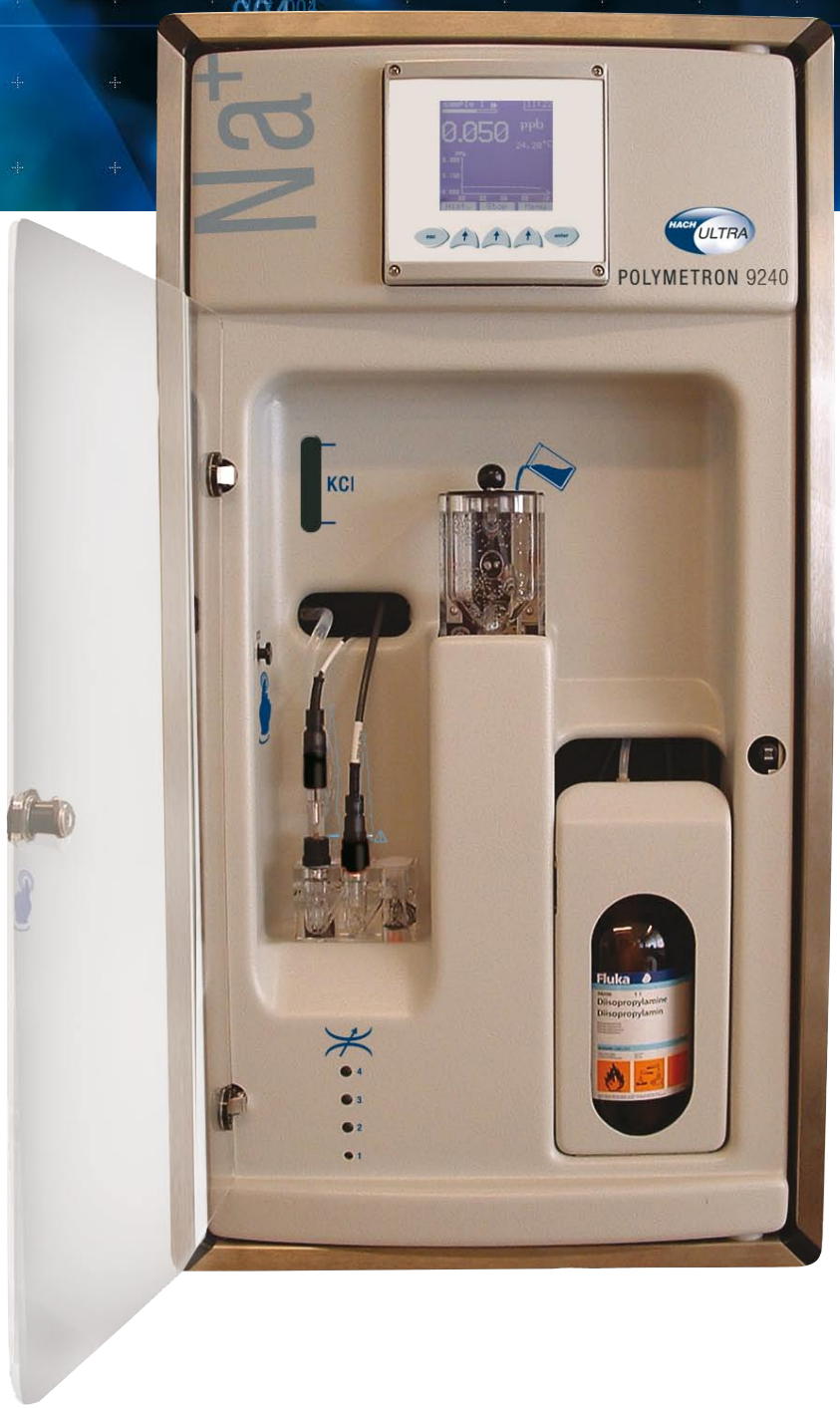
POLYMETRON 9240

Na^+



Multi-channel sodium monitoring for high purity waters

polymetron

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HACH ULTRA™

EXCELLENCE IN PROCESS ANALYTICS

POLYMETRON 9240

The POLYMETRON 9240 multi-channel provides low level sodium measurement in high purity water applications.

With a detection limit of 0.01ppb and a range of 0 – 10'000ppb this analyzer is ideally designed for monitoring sodium in demineralized water, boiler feed, condensate and all parts of the steam/water cycle. Optimized rinsing sequence allows monitoring of different types of water on the same instrument.

This on-line process monitoring analyzer is designed for the power generation industry but can also be applied in a number of other industrial applications such as process water in the semiconductor industry requiring effective sodium monitoring.

Operation

The HACH ULTRA POLYMETRON 9240 multi-channel analyzer is designed for ease of installation and use. It requires only power connection and sample hydraulics. Set-up is managed through the readily accessible controller that has clear messages guiding the user through menus and sub-menus.

This analyzer is fitted with a quick-loop valve per channel, a constant head vessel and minimum sample flow detection. This set-up allows variations in sample pressure, flow and distance from the analyzer to the "fresh-sample" point.

The principle of operation is that of ion selective electrode measurement after pH conditioning. Sample pH conditioning is essential for limiting the interference of temperature or other ions. Constant buffering is assured using regulated reagent addition across sample pH and temperature changes. The "smart" rinsing sequence between channels ensures a minimum cycle time of 10 minutes and no carry-over effect.

To maintain optimum response time even in systems of continuous low sodium concentration, the POLYMETRON 9240 has automatic reactivation. Reactivation uses non-hazardous chemicals and eliminates the need for manual reactivation and the use of hazardous solutions.

Calibration

Due to the difficulty in preparing low ppb sodium solutions for calibration purposes the POLYMETRON 9240 is supplied with an automatic calibration system.

Benefits

- Maximizes up-time and eliminates carry-over effect thanks to an auto-adapted rinsing sequence with a minimum cycle time of 10 minutes
- Increases confidence in accuracy with automatic calibration based on Known Addition technique avoiding risk of contamination or human error
- Grab sample feature allows the use of standards to check operation or measurement of a one-off process sample reducing laboratory time

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- *Sodium measurement detection limit of 0.01ppb*
- *Integrated 1 to 4 channels with optimized rinsing sequence*
- *Automatic adjustment of the conditioning across sample pH and temperature changes*
- *Extensive communication capabilities (analog, alarm relay, JBUS/MODBUS and Profibus)*
- *Designed to minimize total cost of ownership*
- *IP65 transmitter and wall-mount enclosure in ABS with SS frame*

Using easy to prepare samples of 10 ppm, the fully automated system follows a multiple calibration step cycle to accurately calibrate the analyzer, eliminate user variability and possible sample contamination.

The POLYMETRON 9240 is fitted with a grab sample feature for manual verification of accuracy or calibration (ppb levels). Simple manual introduction of a 250 mL sample requires no tube disconnection. After sampling the unit, the analyzer automatically returns to on-line monitoring. This feature allows immediate ppb sodium measurement in off-line samples.

Communication

For every channel, comprehensive information is available from a large display. This information includes: 24 hour sample trend curve, bar graph tracker of current analysis, sample name and alarms, clear messages guiding the user through menus and sub-menus, a built-in data logger allowing the user to re-consult measurement readings, calibration results and alarm information (capacity = 3200 data).
Six sets of isolated analog outputs can be configured in 0/4-20 mA with five outputs assigned to sample concentration or temperature readings. One output is reporting electrode live signal, including calibration and grab sample. Additional digital communication is available with JBUS/MODBUS or Profibus DP.

Alarms and diagnostics

The POLYMETRON 9240 includes four programmable alarm relays that may be assigned to any of the following:
- Concentration limits including direction, delay, hysteresis and normal relay status
- Minimum sample flow rate detection
- Operation of the measurement cycle for a channel

Two additional programmable relays may be used for:
- Warning messages (reagent level low, small calibration deviation)
- System alarms (no reagents, no sample, no calibration and no power supply)

Maintenance

Normal maintenance of the POLYMETRON 9240 has been reduced to:
- Replenishment of the calibration solution as required, typically every 100 days
- Replenishment of reagents and electrolyte of the reference electrode every 100 days
- Annual replacement of the reagent tube

Clear step-by-step instructions are given to simplify maintenance operations such as instrument start-up, long-term stand-by and reagent replenishment.

The analyzer comes in 19” (482.6mm) rack format as standard. A wall-mount cabinet is available as an option.

- Automatic reactivation of sodium electrode ensures the optimum operation of the electrode and reduces response time
- All pre-mounted panel analyzers are supplied with a constant head chamber and minimum flow detection to compensate for sample pressure and flow variations

Performance specifications

HU-DS-9240-A4-EN-Ver.A.0707

Sample

No. of sample streams	Integrated 1 to 4 channels
Insoluble	< 10 ppm, no oil, no grease. For boiler sample type, install approx. 100 um filter
Temperature	5–45°C (41–113°F)
Pressure / Flow rate	0.2–6 bar (3–87 psi), 5 L/h during sampling phase

Connections

Sample line(s)	Simple fittings for 6mm O.D. tubing or 1/4" O.D. in PE-low density. For 1/4" O.D. in PEHD-PTFE-SS, request imperial kit
Drain	Barbed stem for 12 mm (1/2" I.D.) hose
Ambient temperature	5–50°C (41–122°F)
Power supply	100-240 VAC, ±10%, 50/60Hz, 80 VA

Analysis

Measuring ranges	0 to 10,000 ppb freely programmable / 0 to 200 ppm with K Kit option
Repeatability	< 0.02 ppb or 1.5% reading, whichever is greater, within 10°C variation
Detection limit	0.01 ppb
Response time (t=90%)	1 cycle, minimum 10 mn
Calibration	As standard: automatic known addition 3 points, Manual - 1 or 2 points
Sample conditioner	Di-isopropylamine (1L / 100 days), Concentrated ammonia (sample >1 ppb - 2.5 L / 90 days)
Total acidity	As standard less than 50 ppm (equivalent $CaCO_3$) Option K kit (cationic) less than 250 ppm (equivalent $CaCO_3$)

Transmitter

Protection	IP65 (NEMA 4)
E.C regulations & certifications	Conform EN50081, EN50082 (EMC) IEC61010 (low voltage), U. L. and GOST Metrology (contact us for QSIQ of PR of China)
Digital display	75 x 75 mm graphic + LED backlighting: concentration, trend curves, diagnostics, alarm status, calibration constants, historical data.
Programming	Menu driven operation and clear messages in 5 languages
Analog outputs	6 x (0 or 4)/20mA [800 Ohms] / linear, dual, logarithmic / Smart
Relay outputs (30 VDC, 0.5A maximum)	4 programmable contacts assigned to any of: - concentration or temperature limits including direction, delay, hysteresis and normal relay status, - minimum sample flow rate detection. 2 extra programmable relays allocated to: - warning messages (reagent level low, small calibration deviation), - system alarm = Operation in negative or positive safety (no reagents, no sample, no calibration, no power).

Options

Accessories	K kit, Static heat exchanger, filtration system, wall enclosure
RS485	300…9600 baud, 32 stations max., JBUS/MODBUS
Profibus DP	9.6 Kbit/s to 12 Mbit/s, 127 stations max. (with repeater)

Materials / Dimensions

Panel	ABS with SS frame / 850 x 450 x 252.5 mm [33.46 x 17.71 x 9.94 in]
Enclosure	ABS / 850 x 450 x 331.5 mm [33.5 x 17.74 x 13.05 in]
Weight	Empty canisters: Panel 18 Kg Enclosure 23 Kg Full canisters: Panel 20 Kg Enclosure 25 Kg

Maintenance

Every 100 days	Refill electrolyte, reagents and calibration solution

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