SMARTOXY

User Manual

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Basics

1.1) Introduction

Smartoxy is a mobile oxygen and temperature meter. Moreover, thanks to its own special software, it is able to automatically identify the type of probe connected to the handy and safe connector, transforming it into a multi-parametric measuring station. This allows the user to measure and record different types of values of the equipment directly on a single device, making them available online for further analysis in a compact format and on a single database, available 24/24 on our site: www.smartoxy.it .

The device has the following functions:

- Oxygen and temperature measurement
- Plug-n-play connector for further types of probes: oxygen probe, temperature probe, salinity probe, chlorophyll probe, cox probe, pH probe
- Simplified and automatic probes calibration
- Totally waterproof wireless QI technology based battery recharging (the charging base is included in the package)
- Built-in atmospheric pressure sensor aimed at measuring compensation
- Adjustable salinity level
- Storage of the values read by the probes in the configurable database of the device with the names of the tanks/cages
- Automatic synchronization of the device database with the online database (WiFi connection required)
- New generation extremely light lithium battery, reliable over time
- NFC aerial for automatic identification of the zones of your equipment
- Configurable auto power off for energy saving
- Auto-sampling function at regular periods

Access to your profile logging in the dedicated website (www.smartoxy.it) allows the graphical and tabular display of the measurements acquired, sorted by tank/cage and by device; tanks management; and exporting the values in excel format .

The Smartoxy has protection degree **IP67**, it means that the oximeter is completely protected against any type of dust and splashes. Moreover, do not panic if it falls into the water: it will resist for half an hour at a maximum depth of one meter.

1.2) Disclaimer

The manufacturer assumes no responsibility for damage resulting from failure to observe the instructions, from improper use, from repairs carried out in a non-professional way, from unauthorized modifications or from the use of unapproved spare parts.

1.3) Main Unit, Front View

1. Oxygen saturation percentage
2. Oxygen amount in ppm
3. Temperature in degrees centigrade
4. Salinity set
5. Date and time
6. LED on charging (red on charging, off when charging is complete)
7. Power and menu key
8. Storage key and confirmation key within the functions
9. Up arrow - increase the value
10. Down arrow - decrease the value
11. WiFi signal strength
12. Battery charge

1.4) Components

The Smartoxy equipment consists of:

- The device equipped with optical oxygen probe with temperature measurement (other optional types of probe are available)
- Wireless charging station with power cable and power supply
- Tecnos case

1.5) Probe

Tecnos optical probe is used for the optical measurement of oxygen in pure and process water. The measuring principle is based on the sensor luminescence changing effect as a function of the quantity of dissolved oxygen.

Specifications and benefits:

- Reliable concentration measurement via optical measurement process
- No periodic calibration required
- Titanium sensor body
- No membrane replacement and / or solution for at least 2/3 years
- Interchangeable cap for luminophore replacing
- Correct and reliable measurement even in completely still water
- Maximum accuracy at low oxygen levels
- Possibility to set salinity and barometric pressure for oxygen value compensation.

1.6) *Smartoxy* Switch-on

Press the *menu* key (7) for 3 seconds to switch on the device.

1.7) *Smartoxy* Switch-Off

Press the *menu* key (7), go with the arrow keys to **PowerOff** in the menu that appears and press the memory/ok key (8).

NB: If the device does not detect the pressure of any key, it automatically switches off for inactivity after a set number of minutes which can be configured in the parameter section of the menu (see chapter 5.7).

1.8) Battery Recharging

Smartoxy is equipped with a wireless charging base, similar to the one shown in the figure.

To recharge the battery, simply connect the charging station to the electricity through the appropriate power supply and place the Smartoxy on it, making sure that the display is placed at the level of the logo that appears in the centre of the base, see photo.

Smartoxy will recharge only with the red LED on. At the end of the recharge, which lasts about 4-5 hours, the red LED turns off.
If the LED does not light up, reposition the device until the LED lights up.

WARNING: To optimize battery life, recharge must be carried out away from heat sources. In case of excessive temperatures, the device stops charging.

2. Tanks Management

Defining tanks allows to associate the stored measurements to the corresponding tank.

2.1) Add a new tank

Press the menu key (7), scroll with the arrows (9) (10) and choose ***memory*** and then ***new***.
Using the arrow keys (9) (10) choose the letters and/or numbers that will define the tank, with the menu key (7) the selected character is added and the device advances to the next. Once completed the name of the tank, press the memory/ok key (8), at the confirmation request choose with the arrow keys (9) (10) "**YES**" and confirm the choice with the memory/ok (8) key.

2.2) Add a new tank from a website

For both large and small equipments, it is possible to simplify the insertion of the tanks/cages names by entering them directly in the private area of the website www.smartoxy.it using the convenience of the keyboard of the computer and then downloading them to the devices.

To enter the tank names on the website, see chapter 7.3

WARNING: To synchronize the names, the device must be connected to a Wifi network with internet access.

To download the tank names in the device:
Press the menu key (7), scroll with the arrow (10), choose ***memory*** and then ***Download Names***.

2.3) Tank List Display

Press the menu key (7), scroll with the arrow (10) and choose ***memory*** and then ***list***.

2.4) Values Storing

Once the measurement is made, press the *memory/ok* key (8), choose the tank on which the values will be stored and press *memory/ok* (8) again.

If the user owns many tanks, it is possible to position NFC tags at the measuring place (NFC tags are sold separately), when the device ask to select the tank, move the device closer to the NFC tag and the storage will be automatically assigned to the corresponding tank, thus reducing the possibility of error.
Examples of NFC tags:

2.5) Create TAG NFC

First create tanks name (see chapter 2.1) after, push the menu key (7) scroll with the arrow (10), choose ***memory*** and then ***program key***. Choose with the arrow (10) the tank to be written on TAG and push *memory/ok* (8), now near the instrument to key to start writing.
To speed up creation of tanks name you can use synchronize of the name with FishControl database name (see chapter 2.2 and chapter 7.7).

2.6) Auto-Sampling Function

The auto-sampling function transforms the Smartoxy into a data-logger, or a device capable of automatically storing the measurements at regular periods and subsequently displaying them. This function is particularly useful when you

want to study the progress of a parameter over a long period of time and monitor it remotely in real time thanks to the WiFi connection.

To enable auto-sampling, press the menu key (7), scroll with the arrows (9) (10) and choose ***memory*** and then ***Sampling***. At this point select ***Enable Camp.***, the list of stored tanks will be displayed, with the arrow keys go to the tank on which the samples will be stored and confirm with the *memory/ok* key (8). As long as the automatic sampling mode is active, the device will not automatically turn off after the set time period.

To disable auto-sampling, press the menu key (7), scroll with the arrows (9) (10) and choose ***memory*** and then ***Sampling***. At this point, select ***Disab.Camp.*** The function is automatically disabled when the Smartoxy is turned off.

For parameters the sampling times, see par.5.8

2.6) Stored Tank Values View

Select the tank of interest from the tanks list (par.2.3) and press the *memory/ok* key (8). With the Up and Down arrows (9) (10) it is possible to move among all the stored values. Go back to the previous menu by the *menu* key(7).

2.7) Stored Values Deleting

Press the menu key (7), scroll with the arrow (10), choose ***memory*** and then ***delete***, then choose the measures to be deleted. Confirm with the *memory/ok* key (8).

2.8) Removing a Tank

Press the menu key (7), scroll with the arrows (10), choose *tanks*, select the tank to be deleted. Confirm with *memory/ok* (8).

WARNING: By deleting a tank, all assigned stored values are also deleted.

3. Calibration

3.1) Oxygen Probe Calibration

Press the menu key (7), scroll with the arrow (10) and choose the **calibration** function. Use *memory/ok* (8) to calibrate, *menu* (7) to exit without calibrating.

WARNING: Before the calibration, place the probe in the air.

If other types of probes are connected, the calibration menu will be different according to the type of probe, see attachments.

4. WiFi Connection

4.1) Parameters up a New WIFI Network

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **WiFi** and then **new**.
The available networks will be displayed, choose the network to connect to and then enter the network password using the arrow keys (9) (10) and the menu key (7) to move forward in writing.

4.2) View the Set WiFi Network

Press the menu button (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **WiFi** and then **state**.

5. Device Parameter

5.1) Salinity

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **salinity**. The current salinity value will be displayed, use the up or down arrows (9) (10) to change the value and confirm with the *memory/ok* key (8).

5.2) Atmospheric Pressure

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **pressure**. The value of the pressure in mbar read by the internal sensor will be displayed.

5.3) Elevation

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **altitude**. The elevation value in meters estimated by the internal sensor will be displayed.

5.4) Date and Time

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose the **date hour**. The current values will be displayed. Use the up or down arrows (9) (10) to change the values and confirm with the *memory/ok* key (8).

If the Smartoxy is connected to a WiFi network with Internet access, the date and time will be automatically downloaded from the Web and it will not be necessary to set them.

5.5) Screen Brightness

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **contrast**. The set brightness will be displayed, use the up or down arrows (9) (10) to change it and confirm with the *memory/ok* key (8).

5.6) Language setting

Press the menu key (7), scroll with the arrow (10) and choose **language**. The set language will be displayed, use the up or down arrows (9) (10) to change it and confirm with the *memory/ok* button (8).

5.7) Auto Switching-Off Period Parameters

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **Set Auto Off**.
Use the arrow keys (9) (10) to enter the minutes of inactivity before automatic shutdown.

5.8) Sampling Period Parameters

Press the menu key (7), scroll with the arrow (10) and choose **Parameter**, from the parameter menu choose **Sampling Min**.
Use the arrow keys (9) (10) to enter the minutes between one measurement and another.

6. Software Updating

WARNING: To update the device, it must be connected to a Wifi network with internet access.

Press the menu key (7), scroll with the arrow (10) choose **update.**
At the ***"ok to update"*** message, confirm with the *memory/ok* key (8) and wait a few seconds. If there is a new version, confirm with the *memory/ok* key (8), otherwise "**no new update, press any key to exit**" appears, exit pressing any key.

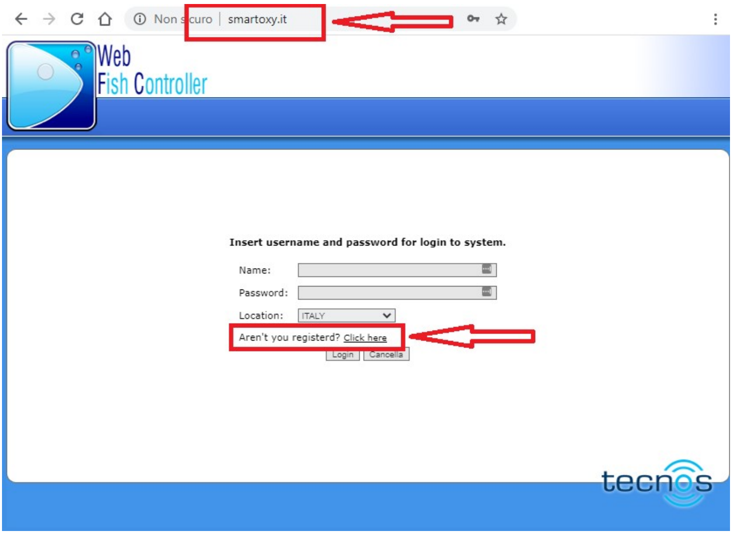
7. FishControl - Web Management

7.1) Registration

Turn on the Smartoxy and get the device ID through this procedure:
press menu (7)
scroll down with the down arrow (10)
select **INFO** with the *memory/ok* key (8)
transcribe the 6-digit code that appears on the second line.

WARNING: once the device is associated with a user, it is no longer possible to associate it with other accounts.

Through an smartphone or a PC enter the website www.smartoxy.it and click text "Click Here" to enter into registration form:



In new appearing page insert your datas and into UUID box the ID code reader from instruments.

7.2) LogIn in FishControl

Through an smartphone or PC enter the website www.smartoxy.it, insert the your credentials created during registration form and push "Login" button.
If the credential is right will appear management panel of FishControl.

7.3) Instrument Management Panel

Clicking on the icon "Device"

from menu placed into top right corner you will enter into instrument management panel, from which is possible to add new instruments, edit its name or delete for reassign to others account. Moreover, from this panel, clicking on instruments name you can enter into list of measure acquired from choosen instrument. Will be showed all tanks in which the instrument had stored datas.

7.4) Add a New Device

If you have multiple Smartoxy you can register them on a single account in order to concentrate all datas in one account. This solutions allow the user to crate charts from all datas of every instruments also with different measured variable.

Enter into instruments management panel (see chapter 7.3) and choose select register new device, will appear new instrument form insertion:

Enter the identification name of the device in the first field (name of your choice) and enter in the second field the identification 6-digits alphanumeric code readed with following procedure at chapter 7.1.

7.5) Tank Management panel

Clicking on the icon "Tank"

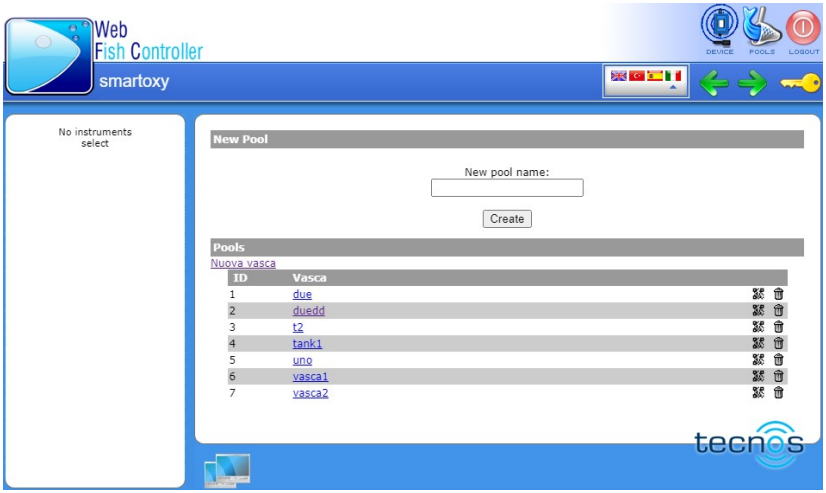
from menu placed into top right corner you will enter into tank management panel, from which is possible to add new tank or delete them

Name of tanks could be synchronized with your instruments (see chapter 2.2). This function, is very helpful into big plant or for user with many instruments. Name synchronizing allow to easy create and manage your tank name database from pc and after download in your instruments, speed up initialization of new device and with a proof error procedure.

Click on the name of a tank you can enter into list of measure acquired from every instruments in that tank.

7.6) Add New Tank From FishControl

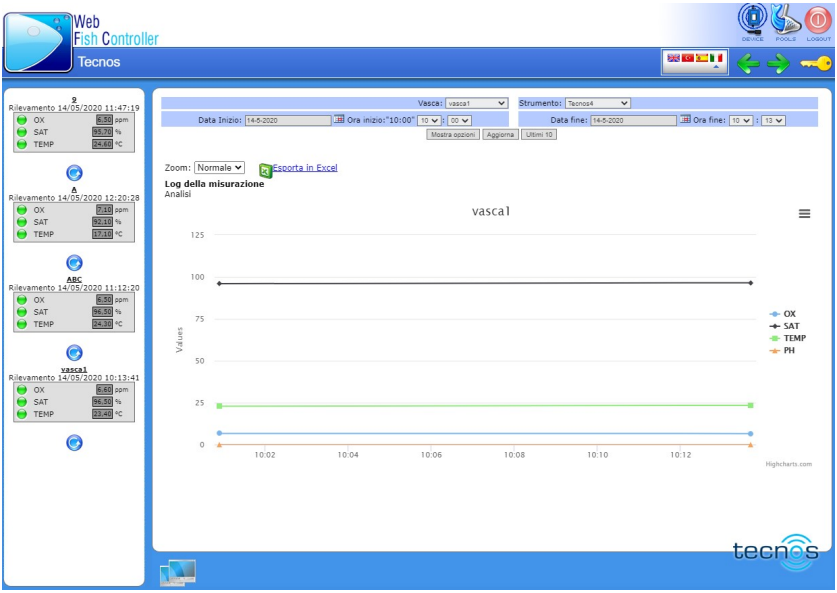
Enter into tank management panel (see chapter 7.5) and choose new tank, will appear new tank form insertion:



type the name you want to give to the tank and click on create.

7.7) Viewing Datas

Choosing an instrument of a tank you will enter into viewing of acquired datas:



On left bar appear the last stored data from choosen instrument grouped by tank. Instead, in the central window appear the chart with value of single tank. In the upper side of main window there are viewing filter, after had edited push "Update" to apply. While clicking on "options" user can show or hide other measured variable of probes available for smartoxy.
From Filter, choosing one instrument and one tank will be showed all datas acquired from that instrument in that tank between data start and data end. While, choosing one tank and "all" from instrument will be showed all datas of that tank acquired from every instruments of account inside temporal range specified.

8. Warranty

Congratulation for purchasing one of our products. This device meets high quality standards of both material and manufacture. The warranty is valid for 12 months from the delivery date. During the warranty period, all defective parts for well-established manufacturing reasons will be repaired and/or replaced for free, except for transport and packaging damages. All components subject to wear are excluded from the warranty. The replacement or repair carried out during the warranty period does not extend the duration of the warranty. The warranty is not valid in case of: repair carried out by unauthorized personnel or with non-original spare parts, damages or defects caused by negligence, hits or improper use.
The warranty becomes null and void if the above is not respected.

Tecnologia informatica

www.tecnosnet.it