MemoRail

The Essence of Measuring

MemoRail is the first genuinely compact, digital analyzer for measuring pH values, ORP, conductivity, oxygen and temperature with Memosens sensors. Two analog active / passive 4 to 20 mA outputs supply the measured values for the process value and temperature to the process control system or a PLC.

Plug & Measure
MemoRail is immediately ready for measurement on connecting a pre-calibrated Memosens sensor. "Used" sensors can simply be replaced.

Memosens
Optimum availability of the point of measurement is achieved by using pre-calibrated sensors with contact-less Memosens technology. Calibration is no longer carried out on site but under reproducible conditions in the laboratory with the new MemoSuite software tool. Individual sensor data are always directly assigned to each Memosens sensor. Problems at the connector involving humidity, corrosion or even defective galvanic isolation are a thing of the past.

Compact
The highly space-saving modular housing of the MemoRail devices is only 12.5 mm wide.

Versatile
With its simple configuration via DIP switches, MemoRail is set up only once for the measurement parameters and ranges. For precise adjustment to the application, a range of variants is available: models with one or two analog current outputs which can be active or passive. The unit is supplied with 24 V DC via screw terminals / bus connectors or with 90 to 230 V AC via the integrated VariPower broad-range power supply. LEDs report operating and sensor states.

Cost-Efficient
The outstanding properties of MemoRail enable the implementation of measuring stations with low overall costs, especially in combination with modern Memosens sensors specially tailored for use with MemoRail.
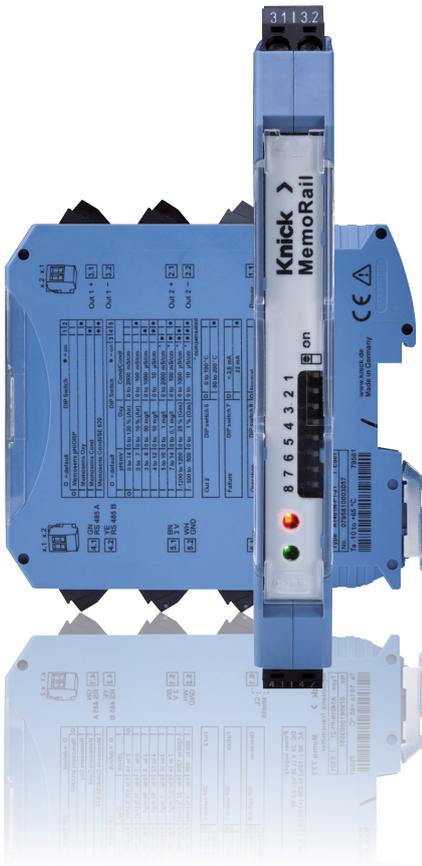
Applications
MemoRail offers economical alternatives in applications such as:
– drinking water
– wastewater, sewage plants
– aquaria, fish farms, greenhouses
– fermentation
– rinsing equipment
– car wash systems
– water treatment plants/equipment

With its narrow modular housing, MemoRail is perfectly suited to installation in restricted spaces – eg, in control cabinets, fermenters or on ships.

Explosion Protection
MemoRail is designed for operation in UL hazardous areas.

MemoRail A 1401

MEMO SENS

Knick ›

The Facts

– Modular housing,
  12.5 mm wide

– Measurement of pH value,
  ORP, conductivity, oxygen
  and temperature

– Memosens communication

– 2 current outputs 4 to 20 mA,
  active or passive

– Power supply 24 V DC
  (screw terminals or bus connection)
  or VariPower broad-range power supply
  90 to 230 V AC

– Simple configuration
  via DIP switches

– LEDs report operating
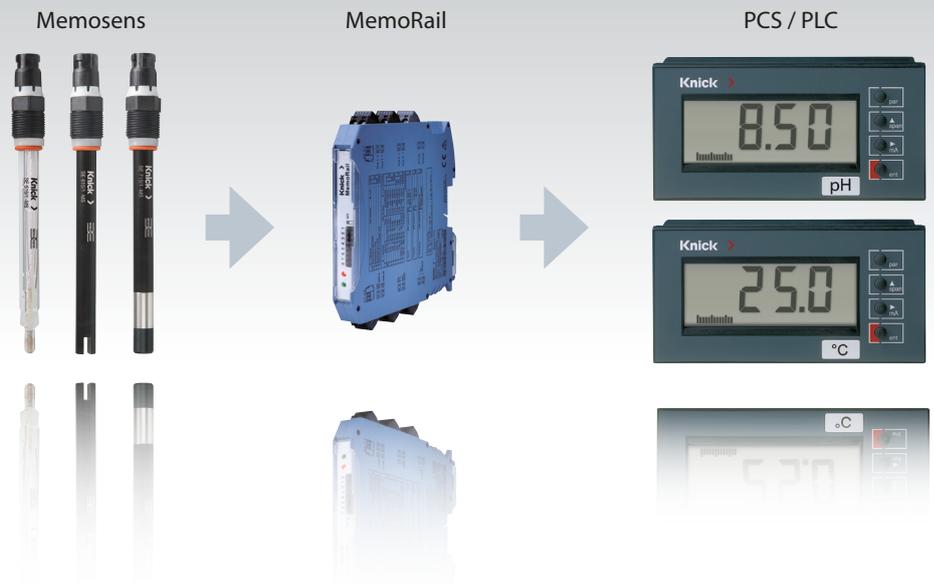 and sensor states

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Memosens Sensors
pH, Cond, Oxy, Temp

MemoRail
Digital analyzer
for Memosens sensors

MemoSuite
Software tool for calibration,
sensor diagnostics and
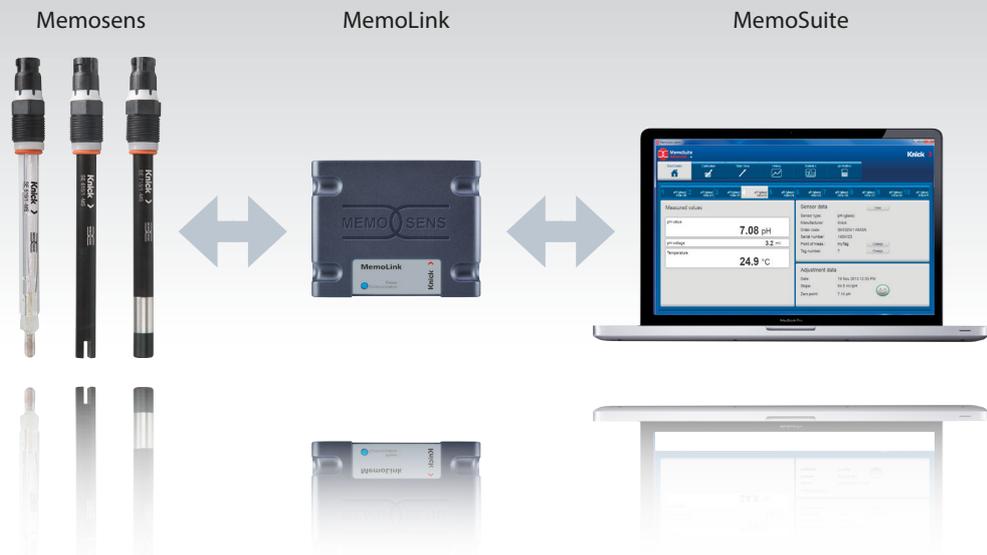database documentation

MemoRail

The Principle

Plug & Measure
MemoRail supplies power to the Memosens sensors and converts the digital measuring signals into output currents of 4 to 20 mA for connection to the process control system or to a PLC.

Memosens   MemoRail   PCS / PLC

Calibration, Diagnostics, Documentation
MemoSuite calibrates Memosens sensors. Additional functions are the sensor diagnostics and database documentation. MemoLink establishes the connection between Memosens sensor and PC.

Memosens   MemoLink   MemoSuite

MemoRail A 1401

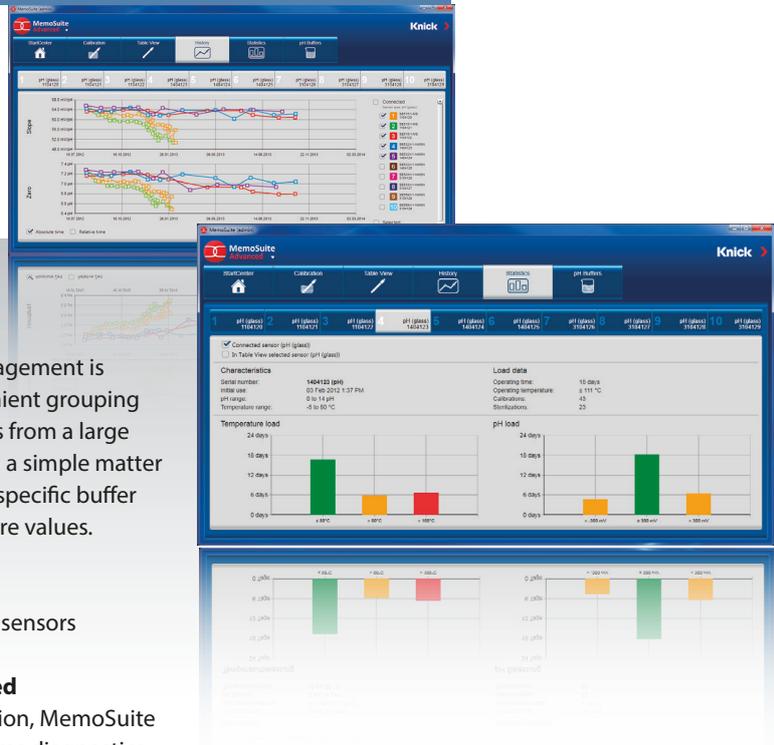## MemoSuite

The Software Tool

Fast and User-Friendly

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, MemoSuite Advanced 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.

Online Measuring Point

Slide & Check.

Contactless Measured Value Queries

MemoView
Mobile push-on tool for the contactless visualization of Memosens measuring points without a display. Thanks to inductive data transmission, neither the process nor the measurement are interrupted.

MemoRail A 1401

Portavo 907/908 Multi
Multiparameter portable devices for
Memosens sensors. With data logger,
USB port and full graphic display.
Measurement and sensor data will be
saved directly; they can be called up
and processed further.

MemoRail
Extremely compact transmitter in
12.5 mm modular housing, without
display. For pH/ORP, conductivity, oxy-
gen and temperature measurement
using Memosens sensors.
Also in 2-channel version.

Memosens

The Sensors

pH Measurement

Memosens sensors for measuring pH, ORP and temperature. Perfectly adaptable to miscellaneous process requirements due to different pH glasses or ISFET, reference systems, designs or lengths.

Conductivity Measurement

2-electrode sensors with Memosens technology for measuring very low to medium conductivities. Digital conductivity sensors with extremely wide measuring range up to highest conductivities. Applications starting from ultrapure water to concentration determination.

Oxygen Measurement

Amperometric Memosens sensors for measuring very low oxygen values up to pure oxygen, dissolved in water or gaseous. Applications: water, fermentation, measurement of traces

MemoRail A 1401

Product Line

MemoRail		A1401	☐ – P1 – ☐☐ – ☐☐☐☐
Explosion protection	Without		N
	UL Class 1 Division 2		B
Outputs	1 x active		1
	2 x active		2
	1 x passive		3
	2 x passive		4
Power supply	24 V DC, 90 ... 230 V AC (connection via terminals)		1
	24 V AC (connection via terminals or bus connector)		0
Customer-specific ranges			– n n n n

MemoView	Length	Order No.
MemoView incl. MemoView cable	2.9 m / 9.51 ft	ZU 1059
MemoView cable	2.9 m / 9.51 ft	ZU 1060
Portavo 907		907 Multi pH
		907 Multi Cond
		907 Multi Oxy
Portavo 908		908 Multi

MemoSuite Basic	Length	Order No.
MemoSuite Basic with calibration function		SW-MS1400-B
Memosens lab cable (Ex and non-Ex, M12 plug)	1.5 m / 4.92 ft	CA/MS-001XDA-L
	2.9 m / 9.51 ft	CA/MS-003XDA-L

MemoSuite Advanced	Length	Order No.
MemoSuite Advanced with calibration function, diagnostics, database, 1 channel		SW-MS1400-A
Memosens lab cable (Ex and non-Ex, M12 plug)	1.5 m / 4.92 ft	CA/MS-001XDA-L
	2.9 m / 9.51 ft	CA/MS-003XDA-L

Second Channel (for MemoSuite Advanced only)	Length	Order No.
MemoLink		ML1400
Memosens lab cable (Ex and non-Ex, M12 plug)	1.5 m / 4.92 ft	CA/MS-001XDA-L
	2.9 m / 9.51 ft	CA/MS-003XDA-L

Indicators	Order No.
Process Indicator 830 S2 with two min/max outputs	830 S2. 290
Process Indicator 830 X S2 with two min/max outputs (Ex)	830 S2. 291

Power Supply	Order No.
IsoPower A 20900 H4, 24 V DC, 1 A, broad-range power supply 100 ... 240 V AC	A 20900 H4

DIN Rail Bus Connector	Order No.
for tapping of supply voltage. Routing to ZU 0628 DIN-rail bus connector, number required: supply towards left = 1, supply towards right = 2	ZU 0678
Power supply bridging for one MemoRail unit each	ZU 0628

Specifications

Memosens input	Interface for Memosens	
	Power supply	$V_0 = 3.05 \ldots 3.15$ V/ $R_i < 5$ ohms / $I \geq 8$ mA
	Interface	RS 485
	Transfer rate	9600 Bd
	Max. cable length	100 m
Output 1 (OUT 1)	With internal or external supply (optional)	
	Internally supplied	Current source 4 ... 20 mA / 10 V
	Externally supplied (order version)	Current sink 4 ... 20 mA / 3 ... 30 V SELV (power supply with double / reinforced insulation)
	Measured variable	pH/ORP, OXY, Cond, CondI
	Characteristic	Linear, rising
	Overrange	< 3.6 mA or 22 mA signal for error messages, selectable
	Measurement error	< 0.25% current value + 0.025 mA
	Temperature coefficient	< 50 ppm/K full scale.
	Span	Adjustable
Output 2 (OUT 2)	With internal or external supply (optional)	
	Internally supplied	Current source 4 ... 20 mA / 10 V
	Externally supplied (order version)	Current sink 4 ... 20 mA / 3 ... 30 V SELV (power supply with double / reinforced insulation)
	Measured variable	Temperature
	Characteristic	Linear, rising
	Overrange	< 3.6 mA or 22 mA signal for error messages, selectable
	Measurement error	< 0.25% current value + 0.025 mA
	Temperature coefficient	< 50 ppm/K full scale
	Span	Adjustable
Power supply	90 (-10%) ... 230 (+ 10 %) V AC; < 5 VA, 45 ... 65 Hz 24 (± 25 %) V DC, < 2.5 W	
	Supply through DIN rail bus connector (option) Supply: 24 (± 25 %) V DC, < 2.5 W	
EMC	EN 61326	
	Emitted interference	Class B (residential area)
	Immunity to interference	Industry
Data retention	Parameters > 10 years	
RoHS conformity	EU directive 2011/65	
Electrical safety	Protection against electric shock by protective separation of all extra-low-voltage circuits against mains acc. to EN 61010-1 Overvoltage category II, pollution degree 2	
Isolation	3-port isolation between: – Sensor input (MEMOSENS) – Outputs (OUT1/OUT2) – Power supply (POWER)	
Test voltage	3.6 kV AC across power supply and sensor input/outputs 2.2 kV AC across sensor input and outputs	
Approvals USA, Canada	cULus Listed, Open-Type Process Control Equipment for Use in Hazardous Locations, File: E340287	
	cULus Listed, Open-Type Process Control Equipment for Use in Hazardous Locations, File: E308146 (nur A1401B)	

Specifications

Explosion protection (A1401B only)	USA, Canada:	Class I, Div. 2, Groups A, B, C and D Class I, Zone 2, Group IIC
Nominal operating conditions	Ambient temperature	-10 ... +65 °C
	Transport/ Storage temperature	-25 ... +85 °C
	Humidity	< 85 %
	Altitude	up to 2000 m
	Power supply	AC: 90 (-10%) ... 230 (+10%) V / 45 ... 65 Hz DC: 24 (±25 %) V Overvoltage category II, pollution degree 2 (to EN 61010 Part 1)
Housing	12.5-mm modular housing, dimensions (114.5 x 99.0 x 12.5) mm	
	Design	P1 12.5 with screw terminals (encoded)
	Material	PA 66
	Housing color	Pigeon blue (RAL 5014)
	Ingress protection	IP 40 (for models with rail bus supply option only, when installed), terminals IP 20
	Mounting	For 35 mm top-hat rail (EN 50022)
	Connections	12 terminals, conductor cross-section max. 2.5 mm^2 AWG 20-12, tightening torque 0.7 Nm, min. cable temperature rating 70 °C
	Terminal color	Input terminals: black (RAL 9005) Output terminals: black (RAL 9005) Supply terminals: bluish gray (RAL 7031)
	Weight	Approx. 120 g
MemoView functionality	from firmware 1.4.0	