

The complete solution  
for smart sensor applications.  
Contactless. Reliable. Digital.

# Memosens





# The Company

## Perfection as the Standard

Knick is defining the future of liquid analysis with new product lines based on digital Memosens technology. From the smart sensor to the full modular measuring system, from the unique portable device with ATEX approval to comprehensive calibration, diagnostics and documentation software.



## Innovative tradition

A progressive outlook has a strong tradition at Knick. For more than half a century, the name has been a byword for exceptional quality in the manufacture of electronic measuring devices.

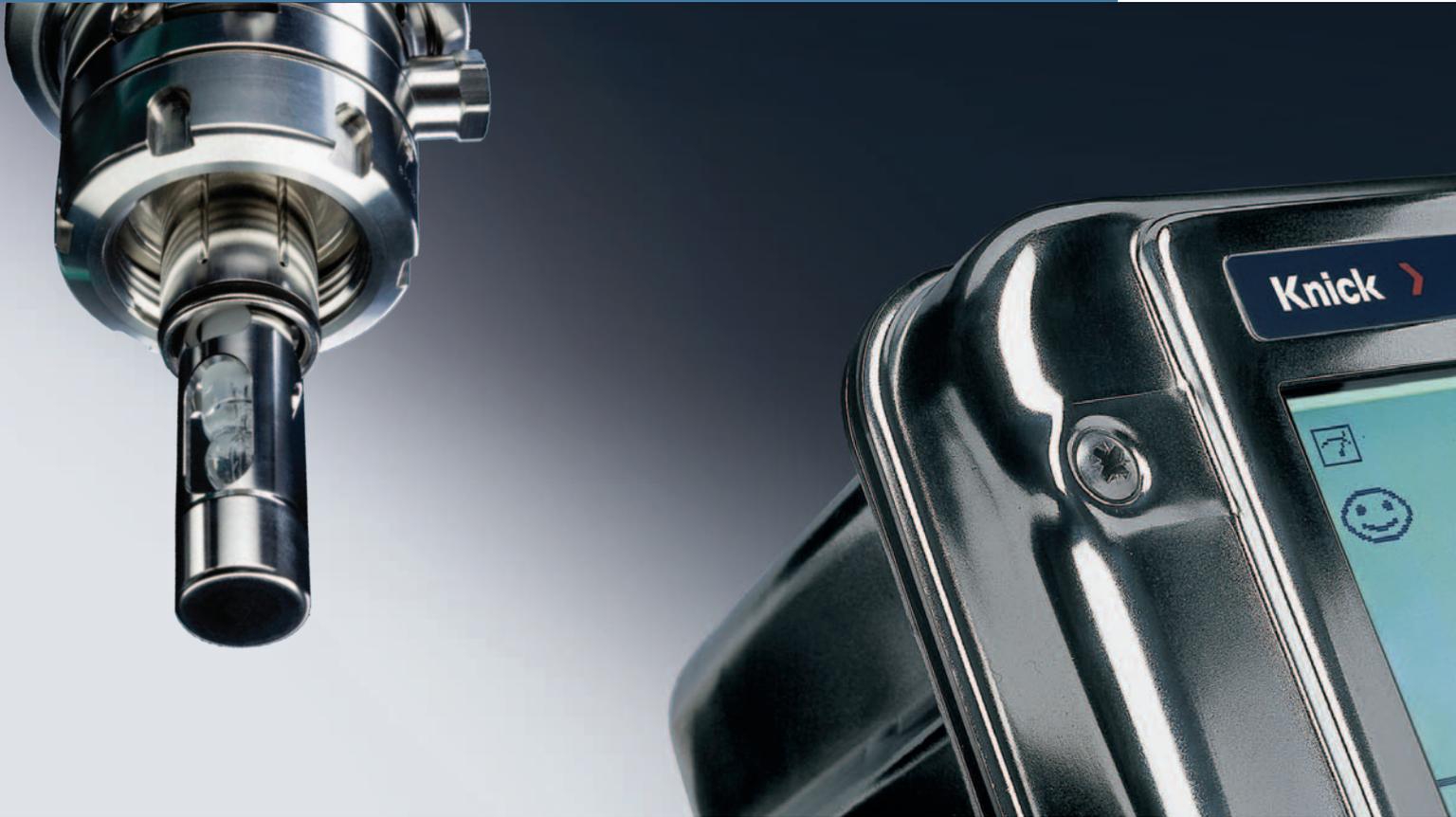
Back in 1945, the company's founder, engineer Ulrich Knick, started manufacturing high-precision zero-point-stabilized DC amplifiers which enabled the production of reliable pH meters and other precision products.

Even today, the owner-operated company maintains a high level of technological refinement and places a strong focus on innovation. A large number of patents and licensing agreements are the result.

## Superior quality

Process analyzers, isolation amplifiers, temperature transmitters and digital indicators from Knick offer above-average warranties and a wealth of unique characteristics with compelling benefits for the customer.

Great importance is attached to the topics of EMC and explosion protection – in which the company has distinguished itself through its high level of competency.



## Global presence

Knick products are used in a wide range of fields, including the chemicals industry, biotechnology, the capital goods industry and industrial automation.

Offices and agents across Europe and in key industrial nations around the world ensure the global distribution of a technology which sets new standards in reliability, durability and precision.

The company has been certified to ISO 9001 since 1993.





# Memosens The Advantages

## The Benchmark for Digital Sensors

Thanks to its outstanding properties, the Memosens technology is the ideal solution for special challenges in the measurement of pH/ORP, conductivity and dissolved oxygen. Ideal for liquid analysis in diverse industries such as chemicals, petrochemicals, pharmaceuticals, energy generation, food/beverages and water/wastewater – also in Zone 0 hazardous areas.



## The 4 Benefits of Memosens:

# 1

### Interference-free coupling

The Memosens inductive sensor connector system transfers both energy and data without contact between electrochemical sensors and analyzers.

Perfect galvanic isolation eliminates interferences from the outset. This enables reliable complex measurements even with most difficult potentials. As ground potentials no longer play a role, solution grounding or equipotential bonding is not required.

Memosens sensors can also be easily handled under adverse conditions – even if the system is connected under water.

- Perfect galvanic isolation
- Completely insensitive to
  - humidity
  - dirt
  - corrosion
  - salt bridges
  - interference potentials
- Simple connection with bayonet coupling
- Easy handling even under harsh conditions
- up to 100 m cable length





## 2 Pre-calibrated sensors

By using pre-calibrated sensors, Memosens ensures maximum availability and lower maintenance requirements at the point of measurement.

MemoSuite is used for precise sensor calibration and documentation under reproducible conditions in the lab. Even for non-specialist employees, sensors can be replaced on site in just a matter of seconds.

The considerably less time and work required for maintaining the digital Memosens sensors on site also reduces process downtimes. Together with the other benefits, such as the longer sensor lives, this results in a quick amortization of the investment.

- Plug & Measure – sensor replacement in seconds
- Maximum availability
- Longer sensor service life due to predictive servicing
- Interoperability

### Time is money

Comparison of maintenance work when changing sensors.

*Maintenance work when using Memosens sensors*



*Maintenance work when using conventional sensors*





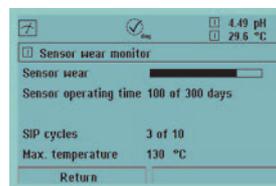
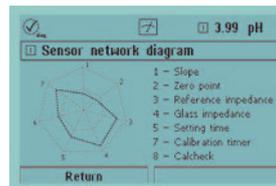
# Memosens The Advantages

## 3

### Intelligent diagnostics

Extensive diagnostics functions guarantee optimum process management. Monitoring of the sensor operating time, sensor wear, remaining lifetime, maximum temperature, calibration time and data significantly increases availability.

- Predictive maintenance
- Optimal process management with intelligent diagnostics
  - Sensor operating time
  - Sensor wear
  - Remaining lifetime (dynamically calculated)
  - Max. temperature
  - Adaptive calibration timer
  - Calibration and adjustment data
  - SIP counter





## 4

## Memosens mobile

Introducing Portavo from Knick, the world's first portable devices for pH, conductivity and oxygen with digital Memosens technology for reliable on-site measurements and sensor calibration.

The Portavo series encompasses multiparameter versions as well as designs with comprehensive data loggers and transreflective color displays.

A USB port enables connection to a PC and can also be used to charge the Li-ion battery.

Another key innovation: As the world's only portable devices with Memosens technology for liquid analysis, the Portavo 904 X series features ATEX approval for Zones 0 and 1.

- The first portable Memosens devices
- Multi-functional housing for process and laboratory
- Integrated sensor quiver, protects the sensor from drying out
- Easy sensor calibration, also on site
- Multi-parameter versions for pH, conductivity and oxygen
- Just one cable for all sensors
- Hazardous area versions available



[www.knick-international.com/portavo](http://www.knick-international.com/portavo)





# Memosens System Overview

- Chemistry
- Water
- Energy
- Pharma
- Food

## Safety Across the Board

Integrated smart sensor technology – from the sensor to the analyzer: Measuring systems with Memosens technology from Knick guarantee reliability and safety at the highest level.



**MemoSuite Basic**



**MemoSuite Advanced**

**pH / ORP**



**Conductivity**



[www.knick-international.com/memosens](http://www.knick-international.com/memosens)



**Portavo**  
Memosens mobile



**MemoRail**  
Plug & Measure



**Stratos Evo**  
4-wire  
multiparameter device



**Protos**  
Modular process  
analysis system



**Stratos Pro**  
2-wire analyzer



**Stratos MS**  
Digital  
transmitter



**Oxygen**





# Memosens Sensors



## pH Sensors

		Chem	Energy	Pharm	Food	Water	
	SE 515						<ul style="list-style-type: none"> <li>Highly affordable sensor for water treatment, surface water, wastewater, sewage plants and drinking water</li> </ul>
	SE 554	•					<ul style="list-style-type: none"> <li>Sensor for demanding industrial applications, pigments, precipitation reactions, strongly polluted media, high ionic strengths and high pressure</li> </ul>
	SE 555	•	•	•	•		<ul style="list-style-type: none"> <li>Sensor for demanding industrial applications, aggressive media, extreme pH values, poisonous media, bioprocesses and fermentation processes, sterilizable and autoclavable, CIP-capable</li> </ul>
	SE 557	•	•	•	•		<ul style="list-style-type: none"> <li>Pressurized sensor for the highest demands and greatest precision, from ultrapure water to highly aggressive and blocking media; very fast response</li> </ul>
	SE 558	•	•				<ul style="list-style-type: none"> <li>Sensor for low-conductivity media, water treatment, boiler feed water, cooling water, ultrapure water; with KCl reservoir</li> </ul>
	SE 559	•					<ul style="list-style-type: none"> <li>Broad range of industrial wastewater applications; also for low temperatures; insensitive to contamination and blocking</li> </ul>
	SE 546			•	•		<ul style="list-style-type: none"> <li>Glass-free sensor with ISFET technology for applications in the food and beverage industry as well as in cosmetics production; sterilizable and autoclavable</li> </ul>
	SE 564	•	•			•	<ul style="list-style-type: none"> <li>ORP sensor for demanding industrial applications, pigments, precipitation reactions, strongly polluted media, high ionic strengths and high pressure; with platinum electrode</li> </ul>
	SE 565	•	•	•	•		<ul style="list-style-type: none"> <li>ORP sensor for demanding industrial applications, aggressive media, poisonous media, bioprocesses and fermentation processes, electroplating, sterilizable and autoclavable, CIP-capable</li> </ul>
	SE 101						<ul style="list-style-type: none"> <li>Affordable lab sensor with shatter-proof plastic body; shock-resistant glass membrane; long lifetime with dual electrolyte junction</li> </ul>
	SE 102						<ul style="list-style-type: none"> <li>Ultra-precise lab sensor with long lifetime thanks to double electrolyte junction; rapid response time with use of electrolyte outflow</li> </ul>



## Conductivity Sensors

		Chem	Energy	Pharm	Food	Water	
	SE 604	•	•				Robust high-precision stainless steel sensor for reliable measurement of low and very low conductivity values as well as ultrapure water
	SE 605H			•	•		Hygienic and robust sensor for low and very low conductivity values, water for injection (WFI), monitoring of water quality to USP <645>; with replaceable gaskets
	SE 615					•	Reasonably priced sensor for measurement of low to medium conductivity values in the field of water treatment with low polarization dependence
	SE 630	•				•	High-precision sensor for measurement of medium to high conductivity values; corrosion-proof materials
	SE 680			•	•		Inductive sensor for highest conductivities; hygienic, for monitoring CIP processes, phase separation, salting, seawater desalination, salt spring, corrosive process media; concentration measurement
	SE 215					•	Affordable and low-maintenance lab sensor; large measuring range, automatic temperature compensation, corrosion-proof, shatter-proof design



## Oxygen Sensors

		Chem	Energy	Pharm	Food	Water	
	SE 715					•	Reasonably priced low-maintenance sensor for measurement in water/wastewater, sewage plants, ventilation control, fish farming, aquaculture
	SE 706	•		•			Robust high-precision stainless steel sensor for biotechnology, pharmaceutical industry, fermentation; hygienic, sterilizable and autoclavable, CIP-capable
	SE 707	•	•		•		Robust stainless steel sensor for high-precision measurements of oxygen traces in biotechnology, pharmaceutical industry, fermentation; hygienic, sterilizable and autoclavable, CIP-capable
	SE 315						Stable and low-maintenance lab sensor; simultaneous measurement of temperature and dissolved oxygen up to 45 °C; corrosion-proof, shatter-proof design





# Memosens Sensor Management

## MemoSuite

The flexible and intuitive software enables easy calibration of Memosens sensors in the lab. Calibration under adverse ambient conditions on site is no longer necessary. The only thing required there is the quick and uncomplicated replacement of the used sensors with pre-calibrated sensors.



Extensive buffer management is offered by the convenient grouping of separate buffer sets from a large buffer library. It is also a simple matter to enter special, user-specific buffer tables incl. temperature values.

## MemoSuite Basic

calibrates Memosens sensors

## MemoSuite Advanced

in addition to calibration, also performs diagnostics and database documentation. Up to 10 sensors can be calibrated simultaneously. The database meets the requirements of GMP and FDA CFR 21 Part 11.





- Measured value display
- User management
- Sensor data and adjustment data
- Sensor types
  - pH
  - ORP
  - conductivity
  - oxygen

- Simultaneous calibration of 10 sensors
- Selectable calibration modes
- GMP and FDA CFR 21 Part 11

- Tabular presentation of all sensor parameters
- Database functions:
  - selecting and arranging columns
  - sorting and filtering
  - comparing and grouping
  - calibration reports using personalized templates
  - export in Excel file
  - printing

- Graphical representation of the calibration history
- Selection of sensors to be shown
- Absolute and relative time axis

- Graphical representation of temperature and pH load
- Characteristics and load conditions:
  - initial start-up and operating time
  - maximum operating temp.
  - number of calibrations and sterilizations

- Integrated, extensive buffer library
- Creation of buffer groups
- Entry of individual buffer sets





# Memosens Analyzers

## The Art of Expertise

The current product range from Knick comprises an extensive selection of Memosens devices for digital liquid analysis – as required for pH, ORP, conductivity and/or dissolved oxygen. With unique solutions, even for complex measurement situations.



[www.knick-international.com/memosens](http://www.knick-international.com/memosens)



## MemoRail

### Plug & Measure

Ultra-compact, affordable analyzer in a slim modular housing just 12.5 mm wide; easy configuration via DIP switches. 2 current outputs, 4 to 20 mA, active or passive. Either with 24 V DC power supply or 90 to 230 V AC broad-range power supply.

## Portavo

### Memosens mobile

The unique portable devices with Memosens technology. Multi-parameter functionality; high-resolution transreflective color display with scratch-proof mineral glass screen. Li-ion battery, USB port and comprehensive data logger. Hazardous area versions available.



## Stratos Pro

### 2-wire transmitter with unrivaled functionality

A wide range of technological features make Stratos Pro an unrivaled multi-talent in 2-wire technology. A multicolor backlit display, extensive diagnostics functions, digital and analog inputs and 2 power outputs are just some of these features. All this also for hazardous areas.

## Stratos MS

### Affordable digital Memosens analyzer

One device for the digital measurement of pH, conductivity and oxygen. Configurable for the desired parameter. Intuitive operation is supported by icons, plain text messages and a 2-color backlit display.

## Stratos Evo

### 4-wire multiparameter device for analog, digital and Memosens sensors

Intuitive operation via a color-coded user interface for optimal visualization of operating states. An efficient HighPower sensor supply allows connecting external 2-wire transmitters.

## Protos

### Modular process analysis system for highest demands

A multitude of available measuring and communication modules integrate Protos in all measuring tasks and environments. Also for use in hazardous areas. As required, simultaneous recording of several process parameters in any combination. Extensive asset management functions, high-resolution graphical display, VariPower power supply 20 to 265 V AC/DC.





Interface Technology

Indicators

Process Analytics

Portables

Laboratory Meters

Sensors

Fittings

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