polymetron

Conductivity, resistivity, concentration, pH, ORP Transmitter Model 9100

The transmitter of the 9100 range, the unique answer for all your needs: power, steam generation, food and beverages, pure and ultra pure water analysis in semi conductors and pharmaceutical industries.

data sheet

- Rugged and compact enclosure for all plant and process conditions
- Multi language menu: English, French, German, Italian, Spanish, Dutch
- Combined display indication: measured parameter, temperature, relay settings and analog outputs
- Three password protected access levels for calibration, programming and service
- Configurable rolling average function filters noisy measurements or fast changing processes
- Built-in real time clock allows perfect data retrieval for QC management and traceability: date and values of last calibration; self-diagnostic data
- Comprehensive output tools available: RS 485, Profibus, 4 relays, 2 fully configurable 0/4–20 mA analog outputs including: linear, bilinear, or logarithmic configuration, simulation of the analog loop signal for testing purposes, programmable hold function of the output during calibration, alarm, and maintenance
- Full set of configurable relay alarms: output parameter, inverted output, temporization, hysteresis, timer, holding time, relay normally open/closed
- Galvanic isolation between sensors, transmitter, and analog outputs for efficient protection against electrical interferences

pH and ORP (redox) measurement

Universal transmitter (2 high impedance inputs): works with combined and simple pH electrode, reference electrodes, antimony electrodes, ORP (redox) electrodes.

Large choice of calibration methods:
- automatic determination of buffer solution values
- manual set-up of process pH values, offset and slope specifications of the electrodes

Wide choice of temperature compensation algorithms:
- according the Nernst equation
- user-programmable coefficient
- non-linear for ultrapure water
- non-linear for process water

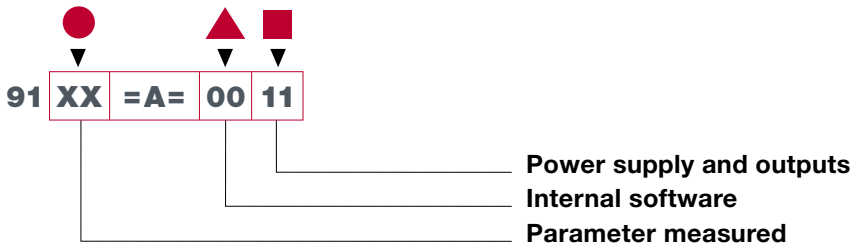
Autodiagnostic of the measurement loop with pH and reference electrode impedance control.

Units available in pH and mV.

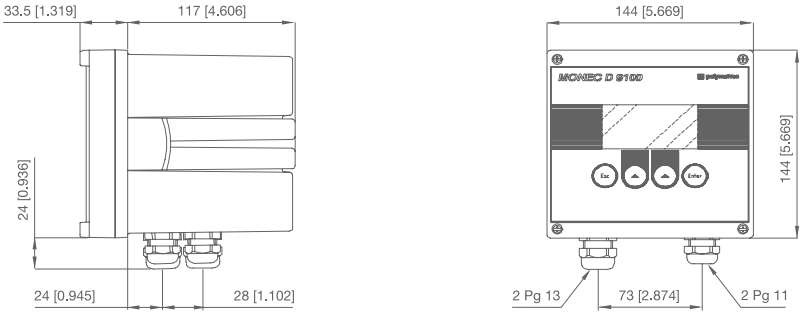
Integrated controller: frequency mode, pulse modes, combined, bidirectional proportional function.

Electrode cleaning feature drived by configurable output relay.

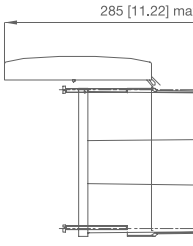
Transmitter ordering identification code



Easy and universal mounting bracket



Connections and dimensions in mm [inches]



Wall m

Conductivity and concentration measurement

Universal transmitter: accepts two electrodes or inductive Polymetron sensors.

Wide choice of display units:
conductivity (S, µS, mS, per m or cm)
resistivity (Ω, kΩ, mΩ, Wper m or cm)
concentration (% or g/l).

Two calibration methods to optimize the sensor response:
- 1 or 2-point, electrical or process
- fully programmable cell constant

Complete set of temperature compensation functions to optimize the measurement:
- fixed programmable coefficient in %/°C or in %/°F
- non-linear, for ultrapure water
- non-linear, freely programmable for concentration
- specific software to conform to USP pharmaceutical regulations

Two electrodes sensor autodiagnostic:
continuous autoadaptive sensor frequency for polarization compensation with system alarm (patented).

Powerful service menu with sensor polarization test and cable capacity measurement.

Parameter measured

25	Conductivity / Concentration
35	pH

▼ ●

Internal software

00	Conductivity / pH / ORP
01	Concentration

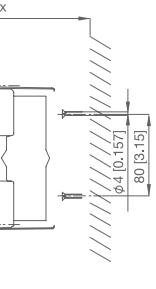
▼ ▲

Power supply & outputs

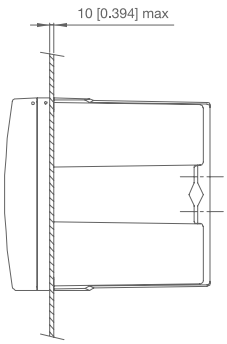
00	200 V & no outputs
04	220 V & 4 relays
11	220 V & RS 485
12	220 V & Profibus
15	220 V & 4 relays & RS 485
16	24 V & Profibus & 4 relays
20	24 V & no outputs
24	24 V & 4 relays
31	24 V & RS 485
32	24 V & Profibus
35	24 V & RS 485 & 4 relays
36	24 V & Profibus & 4 relays

▼ ■

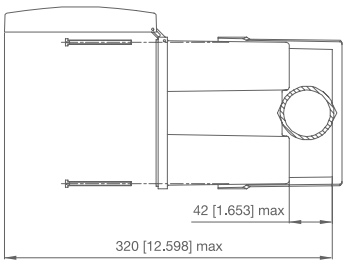
suitable for panel or tube installation



ounting



Panel mounting



Tube mounting max ø2

polymetron

Specifications

Conductivity, resistivity temperature measuring range

Measuring ranges: temperature: -20 to 200 °C

Measuring range for conductivity/resistivity with two electrode sensors

cell constant (cm-1)	specific conductivity	specific resistivity
0.01	0.01µS/cm - 200 µS/cm	5.00 kΩ x cm - 100 MΩ x cm
0.1	0.1µS/cm - 2 mS/cm	0.5 kΩ x cm - 10 MΩ x cm
1.00	1 µS/cm - 20 mS/cm	0.05 kΩ x cm - 1 MΩ x cm

Measuring range for conductivity / resistivity with inductive sensors

cell constant (cm-1)	specific conductivity	specific resistivity
1.00	50 µS/cm - 1 S/cm	1 Ω x cm - 20 kΩ x cm
2.35	200 µS/cm - 2 S/cm	0.5 Ω x cm - 5 kΩ x cm
10.00	1 mS/cm - 10 S/cm	0.1 Ω x cm - 1 kΩ x cm

Accuracy for all conductivity resistivity sensors (at transmitter inputs /outputs):

Measurement	conductivity/resistivity/concentration: ± 1% of reading
Output	± 0.1 mA
Temperature	± 04°C

pH analysis specifications

	measuring range	resolution	repeatability
Temperature	- 20 to +200 °C	0.1 °C	± 0.2 °C
pH	0 to 14 pH	0.01 pH / 1mV	± 0.02 pH / ± 1 mV
Redox	- 1500 to 1500 mV	1 mV	± 1 mV
Impedance set-up range			
Glass	5 MΩ to 1 GΩ		
Reference	1 KΩ to 1 MΩ		

Outputs

Configuration 2 analog outputs: 0 or 4-20 mA, 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

Specifications Galvanical isolation from CPU, outputs and sensor, 16 bit resolution, max load: 900 W. true full galvanic insulation, RS485 board galvanic serial link isolated (part number 09125=A=1100)

Options 4 relay outputs (see the ordering codification table)
- relay 1.2: low or high setpoint
- relay 3: low or high setpoint or system alarm
- relay 4: low or high setpoint or timer output
- relay output: 250 VAC, 3 A max, 100 VDC; 0.5 A max.

Enclosure

EU standards	Conforms to EN 50081-1 & 50082-2 (EMC) EN-61010-1 (low voltage)
Protection	NEMA 4X, IP65 certified
Material	aluminium and polyester–coated metallic housing, ss screws
Cable glands	2 x PG13 and 2 x PG11
Connections	2.5 mm^2 terminals with screw terminals for the mains and relays
Net weight	2 kg (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 67.4 mm (1.3 x 2.7 in), 4 digits: 12 mm x 8 mm (0.5 x 0.3 in) central graphic zone, relay status indication (S1, S2, S3 , S4) double indication for measure and temperature
Power supply	universal self-adapting: standard version: 100 to 240 VAC, ±10% 50/60 Hz, low voltage version: 13 to 30 VAC, 50/60 Hz; 18 to 42 VDC consumption: 25 VA
Packaging	The transmitter is shipped in a cardboard box with instruction manual, 4 cable glands, screws for panel mounting, and a quality certificate of conformity to specifications.
QC doc	Conformity certificate to specifications. Detailed test certificate part number: 09125/35=T=0000

HACH ULTRA
EXCELLENCE IN PROCESS ANALYTICS
www.hachultra.com

Hach Ultra Analytics SA
salesinfo@hachultra.com
tel. ++41 22 855 91 00
fax ++41 22 855 91 99

Headquarters:
6, route de Compois, C.P.212
CH-1222 Vésenaz /Genève
Switzerland

Represented by