

Valmet Concentration Measurement

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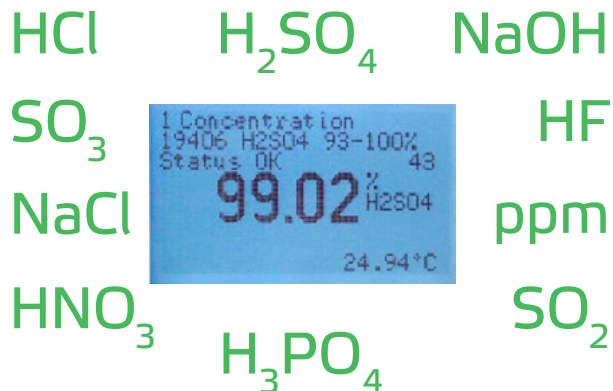


Accurate direct in-line measurement

The Concentration Measurement is provided with intelligent technology calculating the concentration of strong acid or lye. It calculates the concentration of the process liquor based on 4-electrode conductivity measurement combined with temperature measurement.

The Concentration Measurement has selectable pre-programmed recipes and is ready for use upon installation.

- Designed for industrial environments
- Unique corrosion resistant sensors
- Easy to use
- 22 pre-programmed recipes for strong acid/lye
- Display of concentration and temperature
- Easy sensor installation for all pipe sizes
- No maintenance
- Long life time

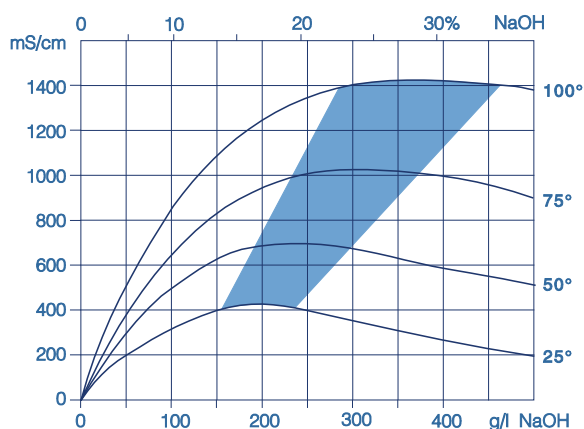
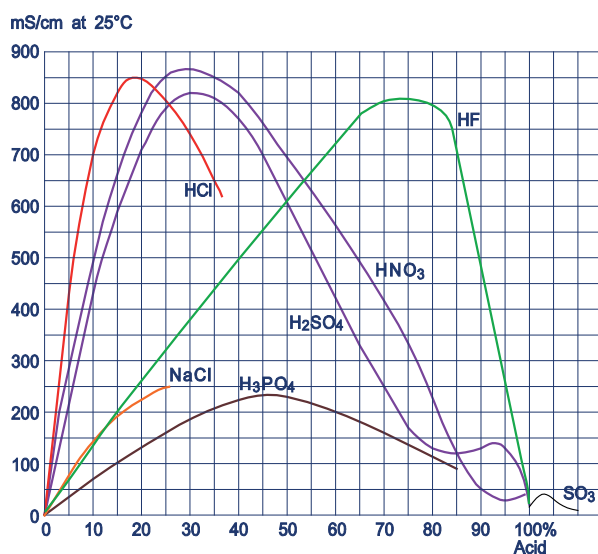


Valmet Concentration Measurement

Concentration determination

The Concentration Measurement is provided with selectable recipes for the range specifications listed next page. The recipes calculate the concentration from the relationship of conductivity versus concentration and temperature.

A one-point or two-point calibration facility is available to eliminate the effect on the conductivity-concentration relationship from any foreign chemicals contained in the liquor. However under normal circumstances calibration before use is not needed. The analogue output can be set up to display expanded range.



Conductivity of NaOH at various temperatures. Concentration measurement cannot be used in the shadow area.

The sensors

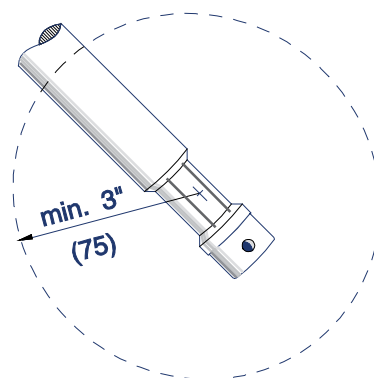
In-line 4-electrode conductivity sensors with Pt1000 temperature element.

Corrosion-resistant materials available:

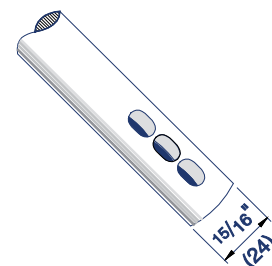
PTFE and platinum (HF and SO₃)

PTFE and tantalum (strong acids)

PTFE and AISI 316 steel (lye)



4-electrode sensor with external electrodes



4-electrode sensor with internal electrodes

The sensors perform measurements of high accuracy and require minimum maintenance due to integrated automatic scaling compensation.

For measurement in pure liquids, sensors with internal electrodes and a small measuring volume (60 ml) are available.

For slurry liquids, sensors with external electrodes are available in a hydrodynamic self-cleaning construction, measuring within a volume corresponding to a radius of 75 mm (3 inches).

The sensors are easy to install due to the wide selection of adaptors. The cable connection parts of the sensors are made of AISI 316 steel in a rugged and watertight construction (IP67).

Sensors examples for strong acid measurements

Flow-through sensor type with internal electrodes, for mounting in narrow pipes

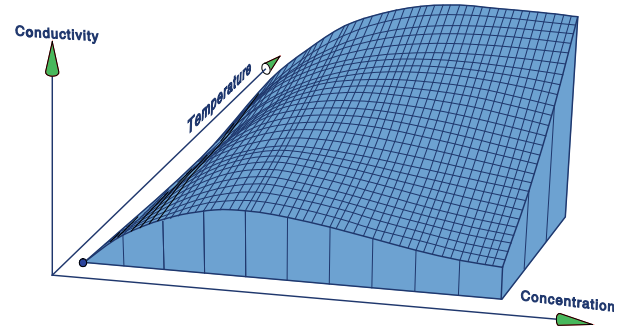


Sensor with external electrodes, suitable for slurry liquids.



Conductivity/Concentration/Temperature

The Concentration Measurement measures the conductivity as well as the temperature and calculates the correct temperature compensation factor.



The Concentration Measurement directly converts those data to actual concentration, which will be displayed in g/l or %, and which is available as output for PLC or DCS display as well.

Beyond the pre-programmed 22 standard recipes, other recipes for your specific solutions may be available.

The portable version

The Portable Conductivity Measurement is micro-processor based, with rechargeable battery, using the 4-electrode principle and is designed for conductivity measurement ranging from ultrapure water to concentrated acids, bases, and pulp liquors.



- Designed for use in the fields as well as laboratories
- Data-logger available
- Reference for certification of field instruments
- Sturdy carrying case
- Using same parts as in the standard industrial analyzer

Standard recipes

Recipe (GOS) No.	Solution	Measuring range	Temperature	Typical accuracy		Electrode material
196.03	HCl	0-15 %	10-80 °C	0-15 %	± 0.3 HCl	Ta
194.59/2	HCl	25-40 %	0-60 °C	25-40 %	± 0.5 HCl	Ta
194.60	HCl	30-36 %	15-45 °C	30-36 %	± 0.2 % HCl	Ta
194.56	HF	99.7-100 %	0-50 °C			Pt
196.62	HNO ₃	0-20 %	0-90 °C	5-20 %	± 0.8 HNO ₃	Ta
194.51/3	HNO ₃	50-75 %	0-65 °C	50-65 %	± 0.5 HNO ₃	Ta
194.70	P ₂ O ₅	45-60 %	20-80 °C	20-80 °C	± 0.2 %	Ta
196.42	H ₂ SO ₄	0-10 %	0-100 °C	0-10 %	± 0.3 H ₂ SO ₄	Ta
196.43/3	H ₂ SO ₄	0-20 %	20-40 °C	Spec.		Ta
194.31	H ₂ SO ₄	50-80 %	25-60 °C	30-60 °C	± 1 % H ₂ SO ₄	Ta
194.28	H ₂ SO ₄	72-82 %	20-70 °C	72-80 %	± 0.5 % H ₂ SO ₄	Ta
194.10	H ₂ SO ₄	92-100 %	20-70 °C	30-70 °C	± 0.35 % H ₂ SO ₄	Ta
194.06	H ₂ SO ₄	93-100 %	20-110 °C	94-100 %	± 0.15 % H ₂ SO ₄	Ta
196.59	H ₂ SO ₄	0-230 g/l	0-100 °C			Ta
194.25	SO ₃ (oleum)	18-34 %	20-80 °C	18-34 %	± 0.5 % SO ₃	Pt
194.26	SO ₃ (oleum)	55-70 %	25-80 °C	60-70 %	± 0.5 % SO ₃	Pt
196.58	NaOH	0-10 %	0-100 °C	5-100 °C	± 0.17 % NaOH	316
194.61	NaOH	20-40 %	20-50 °C	25-40 °C	± 0.7 % NaOH	316
194.62	NaOH	45-55 %	40-75 °C	45-55 %	± 0.7 % NaOH	*316
196.56	NaCl	0-10 %	-5+100 °C			316
196.60	SO ₂		0-25 g/l	0-50 °C	0-20 g/l ± 1.3 g/l SO ₂	316
194.56/2	H ₂ O in HF	0-3000ppm	0-50 °C			Pt

Many other recipes are possible. Contact us about your specific requirements.

* NaOH above 50 % 60 °C: Use Ta electrodes

Specifications

Concentration ranges: 22 preprogrammed recipes

Conductivity ranges: 20 $\mu\text{S}/\text{cm}$ to 2000 mS/cm

Temperature compensated for: STD salt, weak lye, acids, and OFF

Output: Two current outputs 4 - 20 mA for concentration, conductivity or temperature

Temperature measurement: -40 to +250°C

Display: LCD

Sensor connection: Series 4000 sensors with 11-pole strip connector and MF20 cable adaptor

Local or remote measuring range selection: Two concentration and two conductivity set-up modes.

Control voltage: 12 - 30 V DC

HART® communication as a standard

Enclosure

Material: Cast aluminium, PE coated

Protection: IP67

Dimensions: 144 x 144 x 107 mm

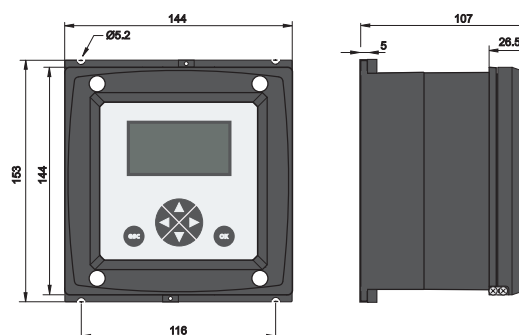
Mounting: Panel, wall or pipe

Ambient temp.: From -10 to +60 °C

Storage temp.: From -20 to +70 °C

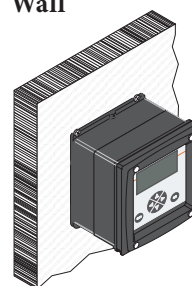
Weight: 2.3 kg

Dimensions in mm



Mounting options

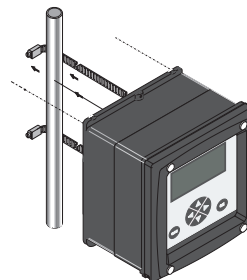
Wall



Panel



Pipe



Wall mounting	Type 3307H	Type 3317H
Panel mounting	Type 3308H	Type 3318H
Power supply	Loop powered 18-30 V DC on mA1	Line powered 85-265 V AC, 6 VA
Alarm	No alarm	Two relays 250 V AC, 8 A
Display	Non-illuminated	Illuminated

Pipe mounting kits

Type No.	For pipe dimension
4902 a	25-38 mm
b	35-52 mm
c	50-73 mm
d	72-94 mm
e	82-114 mm

World wide support for Valmet Concentration Measurements

