9211 Phosphamat

data sheet

Applications

Monitoring of Total Dissolved Ortho-Phosphates in :
- Power plant boiler, feedwater
- Steam generation
- Water supply applications

Features

- Multi-channel operation (1 to 6)
- Very low cost of ownership
- Minimal maintenance requirements
- Built-in remote control operations for automated water plants
- User-friendly menu-operated programming
- Built-in datalogger
- Automatic 2-point calibration (chemical zero and slope)

The 9211 Phosphamat, user-friendly multi-channel silica analyzer

■ Chemistry

All reagents used for the Phosphamat 9210 are available from the major chemical suppliers worldwide. Their unique composition means that their chemical stability is excellent, an essential factor for reliable and reproducible phosphate measurement.

The analytical section of the analyzer has been designed to ensure minimal reagent consumption. The reagent canisters weighing a total of only 4 kg (9 lbs) when full, need replenishment every 45 days.

The integrated design of the Phosphamat (analyzer and sequencer controlled by the same electronics) offers real operational advantages and, in addition, the sampling sequence is fully programmable. Analyzer status (such as lack of sample on one of the channels or the unit being in its calibration cycle) is fully monitored by the 9211 microprocessor.

■ Calibration

Calibration can be performed manually or automatically by programming regular calibration intervals. The 9211 uses a real two-point calibration method (zero+slope).

Polymetron has developed its own proprietary chemical zero method.

The zero is performed automatically by the analyzer itself without the need for calibration solutions or resin cartridge. Extensive laboratory tests have shown that, even if there are significant levels of phosphate present in the reagents or in the sample, the innovative method of zeroing the instrument leads to a negligible offset.

To perform the slope calibration, the analyzer takes a standard solution in place of the sample.

■ Customer Interface

Comprehensive information is available at a glance from the large display (i.e. phosphate concentration of up to 6 channels, alarm status or concentration trend curves). Clear messages are displayed and the user is guided through menus and sub-menus with ease.

A built-in datalogger allows measurement values, calibration results and alarm information to be recorded (capacity = 3200 data).

The seven sets of isolated analog outputs can be configured in 0/4-20 mA with capabilities of calibration and simulation of the current. Six outputs can be assigned to sample concentration on any channel. An extra output will report events like calibration occcurrence, warning messages or system alarms.

Additional digital communication is available with JBUS/MODBUS or Profibus DP.

■ Alarms and Diagnostics

As the phosphate analyzer works continuously without manual intervention, receiving a warning in the case of an incident or change in status is critical. The 9211 is equipped as standard with six programmable alarm relays assigned on any channel and reporting one of the following:

● Phosphate high/low concentration limits
● Minimum flow detection for a channel
● Occurrence of the measurement cycle for a channel

The 9211 also comes with two extra programmable relays allocated to:

● Warning messages (reagent level low, minimum sample flow, small calibration deviation)
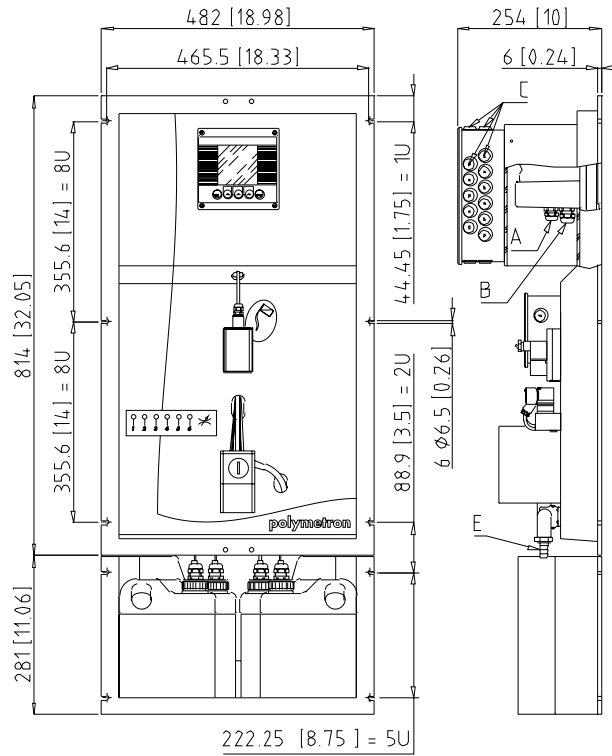● System alarms (no reagent, no sample, no calibration, no power)

■ Maintenance

● Every 45 days: replenish reagents
● Change reagent tube annually
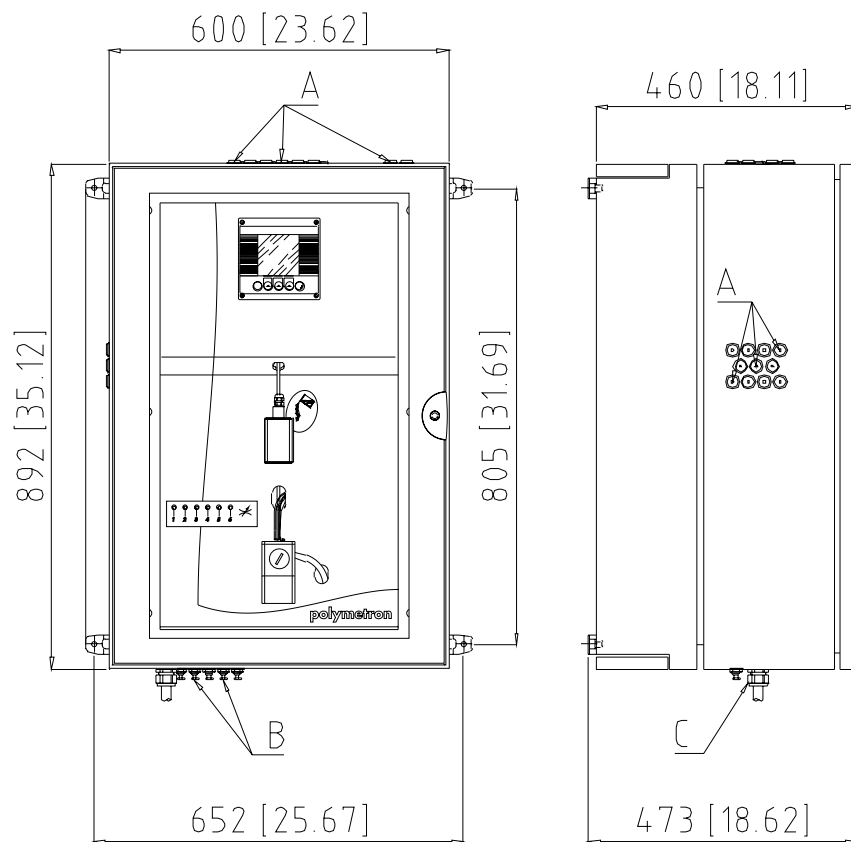● Replenish calibration solution as required

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

The analyzer comes in 19" rack format as standard. A wall mounted cabinet is available as an option. Both include a start-up kit and instruction manual in English (other languages available on request).

Panel dimensions

Cabinet dimensions

All dimensions are in mm (inches)

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Specifications

Sample	No. of sample streams Temperature Pressure/Flowrate	1-6, programmable sequence 5-50°C (41-122°F) 0.2-6 bar (3-87 psi), 15-20 l/h during the sampling phase
Connections	Sample line Drain Ambient temperature Power supply	Simple fittings for 6mm O.D. for PE/PTFE tubing Nipple for 12x10mm tubing 5-45°C (41-113°F) 100-240 VAC, ±10%, 50/60Hz, 50 VA
Analysis	Measuring range Repeatability Detection limit Response time	0 - 5 ppm of PO_4^{3-} 0 - 30 ppm of PO_4^{3-} (extended trend up to 50 ppm) ± 0.1 ppm or ± 3 % of the measured value whichever is greater < 0.2 ppm < 10 minutes per channel
	Calibration	Real two-point chemical zero and slope, Slope with automatic mode and pogrammable frequency Automatic optical zero for each measurement cycle
Transmitter	Protection E.C regulations U.L Digital backlit display Programming Current output Relay outputs Remote control	IP65 / NEMA 4X EN50081, EN50082 (EMC) and IEC61010 (low voltage) Please consult us Display of concentration, diagnostics, alarm status, calibration constants, historical data, trend curves Menu operation and clear messages in 5 languages Six 0/4-20 mA for measurement (one per channel), 650 ohms load max. 6 contacts for : - phosphate concentration alarm sample, - lack of sample, - active channel. 2 contacts for : - warning (reagent/calibration solution low level, sample missing, etc …) - system alarm (calibration error, hardware failure, etc …). Operation in negative or positive safety. 30 VDC, 0.5A maximum. - sample stream activation/disactivation - alarm acknowledgement
Options	RS 485 Profibus DP	300…9600 baud, 32 stations max., JBUS/MODBUS 9.6 Kbit/s to 12 Mbit/s, 127 stations max. (with repeater)
Materials	Panel Cabinet Weight	Polystyrene Stove enamelled steel IP 54 Panel: 10 kg (22 lbs), cabinet: 50 kg (110 lbs)
Maintenance	Every 45 days	Refill reagents and calibration solution