POLYMETRON 9120 & 9125

Conductivity

pH

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Mono and dual channel conductivity transmitters

HACH ULTRA™

EXCELLENCE IN PROCESS ANALYTICS

pH

Conductivity

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The POLYMETRON 9120 *and the* POLYMETRON 9125 *conductivity transmitters are a part of a range of on-line water chemistry analyzers designed for the power industry. This range includes analyzers for pH, conductivity, silica, sodium, phosphate and oxygen scavengers.* HACH ULTRA *also provides the power industry with* ORBISPHERE *instruments for premium gas analysis and* ANATEL *instruments for TOC monitoring.*

The POLYMETRON 9120 *dual channel and the* POLYMETRON 9125 *mono channel transmitters are designed to fulfill the needs of many water analysis applications including: the industrial, pure and ultra pure water analysis, steam generation, electricity production, semiconductors and life sciences.*

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Operation and interface

The POLYMETRON 9120 dual channel and the POLYMETRON 9125 mono channel transmitters have a rugged and compact enclosure that is suitable for all plant and process conditions. The clear graphic backlight display can be configured in 6 different languages: English, French, German, Spanish, Italian and Dutch. Transmitter functions can easily be configured with 4 keys and through a user interface that displays the following main categories: calibration, maintenance, programming and service.
3 additional sub main displays are available through an easy one-touch-button scrolling operation. These 3 displays show the main parameters and temperature measurements with an alarm status, alarm setting and analog output configuration. Several measurement units are also available for conductivity, resistivity and concentration.
Security is managed by a 3 level password protected access for calibration, programming and service. All configuration and calibration logbook data is stored within the transmitters avoiding loss of data in case of power failure.
The POLMETRON 9120 dual channel transmitter offers additional calculations with 2 conductivity inputs. With this transmitter, users have the option to set different display configurations showing both channel and calculation data.

Main features and benefits

- POLYMETRON 9125 transmitter accepts a 2 electrodes probe or one inductive sensor
- For the POLYMETRON 9125 a variety of display units for choice: conductivity (S, µS, mS, per m or cm), resistivity (Ω, k Ω, mΩ, Ω per m or cm) and concentration (% or g/l)
- 2 calibration methods to optimize sensor response:
  - 1 or 2 points, electrical or process
  - Fully programmable cell constant
- Complete set of temperature compensation functions to optimize measurement:
  - Temperature measurement with Pt 100 / Pt 1000
  - Pre-programmed for HCl and NaCl
  - Fixed programmable coefficient in %/°C or in %/°F
  - Non-linear for ultra pure water
  - Freely programmable for concentration
  - Non temperature compensation to conform to USP24 pharmaceutical regulations
- Self monitoring of a 2 electrodes sensor: continuous self-adaptive sensor frequency for polarization compensation or coating errors with system alarm (patented) on the POLYMETRON 9125
- POLYMETRON 9125 offers a service menu with sensor polarization test and cable capacity measurement
- Total galvanic isolation between sensors and the transmitter, between the micro-processors and other circuitry boards (analog outputs) to avoid electrical interferences
- POLYMETRON 9125 has pre-programmed concentration curves for HCl, HNO_3, H_2SO_4, NaOH and NaCl
- Built-in real time clock allows perfect data retrieval for quality control management and traceability: date, values of last calibration and self-diagnosis data

- *Familiar menu configuration (same for all POLYMETRON transmitters and analyzers)*
- *Broad choice of versions (more than 36) to best fit your needs*
- *Complete set of tools for tracking process: standard 0/4-20 mA output, RS485 and Profibus DP digital outputs, 4 configurable alarm relays with averaging, temporization and hysteresis functions*

Outputs and alarms

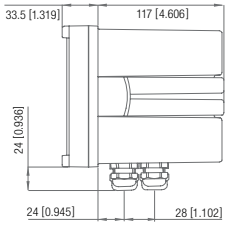
- Comprehensive analog output tools: configurable 0/4–20 mA analog outputs including with:
  - Linear, bilinear, or logarithmic configuration
  - Simulation of the analog loop signal for testing purposes
  - Programmable averaging for fast changing process measurements
  - Programmable hold function of the output during calibration, alarm and maintenance
- Profibus DP V1 (optional)
- Serial output RS 485 galvanic isolated (optional)
- Full set of configurable 4 relay alarms (optional): output parameter, inverted output, temporization, hysteresis, timer, holding time, relay normally open/closed
  - Relay 1: low or high setpoint
  - Relay 2: low or high setpoint
  - Relay 3: low or high setpoint or system alarm
  - Relay 4: low or high setpoint or timer output
- Freely programmable alarm temporization and hysteresis

Main features... (following)

- Logbook that stores calibration data
- Configurable rolling average function that smoothens out variant measurements or fast changing processes

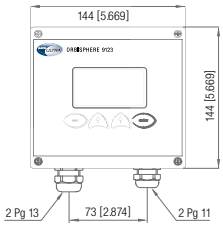
Self monitoring functions

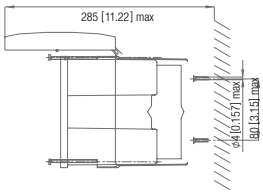
- Bad sensor connection
- Defective temperature
- Calibration conditions
- Conductivity to validity concentration calculation; value too low or too high (only relevant for the POLYMETRON 9125)



POLYMETRON 9120 dual channel transmitter

The POLYMETRON 9120 dual channel transmitter reduces acquisition and installation costs by the drastic reduction of panel space required. Additional calculations are offered between both conductivity channels (C1 and C2) allowing better process understanding and control operations: difference (C1-C2), ratio (C1/C2), percentage accepted (C2/C1)*100 and percentage rejected (1-C2/C1)*100.

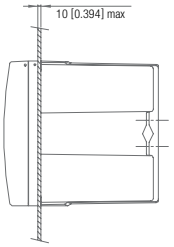




System ordering identification code

9	1	2	X	=A=	0	X	X	X

Channels version | Power supply & Outputs | Internal software



Channels version (conductivit only)

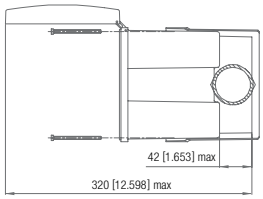
0	Two channels (2 electrodes sensors only)
5	One channel

Software version (one channel only)

0	Conductivity
1	Concentration

Power supply & outputs

00	100-240 VAC
04	100-240 VAC + 4 relays board
11	100-240 VAC + RS 485
12	100-240 VAC + Profibus DP
15	100-240 VAC + 4 relays board + RS 485
16	100-240 VAC + 4 relays board + Profibus DP
20	Low voltage
24	Low voltage + 4 relays board
31	Low voltage + RS 485
32	Low voltage + Profibus DP
35	Low voltage + 4 relays board + RS 485
36	Low voltage + 4 relays board + Profibus DP



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Performances specifications

Analysis	Sample flow rate	100 ml/min to 2000 ml/min (according conductivity probe specs)
	Measuring temperature range	- 20 to 200°C (4 to 392°F)

Measuring ranges for two electrode sensors (9120 and 9125)

Cell constant (cm^{-1})	Specific conductivity	Specific resistivity
0.01	0.01µS/cm – 200µS/cm	5.00kΩxcm –100MΩxcm
0.1	0.1µS/cm – 2mS/cm	0.5kΩxcm –10MΩxcm
1.00	1µS/cm – 20mS/cm	0.05kΩxcm –1MΩxcm

Measuring ranges for inductive sensors (9125)

Cell constant (cm^{-1})	Specific conductivity	Specific resistivity
1.00	50µS/cm – 1S/cm	1Ωxcm – 20kΩxcm
2.35	200µS/cm – 2S/cm	0,5Ωxcm – 5kΩxcm
10.00	1mS/cm – 10S/cm	0.1Ωxcm – 1kΩxcm

Measuring range for concentration measurement (9125)

HCl	0…18%
HNO_3	0…30%
H_2SO_4	0…30%
NaOH	0…15%
NaCl	0…26%

Accuracy	Measurement	± 1% of reading (conductivity/resistivity/concentration)
	Output	± 0.1mA
	Temperature	± 0.2°C
Outputs	Configuration	2 analog outputs: (0 or 4)–20mA, freely programmable scale (linear, bilinear, logarithmic) - 1 for conductivity/resistivity/concentration or pH and 1 for temperature or - 2 for conductivity/resistivity/concentration or pH Galvanic isolation from CPU, outputs and sensor, 16bits resolution, maximum load: 900Ω. True full galvanic insulation, RS485 board galvanic serial link isolated (part number 09125=A=1100) Profibus DP V1
	Optional	4 relay outputs (see the ordering codification table) - Relay 1, 2: low or high set point - Relay 3: low or high set point or system alarm - Relay 4: low or high set point or timer output - Relay output: 250 V AC, 3 A maximum, 100 V DC; 0.5 A maximum
Enclosure	Dimensions	144 x 144 x 151mm, 5.7 x 5.7 x 6 in (H x W x D)
	Regulations & certifications	EC regulations: EN 50081-1 & 50082-2 (EMC) EN 61010-1 (low voltage), US: U.L., Russia: GOST
	Protection	IP65 certified, NEMA 4X
	Material	Aluminum and polyester–coated metallic housing, stainless steel screws
	Cable glands	2 x PG13 and 2 x PG11
	Connections	2.5mm2 terminals with screws terminals for the mains and relays
	Net weight	2kg (4.4 lbs)
	Temperature	Storage: -20 to 70°C (4 to 158°F) Operating: -20 to 60°C (4 to 140°F)
	Display	34 x 67.4mm (1.3 x 2.7 in), LED backlight, 4 digits: 12mm x 8mm (0.5 x 0.3in) Central graphic zone, relays status indication (S1, S2, S3, S4), double indication for measure and temperature
	Power supply	Universal self–adapting: standard version: 100 to 240 VAC, ±10% 50/60Hz low voltage version: 13 to 30 VAC, 50/60Hz; 18 to 42 VDC consumption: 25VA
	Mounting	Universal mounting bracket for wall, panel or tube installation
	Packaging	The transmitter is shipped in a cardboard box with instruction manual, 4 cable glands, and a quality certificate of conformity to specifications
	QC documentation	Conformity certificate to specifications. Detailed test certificate part number: 09120=T=0000 (optional for the POLYMETRON 9120) or 09125=T=0000 (optional for the POLYMETRON 9125)

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