

Aquatronica

Instruction Manual 

Redox Interface (ORP) ACQ210N-RX



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Redox, known to many as ORP (Oxidation Reduction Potential) provides a general indication of the biochemical conditions of the water in aquariums. This value is measured in mV and indicates whether the aquarium is in a state of oxidation (Value > 0) or reduction (Value < 0).

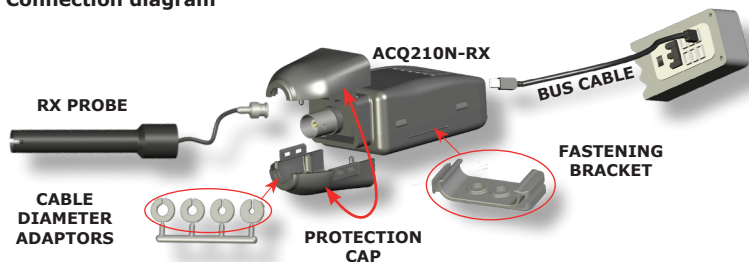
Aquatronica's Redox Interface connects a Redox electrode (ORP) to the "Aquarium Controller" system to measure and control the oxidation reduction potential in aquariums.

Pack contents

You will find:

- One Redox probe connection interface.
- One BUS cable for connecting the interface to the power unit
- One bag of accessories containing: 1 fixing bracket – 1 kit of cable diameter adaptor 1 guard – 2 fixing screws

Connection diagram



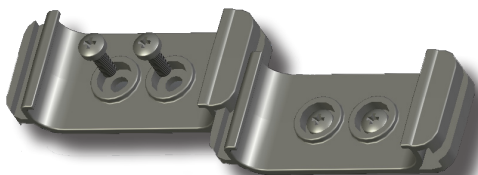
Connection to "Aquarium Controller" system

1. Connect the Redox probe's connector to the interface (ACQ210N-RX).
2. Connect the Redox interface to the power unit (or HUB) using the provided BUS cable.

NOTE: Insert the correct end of the connector into the power unit; inserting it in the other direction can seriously damage the equipment.

ATTENTION: For proper Redox parameter reading, immerse the sensor in the aquarium 4-5 days before carrying out any programming. If the electrode was not protected in its preservation liquid when it was purchased, leave it in the aquarium for 6-7 days.

Thanks to the special shape of the box and fixing bracket, the interface can be fitted with others simply and very quickly, as seen below.





New device
connected Sensor
S01
Redox

(Fig. 1)

After connection, the control unit will display a Plug-In screen (Fig. 1), where a name can be assigned to the connected sensor.

It may take several seconds for the control unit to recognize the connected interface.

NOTE: The sensor's name can be changed using the control unit's keypad.

If more than one of these sensors is connected, the user may assign different names for each one to facilitate menu navigation.



Mon 11/06/07 15:05
PU01 A B C D E F G H
Redox 450mV

(Fig. 2)

Displaying the read value

After the electrode has been connected through the appropriate interface, the values read by the electrode will be displayed on the main screen.

If several sensors were connected, their values can be checked in order by pressing the \uparrow and \downarrow keys.



Redox

Change Name
Programs
Data Record
Alarm
Calibrate Sensor

(Fig. 3)

Redox Menu

Once the electrode and interface are connected, the "Redox" menu will appear in the "Main Menu", where all of its settings can be programmed.

All sensor menus have the same structure in order to make them more intuitive and simple.



Redox

(Fig. 4)

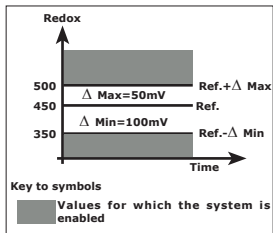
Change Name

This option modifies the name given to the sensor (Fig. 4).

To use this option, proceed as follows:

Main screen \Rightarrow Main Menu \Rightarrow Redox \Rightarrow Change Name.

- Select the letter to insert using the $\leftarrow \rightarrow$ keys and move within the word using the [figura] keys. When finished, press "Enter".



Programs

This option is used to create programs based on the redox value.

To set up a program, the following must be established:

- A **reference value**, defined as the redox for the tank, which the system will aim to maintain.
- A **Δ Max** defined as the tolerance that must be observed with respect to values higher than the reference value.

For example: If the reference is set to 450mV and the Δ Max is 50mV, the system will be enabled at values higher than 500 mV (see chart).

- A **Δ Min** defined as the tolerance that must be observed with respect to values lower than the reference value. For example: If the reference is set to 450mV and the Δ Min is 100mV, the system will be enabled at values lower than 350 mV (see chart).



(Fig. 5)

To insert a program, proceed as follows:

Main screen ⇒ **Main Menu** ⇒ **Redox** ⇒ **Programs**.

- Select "Insert" using the $\uparrow\downarrow$ keys and press "Enter" (Fig. 5).

Insert

In this screen, the Redox value to obtain can be chosen and a minimum and maximum tolerance can be set (Ex. Fig. 6).

To set this program, proceed as follows:

Main screen ⇒ **Main menu** ⇒ **Redox** ⇒ **Programs** ⇒ **Insert**.

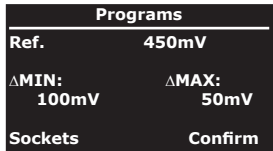
- Select with the reference Redox value using the $\leftarrow\rightarrow$ keys and set the desired value using the $\uparrow\downarrow$ keys.

- Set the "ΔMIN" and "ΔMAX" tolerances; select the desired parameter using the $\leftarrow\rightarrow$ keys and modify the value using the $\uparrow\downarrow$ keys.

- Select "Sockets" using the $\leftarrow\rightarrow$ keys to choose how the outputs will function when the Redox level goes above or below the set values. Then press "Enter".

- Select the output to be controlled using the $\leftarrow\rightarrow$ keys. The selected output will blink on both lines.

The outputs on the upper line determine which devices must be enabled/disabled when the Redox goes above the set maximum value (Ref. + ΔMAX); the outputs on the upper line are set using the \uparrow key.



(Fig. 6)

Skimmer								
PU01	A	B	C	D	E	F	G	H
			RX					
PU01	A	B	C	D	E	F	G	H
			RX					

(Fig. 7)

The example in Fig. 7 shows enabling of the skimmer on socket "C": pressing the \uparrow key once, the socket is highlighted and the RX symbol appears above it.


To disable a socket, press the \uparrow key a second time; in this case, only the RX symbol will appear above the selected socket.

The outputs on the lower line determine which devices will be enabled/disabled when the Redox goes below the set minimum value (Ref. - Δ MIN); the outputs on the lower line are set using the \downarrow key.

The example in Fig. 7 shows disabling of the skimmer connected to socket "C"; only the symbol RX appears.

After the desired sockets have been set, press "Enter" to return to the previous menu (Ex. Fig. 6).

The "Confirm" field is automatically selected: by pressing "Enter" the inserted program is saved.

Programs	
Curve	
Δ MIN:	Δ MAX:
100mV	50mV
Sockets	Confirm

(Fig. 8)

If different Redox values are desired based on the time of day, these can be set graphically.

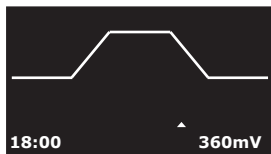
To program this function, proceed as follows:

Main screen \Rightarrow **Main menu** \Rightarrow **Redox** \Rightarrow **Programs** \Rightarrow **Insert**.

- Using the $\leftarrow \rightarrow$ keys, select the Redox reference parameter (**Ref.**). Using the $\uparrow \downarrow$ keys, select "Curve" (Ex. Fig. 8).

Afterwards move to the $\wedge \vee \vee \backslash$ symbol and press "Enter".

A screen opens where the desired Redox value can be graphically modeled over 24 hours (Ex. Fig. 9).



(Fig. 9)

- Using the $\leftarrow \rightarrow$ keys, select the time of day (in 2-hour intervals, lower left corner). Using the $\uparrow \downarrow$ keys, modify the desired Redox value (lower right corner) for the selected time. When finished, press the "Enter" key.

Do you want to
modify or delete?

Modify
Delete Program

(Fig. 10)

Do you want to
delete this
program?

Enter: Confirm
Esc: Cancel

(Fig. 11)

Do you want to
delete all of the
programs?

Enter: Confirm
Esc: Cancel

(Fig. 12)

View/Mod/Del

In this menu the inserted programs can be viewed (View), modified (Mod) or deleted (Del).

To use this function, proceed as follows:

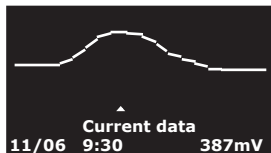
- Access the program to be modified or deleted by pressing "Enter" on the "View/Mod/Del" field.
- Use the $\leftarrow \rightarrow$ keys to view the desired program (Ex. Fig. 8).
- Press the "Enter" key. The specific screen appears on the display (Fig. 10).
- Select "Modify" using the $\uparrow \downarrow$ keys to modify the program or change the desired parameters. Then press "Enter" to confirm the changes.
- Select "Delete Program" using the $\uparrow \downarrow$ keys to delete the program. The delete screen will appear (Fig. 11). Press "Enter" to delete or "Esc" to cancel.

Delete All (Fig. 12)

In this menu all of the programs inserted in the menu can be deleted at one time.

To use this function, proceed as follows:

- Select "Delete All" using the $\uparrow \downarrow$ keys and press "Enter". The delete screen will appear. Press "Enter" to delete or "Esc" to cancel.



(Fig. 13)

Data Record

The Data Record graphically displays variations in the Redox during the previous 24 hours with a minimum interval of 30 minutes (Ex. Fig. 13).

To display the data, proceed as follows:

Main screen ⇒ **Main menu** ⇒ **Redox** ⇒ **Data Record**.

- Using the $\uparrow\downarrow$ keys, select the maximum (MAX), minimum (MIN) or current Redox. Using the [figure] keys, move within the chart to view the conductivity of a given time. Press **"Enter"** when finished.

Alarm

A visual or acoustic alarm can be set to notify the user if the Redox level goes below or above the **"Less than"** or **"Greater than"** values (Ex. Fig. 14).

If the Redox value exceeds these limits, the Redox value on the main screen will blink if the alarm is set to **"Without Sound"**.

If the alarm is set to **"With Sound"**, the value will blink, an acoustic signal will sound and the \square icon will appear on the main screen.

To program this function, proceed as follows:

Main screen ⇒ **Main Menu** ⇒ **Redox** ⇒ **Alarm**.

- Select the desired option using the $\uparrow\downarrow$ keys:

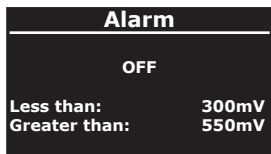
OFF = alarm disabled

With Sound = alarm and acoustic signal enabled

Without Sound = alarm enabled and acoustic signal disabled

- Select **"Less than"** using the $\leftarrow\rightarrow$ keys and then **"Greater than"** and with the $\uparrow\downarrow$ keys program the desired Redox to set the limits beyond which the alarm will be enabled.

After programming the various settings, press **"Enter"**.



(Fig. 14)

Calibrate Sensor

New
Cancel

(Fig. 15)

Do you want to return to
default calibration values?

Enter: Confirm
Esc: Cancel

(Fig. 16)

Set reference and
wait for
adjustment

Read value 477mV

Calib. value 470mV

1/1

(Fig. 17)

Calibration OK

Press any key to continue

(Fig. 18)

Aquatronica

FW Version: x.y

Press any key
to continue

(Fig. 19)

Calibrate Sensor

This menu allows you to calibrate the Redox probe through the interface. By using the keys $\uparrow\downarrow$, you may choose whether to perform a new calibration by selecting "New", or to delete a previous one and reset the interface to the default settings by selecting "Cancel" (Fig. 16). The probe should be calibrated periodically in order to maintain precise Redox readings.

Note: Before performing the calibration, the probe must be rinsed using tap water, dried carefully and inserted in the Redox solution. Allow the probe to stabilize for roughly 15 minutes.

In order to correctly calibrate the sensor, proceed as follows:

Main screen \Rightarrow **Main menu** \Rightarrow **Redox** \Rightarrow **Calibrate Sensor** \Rightarrow **New**.

1) Select the function "New" by using the keys $\uparrow\downarrow$ then press "Enter" (Fig. 15).

2) Using the keys $\uparrow\downarrow$ set the value of the standard solution next to "Calib. Value" (Fig. 17).

3) Wait 5 minutes in order to allow the probe's read value to stabilize. The read value may stabilize on a value that is slightly different than the reference.

4) Once 5 minutes have elapsed, press "Enter".

5) The controller will display the calibration result (Fig. 18); rinse the probe and insert in aquarium

Note: the calibration may be cancelled at any time by pressing "Esc". This will return the calibration parameters to those of the last completed calibration.

About

Provides information on the control unit's firmware version.

To use this function, proceed as follows:

Main screen \Rightarrow **Main Menu** \Rightarrow **Redox** \Rightarrow **About**.

Device Disconnected

S01: Redox

(Fig. 20)

Mon 11/06/07 15:05

PU01 A B C D E F G H

Redox ?

?

(Fig. 21)

Redox

Change Name
Programs
Alarm

Disconnect

(Fig. 22)

Disconnect

Redox

Enter: Confirm
Esc: Cancel

(Fig. 23)

Disconnect

If the Redox interface is disconnected, a message will appear on the display (Fig. 20). Press **"Enter"** to indicate that the message has been read.

On the main screen the **"?"** icon will appear next to the name of the **"Redox"** sensor and in the lower left corner (Fig. 21).

If the Redox interface is reconnected, the control unit will automatically begin displaying the read value again.

To definitively eliminate the Redox sensor from the system, proceed as follows:

Main screen ⇒ **Main Menu** ⇒ **Redox** ⇒ **Disconnect**.

The **"Data Record"** and **"Calibrate Sensor"** functions disappear from the **"Redox"** menu (Fig. 22) and the **"Disconnect"** function appears.

- Select this function using the \updownarrow keys and press **"Enter"**.

- The disconnection screen will appear (Fig. 23). Press **"Enter"** to disconnect or **"Esc"** to cancel.

Suggestions for an accurate oxidation reduction potential reading

Precise Redox readings depend greatly on proper maintenance of the connected probe. Beyond its intrinsic qualities, how the probe is cared for is particularly important. This will, in fact, provide reliable readings. Below is a list of some simple suggestions for optimum ORP readings in aquariums:

- Handle the electrode with care.
 - Leave the probe in the aquarium for 4-7 days before calibrating it or carrying out any programs.
 - Never leave the probe out of the water; if not used, store it in a pH7 buffer solution (never store the probe in distilled or reverse osmosis water).
 - Periodically wash the probe with tap water to eliminate any deposits.
- To keep the electrode working properly, clean it using the special Aquatronica solution. Periodically calibrate the instrument (approximately every month as indicated to previous pages) to correct any reading imperfections due to probe wear.
- Never use calibration solutions that have been left open or have expired.
 - Replace the probe at least once a year.
 - Do not install the interface in contact with wet or damp parts.
 - Do not immerse the electrode completely in water. The cable's seam must always be approximately 2 cm above the water.

IMPORTANT

**For reliable Redox readings, use only AQUATRONICA electrodes.
The use of other brands of electrodes could cause incorrect readings of the instrument.**

NOTE: in case of malfunctions or any doubts about the use of this interface, please contact AQUATRONICA'S free Technical Assistance.

DISPOSAL OF ELECTRIC AND ELECTRONIC PARTS

Pursuant to Article 13 of Legislative Decree No. 151 of 25 July 2005, "Implementation of **Directives 2002/95/CE, 2002/96/CE and 2003/108/CE, regarding the reduction in use of dangerous substances in electrical and electronic equipment, as well as waste disposal**":



Products bearing the barred dustbin symbol must be disposed of separately from other waste.

The user must therefore dispose of the product in question at suitable recycling centers for electronic and electro-technical waste, or he/she must turn over the used product to the retailer when buying a new equivalent product, on a one-to-one basis.

Separate waste collection allows used equipment to be recycled, treated and disposed of without negative consequences for the environment and health, and it allows the materials in the equipment to be recycled. Illegal dumping of the product by the user entails the administrative sanctions stated in Legislative Decree No. 22/1997 (Article 50 et seq of Legislative Decree No. 22/1997).



Separate collection of used products and packaging allows materials to be recycled and used again. Reuse of recycled materials helps prevent environmental pollution and reduces the demand for raw materials.

Local regulations may provide for the separate collection of household appliances at municipal waste sites or retailers when a new product is purchased.

Warranty

Dear Customer,

Thank you for the trust you have placed in **AQUATRONICA** by purchasing this product. **AQUATRONICA** subjects all its products to severe quality tests. If, in spite of the controls, the product should malfunction, we recommend you immediately contact the dealer/producer for any checks or interventions necessary.

- General warranty regulations

AQUATRONICA guarantees that this product operates properly and that it is free of manufacturing faults and defects. If the product becomes defective during the warranty period, **AQUATRONICA** will repair or replace it. Defective parts will be replaced ex-works **AQUATRONICA**'s plant (recipient responsible for shipping expenses). Accessories and components not made by **AQUATRONICA** are covered by their manufacturers' warranties only. This is the only warranty offered by **AQUATRONICA**. All others are excluded. Unless due to malice or gross negligence, **AQUATRONICA** is not responsible for injury to people or damage to things resulting from product malfunctioning. This warranty is valid only for those up to date with their payments.

- Conditions

The warranty will be valid for a period of **24 months from the date of purchase** only upon presentation of this certificate, which must bear the retailer's stamp, the date of sale and the product's serial number, accompanied by the invoice or receipt issued by the retailer, indicating the serial numbers of the installed products. If this information is missing, the final customer will receive warranty coverage **valid for 24 months starting from the date printed on the back of the product**. **AQUATRONICA** can refuse to recognize the warranty if this information is incomplete or has been tampered with after purchase. The warranty will be valid only if, at the time of purchase, the product was properly stored as it was originally packaged by **AQUATRONICA**, who alone can ensure its origin and adequate protection.

- Warranty exclusions

This warranty does not cover:

- a)** periodic checks, maintenance, repairs, or replacement of parts due to normal wear
- b)** malfunctioning due to negligence, incorrect installation, improper use or non-observance of the technical instructions and, in general, any malfunction not traceable to manufacturing faults or defects of the product and therefore the responsibility of **AQUATRONICA**
- c)** products modified, repaired, replaced, installed or in any way tampered with by anyone without the prior written authorization of **AQUATRONICA**
- d)** accidents originating from force majeure or other causes (e.g. water, fire, lightning, bad ventilation, etc.) not depending on **AQUATRONICA**

Products with manufacturing faults or defects recognizable through normal diligence must not be resold or installed. The sole competent court for any disputes concerning the interpretation or execution of this warranty is that of Reggio Emilia (Italy).

Product code: _____

Serial number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Day

Month

Year

Date of purchase:

--	--

--	--

--	--	--	--

Retailer's stamp

Declaration of Conformity

DECLARATION OF CONFORMITY



Standard of reference ISO/IEC Guide 22 and EN 45014

Number of conformity: 005-2007/E

Name of the manufacturer: **Aquatronica division of A.E.B. srl**
Address: via dell'Industria, 20
Corte Tegge
42025 Cavriago (RE) Italy

DECLARES THAT THE ELECTRONIC UNITS

Code: **ACQ210N-RX** (REDOX sonde interface)
ACQ210N-PH (PH sonde interface)
ACQ210N-TL (temperature and level sonde interface)
ACQ210N-MS (conductibility sonde interface)
ACQ210N-D (density sonde interface)
ACQ210N-WL (water-leakage sonde interface)

ARE IN COMPLIANCE WITH THE FOLLOWING PRODUCT SPECIFICATIONS:

FIELD	Directive	Description	References	Test Result
EMC	2004/108/EC	EMC directive	Official Journal of the European Union L390 December 31 2004	applied

THEREFORE THEY ARE IN COMPLIANCE WITH THE REQUISITES OF THE CE MARK
The equipment was checked in a typical working configuration

Place of issue: **Cavriago (RE) Italy**

Date of issue: **12/04/07**

The A.E.B. srl legal representative
Paterlini Ivan

Aquatronica

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