Portavo 904 X Multi

The world's only portable multiparameter analyzer for liquid analysis in hazardous locations. Ideal for applications in the process industry.

For the first time, Portavo makes it possible to check process measuring points directly on site. For all Memosens pH, ORP, conductivity, and amperometric oxygen sensors.

Up to 5,000 values can be recorded using the integrated data logger. The MemoLog function enables the logging of calibration data from various Memosens measuring points, which can then be easily transferred to a PC via the USB interface. The Paraly SW 112 software enables easy management of all recorded data.

Custom pH Calibration
Cal SOP

The new Cal SOP calibration procedure allows pH sensors to be checked with up to 3 calibration points. A buffer is used as the verification buffer. The buffer set for each calibration point can be separately selected, thus also allowing their order to be determined.
Custom buffer solutions can be used, or choose from a list of commercially available buffer sets, e.g., CaliMat, NIST, and DIN.
A maximum permissible deviation (Delta pH) is entered for the verification buffer.

Security Package, Including
User Management

Professional user management regulates access to the device and the sensor.
- Increased security for configuration, calibration, measurement data, and data logger settings.
- No unauthorized interventions during the operating cycle
- Up to 4 user profiles can be set
- Different access rights can be established

Depending on the user's experience, the role profile can optionally be defined for configuration of the device and sensor or for sensor calibration. This clearly minimizes the risk of inadvertently changing settings.

Greater Reliability During Operation

Memosens sensors can be assigned directly to the Portavo 90 Multi using the data stored in the sensor, such as
Sensor type
TAG
Group
Unambiguous assignment of the sensor to the device reduces the potential for errors. This ensures that only the right sensors are used for the selected measuring point.

Multiparameter

Facts and Features

- Portable multiparameter analyzer for Memosens sensors
- Sensor quiver protects the sensor from drying out and damage
- Oxygen measurement: Measurement in liquids or in the gaseous phase
- Can be used with toroidal conductivity sensors with Memosens protocol
- Sturdy housing with IP66/67 protection, also suitable for outdoor use
- Data logger with 5,000 values
- Micro USB port and Paraly SW 112 operating software
- Mineral glass screen can still be read perfectly after many years
- Use in hazardous locations
- Ideal for applications in the process industry
- Custom pH calibration Cal SOP
- User management for access control
- Sensor verification for clear assignment of the sensor to the device via sensor type, TAG, or group
- Temperature detector adjustment in the Memosens sensor (offset correction)

MEMOSENS

3-year warranty

Original size

Specifications

Memosens pH input, ISFET	M8 socket, 4-pin, for Memosens laboratory cable, or M12 socket for Memosens sensors		
	Display ranges[4)]	pH	–2.000 ... 16.000
		mV	–2000 ... 2000 mV
		Temperature	–50 ... 250 °C / –58 ... 482 °F
Sensor adjustment*)	pH calibration		
Operating modes*)			
	Calimatic	Calibration with automatic buffer recognition	
	Manual	Manual calibration with entry of individual buffer values	
	ISFET zero	Calibration of ISFET sensors	
	Data entry	Data entry of zero and slope	
	Cal-SOP (TAN option)	Software option SW-P001: Defining the pH buffers and the sequence of the calibration steps; defining the delta deviation for the verification buffer	
	Temperature calibration (TAN option)	Software option SW-P002: Temperature detector adjustment in the Memosens sensor (offset correction)	
Calimatic buffer sets*)	–01– Mettler-Toledo	2.00/4.01/7.00/9.21	
	–02– Knick CaliMat	2.00/4.00/7.00/9.00/12.00	
	–03– Ciba (94)	2.06/4.00/7.00/10.00	
	–04– NIST Technical	1.68/4.00/7.00/10.01/12.46	
	–05– NIST Standard	1.679/4.006/6.865/9.180	
	–06– HACH	4.01/7.00/10.01/12.00	
	–07– WTW techn. buffers	2.00/4.01/7.00/10.00	
	–08– Hamilton	2.00/4.01/7.00/10.01/12.00	
	–09– Reagecon	2.00/4.00/7.00/9.00/12.00	
	–10– DIN 19267	1.09/4.65/6.79/9.23/12.75	
	–U1– (User)	Loadable via Paraly SW 112	
Permissible calibration range	Zero point	6 ... 8 pH	
	Slope	Approx. 74 ... 104 %	
	ISFET	–750 ... 750 mV	Operating point (asymmetry)
Calibration timer*)	Interval 1 ... 99 days, can be deactivated		
Sensoface	Provides information on the condition of the sensor		
	Evaluation of	Zero point/slope, response time, calibration interval	
Memosens ORP input	M8 socket, 4-pin, for Memosens laboratory cable, or M12 socket for Memosens sensors		
	Display ranges[4)]	mV	–2000 ... 2000 mV
		Temperature	–50 ... 250 °C / –58 ... 482 °F
Sensor adjustment*)	ORP calibration (zero offset)		
	Permissible calibration range	ΔmV (offset)	–700 ... 700 mV
	Temperature calibration (TAN option)	Software option SW-P002 for temperature detector adjustment in the Memosens sensor (offset correction)	

Multiparameter

Specifications

Conductivity input, Memosens	M8 socket, 4-pin, for Memosens laboratory cable, or M12 socket for Memosens sensors		
	Measuring cycle	Approx. 1 s	
	Temperature compensation	Linear 0 ... 20 %/K, adjustable reference temp. nLF: 0 ... 120 °C / 32 ... 248 °F NaCl (ultrapure water with traces) HCl (ultrapure water with traces) NH3 (ultrapure water with traces) NaOH (ultrapure water with traces)	
Display resolution[5] (autoranging)	Conductivity	0.001 µS/cm	($c < 0.05$ cm^{-1})
		0.01 µS/cm	($c = 0.05$ ... 0.2 cm^{-1})
		0.1 µS/cm	($c > 0.2$ cm^{-1})
	Resistivity	00.00 ... 99.99 MΩ • cm	
	Salinity	0.0 ... 45.0 g/kg	(0 ... 30 °C / 32 ... 86 °F)
	TDS	0 ... 5000 mg/l	(10 ... 40 °C / 50 ... 104 °F)
	Concentration	0.00 … 100 wt%	
Concentration determination	NaCl	0 - 26 wt% (0 °C / 32 °F) ... 0 - 28 wt% (100 °C / 212 °F)	
	HCl	0 - 18 wt% (-20 °C / -4 °F) ... 0 - 18 wt% (50 °C / 122 °F)	
	NaOH	0 - 13 wt% (0 °C / 32 °F) ... 0 - 24 wt% (100 °C / 212 °F)	
	H_2SO_4	0 - 26 wt% (-17 °C / -1.4 °F) ... 0 - 37 wt% (110 °C / 230 °F)	
	HNO_3	0.0 - 30 wt% (-20 °C / -4 °F) ... 0 - 30 wt% (50 °C / 122 °F)	
	H_2SO_4	94 - 99 wt% (-17 °C/ -1.4 °F) ... 89 - 99 wt% (115 °C / 239 °F)	
	HCl	22 - 39 wt% (-20 °C / -4 °F) ... 22 - 39 wt% (50 °C / 122 °F)	
	HNO_3	35 - 96 wt% (-20 °C / -4 °F) ... 35 - 96 wt% (50 °C / 122 °F)	
	H_2SO_4	28 - 88 wt% (-17 °C / -1.4 °F) ... 39 - 88 wt% (115 °C / 239 °F)	
	NaOH	15 - 50 wt% (0 °C / 32 °F) ... 35 - 50 wt% (100 °C / 212 °F)	
Sensor adjustment	COND cell constant	Input of cell constant with simultaneous display of conductivity value and temperature	
	CONDI cell constant	Input of cell constant with simultaneous display of installation factor and zero point	
	Solution input	Input of calibration solution conductivity with simultaneous display of cell constant and temperature	
	Auto	Automatic determination of cell constant with KCl or NaCl solution	
	Temperature calibration (TAN option)	Software option SW-P002 for temperature detector adjustment in the Memosens sensor (offset correction)	

Specifications

Memosens amperometric oxygen input	M8 socket, 4-pin, or M12 socket for Memosens laboratory cable	
	Display ranges[4)]	Saturation 0.000 ... 200.0 % Concentration 000 µg/l ... 20.00 mg/l Partial pressure 0.0 ... 1000 mbar Gas measurement 0.000 ... 100.0%
	Temperature range[4)]	–20 ... 150 °C / –4 ... 302 °F
Sensor adjustment	Automatic calibration in air, adjustable relative humidity Data entry Zero calibration	
	Temperature calibration (TAN option)	Software option SW-P002 for temperature detector adjustment in the Memosens sensor (offset correction)
Storage	In quiver	
Connections	2 x socket Ø 4 mm for separate temperature probe 1 x M8 socket, 4-pin, for Memosens laboratory cable 1 x micro USB-B for data transmission to PC 1 x M12, 8-pin, for Memosens laboratory cable	
Display	LCD STN 7-segment display with 3 lines and icons	
	Sensoface Status indicators Notices	Status display (friendly, neutral, sad) For battery condition, logger Hourglass
Keypad	[on/off], [cal], [meas], [set], [▲], [▼], [STO], [RCL], [clock]	
Data logger	Space for 5,000 entries Recording	Manual, interval- or event-controlled
MemoLog calibration data logger (Memosens only)	Can save up to 100 Memosens calibration records – directly readable via MemoSuite (USB): Manufacturer, sensor type, serial no., zero point, slope, calibration date	
Communication	USB 2.0	
	Profile	HID, driverless installation
	Usage	Data transfer and configuration via the Paraly SW 112 software
Diagnostic functions	Sensor data (Memosens only)	Manufacturer, sensor type, serial number, operating time
	Calibration data	Calibration date; zero and slope, or cell constant, resp.
	Device self-test	Automatic memory test (FLASH, EEPROM, RAM)
	Device data	Device type, software version, hardware version
Data retention	Parameter, calibration data > 10 years	
EMC	EN 61326-1 (General requirements) Emitted interference Immunity to interference EN 61326-2-3	 Class B (residential) Industrial applications
Explosion protection	See Ex Certificates and EU Declaration of Conformity or www.knick.de	

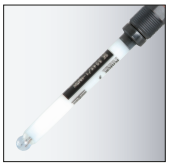
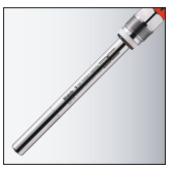
Multiparameter

Specifications

RoHS conformity	According to Directive 2011/65/EU	
Power supply	4 x AA (Mignon) alkaline batteries	
	Operating time	Approx. 1000 h (alkaline)
Rated operating conditions	Ambient temperature	–10 °C ≤ Ta ≤ 40 °C T4 –10 °C ≤ Ta ≤ 50 °C T3
	Transport / storage temp.	–25 ... 70 °C / –13 ... 158 °F
	Relative humidity	0 ... 95 %, brief condensation permissible
Housing	Material	PA12 GF30 (silver gray RAL 7001) + TPE (black)
	Ingress protection	IP66/67 with pressure compensation
	Dimensions	Approx. 132 x 156 x 30 mm / 5.2 x 6.14 x 1.18 inches
	Weight	Approx. 500 g / 1.10 lbs

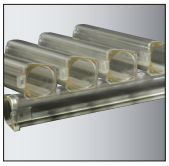
*) User-defined
1) At rated operating conditions
2) ± 1 digit
3) Plus sensor error
4) Ranges dependent on sensor
5) c = cell constant

Multiparameter Device and Sensor Product Line for Measurement in Hazardous Locations

Portavo 904 X Multi		Order No.
	Portavo 904 X multiparameter device for hazardous locations, for measurement with Memosens sensors, incl. USB connector cable.	904 X Multi
Portavo 904XSET-MULTI		
	Portavo 904 X MULTI, SE 554X/1-NMSN pH sensor, CA/MS-001XFA-L Memosens cable, adapter for Ø12 mm sensor with PG 13.5 thread on ZU 0939 sensor quiver, CS-PSET479 CaliMat pH buffer solution set, ZU 0934 field case	904 X Set Multi
SE 554 Memosens pH sensor		
	Low-maintenance sensor for demanding process applications in the chemical industry, digital, with Memosens technology Length 120 mm / 4.72 inches (further pH and ORP sensors: www.knick.de).	SE 554X/1-NMSN
SE 604 Memosens conductivity sensor		
	Sturdy 2-electrode sensor for precise, reliable measurement of low and very low conductivity, in particular in ultrapure water, digital, with Memosens technology (further conductivity sensors: www.knick.de)	SE 604X-MS
SE 680 toroidal conductivity sensor		
	High-precision sensor made of FDA-approved PEEK with an extremely broad measuring range. Steam sterilizable.	
	DN 50 dairy pipe process connection	SE 680X-C1N4U00M
	Varivent DN 50 process connection	SE 680X-V1N4U00M
	2" clamp process connection	SE 680X-J2N4U00M
	ARF 210/215 connection piece for flow-through fitting	SE 680X-K8N4U00M
	2" SMS process connection	SE 680X-M2N4U00M
	Connection for ARD 75 immersion fitting	SE 680X-KUN4U00M
SE 706 Memosens oxygen sensor		
	Sensor in sturdy, hygienic stainless steel, high precision and low detection limit, quick and easy maintenance thanks to special membrane, digital, with Memosens technology (further oxygen sensors: www.knick.de).	SE 706X/1-NMSN

Multiparameter

Multiparameter Device and Sensor Product Line for Measurement in Hazardous Locations

		Order No.
Memosens cable		
	Measuring cable for digital sensors with Memosens connector Length 1.5 m / 4.92 ft	CA/MS-001XFA-L
	Measuring cable for digital sensors with Memosens connector Length 2.9 m / 9.51 ft	CA/MS-003XFA-L
	Measuring cable for digital CONDI sensors with Memosens protocol, 4-pin M12 coupling; 4-pin M8 connector, length 1.5 m / 4.92 ft	CA/M12-001M8-L
Adapter		
	Adapter for 12 mm / 0.47 inch process sensors with PG 13.5 thread.	ZU 0939
Membrane set		
	Membrane set for 12 mm SE 706, SE 707 oxygen sensors, consisting of 4 membrane bodies, 1 O-ring set, 25 ml electrolyte	ZU 0564
Sensor quiver		
	5 pcs., replacement, for leak-proof storage of sensors	ZU 0929
Sturdy field case		
	For device and sensor	ZU 0934
pH/Pt1000 sensor		
	For measurement in Ex Zone 0, including equipotential bonding cable, glass body, ceramic junction	ZU 6979
Base stand		
	Base stand for mounting up to 3 sensors with base plate made of stainless steel	ZU 6953

Multiparameter Device and Sensor Product Line for Measurement in Hazardous Locations

		Order No.
Pt1000 temperature detector		
	For temperature measurements with quick response time: Monel 2.4360, –10 ... 100 °C / 14 ... 212 °F, accuracy class A according to IEC 751	ZU 6959
Inspection certificate 3.1		
	For Portavo/Portamess pH	ZU 0268/9nnpH
	For Portavo/Portamess Cond	ZU 0268/9nnCOND
TAN options	For Portavo 904	
	Cal SOP calibration method*); User management, sensor verification, temperature detector adjustment in the Memosens sensor (offset correction) *)For pH only	SW-P001
	Temperature adjustment (offset)	SW-P002
Paraly SW 112 Software	PC software for Portavo 904	
	Software for configuration and firmware update (free download at www.knick.de)	

Multiparameter

Multiparameter Device and Sensor Product Line for Measurement in Hazardous Locations

Conductivity standard		Order No.
	For determining and checking cell constants, 1 ampoule for producing 1000 ml 0.1 mol/l NaCl solution (12.88 mS/cm)	ZU 6945
	For determining and checking cell constants, conductivity 12.88 mS/cm ±1 % (0.1 mol/l KCl), 500 ml ready-to-use solution	CS-C12880K/500
	For determining and checking cell constants, conductivity 1413 µS/cm ±1 % (0.01 mol/l KCl), 500 ml ready-to-use solution	CS-C1413K/500
	For determining and checking cell constants, conductivity 147 µS/cm ±1 %, 500 ml ready-to-use solution	CS-C147K/500
	For determining and checking cell constants, low conductivity 15 µS/cm ±5 %, 500 ml ready-to-use solution	CS-C15K/500
	For determining and checking cell constants, conductivity standard 1.3 µS/cm KCl 300 ml	ZU 0701

Accessories and Buffer Solution Product Line

CaliMat pH Buffer Solutions		Quantity	Order No.
	pH 2.00 (20 °C / 68 °F)	250 ml	CS-P0200/250
	pH 4.00 (20 °C / 68 °F)	250 ml	CS-P0400/250
		1000 ml	CS-P0400/1000
	pH 7.00 (20 °C / 68 °F)	250 ml	CS-P0700/250
		1000 ml	CS-P0700/1000
	pH 9.00 (20 °C / 68 °F)	250 ml	CS-P0900/250
		1000 ml	CS-P0900/1000
	pH 12.00 (20 °C / 68 °F)	250 ml	CS-P1200/250

Multiparameter

Accessories and Buffer Solution Product Line

CaliMat pH Buffer Solutions		Quantity	Order No.
	Set pH 4.00 (20 °C / 68 °F)	3 x 250 ml	CS-PSET4
	Set pH 7.00 (20 °C / 68 °F)	3 x 250 ml	CS-PSET7
	Set pH 9.00 (20 °C / 68 °F)	3 x 250 ml	CS-PSET9
	Set pH 4.00 / 7.00 / 9.00 (20 °C / 68 °F)	3 x 250 ml	CS-PSET479
	KCl solution	250 ml	ZU 0960