

# Instrumentation for Process Analytics

Transmitters, Analyzers, & Automated Systems

Memosens digital and analog analytical measurements



# Analytical Measurements Can Be Painful



## We're Changing the Status Quo of Process Analytics

The following issues plague the industry:

- Regularly scheduled calibrations due to drift
- Calibrating sensors in less than ideal conditions — harsh weather, extreme temperatures, or at the worst possible time
- Sensor replacement is inconvenient and time consuming
- Sensor performance is not repeatable
- Unable to tell if the sensor is still good, so it is thrown away

These pains waste time, cost money, and compromise safety. The status quo is no longer acceptable. There is a better way, and it's called **Memosens®**.



## Memosens Digital Technology

### Memosens<sup>®</sup> Instruments

#### Safe

- Automated operation in hazardous locations
- Significantly reduced in-field maintenance
- System and instrument self-diagnostics and reporting

#### Informative

- Clear and intuitive user interface
- Status monitoring (NAMUR NE 107)
- HART/AMS compatible
- Ethernet/IP and PROFINET capable

#### Versatile

- One device for pH, ORP, conductivity, and dissolved oxygen
- Compatible with Memosens, ISM, or analog sensors
- Modular design, adaptable to virtually any application

# Stratos Series

## Stratos Multi

### Versatile Multi-Parameter Process Analyzer

- Operation of Analog or Memosens® sensors
- High resolution color graphic display with easy to follow diagrams and icons for quick analysis of the measurement loop
- Sensoface provides information on sensor condition
- Memory card for storage and transfer of configurations, software updates, and measurement data
- One device for pH/ORP, conductivity, or oxygen
- Sensor diagram
- 4-wire, universal power supply



## Stratos Evo

### Versatile Multi-Parameter Process Analyzer

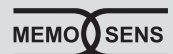
- Operation of Analog or Memosens® sensors
- Multi-color backlit display indicates conditions
- Sensoface provides information on sensor condition
- Modular design with large terminal compartment
- One device for pH/ORP, conductivity, or oxygen
- Removable screw terminals
- 4-wire, universal power supply











## Stratos Pro A2

### Versatile Process Analyzer in Hazardous Areas

- Multi-color backlit display indicates conditions
- Sensoface provides information on sensor condition
- Modular design with large terminal compartment
- Operation of Analog or Memosens® sensors
- Removable screw terminals
- 2-wire, loop-powered
- FM/CSA approvals





Model	Special Features & Applications	Multi-Parameter	Multi-Channel	Relays	Digital Input for Control or Hold	Memosens	Analog	4-wire	2-wire	4...20 mA Input	Input for SE 740	Ethernet / IP	Profinet	HART	PROFIBUS DP	PROFIBUS PA / Foundation	Fieldbus	Pfaudler Sensor Compatible
Stratos Eco 	4 wire analog transmitter			3			•	•										
Stratos MS 	Memosens multi-parameter transmitter, Display: White and Red Alarm	Digital		2	1	•	•											
Stratos Evo 	2-channel, multiparameter Memosens or analog transmitter Display - Colored Backlighting, Memosens Diagnostics	Digital & Analog	Digital: pH/pH, pH/DO Analog: Cond/Cond	4	2	•	•	•		•	•			•				•
Stratos Evo DP 	Transmitter with HART communication or PROFIBUS DP Display - Colored Backlighting, Memosens Diagnostics	Digital & Analog		2	1	•	•	•			•				•			
Stratos Multi 	4-wire, multi-parameter transmitter Display - Color graphic	Digital & Analog	2-channel in any combination (measurement parameter or analog/digital)	3	2	•	•	•		•	•	•	•					•
Stratos Pro A2 	2-wire, loop powered Memosens or analog transmitter Display - Colored Backlighting, Memosens Diagnostics		Analog: Cond/Cond		2	•	•		•	•				•				•
Stratos Pro A4 	4-wire, Memosens or analog transmitter Display - Colored Backlighting, Memosens Diagnostics		Analog: Cond/Cond		2	•	•	•		•				•				•
Stratos Pro FF/PA 	Transmitter with HART communication, PROFIBUS PA, or FOUNDATION-Fieldbus. Display - Colored Backlighting, Memosens Diagnostics	Digital & Analog			1	•	•		•							•		•



# Protos®

## Protos II 4400

Modular Measuring System for Application in Hazardous & Safe Areas

- 4-wire FM/CSA approved, intrinsically safe, non-incendive system with active outputs; suited for Class 1 Div 2 Groups ABCD
- Memory card for storage and transfer of configurations, software updates, and measurement data
- Stainless steel enclosure, either with hygienic surface or corrosion-proof powder coating
- Data recording and backup according to FDA 21 CFR Part 11
- Measurement with analog or Memosens sensors
- Profibus PA / FOUNDATION Fieldbus
- 2-channel measurement recorder
- Sensocheck sensor monitoring
- Sensor diagram
- Adaptive cal timer

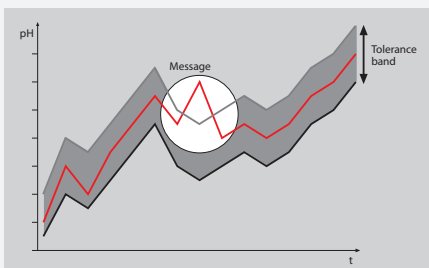


Model	Special Features & Applications	Multi-Parameter	Multi-Channel	Relays	Digital Input	Memosens Analog	4-wire	2-wire	4...20 mA Input	Input for SE 740	PROFINET	PROFIBUS PA / Foundation Fieldbus	Pfaudler Sensor Compatible	Ethernet / IP
 Protos II 4400	Matrix Display, Memosens Diagnostics, Unical/Uniclean Probe Controller**, PID capable	●*	●*	Yes	Yes	●*	●*	●	●*	●	●	●*	●*	●
 Protos 4400X	Matrix Display, Memosens Diagnostics, Unical/Uniclean Probe Controller**	●*	●*	Yes	Yes	●*	●*	●	●*	●	●	●*	●*	●

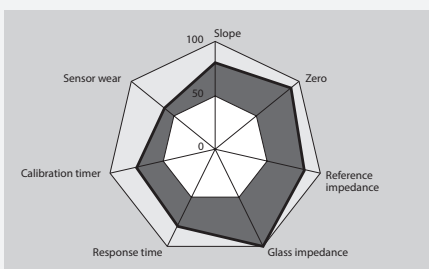
\* Up to 6 inputs  
 \*\* Unical/Uniclean with Protos 3400

## Universally Interchangeable Modules

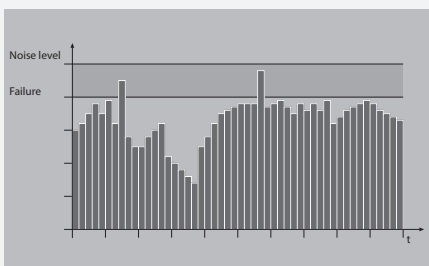
Various user-defined plug-in measuring modules for measurement and control functions can be combined depending on the measuring task. They facilitate subsequent trouble-free expansion or modification. Communication modules for functional expansion: In addition to the OUT module for the expansion of the output options already available as standard, other modules are also available, including modules for PROFINET and Ethernet/IP.



KI recorder



Sensor Network Diagram



ServiceScope®

## Protos Functions

### Early alarm detection with the KI recorder

The KI recorder follows the course of the process and transmits a message in the event of a deviation. The monitoring is always carried out for the primary measured variable, e.g. pH or conductivity and at the same time the temperature. The visualization is graphical with process and limit value variation for both variables.

### Proportional Integral Derivative Controller

A convenient PID controller uses a quasi-continuous pulse length/pulse frequency for valve actuation or pump metering. Analog control valves are actuated via 2 passive current outputs. There are also two free limit contacts which can be used for 3-point control of secondary control processes.

### Sensor diagram for pH measurement

Graphical representation of current sensor parameters in a network diagram on the display – with slope, zero, reference impedance, glass impedance, response time, calibration timer, sensor wear.

### ServiceScope®

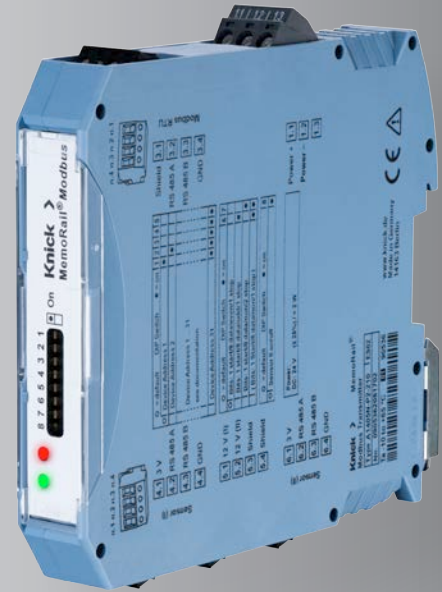
This function monitors the pH input signal and checks whether it remains in the control range. Moreover, the representation of the noise level over time allows the distinction to be made between individual disturbances, periodic and broad-band disturbances, which is helpful for troubleshooting. In this way, it is possible to simply detect regularly recurring disturbances, e.g. large consumers which are regularly switched on or off. An error message is generated if the noise level exceeds the failure limit.





# MemoRail Series

## MemoRail Modbus A1405N

Compact, cost-efficient Memosens digital transmitter/analyzer with Modbus RTU

- Sensor diagnostics can be pulled along with process variables through Modbus
- Operation of Memosens sensors in single channel or dual channel version
- Compact, space saving, modular housing, DIN rail mount
- Calibration from PLC/HMI
- Low cost



Model	Special Features & Applications	Multi-Parameter	Multi-Channel	Memosens Analog	4-wire	2-wire	Input for SE 740	Modbus
 	Compact, digital DIN rail mounted multi parameter transmitter	Digital	No	•	•			
 	Compact, DIN rail mounted, Modbus digital and calibration through RTU	Digital	Yes	•	•	•	•	

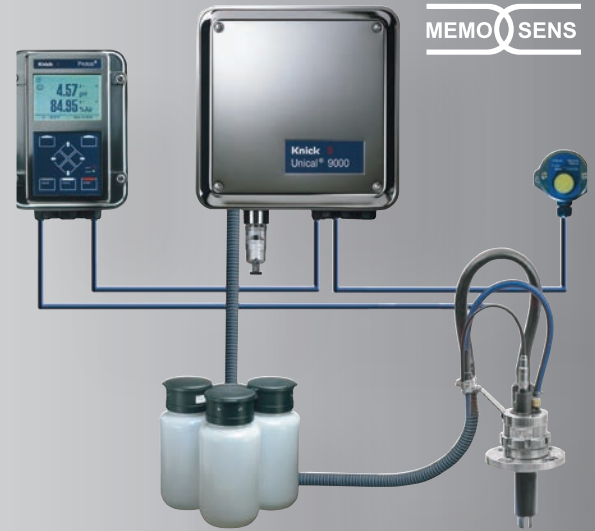







# Automated Systems

## UniCal 9000

### Automatic Calibration and Cleaning System

- Immediate readiness for measurement after production interruption since sensor is safely stored in liquid
- Safety monitoring of the compressed air and water supply, as well as the probe position and buffer/cleaning solution levels
- Time-controlled cleaning and calibration means fewer interruptions in production
- Longer sensor life due to user programmable measurement intervals and regular cleaning
- Modular design, adaptable to virtually every measuring task
- Operation in hazardous locations (all system components)
- Reduced maintenance with automatic calibration



Model	Special Features & Applications	Metering Pumps	Cleaning	Calibration	IP 65, NEMA 4X	IP 66, NEMA 4X	Service Switch	Buffer Level Monitoring	Integrated Leak Detection	Optional Heated Media Connection
 	Fully automated cleaning and calibration	3	•	•	•		•	•	•	•
 	Fully automated cleaning	1	•		•				•	•
	Simple automated cleaning	0	•			•				

# Memosens System Overview

## The Complete Digital Solution

Integrated smart sensor technology — from the sensor to the analyzer:  
Measuring systems with Memosens® technology guarantee reliability and performance at the highest level.

Sensor Management

Sensors & Fittings

Instruments

MemoSuite Basic



MemoSuite Advanced



Portavo Memosens mobile

pH/ORP



Conductivity



## Memosens



● **Protos**  
Modular process analysis system



● **MemoRail**  
Compact digital analyzer



● **Stratos**  
Intuitive field mounted analyzer



● **Oxygen**



● **Fittings**  
Static, retractable, and immersion holders. Flow-through vessels



Sensors

**Instruments**

Sensor Management

Fittings and Hardware

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