knick transmitters.

Device settings can easily and conveniently be configured in advance — also for multi-channel transmitter systems.
Thanks to a clearly arranged display and convenient processing in a variety of languages, Protos II can be configured for the measuring task.
The configuration data can be saved on the data card and only has to be copied to the transmitter on site.

Sensor Control and Sensor Assignment

As soon as a sensor is connected, the sensor data is checked against the configuration data. This includes the sensor type and the information saved in the sensor, such as the TAG ID and group designation.
Different user levels enable areas of competency to be assigned reliably; with password protection.

Knick

Process Analytics

– Industrial Transmitters

– Fittings

– Automatic Cleaning and Calibration Systems

– Sensors

– Portables

– Laboratory Meters

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Knick
The Art of Measuring

Knick has been among the leading manufacturers of electronic measurement devices for process analysis for more than 70 years. Today, the company alignment is still focused on a high technical level and an intensely innovative orientation.

The current product range of Knick includes unique device series also for extremely difficult applications. As a system provider, Knick can guarantee expert analysis of your measurement requirements and provide qualified advice for complete measurement loops.

www.knick.de

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