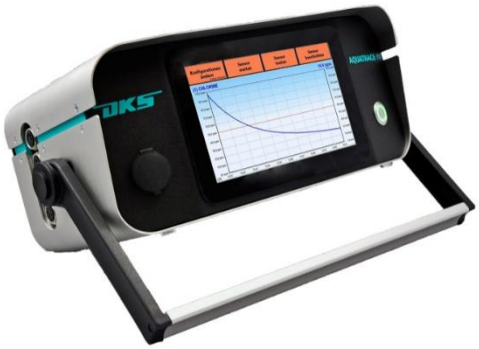
➢ MANUAL ➢

AQUATRACE®-IV

TRACE MOISTURE ANALYZERS FOR GASES

0-2000ppm$_v$



Portable devices (optional with battery)

Wall mounted device (IP65)

19 inch Rack (up to 4 channels)

Measuring cells in different variants available:
Stainless steel | PVDF | glass or ceramic sensor

Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

INDEX

Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

1. Introduction

The **AQUATRACE IV** devices are a further development of our proven series of moisture trace measuring instruments, which work on the basis of P_2O_5 sensors and can be used to determine the humidity in all gases (except NH_3) in the coarse and fine ppm_V range. The measuring system consists of an electronic measuring instrument and a separately installed measuring cell that can be integrated into a gas handling system. The measuring instruments are available as:

1. Laboratory device (portable version) - Model T
2. Laboratory device with battery (portable version) - Model A
3. Industrial device in 19" rack (3 U) or - Model R
4. Wall Unit (IP65) - Model W

2. The basic instrument structure of the AQUATRACE® Analyzer

2. Depending on the version, the devices can process up to a maximum of 4 independent channels (humidity sensors)
3. The display is designed as a touch screen and thus dispenses with susceptible controls
4. The 7" graphic display with a resolution of 800 x480 pixels shows the time-dependent course of the measured values for one or all integrated channels.
5. The run-in process after recoating is represented with logarithmic scaling. After falling below the upper measured value scaled for the channel, the display automatically switches to linear scaling.
6. The re-coating of the sensor is menu-guided.
7. The menu navigation is largely self-explanatory
8. Optionally, the display can be set in ppm_V or Dp in°C. The conversion is done automatically using the Magnus formula
9. The user language is adjustable. It can be selected from 9 languages
10. Production according to ISO 9001
11. The device design follows the current NAMUR recommendations, according to which status signals for failure, limit exceedance, maintenance requirements, device in maintenance
    should be provided as potential-free relays.
12. An automatable sensor test enables the self-monitoring of the
    Device
13. All changes and settings are secured by password protection on several levels (operator, engineer, administrator)
14. Calibration and adjustment with separately available dongle necessary
15. The analog output (4....20 mA) is freely scalable
16. The device records all measured values and changes to the device per channel in the background and has a USB interface via which all data can be read out as a logbook in CSV format.

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

3. Measuring principle

The principle of recording the moisture content of gases is based on the electrolysis of water, which is adsorbed by phosphorus pentoxide. In the AQUATRACE® IV, the sensor coated with H_3PO_4 is surrounded by a precisely defined amount of gas. The cell parameters and the flow velocity are coordinated in such a way that the acid always absorbs a constant proportion of the gas moisture and this proportion is electrolyzed in the same unit of time. The consequence of this is the setting of a dynamic equilibrium in which the flowing current is directly proportional to the moisture content.

4. Measurement setup

The measuring cells consist of the **sensor** in the form of a cylindrical carrier, optionally of:

-ZrO_2 with an interdigital structure of Pt layers, or of glass with bifilar wound Pt electrodes,

and the sensor housing, which
is available in rust-free stainless steel (V4A) or in PVDF,

This means that almost all requirements regarding corrosion resistance can be met.

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

The sensors are coated with phosphoric acid. In the operating menu, the cleaning and recoating of the sensor with H_3PO_4 approx. 40% (semi-concentrated) is described. This work step is of particular importance, as the trouble-free functioning of the P_2O_5 sensor depends on the careful execution.
The handling of the sensor is simple, but requires a certain amount of practice:

1. In principle, when cleaning and recoating, care must be taken to ensure that no moisture reaches the socket. This means that after thorough cleaning of the sensor under running water, it must be dried thoroughly with lint-free cloth (paper).
2. When coating the sensor, make sure that the sensor tip is always slightly tilted downwards.
3. Only 1 – 2 drops of electrolyte (glass sensor up to 3 drops) should always be distributed on the "active" sensor surface (slight turning; possibly distribute with brush).
4. To avoid "splashing" of the electrolyte solution in the sensor housing, the strong formation of bubbles on the sensor should have subsided before it is inserted into the chamber.

Please note!
Moisture residues on the housing wall are very slowly degraded by the passing dry gas, which leads to falsified (increased) measured values over a longer period of time.

When operating the measuring cell, a constant gas flow must always be ensured. The flow rate has an influence on the response time after humidity change but also on the absolute value, since a corresponding calibration curve is firmly stored in the evaluation electronics. Measuring cells for flow rates of 20 Nl/h or 100 Nl/h are available. The evaluation unit automatically detects which of the two cell types is connected. For safety reasons, the cells are designed for a pressure of up to 10 bar, and are usually sealed via a Viton-O-ring.
Normally, the measurement is carried out under low overpressure (20 - 100mbar). Higher pressures must be reduced beforehand with a pressure regulator or throttle dosing valve.

A prerequisite for reliable measurement results is the acquisition and consistency of the flow velocity. We recommend a needle valve at the input and a rotameter at the output of the measuring cell. All components used in front of the measuring cell should have a leakage rate of morethan 10-4 mbar l/s.

Behind the cell, the measured gas must flow off without pressure, with at least 1m pipe length provided for the exhaust pipe. With shorter pipes, it can easily lead to re-diffusion of moisture from the environment (partial pressure gradient).

The pipelines for measurement should always be in V2A or better. For particularly aggressive gases such as chlorine, PTFE pipe is to be used. Other plastic materials may cause a strong diffusion of moisture into the gas.

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

5. Requirements for trouble-free operation of the measuring device

In principle, care must be taken to ensure that the gas supply routes to the measuring cell are as short as possible. Keep in mind that the water molecules are always inclined to attach to the "inner surfaces".

This effect is more pronounced the larger these surfaces are, this means the greater the roughness of the pipe wall and the higher the moisture content of the gas. This is a special feature of the behavior of the water molecules and not a property of the measuring system. Electropolished surfaces or glass-coated surfaces minimize these effects. Set enough time for the "flushing of the measuring device" after the initial commissioning and openings, e.g. after service work.

The measuring cable between the cell and the evaluation device is 2.0 m long as standard. However, distances of up to 150 m between the measuring point and the evaluation device are possible. Please contact us about the dimensioning of the cable.

For measurements in explosive gases, an intrinsically safe design of the measurement arrangement is required. Please contact us about the specific device design required for this!

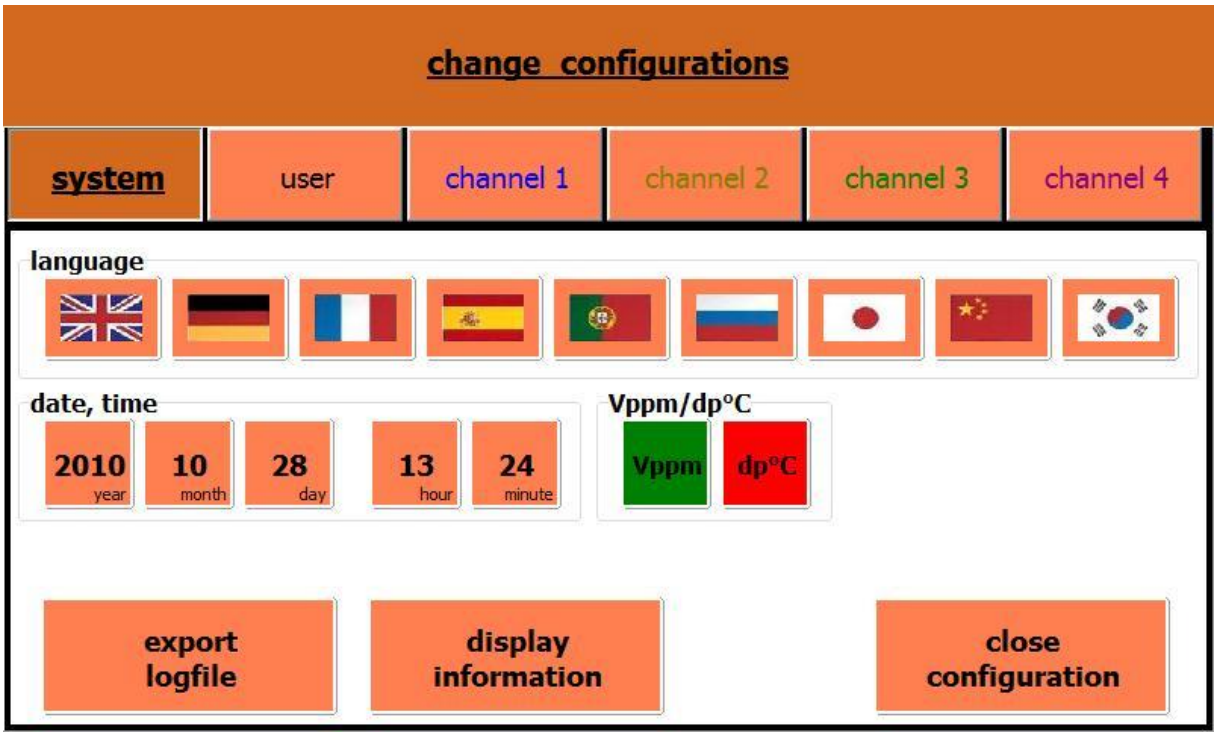
Before the start of the measurement, the entire system must be checked for tightness and thoroughly rinsed. Depending on the cleanliness of the plant components and the length of the gas supply pipes, this process can take several hours, as the moisture components adsorbed on the inner surfaces must be degraded.

This preparation phase is complete when the value displayed on the device does not change within about 30 minutes.

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

6. Explanation of the menu structure and execution of the measurement

After the system startup has been done, the system configuration logs in, where you can select the desired language. The entire operation can then be carried out in this language.



Configuration menu item

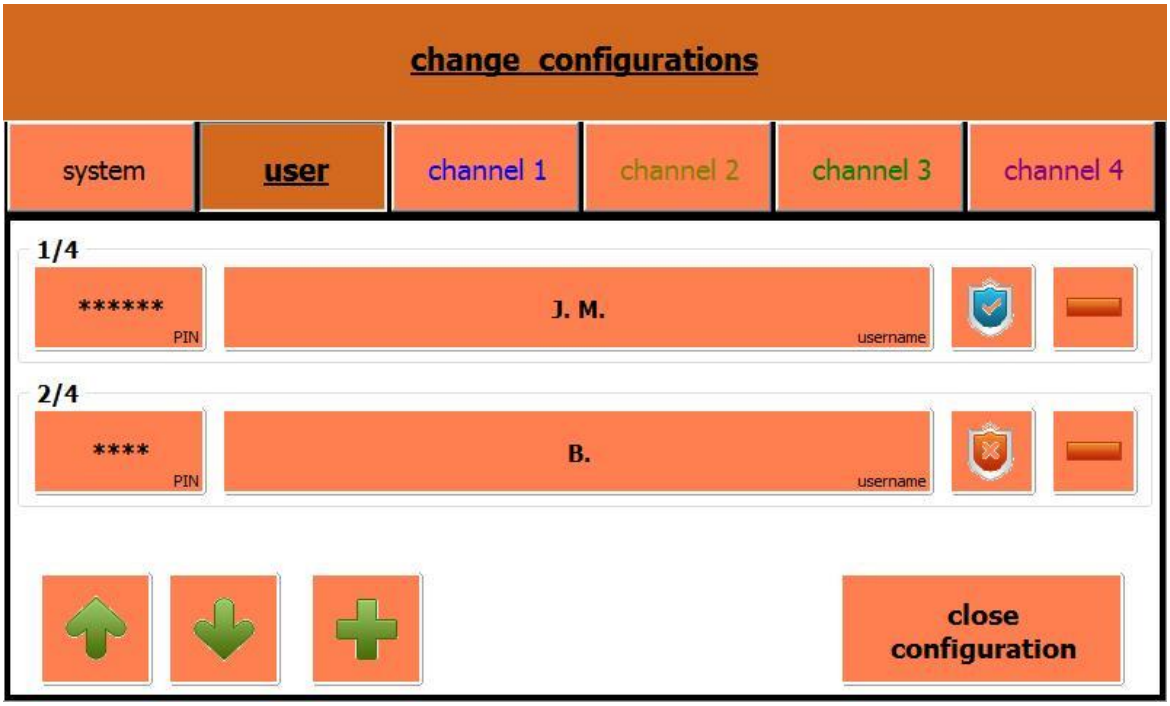
- Display in ppm_V or Dp in°C
- Language selection
- Nutzerverwaltung
- Channel management
- Data export (value range, channel, etc.)
- Date, time
- „stamp“ (z.B.: Messstellenbezeichnung; Gasbezeichnung ect.)
- Define name of the channels
- Scaling of the display area
- Alarm/ Limit-configuration
- Setting of the automatic sensor test (per channel)
- Analog output scaling (per channel)

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

View information:
-Type
-Device number
-Delivery date
-Version
-Firmware version
-Date of last data output

In the menu item "Users" any number of users with different access authorizations can be created.

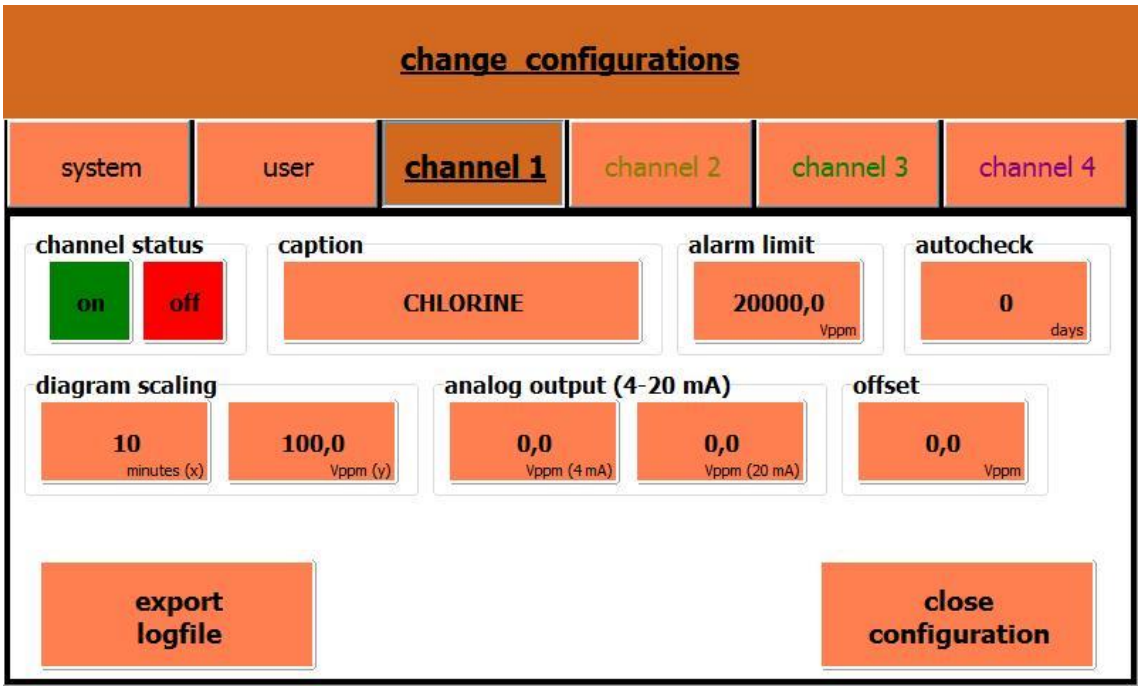
4 operator levels are provided for these authorizations:
0. Free access (access without PIN code, or dongle)
1. Plant personnel - PIN - for channel switching; sensor test; sensor maintenance; Coating
2. Engineer - PIN - change for device configuration; Read data; Read device status
3. Service - protected interface - change soft/firmware; Diagnosis



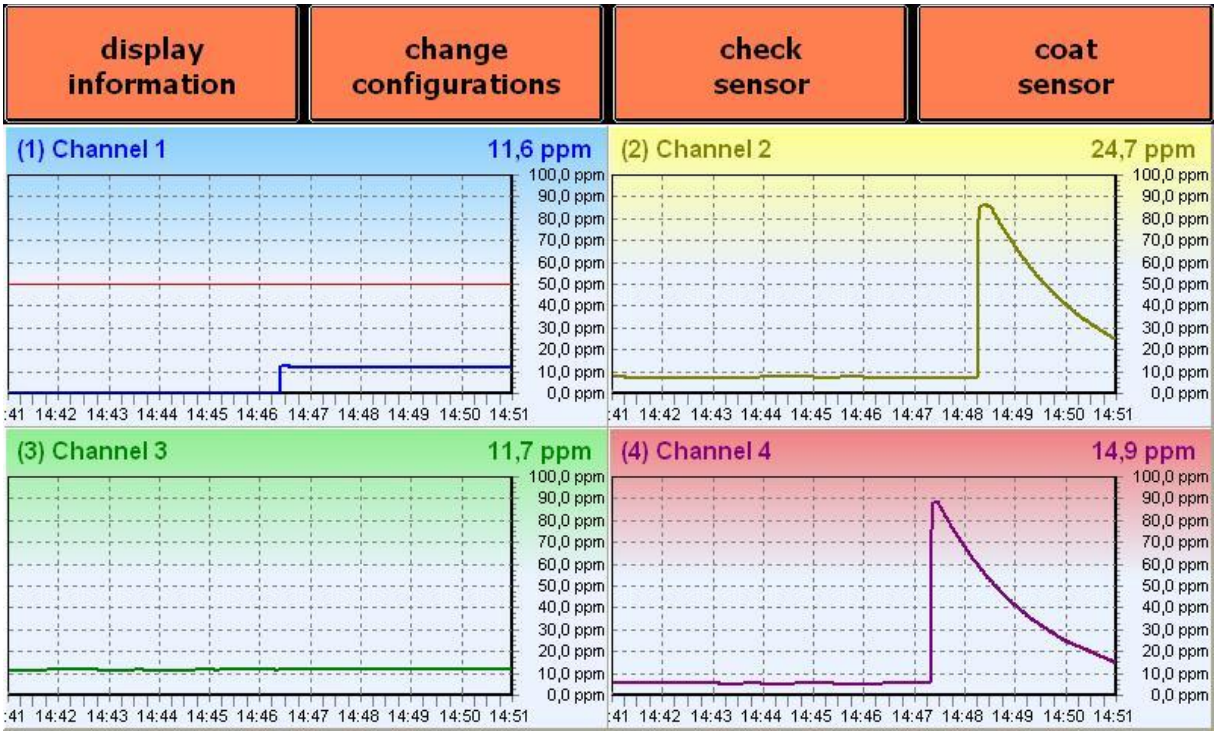
For each available channel, the intended parameters can be defined or selected.

Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

The recorded measurement data can be read out via the "logbook" on a USB stick and made available as a date-based, daily *.csv file.

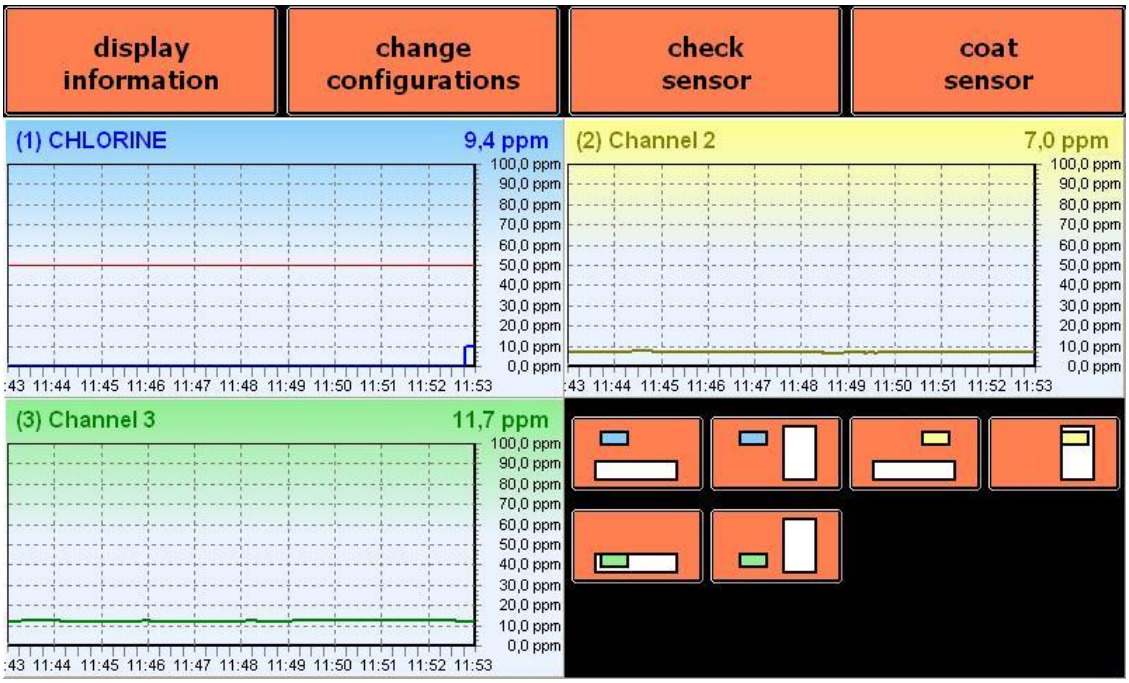


Basic menu structure with header for function keys

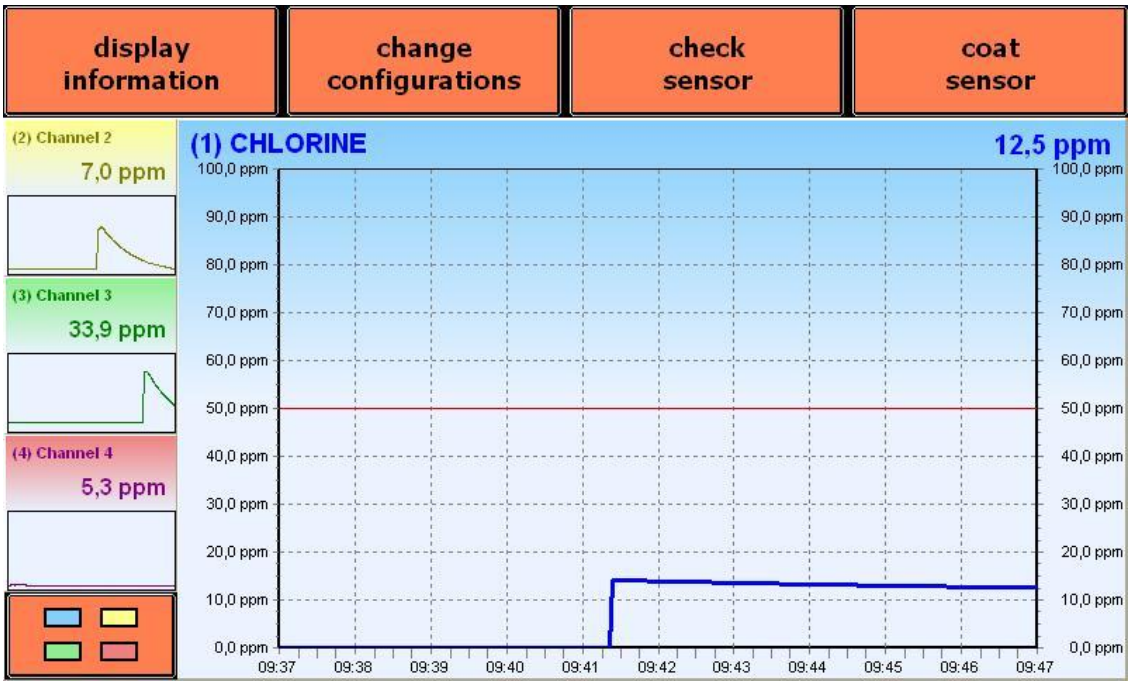


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

The arrangement of the channel representation can be changed as desired:



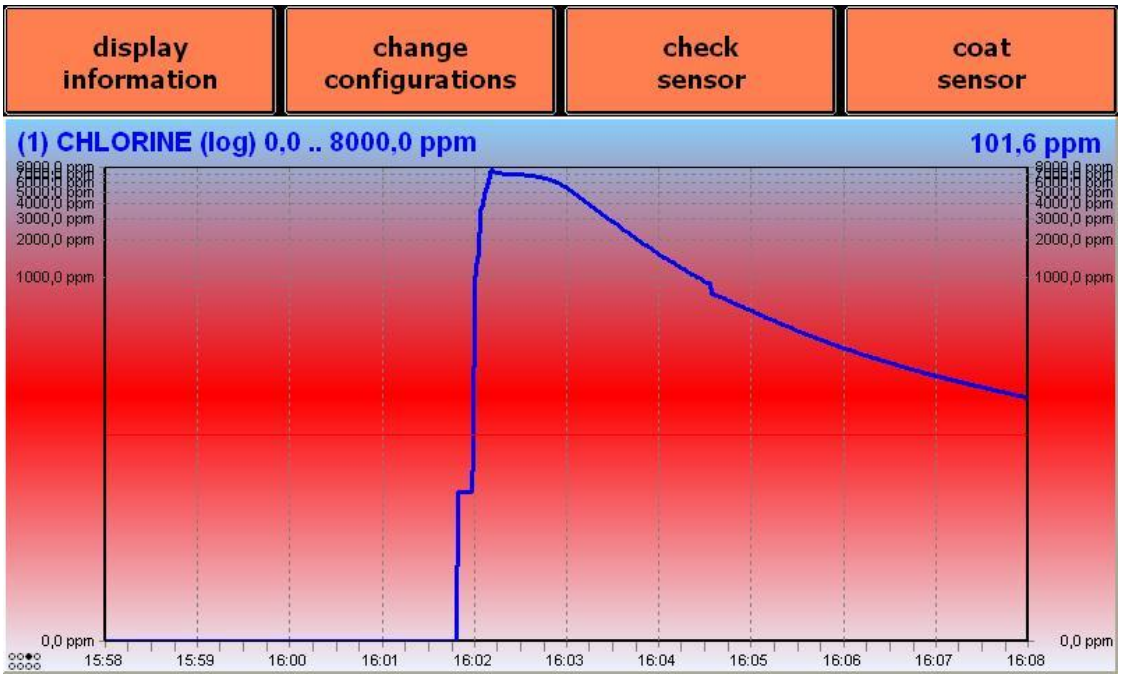
By touching a channel field, it appears in the foreground:



The visible range of the timeline is adjustable and zoomable by touch:

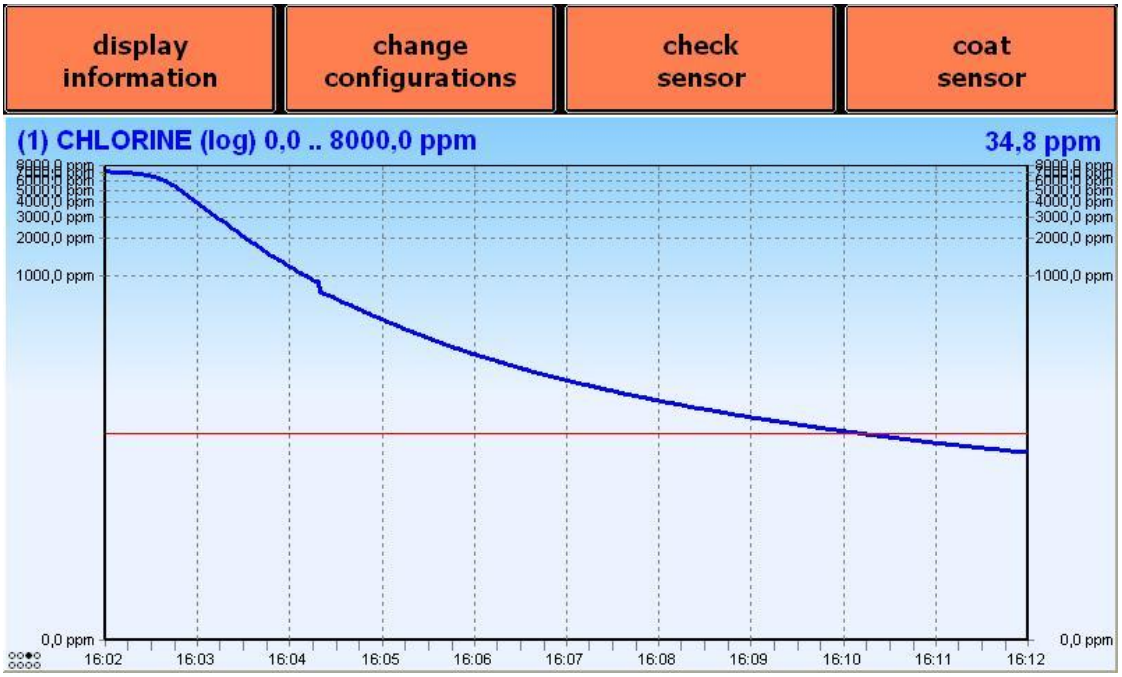
DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Representation of an "infeed operation" with logarithmic scaling:



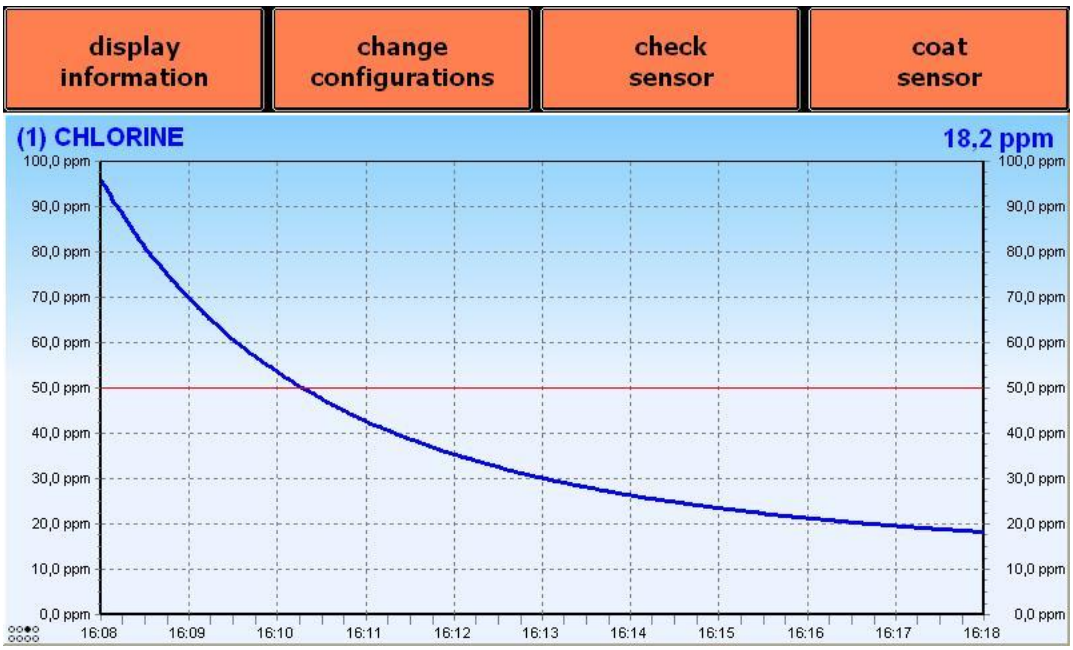
As long as the adjustable limit value is exceeded, the display flashes red.

Regular curve after falling below the limit value. (here 55.0 ppm) :

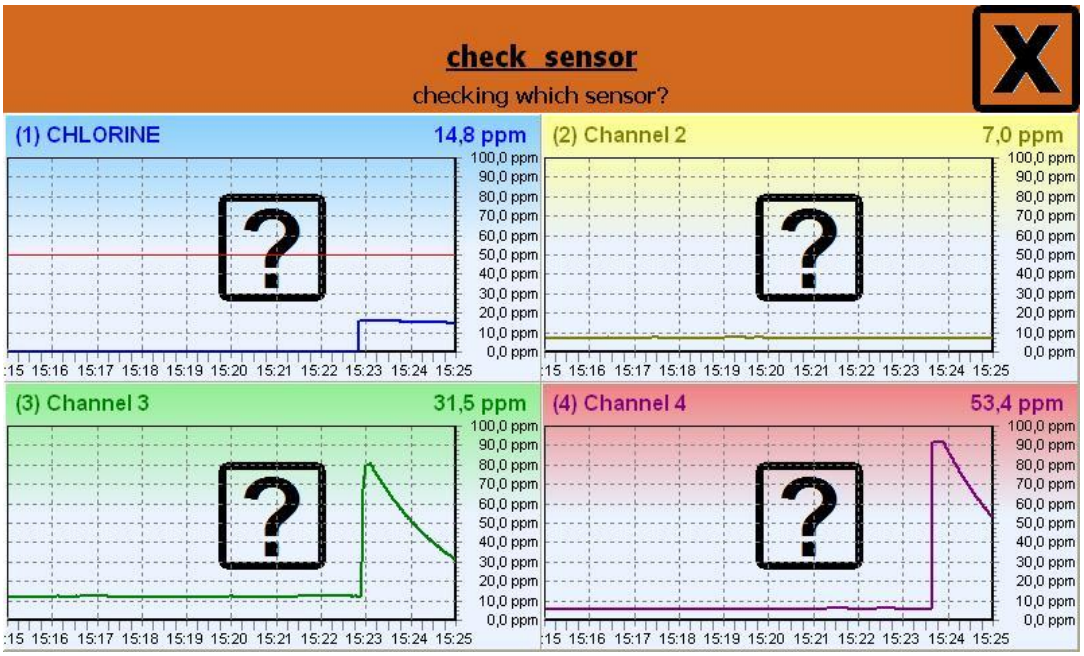


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

When the visible curve value on the left edge of the image has reached the scaled maximum value, the scaling switches back to linear division:

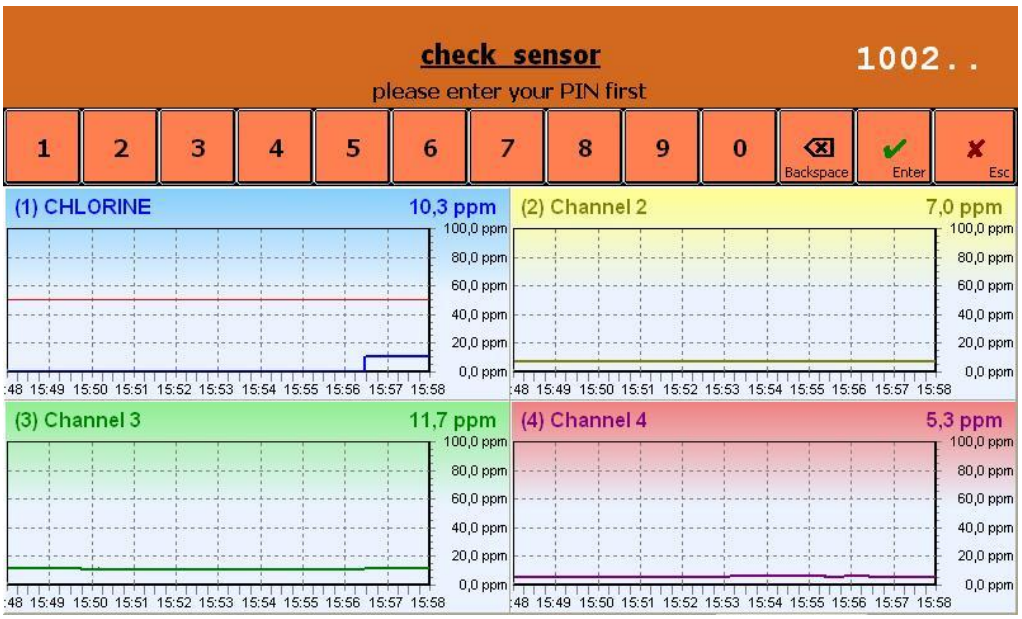


A sensor test is carried out to check the measuring cell. By touch, the respective sensor is selected:

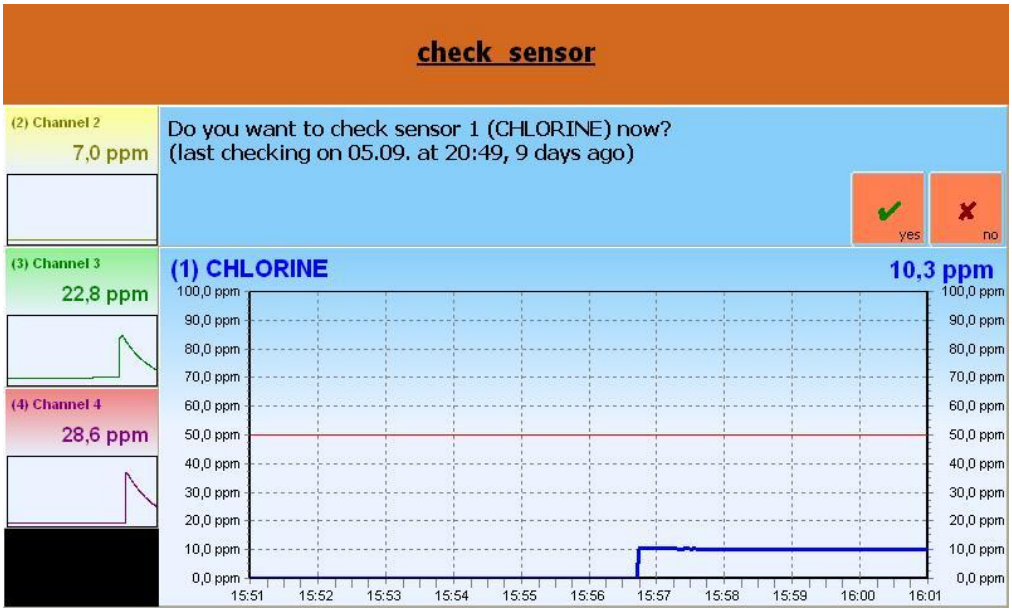


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

For the sensor test, the input of the PIN (engineer or operator level) required. (see menu item "Users" if this is specified.) :



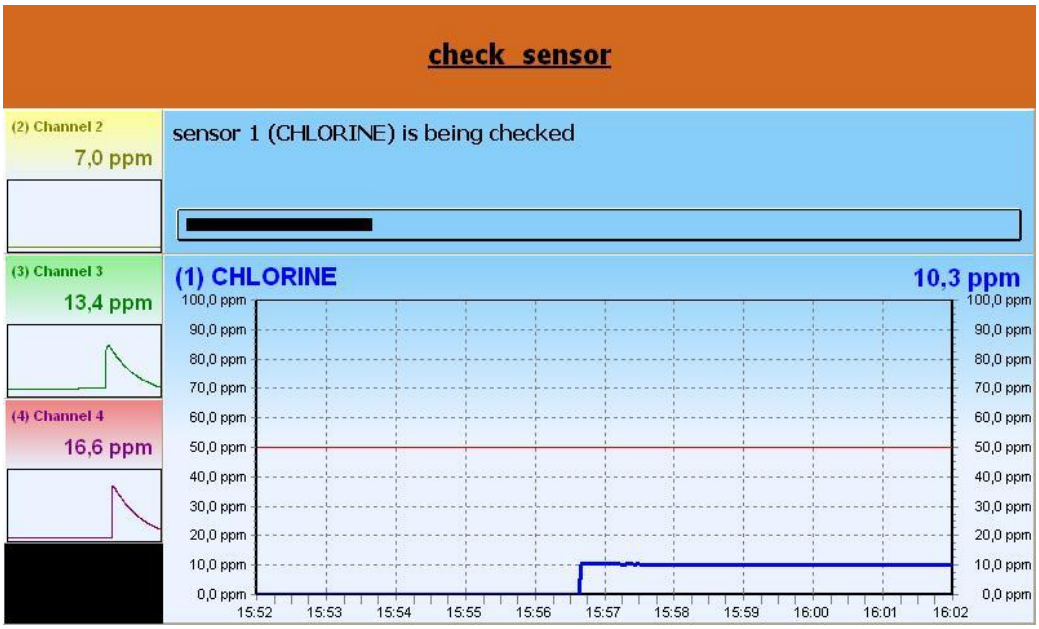
After confirming with "Enter" you will be taken to the test menu.
You can now start the test (yes), or leave the menu again (no):



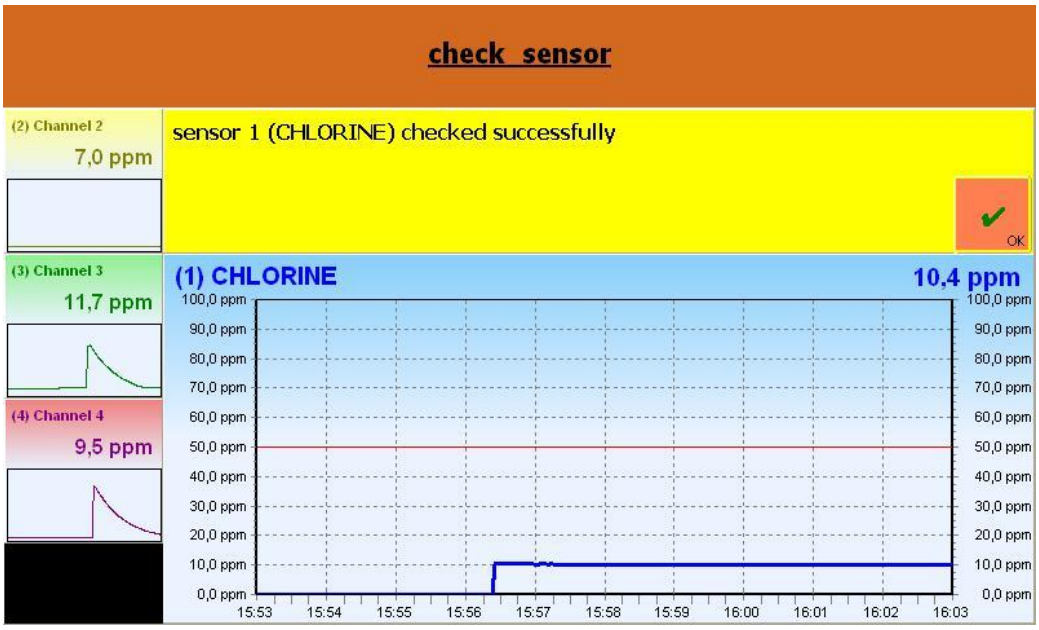
DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

When the test is started, it runs automatically and the time course can be tracked.

In the meantime, the analog output is switched to "sample and hold":

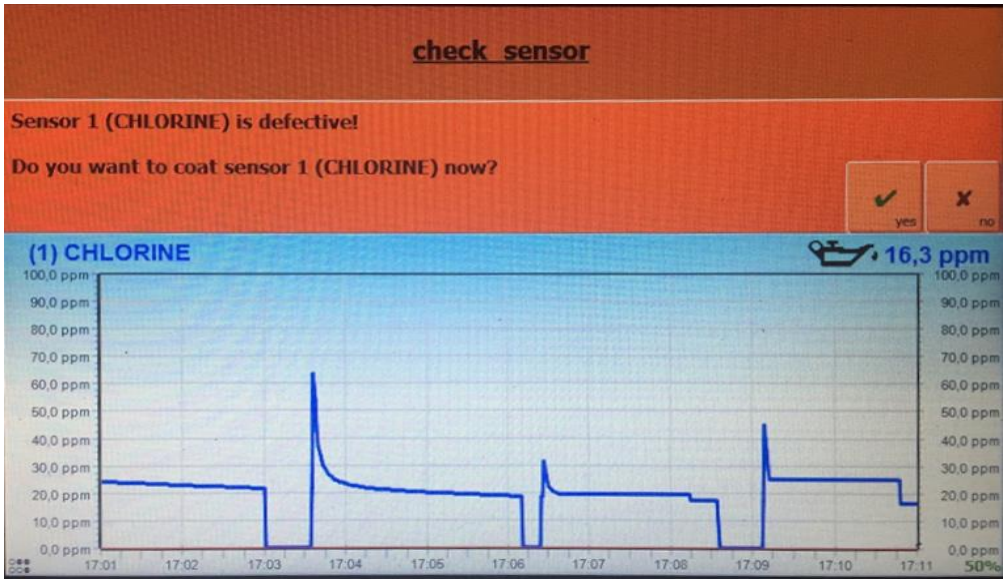


The test result is displayed and, as in the example shown, again with "ok" switched to measurement mode:

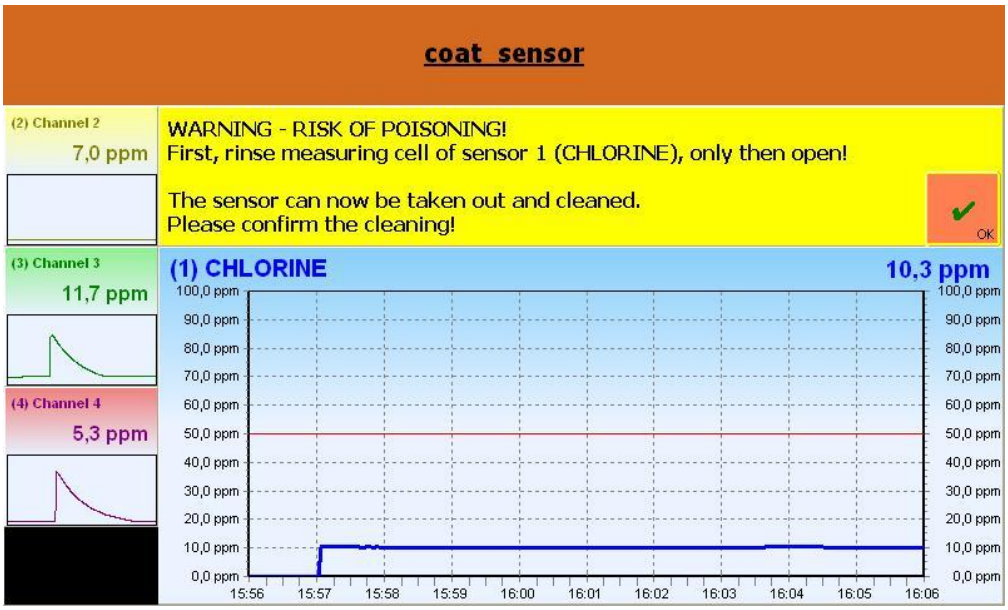


Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

If the test is negative, the relay "maintenance requirement" is activated and it can be decided whether to switch to the coating mode (yes), or to measure further (no). In this case, the service icon remains active:

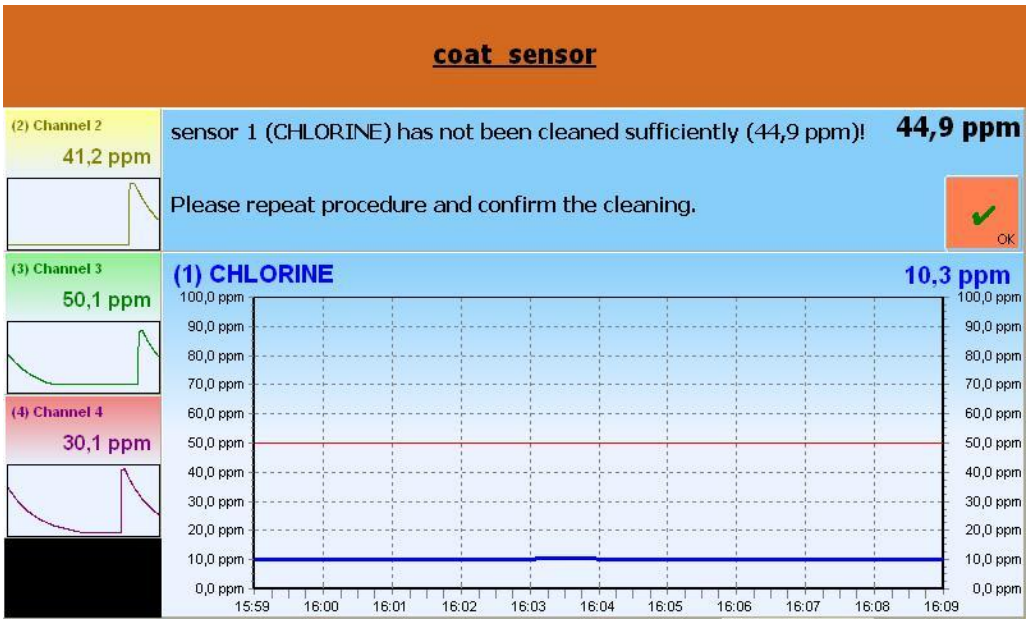


If confirmed with "yes", the operator receives an indication of possible dangers. At the same time, the voltage on the sensor is switched off, the analog output switches to "sample and hold", the last measured value is displayed on the display (here 50.6 ppm) and the relay "Maintenance" is activated. The sensor is cleaned and the success is checked with "ok".

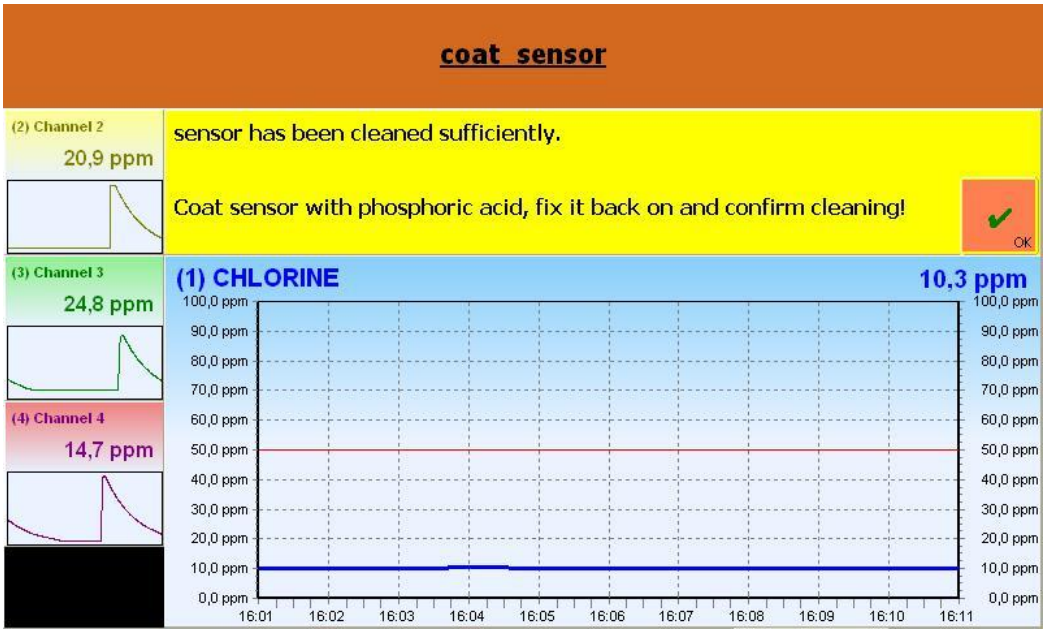


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

If the cleaning was not successful; i.e. the "electric zero point" has not been reached, the process must be repeated.



If the cleaning result is positive (< 0.1 ppm), the voltage is restored again switched on and the sensor can be coated with phosphoric acid

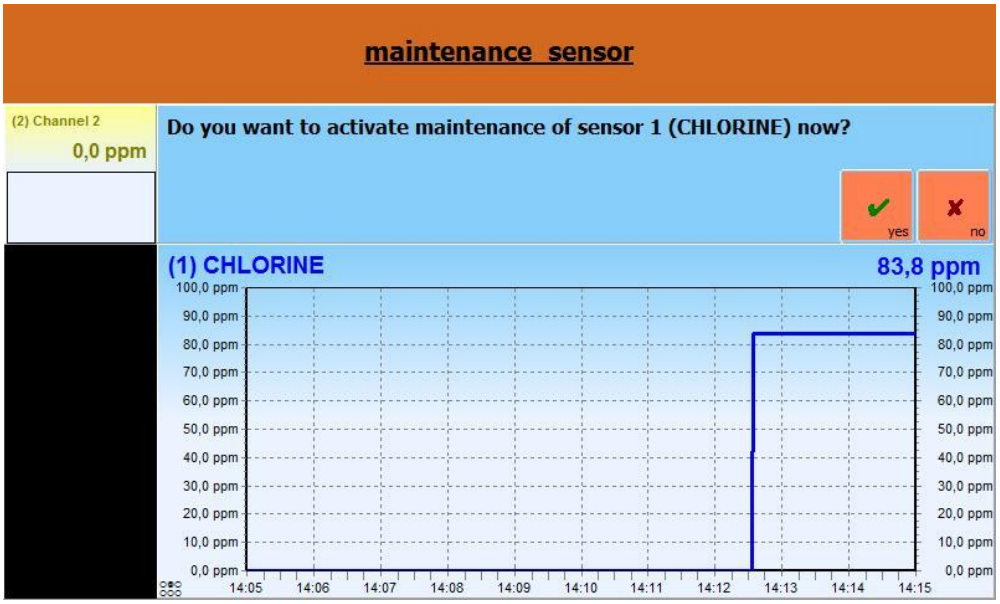


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Please note: Insert the sensor into the reaction chamber only after the bubble formation has subsided. With the "ok" confirmation, the inlet curve appears in the display in logarithmic representation. The relay "Maintenance" is only deactivated after falling below the limit and releases the analog output again ("sample and hold" is switched off).

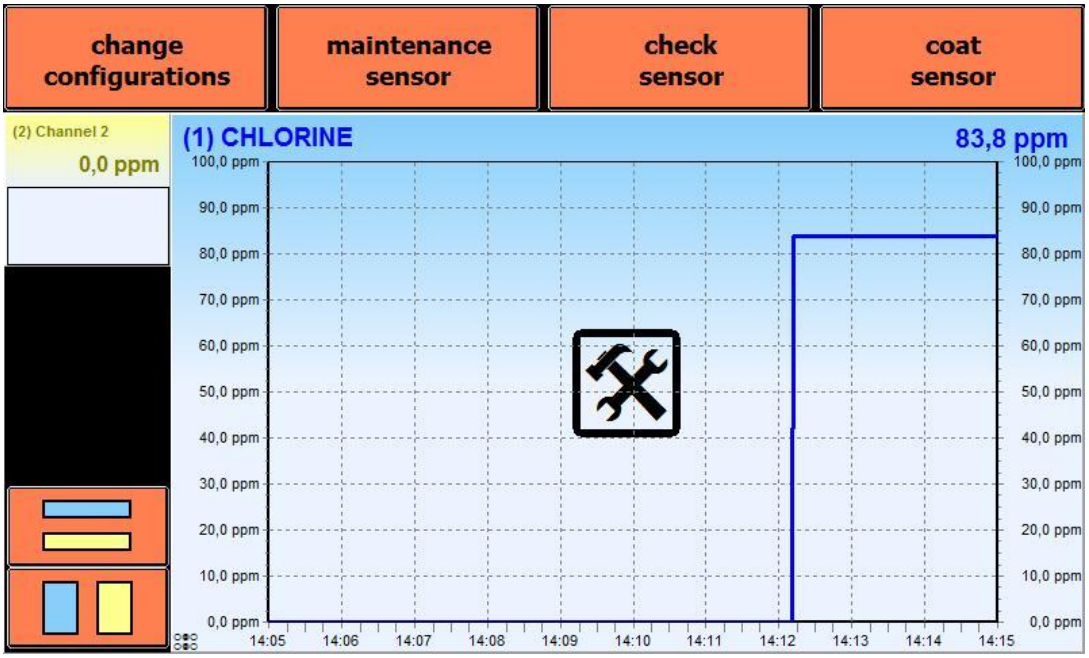
If basic maintenance work has to be carried out on the measuring system, you can select "Wait sensor" via the main menu and specify for which channel the maintenance is to be carried out. (see NAMUR recommendations; Function "Key Switch")

The following image will then appear with the selection option:

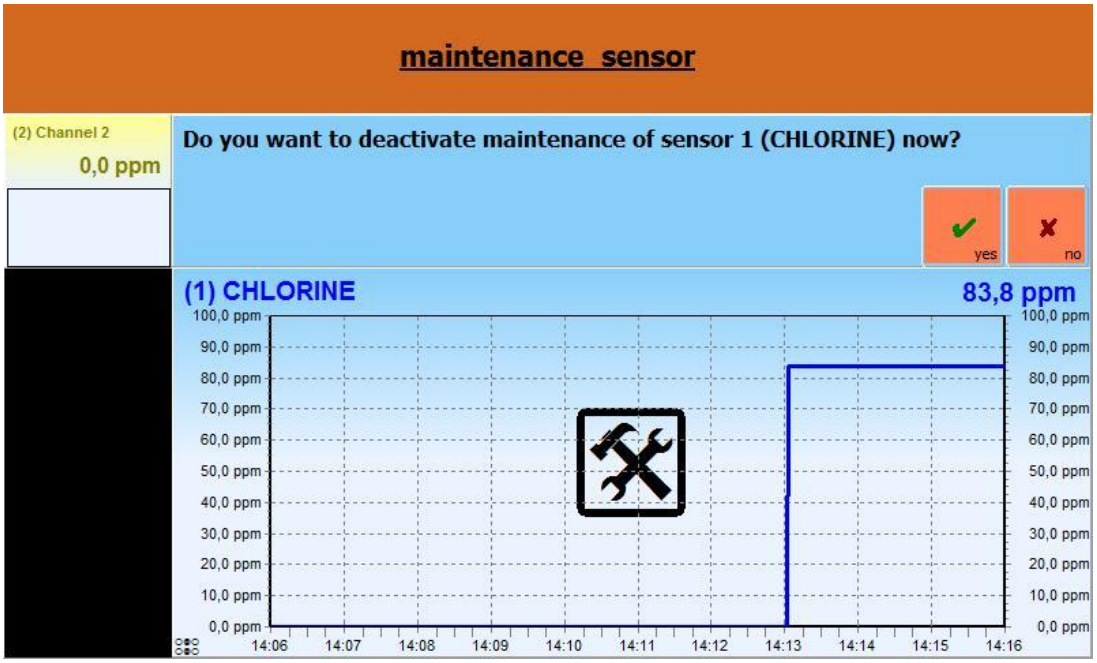


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

If the maintenance has been confirmed with "yes" for the selected channel, the icon for this channel appears on the display for the duration of the maintenance:



After completion of the work, the maintenance mode can be deactivated again via the button "maintenance sensor":



DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

7. Special functions

All measuring instruments, **except the AQUATRACE® IV-A** have a digital Ethernet interface with Modbus TCP protocol.

In the AQUATRACE IV, the following functions are possible via this interface:

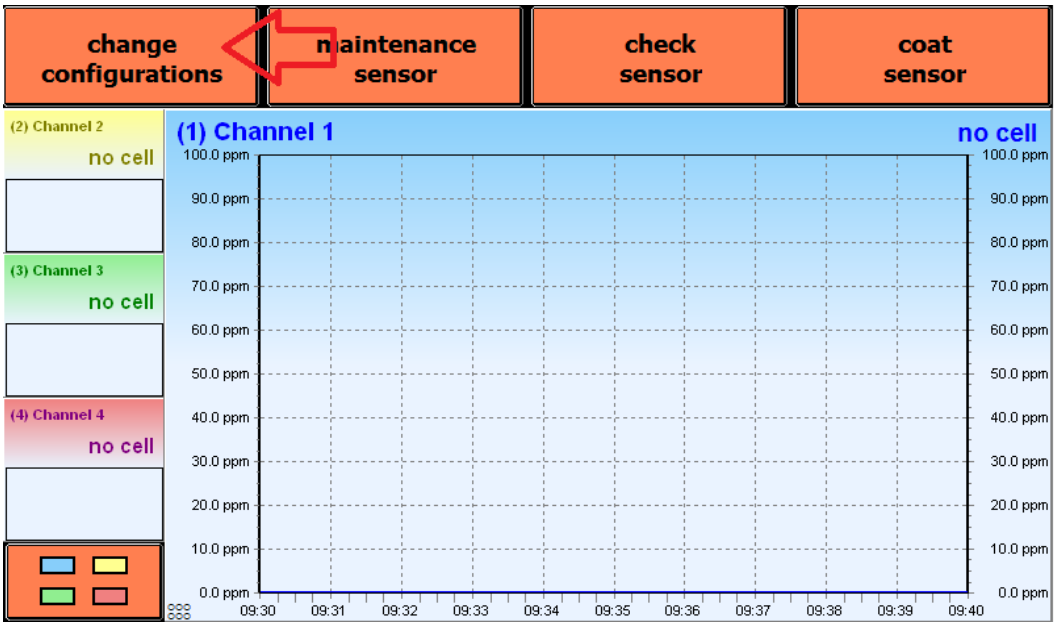
1. Modbus TCP (direct, up-to-date data transfer from PLS)
2. Remote control of an AQUATRACE IV device via VNC
3. FTP (File Transfer)

VNC implements the Remote Framebuffer Protocol and is platform-independent

7.1 Virtual Network Computing

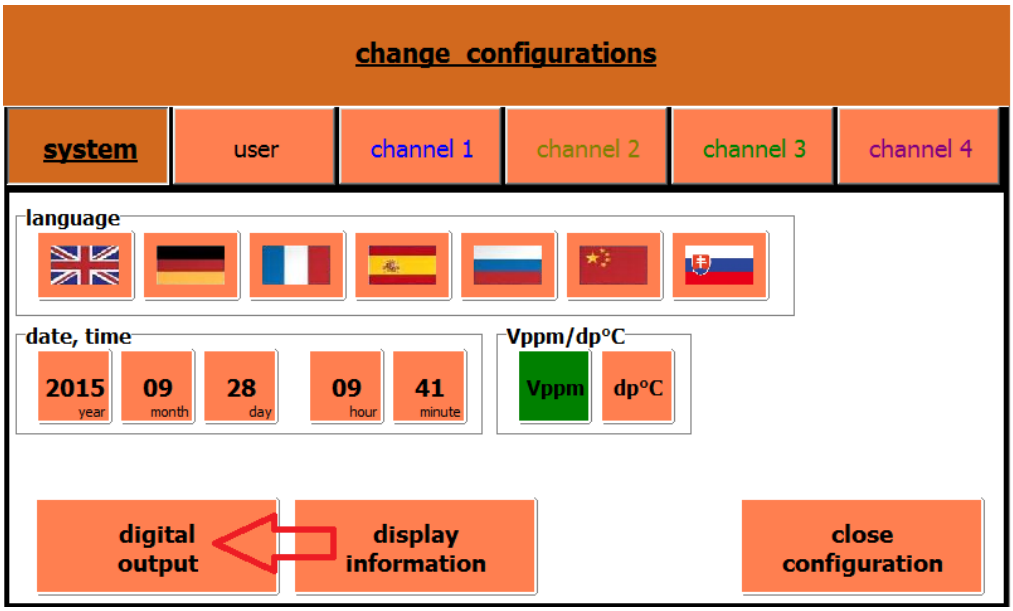
By using of the digital interface with Modbus TCP protocol it is possible to use VNC. For this purpose, the IP address of the AQUATRACE® IV must be adapted according to the conditions at the place of use.

When the system is fully loaded, please press "change configuration":



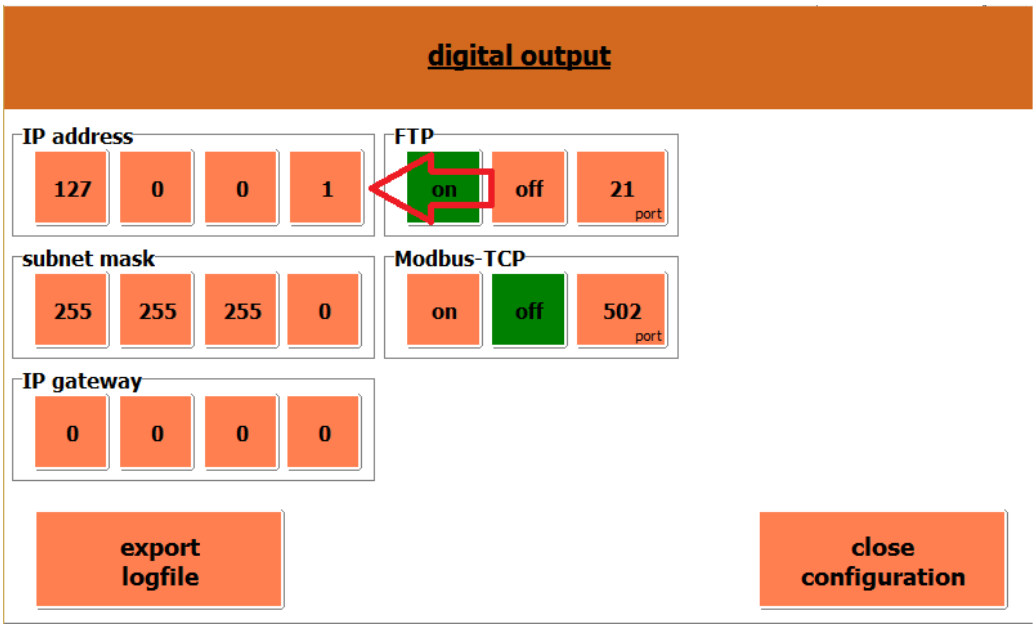
DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Next, please navigate to the "digital output":



DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Under "IP address" the address can now be changed according to your wishes:



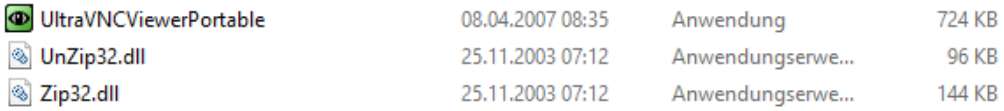
To complete the configuration, please press "close configuration".

The software is restarted and the IP address is adopted. A VNC connection to the Aquatrace IV is then possible.

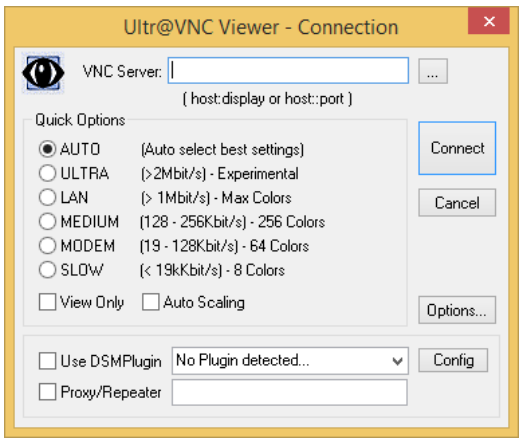
7.2. Ultra VNC on a Windows PC

The UltraVNC software is available on the supplied USB stick.

This version is portable and does not need to be installed.



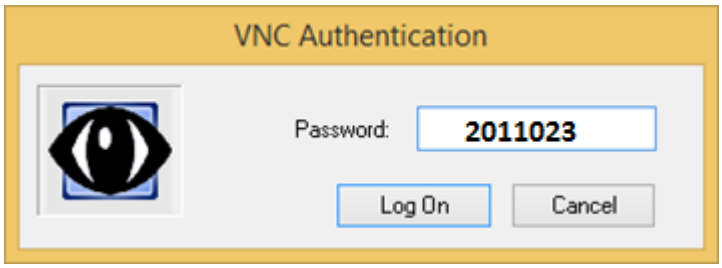
Please launch the UltraVNCViewerPortable application:



DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Under the entry VNC Server, please enter the IP address of the AQUATRACE® IV, which was assigned as described above.

Other settings do not need to be changed.



In order to establish the connection, you will be asked for admin password.

The password consists only of numbers and is the device number of the AQUATRACE® IV (see entry)

The image of the device display now appears on your PC.

7.3. Individual adjustment of the characteristic curve

The following options are available:

1. Programming of a separate – plant-specific – characteristic curve, or
2. Displacement of the characteristic curve stored in the device (zero point correction) or
3. Adjustment of sensitivity (gradient)

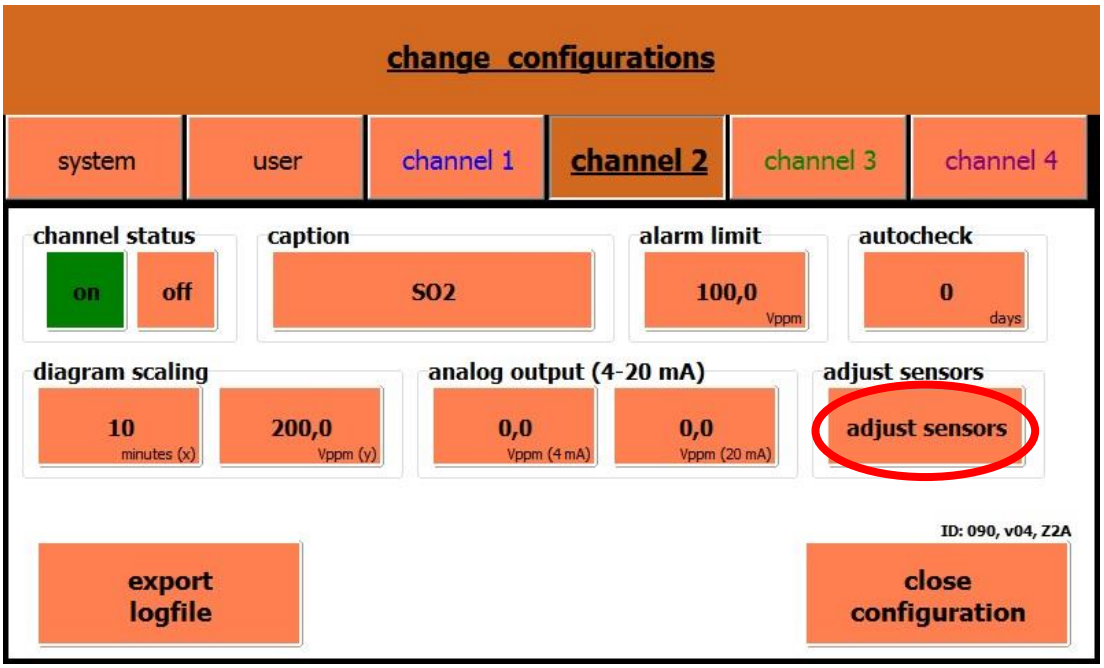
PLEASE NOTE: A separately available USB dongle is required to adjust the device. This is not included as standard!

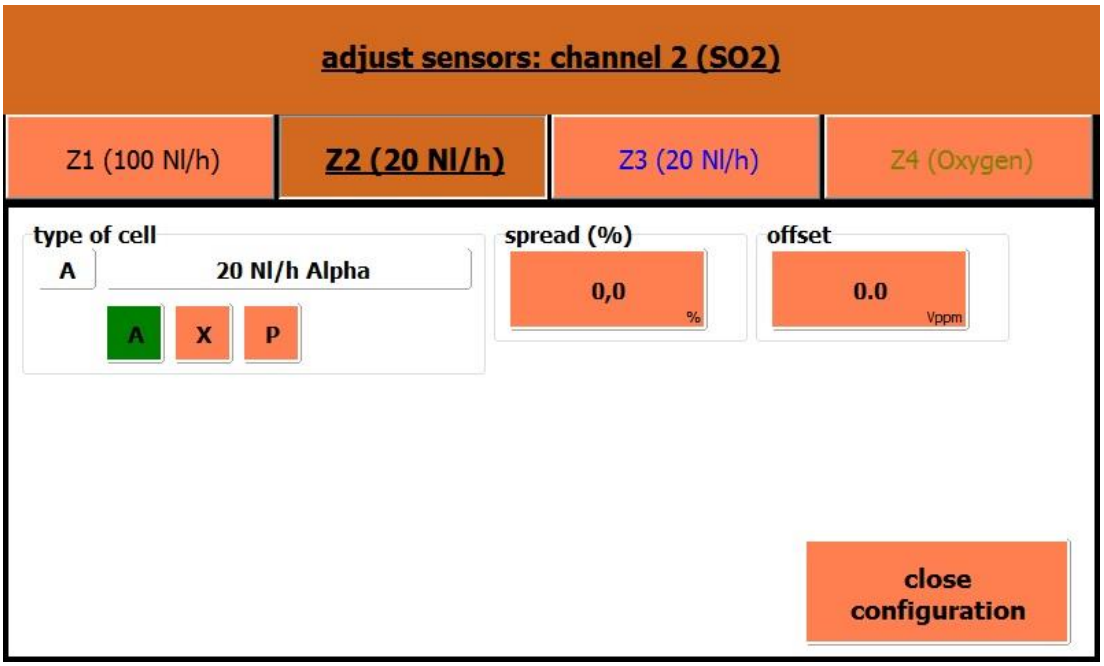
The adjustment of the sensor characteristic curve may only be carried out by specially trained personnel authorized by the operator.

The same applies to the setting of a desired "final value".

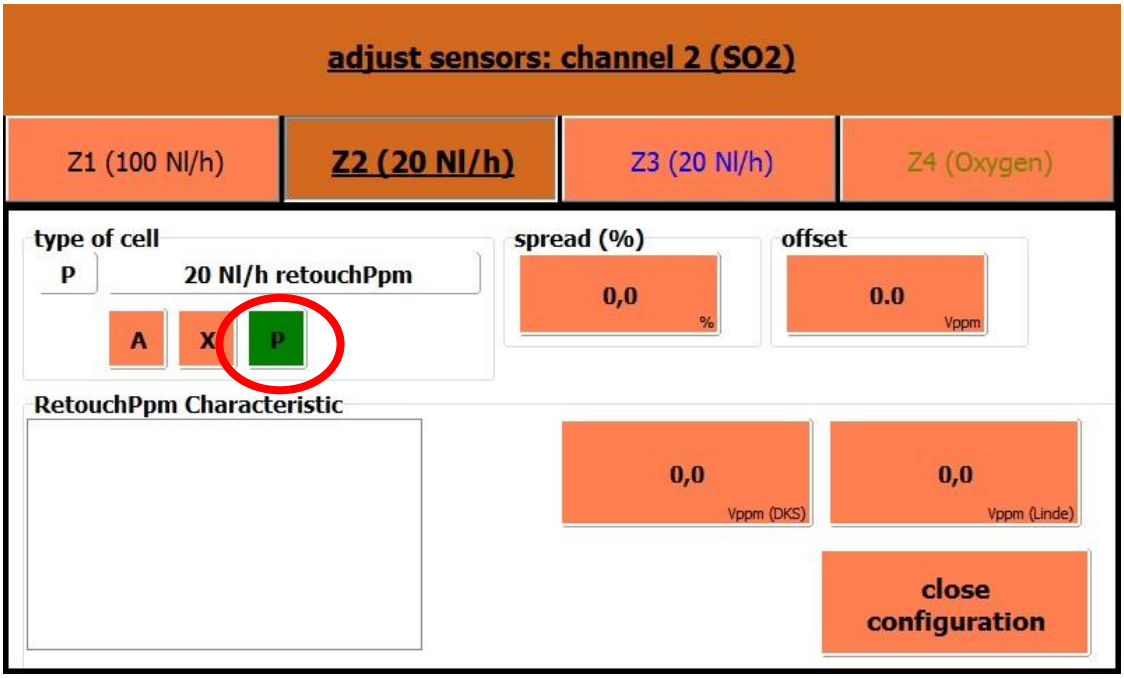
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

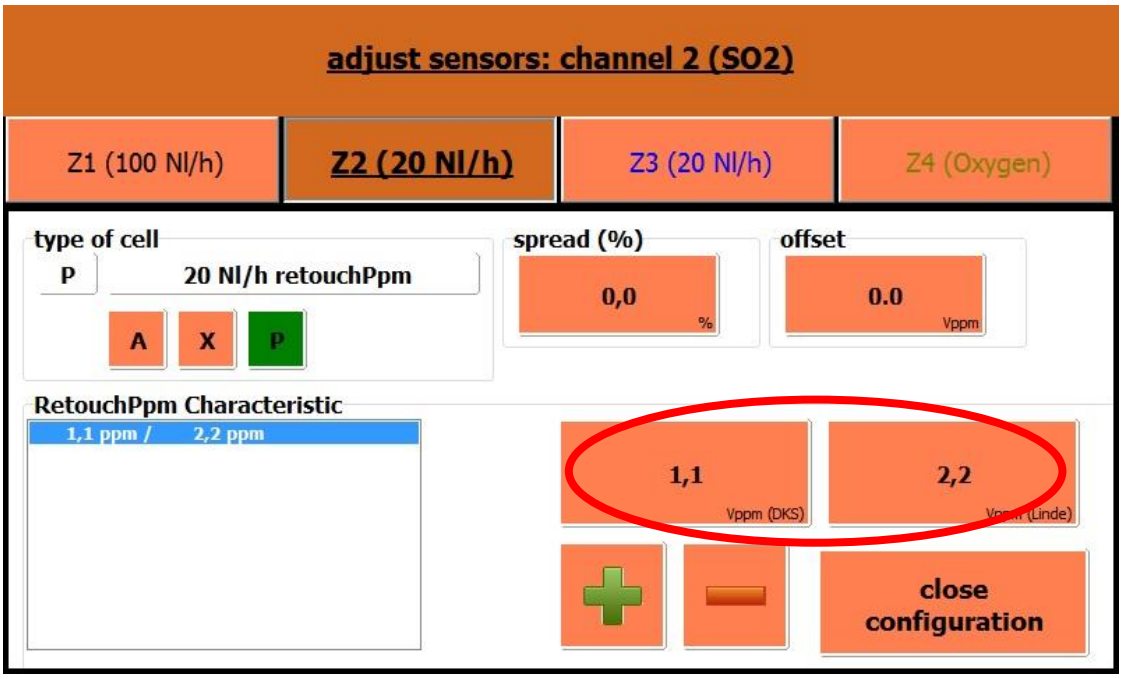
The following pictures are intended to illustrate this possibility:



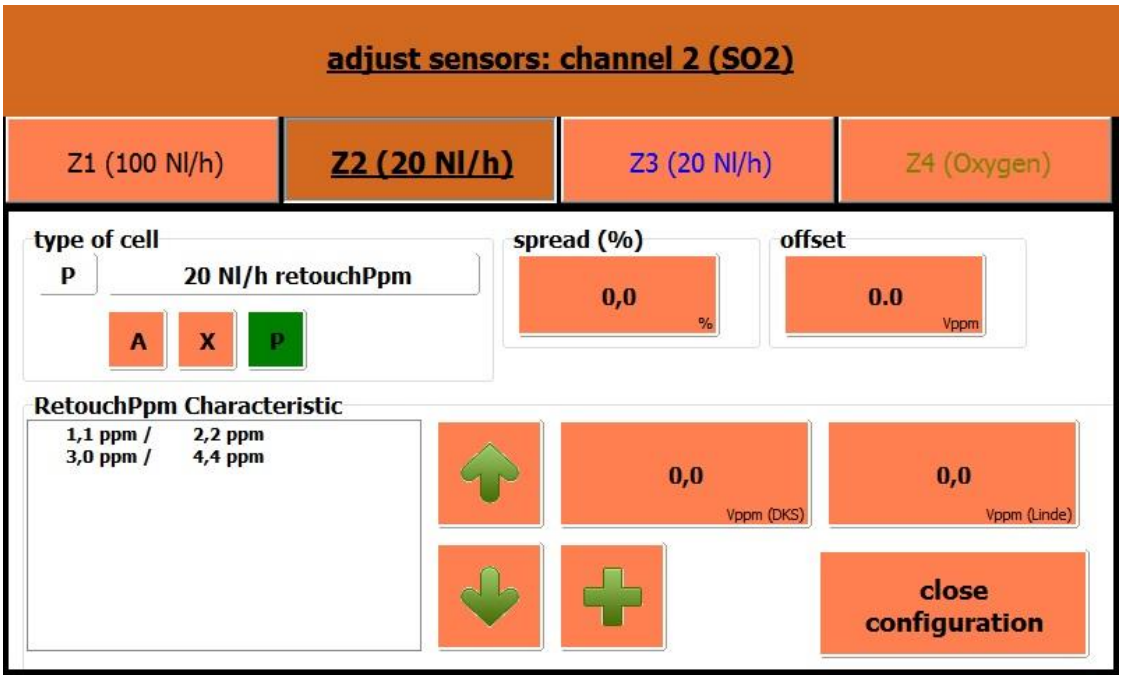


DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de





DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de



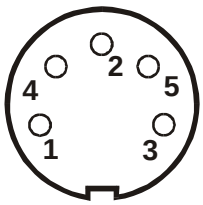
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

8. Plug assignment (applies to eachs channel)

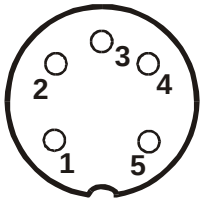
View from the soldering side of the plug or top view on socket

8.1 Measuring cell – Device

Type of device socket **Binder Series 680**, 5-S pin (cable plug: 09 0317 00 05)

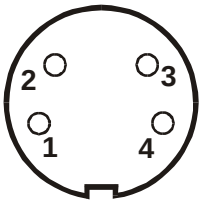
	1	Measuring Voltage - Output
	2	Measuring Voltage - Input
	3	Sensor ID 100 Nl/h
	4	GND
	5	Sensor ID 20 Nl/h

Measuring cell connection via cable with miniature coupling plug, angled**, binder series 712**, 5 pin type: 99 0413 70 05

	1	Measuring Voltage - Output
	2	Measuring Voltage - Input
	3	Sensor ID 100 Nl/h
	4	GND
	5	Sensor ID 20 Nl/h

8.2 Analog output 4 – 20 mA scalable

Type of device socket **Binder Series 680**, 4 pin (cable plug: 09 0309 00 04)

	1	+ Current output
	2	- Current output
	3	free
	4	free

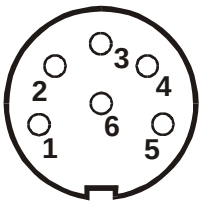
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

8.3 Relay outputs 1 + 2

Type of device socket **Binder Series 680**, 6 pin (cable plug: 09 0321 00 06)

Relay 1 for "F" (Failure/Failure/, Fault)

Relay 2 for "S" (out of specification/ over limit)



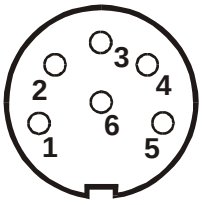
1	Relay 1 potentialfrei -COM
2	Relay 1 NO
3	Relay 1 NC - NC
4	Relay 2 potential free-COM
5	Relay 2 NO -NO
6	Relay 2 NC - NC

8.4 Relay outputs 3 + 4

Type of device socket **Binder Series 680**, 6 pin (cable plug: 09 0321 00 06)

Relay 3 for "C" (Check/ Channel in Maintenance)

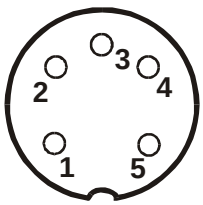
Relay 4 for "M" (maintenance)



1	Relay 3 potential free-COM
2	Relay 3 NO
3	Relay 3 NC – NC
4	Relay 4 potential free -COM
5	Relay 4 NO
6	Relay 4 NC - NC

9. Satus output (once per device)

Type of device socket **Binder Series 680**, 5 pin (cable plug: 09 0313 00 05)



1	Relay 5 potentialfrei -COM
2	Relay 5 Claspr -NO
3	Relay 5 NC - NC
4	not occupied
5	not occupied

Relay 5 is controlled as "fail save".

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

A WatchDog Timer monitors the device's function and shuts down the relay in the event of a failure.

10. FAQ

10.1 What determines the response time of the sensor to a humidity event?

The response time from "dry" to "wet" depends strongly on the respective humidity level. For example, with a humidity increase from less than 1 ppm to only about 10 ppm, there is a delayed increase in the measured value by about 1 min., which indicates surface effects (adsorption of the "first" water molecules) on the inner surfaces of the measuring system. However, if there is a "humidity event" with a significant input of water molecules (more than 100 ppm), the sensor responds immediately (< 1 sec.). Here, too, the visualization of the measured values as a curve curve on our touchscreen is of particular importance.

10.2 How does the sensor behave in case of wet decrease?

Similarly, the sensor also behaves when the sample gas humidity drops. The electrolytic moisture degradation generally takes place much more slowly than with a moisture increase in the sample gas.
(T_{90} of 15-20 min. provided that the entire measuring system has been dried!)

10.3 What do the error messages on the display mean?

„Communication Error“	Connection device hardware with PC board is disturbed; is automatically remedied in a time-controlled manner in the event of a short-term malfunction (watchdog).
"Destination drive unavailable"	Data should be stored on a USB stick, but no USB stick should be connected
"no sensor"	there is no measuring signal on the corresponding measuring channel = no measuring cell connected; Measuring cable or sensor defective

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

11. Description of the controls

Type R 19 Rack

USB – Connection for updates or -Copy of the recorded log. Data

Start-Stop switch; to start min. Press 3s - green ring glows – ok

Key switch for network

Measuring cell see 8.1
Analog output see 8.2
Relay outputs see 8.3
Relay outputs see 8.4

Status output see 9.0

Ethernet Socket

Type W wall mounted device

Start-Stop switch; to start min. Press 3s - green ring glows – ok

USB – Connection for - Updates or -Copy of the recorded log. Data

Key switch for network

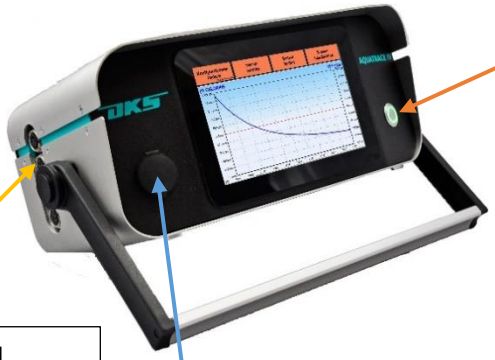
Measuring cell see 8.1
Analog output see 8.2
Relay outputs see 8.3
Relay outputs see 8.4

Status output see 9.0

Ethernet Socket

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

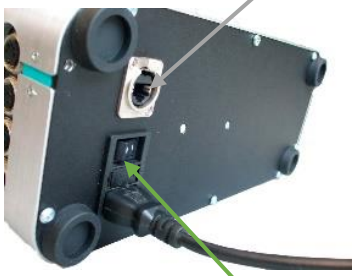
Type T labratory device



Start-Stop switch;
to start min. Press 3s
- green ring glows – ok

Measuring cell see 8.1
Analog output see 8.2
Relay outputs see 8.3
Relay outputs see 8.4

Ethernet Socket



USB – Connection for
- Updates or
-Copy of the recorded
log. Data

Power switch and
Mains connection

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

12. Technical data

	Technical Specifications
Product:	**AQUATRACE®** IV Trace moisture analyzer 1-4 channel in different variants
	Performance specifications
Measuring range:	0-2000 Vppm, dew point –100 °C - 20 °C, on request non-standard ranges available
Accuracy:	+/- 5 % of the display value, at least 0.4 ppm_V | optional: at least 0.04 ppm_V
Ansprechzeit:	Dry to moist: T90 < 5 sec; Wet after dry: T90 < 15 min
Repeatability:	+/- 0,1 ppm_V | optional: +/- 0,02 ppm_V
Calibration:	traceable calibration certificate | n-point calibration/adjustment (optional)
Display	Touchscreen 800x480 pixels, colored
	Each measuring channel
Lower detection limit	0,1 ppm_V | optional: 0,01 ppm_V
Measuring range	0-2000 Vppm
Measurement value	In ppm_V or Tp°C (adjustable)
Transmission rate	32bit
Data log rate	minus. 2 s max 10 min
Sensor ID	automatic
Sensortest	automatic (function test)
Analog-output	4-20 mA (freely scalable)
Alarm Type	Limit value - programmable as potential-free alternating contact
Channel relays	4 channel relays according to NAMUR (F + S; C + M), per channel (max. 2)

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de

Measuring cell (sensor)

Material Measuring cell	PVDF or stainless steel
Material of the sensor	Platinum on glass carrier/ceramic or interdigital structure on ceramic carrier
Leckage rate	< 5x10 -7 mbar x l / s
Gas flow	20 Nl/h oder 100 En/h
Gas temperature	+5 … +90°C
Gas pressure	approx. 200 mbarü at the measuring cell inlet, flowing out without pressure
Gas connectors	for 1/4" NPT screwdriver
Electrical connector cell	5 – pol. Binder plug, angled
Measurement wire	assembled 2 m; max. cable length 150 m

13. Sampling system

Here you can see a example for a typical gas sampling system for non-corrosive gases with:

- Rotameter
- Needle valve
- Quick coupling
- P2O5-measuring cell
- Stainless steel

Note: Also available in PVDF and many other configurations. Depends from your needs!

***** Please contact us *****

DKS GmbH Engineering & Vertrieb
Radeberger Str. 21; 01900 Großröhrsdorf
Tel. / Fax. 0049 35952- 429465 /- 429457
E-Mail: info@dks-engineering.de; www.dks-engineering.de