OxyGuard® Atlantic

Single Channel Monitoring System

USER MANUAL

Set-up:	☐	Standard Aquaculture
	☐	Standard Industry
	☐	Standard Waste Water
	☐	Special, as per enclosed list
Supply:	☐	115 VAC
	☐	230 VAC
	☐	9-35 VDC
Probe type:	☐	2 wire NB. Probe type is factory set.
	☐	4 wire
	☐	Special:

Serial number and delivery date:

Div.:
Checked by:

CONTENTS

1. DESCRIPTION

General

The **OxyGuard Atlantic** is a single-channel meter with advanced features and functions:

- Multi-parameter oxygen/dissolved oxygen measurement
- Temperature measurement
- Pressure sensor for atmospheric pressure
- 4-20 mA analogue input for compensation etc.
- 4 relay outputs
- 4 x LED indicators for logically active relays
- 4-20 mA analogue output
- User defined alarm functions (8 setpoints)
- User defined timer functions (8 timers)
- Logical functions to link alarms, timers, relays etc.

Atlantic can measure dissolved oxygen or oxygen in gas, with units mg/l, ppm, % saturation, % volume, mbar.

IMPORTANT
Your Atlantic is delivered for use with the probe type stated on the front of this manual and should not be used with other probe types.

Consult OxyGuard or your distributor if you need to use a different probe type.

The OxyGuard Atlantic consists of a transmitter and a probe. Oxygen measurements are automatically compensated for temperature and atmospheric pressure, and can be compensated for salinity. As standard the instrument is mains-powered, but can be ordered for DC supply (9-36 VDC, nominal 24VDC).

Atlantic can also accept an analogue input from an external sensor. This input can be used to compensate the oxygen measurement but can also be acted on by all the functions of Atlantic. You can use this for salinity compensation if you measure in salt water or pressure compensation of you measure in a closed vessel.

You can also connect a completely different 4-20 mA measurement, i.e. the output from a pH transmitter such as the OxyGuard pH Manta. You can then use set points and relays in Atlantic to monitor and control pH. You can also use logical linking to achieve a single alarm output if either the pH or the DO value crosses a set point.

Oxygen Probe

The OxyGuard oxygen probe is a galvanic oxygen sensor. It has an upper part with cathode, anode and cable, and a cap with membrane and electrolyte. It produces a temperature compensated millivolt electrical output proportional to the oxygen partial pressure it senses.

The OxyGuard oxygen probe does NOT need regular service or maintenance – just keep the membrane reasonably clean.

OxyGuard probes have functioned for 8 years and more between renovations.

If the probe output is too small to enable calibration "Improper output level" will appear in the display. If wiping the membrane does not help you can then renovate the probe as described later in this manual. Necessary spares are shipped with the probe. The procedure is easy and can be performed on-the-spot by anyone. If the membrane is damaged you should also renovate the probe, otherwise just keep it clean.

Probes used for safety purposes should, however, be checked regularly and can be renovated once every 3 years or as felt necessary.

Transmitter Unit

The transmitter consists of a cabinet with a front plate assembly and a power supply board. The front plate assembly contains a display, computing circuitry, flat foil pushbuttons and indicators. The power supply board has terminals, relays, power supply and input and output circuits. The terminals are accessed by removing a cover over the lower part of the transmitter.

NB The relay contact outputs have max. load 200 VA at 250 VAC. They should not be used to start motors etc. directly.

The unit is as standard shipped for 220-240 VAC supply. It can be delivered for 110VAC supply or DC supply, nominal 24VDC (9 to 35V). Please see the front page of the manual for the actual voltage.

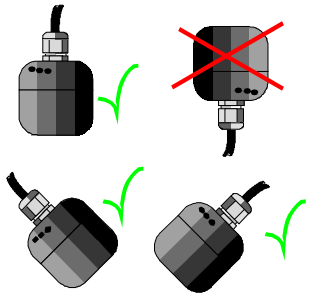
The input is the millivolt signal from the probe. The analogue output is galvanically isolated from the input. The scale and parameter for this output is set by the user. The display shows the main parameter in a large size and other parameters in a small size. The arrow buttons are used to select which parameter is shown large size.

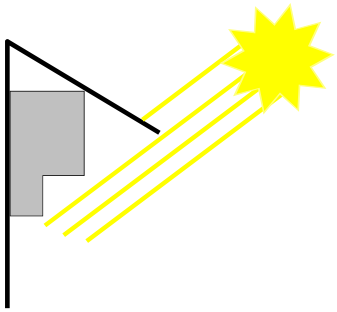
All settings are set and adjusted using menus accessed using the flat foil pushbuttons on the front panel.

The Atlantic has 8 alarm functions and 8 timer functions that can be activated as desired and logically linked to each other and to the 4 relay outputs. The exact nature of the functions and timers is set using the menus.

The user is thus free to choose the precise function of the unit and the relay outputs.

The mA input can both be used to compensate the oxygen measurement, can be acted on by the alarm and timer functions and can be logically linked.





Protect from direct sunlight

2. INSTALLATION

The probe should be mounted vertically, with the membrane down, or horizontally. It must NOT be mounted with the membrane up.

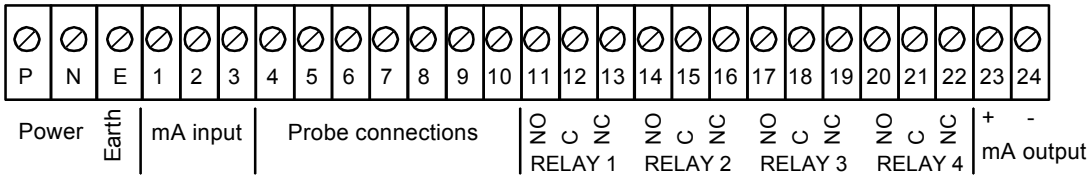
If the transmitter unit is mounted outdoors provide it with a cover so that the lid can be opened in rainy weather without the electronics getting wet. The display must also be protected from direct sunlight.

The transmitter can be hung on one screw at the centre top and then secured using holes at either side of the cabinet next to the terminal compartment.

OxyGuard have accessories and mounting devices for various uses. Please consult your OxyGuard distributor or see the OxyGuard web site www.oxyguard.dk for more information.

The equipment is not sensitive to electrical noise, but do not run cables too close to power cables, especially those supplying speed controlled motors. In areas with extreme electrical noise screened cable is recommended. Remember to ground the screen at the transmitter end only.

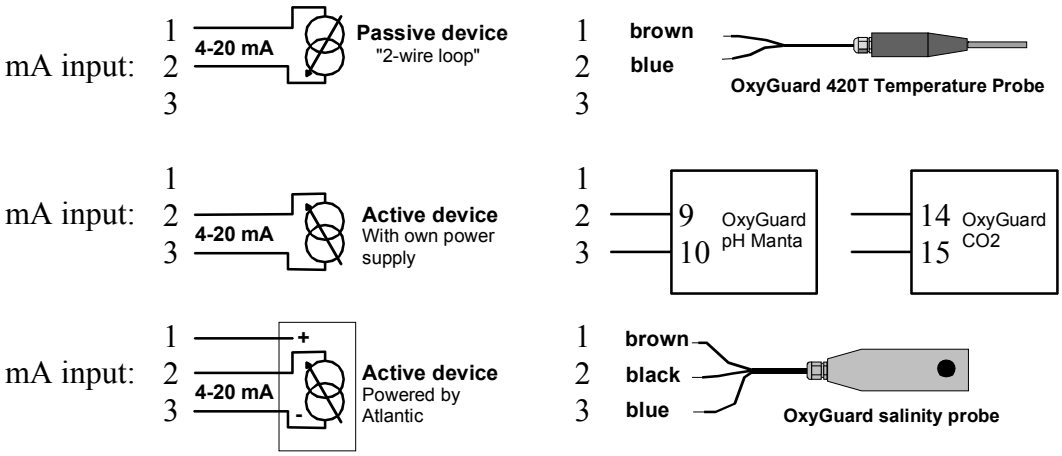
Connections
The terminals are behind the lower cover.



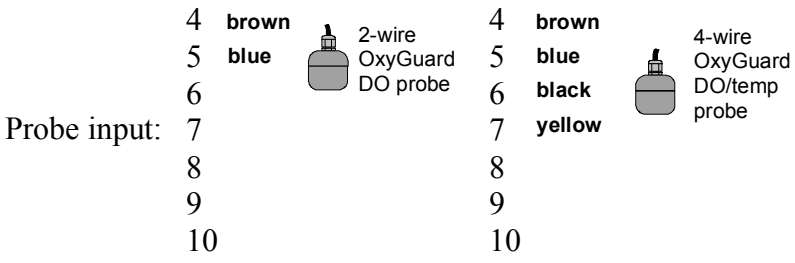
Power: The Atlantic is delivered for the power supply shown on the front page of this manual. Only this supply can be used. There are three possibilities.

Power:	P	230 VAC	P	115 VAC	P	24VDC
	N	Neutral	N	Neutral	N	0V
	E	Earth	E	Earth	E	Earth

mA input: This can be from active or passive transmitters as follows:



Probes: The Atlantic can be used with 2-wire probes that measure oxygen only or with 4 wire probes that measure both oxygen and temperature:



Relay outputs: The relay states (NO, C, NC = Normally Open, Common, Normally Closed) are shown with the relays not activated. The user can select whether relays should be activated or de-activated for any particular function.

The relay contacts are designed for use as auxiliary contacts - they have max. load 200 VA at 250 VAC and cannot start or stop large equipment (motors etc.) directly.

When using the Atlantic as part of a safety system make sure that it is powered from an appropriate mains circuit (fuse).

Before switching on check that:
1) The supply voltage is that marked on the equipment;
2) That the probe is connected with correct polarity.

After switching on alarms can be given for a short time, and the probe must be calibrated. If the Atlantic has not been delivered set up to your exact specifications you must set the Atlantic up as desired. This includes mA input, mA output, set points, timers, alarm and relay functions as well as parameters for display.

3. DIRECTIONS FOR USE

In normal use the Atlantic will remain on all the time. The following will constitute "Daily Use":

- -Keep the probe membrane reasonably clean
- -Use the arrow buttons to obtain the desired value on display
- -Take action if alarm is given - press the bell symbol to silence an alarm.

Further functions are accessed by pressing "OK" to obtain the menu. You then highlight your choice using the arrow buttons and press "OK" to proceed.

You can also press "Esc" to go back from many menus.

Calibration check is needed from timer to time. "Calibrate" is the first item in the menu. "Set salinity" and "Set setpoint values" are next. These might need adjusting after the system has been started, whereas the "Setup" menus that follow probably will not. The "Information" menu shows the serial number and the software version. If there is an error message "Status list" will also appear in the menu.

The full menu "tree" is shown as the last section of this manual together with some examples.

If "Improper output level" appears and wiping the membrane clean does not help, probe renovation is indicated. See section 4.

CALIBRATION

Accurate measurements need accurate calibration, which in turn needs stable conditions. Atlantic checks and only permits calibration if conditions are stable. The sensitivity of this check can be changed - see "Calibration Precision".

To check calibration turn the instrument on, take the probe, wipe the membrane and place the probe in air away from direct sunlight or other sources of heat. Wait for a steady oxygen value. When measuring dissolved oxygen the calibration value is 100.5% - temperature difference between the probe and the air can mean that it takes a long time to come within 1% of this.

If you measure oxygen in air you will probably be measuring in % volume, and you should calibrate in air and set the calibration value to 20.94% vol.

You should note that the OxyGuard Standard Type 3 probe is very stable. In clean air (e.g. indoors) it will keep its calibration for years, in water bio-film on the membrane can change calibration a little.

If you are measuring pure oxygen or in gas in a closed chamber you might be using calibration gas in which case you should set the Atlantic up accordingly.

If calibration is needed select "Calibrate" and press "OK" to start calibration. Progress is shown on the display, which will also tell you if anything is wrong. When "Calibration done" is shown press "OK".

If "Calibration error - unstable conditions" appears you can either choose a lower calibration precision (see 3.2) or force a calibration. To force calibration hold "OK" depressed when "Calibrate - Please wait" is shown. The result will not necessarily be precise – "Calibrate" will blink in the display when making measurements. Re-calibrate under more stable conditions when possible.

SET SALINITY

If you measure in salt water the correct salinity must be set to obtain correct mg/l (ppm) values. The "Set salinity" function is used for this.

After highlighting "Set Salinity" and pressing "OK" you can change the tens figure. Then press "OK" to go to the units. After setting the units press "OK" again. Atlantic will display "New salinity" and the new setting. Press "OK" to confirm this and then "Esc" to measure.

To go back from units to tens press "Esc".

When measuring oxygen in air or gas make sure that the salinity is set to "0".

For automatic salinity compensation you can connect an OxyGuard salinity probe to the mA input. You must then set the input to compensate for salinity, in which case the value set under "Set salinity" will be ignored. There is an example showing this towards the end of the manual.

SET SETPOINT VALUES

This menu enables the actual setpoint value to be adjusted. The actual setting up of the setpoints is performed using the setup menu.

There are 8 setpoints. This menu shows if the setpoints are set up as a regulation, as an alarm or are disabled.

The only difference between "Regulation" and "Alarm" is that the Alarm setpoints are linked to give the "Any Alarm" function. A relay linked to "Any Alarm" operates if any "Alarm" setpoint is violated.

"Any Alarm" can, for example, activate a relay that starts a flashing light, auto dialler or other warning device.

Regulation or alarm setpoints show the setpoint value, which can be changed. Use the arrows to highlight the item wanted, then press "OK" and you will be able to change the value.

Setpoint 1: Disabled
Reg. SP: 75.000
Alarm SP: 50.000
Setpoint 4: Disabled
Setpoint 5: Disabled
Setpoint 6: Disabled
Setpoint 7: Disabled
Setpoint 8: Disabled

In this example only channels 2 and 3 are active.

THE ABOVE FUNCTIONS ARE THOSE LIKELY TO BE USED AS PART OF NORMAL OPERATION. THE FOLLOWING SETUP FUNCTIONS WILL PROBABLY ONLY BE USED AS PART OF THE START-UP PROCEDURE.

SETUP MENU:

This is normally only used when setting up the Atlantic for the first time. The possibilities are outlined in the following. Please also see the full menu and the setup examples for details.

User interface

Visible measurements *You can choose what you see in the display, which of course depends on what you are measuring. You can also choose to show both °C and °F*

Decimals *Puts an extra decimal on % sat and % vol displays.*

Calibration setup

Cal. precision *high, normal or field. Field is the default.*

Cal to units (%SAT) *Use % sat for DO and % vol for gaseous oxygen*

Set cal to (100.50) *Use 20.9% for air and 100% for pure oxygen calibration.*

Auto calib (off) *Auto calibration is for very special purposes.*

Calibration with "field" can be very accurate if conditions are very stable.
Calibration with "high" is not possible if conditions are a little unstable.

You can also use a special calibration gas and set cal to the O2 % in the gas.

Setpoint setup list

This lets you select Alarm, Regulation or Disabled for the 8 setpoints, which parameter they act on, whether to activate on falling or rising value, hysteresis, whether other setpoints or timers have influence and whether or not the buzzer should sound when the setpoint is activated.

Alarm and regulation differ only in that if you choose "alarm" the setpoint violation will also activate "Any Alarm".

Timer setup list

There are 8 timers whose start is synchronised to a main timer. Timers are periodic and repeat "on" and "off" at regular intervals. They can be disabled and enabled again, when they return to the original cycle. They can be paused. The pause time shifts the cycle of the timer. They can also be stopped and re-started - for example by the "#" button if so chosen, and can freeze a measurement during an "on" time. Timers can also be offset. You can thus let one timer activate half-an-hour after another by choosing identical settings but offsetting the one by half an hour. Timer function can be linked to other timers and to setpoints. A one-shot function is obtained by setting the period time to "0" and letting a setpoint, timer or the "#" button reset the timer, when it will pulse once.

Positive logic is used, also when linking setpoints and timers.

("A" enabled if "B") means "A" is active if (A AND B)

("A" disabled if "B") means "A" is active if (A AND (NOT B))

Relay setup list

There are 4 relays, each with the following setup possibilities:

Enabled or disabled.

Normal or inverted *an inverted relay will normally be activated, and will de-activate when the associated setpoint or timer is violated or on power failure.*

Bound to *you can choose setpoints, timers or any alarm*

mA input setup (off)

The mA input hardware is an option. If present, you can use the input to compensate the oxygen measurement or you can link it to a setpoint and relay output or other functions. You can set scaling and units.

mA out setup (Off)

The mA output is always present. You can select 4-20 mA or 0-20 mA, scaling and parameter. If you select 4-20 mA you can use a timer, setpoint or any alarm to under-range to 0 mA and thus add an alarm function to the analogue output.

4 MAINTENANCE and SERVICE

1 General

A message in the display will inform you when probe renovation is needed, otherwise just calibrate, and keep the probe clean.

The actual conditions dictate whether or not regular cleaning is necessary. Cleaning can be performed with a cloth or soft paper. The membrane is strong and not easily damaged, but **do not** try to scratch it clean with a hard or sharp object.

The probe should not be taken apart unless the membrane is damaged, e.g. due to accident when cleaning.

The electronics need no maintenance.

NB. There is no need to change the electrolyte regularly as in some probes

"Spares" for the first few years use are sent with all OxyGuard equipment.

2 Fault Finding

CAUTION - REMEMBER TO SWITCH OFF THE SUPPLY TO THE UNIT AND TO CIRCUITS CONNECTED TO THE CONTROL AND ALARM OUTPUTS BEFORE REMOVING THE FRONT PANEL OR TERMINAL COVER - A HAZARD EXISTS IF THIS IS NOT DONE

1) If the system is completely "dead" first check the power supply to the instrument. Check and if necessary exchange the fuse. If this does not help, consult your dealer or OxyGuard!

2) If, after a long period of operation, it is impossible to calibrate and you are sure that conditions were stable, renovate the probe, as described below.

3) A very unstable reading is probably due to a damaged probe membrane. Renovate the probe, as described below.

4) A sudden fault - e.g. with a zero or negative display indication - can be due to a cable fault or bad connection. The probe can be connected directly to the transmitter. If there is still a fault, renovate the probe.

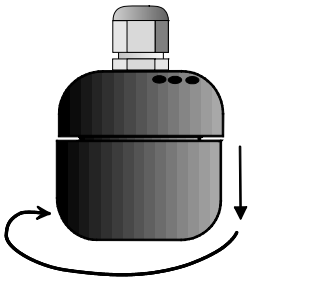
3 Probe Renovation

THIS SHOULD ONLY BE NECESSARY IF THE MEMBRANE FOR ANY REASON SHOULD BE DAMAGED OR UNLESS, AFTER LONG USE (SOME YEARS), YOU CANNOT CALIBRATE UP TO THE CORRECT VALUE.

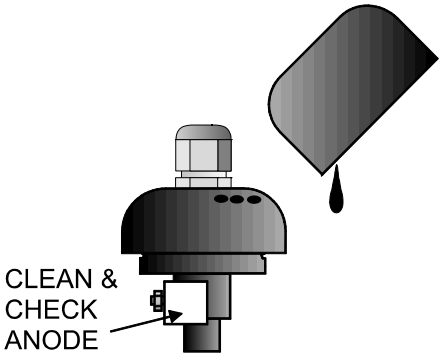
BEFORE STARTING, SWITCH OFF THE SUPPLY TO THE UNIT AND TO CIRCUITS CONNECTED TO THE ALARM OUTPUT

Most probes used with OxyGuard Atlantic are type 3. They have 3 dots on the top part near the cable gland, type 3 anodes and electrolyte. The electrolyte of a probe with type 3 chemistry is blue to start with, but soon becomes very dark, and dark deposits are found inside the probe.
-If there are three dots on the top of the probe, and very dark deposits inside it, you can be sure that it is a type 3 probe with type 3 chemistry.

These probes use D10MC membranes with grey backing paper.

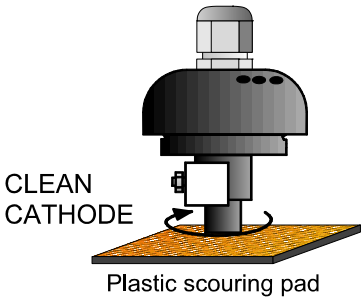


3.1) Remove the probe, rinse it and unscrew the cap. If it sticks, tap the side of the probe gently with a hammer then try again. Discard the electrolyte, rinse the cap and top part, clean off any brown or black oxide deposits.



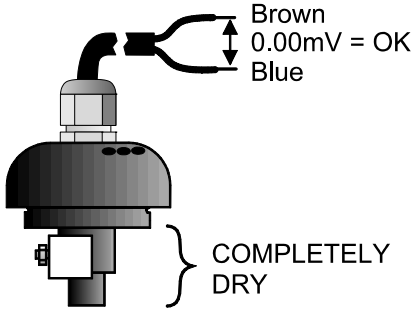
3.2) Inspect the anode. If the probe was filled correctly when it was last renovated it will be easy to clean the dark deposits from the anode - use a nail brush or similar. If the probe was not filled completely the anode will be very corroded and must be replaced. Check that the nut under the anode is tight before fitting a new anode. Wash the anode in soapy water before use to remove any protective oil. Make sure that you use type 3 anodes on the probe.

3.3) Check the cathode and remove any deposits using the plastic abrasive pad supplied with the probe or a little wet or dry emery paper, grade 600. The cathode MUST NOT BE POLISHED.



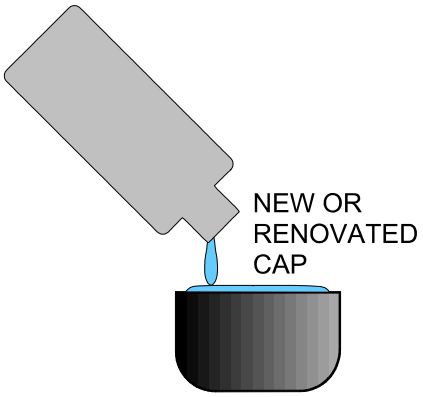
3.4) Rinse and dry the top part.

3.5) You can at this stage perform an easy check on the probe. Dry the probe – especially the cathode and area around it - completely, then observe the output signal – the probe should have zero output. You can also measure on the probe leads – when the probe is completely dry there should be no voltage (mV) between the brown and blue leads (you can disconnect the leads and measure as below). Contact your distributor if this is not the case.



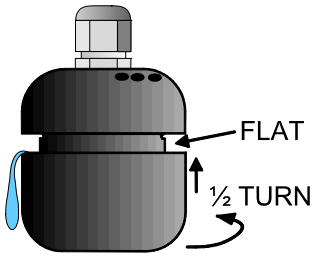
You should also be able to measure a resistance between the yellow and black leads. The value measured will be between 10 and 25 kiloohm.

3.6) Fill a new (or renovated) cap to the brim with electrolyte – the excess electrolyte helps remove any air bubbles.



7.2.7) Locate the flat machined from the thread. Lower the upper part into the cap and turn the cap half a turn to engage the thread.

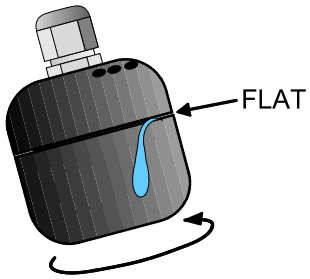
Tilt the probe 15° so that the flat is uppermost and screw the cap onto the top part. Excess electrolyte and air should dribble out at the flat.



IT IS IMPORTANT THAT THE PROBE IS FILLED COMPLETELY.

WHEN YOU ARE CERTAIN THAT THE PROBE IS FILLED COMPLETELY TIGHTEN THE CAP **HARD.**

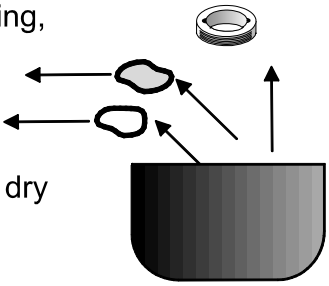
After renovation the probe can be regarded as new. It should be hung up in air to stabilize for at least an hour before calibration. If possible re-calibrate after a day or two.



A new membrane can easily be fitted to the cap - see the drawing. The membrane must be flat - if it wrinkles remove it and try again with a new one. It is important that all parts are clean and dry. A cap must not be re-used without replacing the membrane, as the membrane stretches to fit the cathode, and will not fit perfectly a second time

1) Unscrew ring, discard used membrane and O-ring

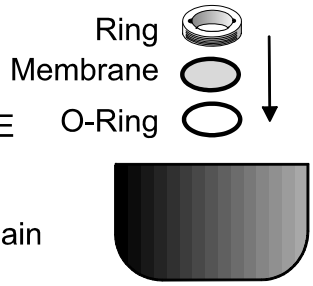
2) Clean and dry cap & ring **thoroughly**



3) Assemble as shown.

THE O-RING GOES UNDER THE MEMBRANE

4) Tighten the ring. If the membrane wrinkles try again with a new membrane.



4 Spare Parts

The parts delivered with the unit should cover the need for spares for several years use, otherwise spares can be obtained from OxyGuard.

D10MC	Set of membranes and o-rings
D10E3500	500 ml electrolyte
D10E31L	1 liter electrolyte
D10PP	Membrane Protector
D10TOOL	Membrane ring removal tool

5. SPECIFICATIONS

1 Probe

Measurement principle:	Oxygen: Galvanic oxygen partial pressure cell, self polarizing, self temperature compensating. Temperature: Precision NTC
Dimensions:	Diameter = 58 mm, length = 59 mm.
Weight:	Probe alone 0.2 kg. Probe with 7m cable 0.5 kg.
Connections:	Cable, 4 lead, standard cable length = 7 m.
Measurement range:	0 to 20 mg/l (ppm)/ 0 to 200 % sat, higher on request. Temp. from -5°C.
Accuracy:	Depends on calibration and conditions. Typical better than +/-1% of value.
Output stability:	In air at constant temperature stable to within +/- 1% over 1 year.
Accuracy, temperature:	+/- 0,3°C.
Operating conditions:	0 to 40°C, pressure to 2 bar. Higher on request.
Storage temperature:	-5 to +60°C.

2 Transmitter Unit

Construction:	ABS enclosure with display, indicators, pushbuttons and alarm buzzer.
Dimensions & weight:	b x h x d: 213 x 185 x 95 mm, 1.2 kg.
Supply & consumption:	230 VAC, 115 VAC +/-10% or 9 to 36VDC. 10 W. (As ordered)
Operating conditions:	-10 to +50°C. Max. 90% humidity non-condensing. Enclosure IP65.
Storage conditions:	-10 to +60°. Max. 90% humidity non-condensing.
Measurement inputs:	Probe signals: mV oxygen & resistance temperature. Scaleable ranges.
Compensation input:	4-20 mA. Scaleable. Max voltage drop 5V at 20 mA. Fully galvanically isolated.
Parameters:	mg/l (ppm); % sat; % vol; mbar O2, temperature. Can be scaled & linked.
Analogue output:	4-20 mA. Max. load 820 ohm (total). User selectable range & parameter. Fully galvanically isolated from all inputs.
Display:	Graphical LCD with backlight. Max 4 figures, 2 decimals, 13 mm height.
Conversion accuracy:	To display and analogue output < +/- 0.1%. Non-linearity and repeatability typically < +/- 0.1% of actual value.
Relay outputs:	4, with potential free changeover (SPDT) contacts. Selectable mode (direct or inverted), and linking to parameter or logical argument. Max advisable load 200VA or 1A AC, 2A at 24 VDC. Max voltage 240 VAC 36 VDC.
Logical functions:	Direct, inverted, multiply. With "and" and "not and" linking.
Alarms:	8, variable hysteresis. Selectable parameter, values & linking.
Timers:	8, from 1 second to 9999999 seconds (99 days). Selectable period, duty cycle and offset. Can activate or be activated by alarm. Can freeze the output. Can activate relays. Can be reset from front panel.

Data subject to change without notice

Menu Level 1	Menu Level 2	Menu Level 3	Menu Level 4	Menu Level 5
Menu Calibrate Set salinity Set setpoint values Setup Information Status list				
Calibrate	Calibrate Wipe membrane and press OK			
Set salinity	Set salinity 00 ppt ^			
Set setpoint values	Setpoint 1: Disabled Setpoint 2: Disabled Setpoint 3: Disabled Setpoint 4: Disabled Setpoint 5: Disabled Setpoint 6: Disabled Setpoint 7: Disabled Setpoint 8: Disabled		*You can only set values for set points that are enabled These appear as "Alarm SP" or "Reg. SP" and a value. See "Setup"*	
Setup	Setup User interface Calibration setup Setpoint Setup List Timer Setup List Relay Setup List mA Input Setup (Off) mA out setup (Off)			
Setup	*User interface*	User interface Visible measurements Decimals		
Setup	*User interface*	Visible measurements	mg/l (on) °C (on) °F (off) % SAT (on) mA input (off) PPM (off) %VOL (off) mbar O_2 (off)	
Setup	*User interface*	*Decimals*	Decimals Extra decimal Standard	

Setup *Calibration setup*

Calibration setup
Cal. precision
Cal to units (%SAT)
Set cal to (100.50)
Auto calib (off)

Setup *Calibration setup* *Cal. precision*

Cal. precision
High
Normal
Field

Setup *Calibration setup* *Cal to units (%SAT)*

%SAT
%VOL

Setup *Calibration setup* *Set cal to (100.50)*

Enter new value
+0100.50
^

Setup *Calibration setup* *Auto calib (off)*

Setup *Calibration setup* *Auto calib (off)*

Auto calibration
Disabled
Calibrate at
falling edge of:
none
Max cal diff=5.0%
Calib error gives
Warning
Save
Cancel

Setup *Calibration setup* *Auto calib (off)* *Disabled*

Enabled
Disabled

Setup *Calibration setup* *Auto calib (off)* *Calibrate at falling edge of*

none
Timer 1
Timer 2
Timer 3
Timer 4
Timer 5
Timer 6
Timer 7
Timer 8
Setpoint 1
Setpoint 2
Setpoint 3
Setpoint 4
Setpoint 5
Setpoint 6
Setpoint 7
Setpoint 8
Any alarm

Setup	*Calibration setup*	*Auto calib (off)*	*Max cal dif =5.0%*	Enter new value 005.0 ^
Setup	*Calibration setup*	*Auto calib (off)*	*Calib. error gives warning:*	Warning Error
Setup	*Calibration setup*	*Auto calib (off)*	*Save*	Save Done Continue
Setup	*Setpoint setup list*	Setpoint setup list Setpoint 1 (Al) Setpoint 2 (Reg) Setpoint 3 (Dis) Setpoint 4 (Dis) Setpoint 5 (Dis) Setpoint 6 (Dis) Setpoint 7 (Dis) Setpoint 8 (Dis)		
Setup	*Setpoint setup list*	*Setpoint 1*	Alarm Active if: % Sat < 70.000 Hyst = 5.0 Enable if: none Disable if: none Buzzer off Save Cancel	
Setup	*Setpoint setup list*	*Setpoint 1*	*Alarm*	Disabled Alarm Regulator
Setup	*Setpoint setup list*	*Setpoint 1*	*Active if*	mg/l °C °F % SAT % VOL mbar mmHg in Hg mbar O2 mA raw mA scaled mV System error

Setup	*Setpoint setup list*	*Setpoint 1*	*<*	> < = <> >= <= Always on Always off
Setup	*Setpoint setup list*	*Setpoint 1*	*70.000*	Enter new value +000070.000 ^
Setup	*Setpoint setup list*	*Setpoint 1*	*Hyst= 5.0*	Enter new value +000005.000 ^
Setup	*Setpoint setup list*	*Setpoint 1*	*Enable if*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*Setpoint setup list*	*Setpoint 1*	*Disable if*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*Setpoint setup list*	*Setpoint 1*	*Buzzer off*	Off On

Setup	*Setpoint setup list*		*Save*	Save Done Continue
Setup	*Timer setup list*	Main timer time Timer 1 (Ena) Timer 2 (Dis) Timer 3 (Dis) Timer 4 (Dis) Timer 5 (Dis) Timer 6 (Dis) Timer 7 (Dis) Timer 8 (Dis)		
Setup	*Timer setup list*	*Main timer time*	Main timer time 000d 00h 00m 00s Set time Show time on boot Back	
Setup	*Timer setup list*	*Main timer time*	*Main timer time* *000d 00h 00m 00s* *Set time*	Main timer time 000d 00h 00m 00s ^
Setup	*Timer setup list*	*Main timer time*	*Show time on boot*	Off On
Setup	*Timer setup list*	*Timer 1 (Ena)*	Enabled Period = 3600s Offset = 0s Ontime = 5s Meas freeze OFF Restart if: "#" OFF Restart if: none Pause if: none Enable if: none Disable if: none Save Cancel	
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Enabled*	Enabled Disabled
Setup	*Timer setup list*	*Timer 1 (Ena)*	*period =3600s*	Enter new value +00360000 ^
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Offset =0s*	Enter new value +00000000 ^
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Ontime = 5s*	Enter new value +00000005 ^

Setup	*Timer setup list*	*Timer 1 (Ena)*	*Meas freeze OFF*	Meas freeze OFF Meas freeze ON
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Restart if"#": OFF*	OFF ON
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Restart if: none*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Pause if: none*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm

Setup	*Timer setup list*	*Timer 1 (Ena)*	*Enable if: none*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Disable if: none*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*Timer setup list*	*Timer 1 (Ena)*	*Save*	Save Done Continue
Setup	*Relay setup list*	*Relay 1 (Ena)* *Relay 2 (Ena)* *Relay 3 (Ena)* *Relay 4 (Ena)*		
Setup	*Relay setup list*	*Relay 1(Ena)*	Relay 1 Enabled Normal Bound to: Setpoint 1 Save Cancel	

Setup	*Relay setup list*	*Relay 1(Ena)*	*Enabled*	Disabled Enabled
Setup	*Relay setup list*	*Relay 1(Ena)*	*Normal*	Normal Inverted
Setup	*Relay setup list*	*Relay 1(Ena)*	*Bound to Setpoint 1*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
			Save	Save Done Continue
Setup	*mA input setup (off)*	mA input setup Disabled Use as 4-20 mA Scaling: 4mA => 40.000 20mA => 200.000 Scaled units: mbar Use for comp.: none Save Cancel		
Setup	*mA input setup (off)*	*Disabled*	Disabled Enabled	
Setup	*mA input setup (off)*	*Use as 4-20 mA*	*Use as 4-20 mA* *Use as 0-20 mA*	
Setup	*mA input Setup (off)*	*Scaling:* *4mA =>* *40.000*	Enter a new value +0040.000 ^	

Setup *mA input setup (off)* *20mA => 200.000*

Enter a new value
+0200.000
^

Setup *mA input setup (off)* *Scaling units: mbar*

PPM
mg/l
°C
°F
%SAT
%VOL
mbar
mmHg
inHg
mbar O2
mA raw*
mA scaled*
mV*
System error
PPT

Setup *mA input setup (off)* *Use for comp.: none*

*for special use

Pressure
Salinity
Temperature
NTC Temperature

Setup *mA input setup (off)* *Save*

Save
Done
Continue

Setup *mA out setup (Off)*

mA output setup
Disabled
Use as 4-20 mA
Value from
%SAT
Scaling:
0.000
=4mA
160.000
=20mA
Underrange from
none
Save
Cancel

Setup *mA out setup (Off)* *Enabled*

Disabled
Enabled

Setup	*mA out setup (Off)*	*Value from %SAT*	PPM mg/l °C °F %SAT %VOL mbar mmHg inHg mbar O2 mA raw mA scaled mV system error
Setup	*mA out setup (Off)*	*Scaling: 0.000* *= 4mA*	Enter a new value +00000.000 ^
Setup	*mA out setup (Off)*	*160.000* *= 20mA*	Enter a new value +00160.000 ^
Setup	*mA out setup (Off)*	*Underrange from none*	none Timer 1 Timer 2 Timer 3 Timer 4 Timer 5 Timer 6 Timer 7 Timer 8 Setpoint 1 Setpoint 2 Setpoint 3 Setpoint 4 Setpoint 5 Setpoint 6 Setpoint 7 Setpoint 8 Any alarm
Setup	*mA out setup (Off)*	*Save*	Save Done Continue
Setup	*mA out setup (Off)*	*Cancel*	return to setup list

Information Instrument name, software version, serial number

Status list List of any errors or similar, for example calibration, probe condition, cable fault etc.

Aerator Control

This is the standard setting when using aeration rather than oxygenation - set points are based on % sat values.
Set point 1 = low alarm; linked to relay 1, activates when DO < 70%
Set point 2 = control; linked to relay 2, activates when DO < 95%
Set point 3 = high alarm; linked to relay 3, activates when DO > 110%
The fourth relay is linked to timer1 with on time 5 seconds every hour and can be used for probe cleaning.
The mA output is set to 4-20 mA = 0-200% sat

The display is set to show mg/l, % sat and °C.

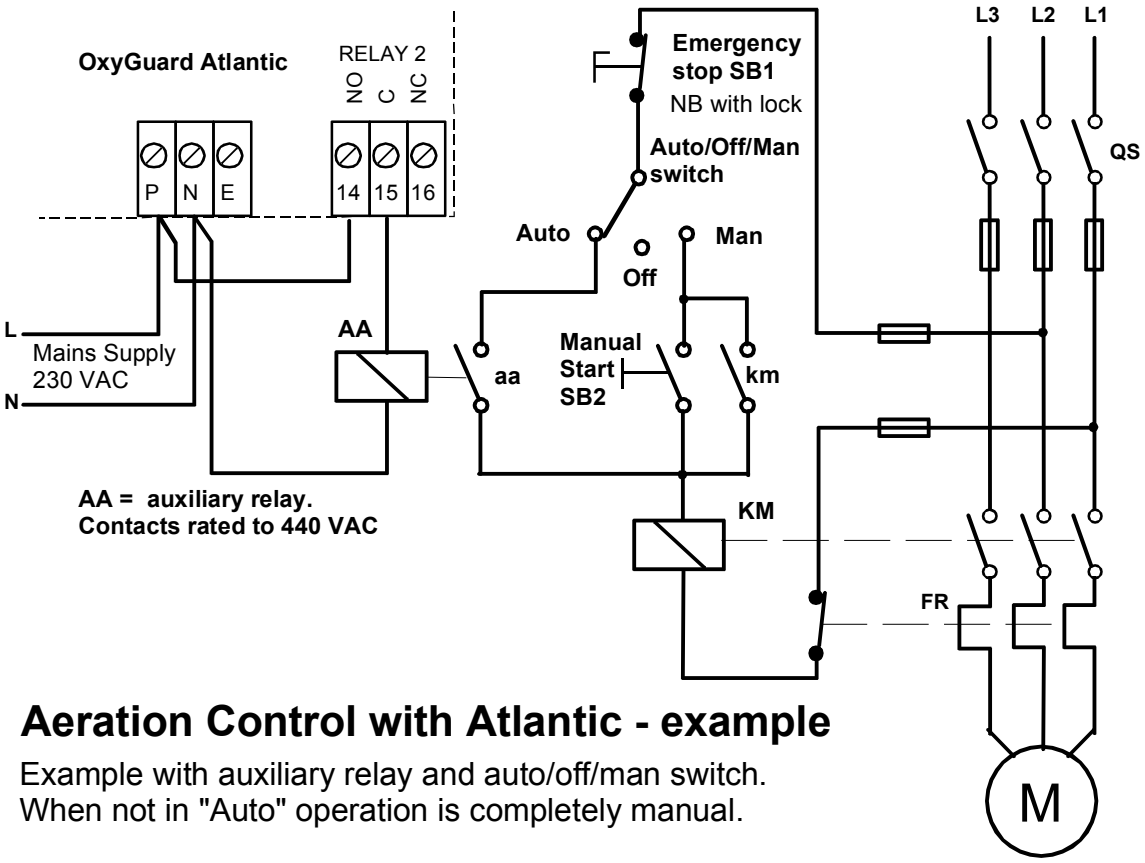
Setup	*User interface*	*Visible measurements*	mg/l (on) °C (on) °F (off) % SAT (on) mA input (off) PPM (off) %VOL (off) mbar O_2 (off)
Setup	*User interface*	*Decimals*	Standard
Setup	*Calibration setup*	*Cal. precision*	Field
Setup	*Calibration setup*	*Cal to units (%SAT)*	%SAT
Setup	*Calibration setup*	*Set cal to (100.50)*	+0100.5**0**
Setup	*Calibration setup*	*Auto calib (off)*	
Setup	*Setpoint setup list*	Setpoint setup list Setpoint 1 (Al) Setpoint 2 (Reg) Setpoint 3 (Al) Setpoint 4 (Dis) Setpoint 5 (Dis) Setpoint 6 (Dis) Setpoint 7 (Dis) Setpoint 8 (Dis)	
Setup	*Setpoint setup list*	*Setpoint 1*	Alarm Active if: % Sat < 70.000 Hyst = 5.0 Enable if: none Disable if: none Buzzer on

Setup	*Setpoint setup list*	*Setpoint 2*	Regulator Active if: % Sat < 95.000 Hyst = 5.0 Enable if: none Disable if: none Buzzer off
Setup	*Setpoint setup list*	*Setpoint 3*	Alarm Active if: % Sat > 110.000 Hyst = 5.0 Enable if: none Disable if: none Buzzer on
Setup	*Timer setup list*	Main timer time Timer 1 (Ena) Timer 2 (Dis) Timer 3 (Dis) Timer 4 (Dis) Timer 5 (Dis) Timer 6 (Dis) Timer 7 (Dis) Timer 8 (Dis)	
Setup	*Timer setup list*	*Main timer time*	Main timer time 000d 00h 00m 00s Set time Show time on boot off Back
Setup	*Timer setup list*	*Timer 1 (Ena)*	Enabled Period = 3600s Offset = 0s Ontime = 5s Meas freeze OFF Restart if: "#" OFF Restart if: none Pause if: none Enable if: none Disable if: none Save Cancel
Setup	*Relay setup list*	*Relay 1 (Ena)* *Relay 2 (Ena)* *Relay 3 (Ena)* *Relay 4 (Ena)*	

Setup	*Relay setup list*	*Relay 1(Ena)*	Relay 1 Enabled Normal Bound to: Setpoint 1 Save Cancel
Setup	*Relay setup list*	*Relay 2(Ena)*	Relay 2 Enabled Normal Bound to: Setpoint 2 Save Cancel
Setup	*Relay setup list*	*Relay 3(Ena)*	Relay 3 Enabled Normal Bound to: Setpoint 3 Save Cancel
Setup	*Relay setup list*	*Relay 4(Ena)*	Relay 4 Enabled Normal Bound to: Timer 1 Save Cancel
Setup	*mA input setup (off)*		
Setup	*mA out setup (On)*	mA output setup Enabled Use as 4-20 mA Value from %Sat Scaling: 0.000 =4mA 200.00 =20mA Underrange from none Save Cancel	

Information Instrument name, software version, serial number

Status list List of any errors or similar, for example calibration, probe condition, cable fault etc.



Aeration Control with Atlantic - example

Example with auxiliary relay and auto/off/man switch.
When not in "Auto" operation is completely manual.

The above assumes that the mains supply is 230 VAC and that the auxiliary relay and aerator motor contactor also use 230 VAC. Other voltages can be found.

Oxygenation Control

This is the standard setting when using oxygenation rather than aeration - set points are based on mg/l values.
Set point 1 = low alarm; linked to relay 1, activates when DO < 7 mg/l
Set point 2 = control; linked to relay 2, activates when DO < 10mg/
The above two relays would be used to open magnetic valves to supply oxygen to diffusors or similar.
Set point 3 = high alarm; linked to relay 3, activates when DO > 15mg/
Relay 3 could also be linked to "any alarm" to act as a general alarm.
The fourth relay is linked to timer1 with on time 5 seconds every hour and can be used for probe cleaning.
The mA output is set to 4-20 mA = 0-20 mg/

The display is set to show mg/l, % sat and °C.

Setup	*User interface*	*Visible measurements*	mg/l (on) °C (on) °F (off) % SAT (on) mA input (off) PPM (off) %VOL (off) mbar O_2 (off)
Setup	*User interface*	*Decimals*	Standard
Setup	*Calibration setup*	*Cal. precision*	Field
Setup	*Calibration setup*	*Cal to units (%SAT)*	%SAT
Setup	*Calibration setup*	*Set cal to (100.50)*	+0100.50
Setup	*Calibration setup*	*Auto calib (off)*	
Setup	*Setpoint setup list*	Setpoint setup list Setpoint 1 (Al) Setpoint 2 (Reg) Setpoint 3 (Al) Setpoint 4 (Dis) Setpoint 5 (Dis) Setpoint 6 (Dis) Setpoint 7 (Dis) Setpoint 8 (Dis)	
Setup	*Setpoint setup list*	*Setpoint 1*	Alarm Active if: mg/l < 7.000 Hyst = 0.50 Enable if: none Disable if: none Buzzer on

Setup	*Setpoint setup list*	*Setpoint 2*	Regulator Active if: mg/l < 10.000 Hyst = 0.50 Enable if: none Disable if: none Buzzer off
Setup	*Setpoint setup list*	*Setpoint 3*	Alarm Active if: mg/l > 15.000 Hyst = 0.50 Enable if: none Disable if: none Buzzer on
Setup	*Timer setup list*	Main timer time Timer 1 (Ena) Timer 2 (Dis) Timer 3 (Dis) Timer 4 (Dis) Timer 5 (Dis) Timer 6 (Dis) Timer 7 (Dis) Timer 8 (Dis)	
Setup	*Timer setup list*	*Main timer time*	Main timer time 000d 00h 00m 00s Set time Show time on boot off Back
Setup	*Timer setup list*	*Timer 1 (Ena)*	Enabled Period = 3600s Offset = 0s Ontime = 5s Meas freeze OFF Restart if: "#" OFF Restart if: none Pause if: none Enable if: none Disable if: none Save Cancel
Setup	*Relay setup list*	*Relay 1 (Ena)* *Relay 2 (Ena)* *Relay 3 (Ena)* *Relay 4 (Ena)*	

Setup	*Relay setup list*	*Relay 1(Ena)*	Relay 1 Enabled Normal Bound to: Setpoint 1 Save Cancel
Setup	*Relay setup list*	*Relay 2(Ena)*	Relay 2 Enabled Normal Bound to: Setpoint 2 Save Cancel
Setup	*Relay setup list*	*Relay 3(Ena)*	Relay 3 Enabled Normal Bound to: Setpoint 3 Save Cancel
Setup	*Relay setup list*	*Relay 4(Ena)*	Relay 4 Enabled Normal Bound to: Timer 1 Save Cancel
Setup	*mA input setup (off)*		
Setup	*mA out setup (On)*	mA output setup Enabled Use as 4-20 mA Value from mg/l Scaling: 0.000 =4mA 20.000 =20mA Underrange from none Save Cancel	

Information Instrument name, software version, serial number

Status list List of any errors or similar, for example calibration, probe condition, cable fault etc.

Setup for Pulsed Dosing

Sometimes it is advisable to pulse the injection of oxygen rather than supply it continuously - for example to provide optimal diffusor operation whilst avoiding a too large supply of oxygen. This is done by letting a setpoint enable a timer, which in turn controls a relay output.

Timer 2 could, for example, be inserted between setpoint 2 and relay 2 in the above oxygenation example, so that when the DO level falls below the 10 mg/l setpoint, the relay will open for 10 seconds every 20 seconds until the DO level has risen to within the hysteresis value (0,5 mg/l) of the setpoint. The settings for this are shown below.

NB. The period time and on time, as well as the setpoint value and hysteresis, should be set to suit the actual installation. Shorter times will be better in smaller tanks. The positioning of the DO probe and mixing of the water is also important. The figures shown here are examples.

Note that Atlantic can only dose at one given rate - it cannot provide proportional dosing. You can, however, obtain pulsed dosing when the deviation from the setpoint is small and continuous dosing when the deviation is large by connecting two relay outputs in parallel. One relay gives pulsed operation from one setpoint and a timer (as outlined below); the other relay operates directly from a second setpoint with a value further from the desired value. If the DO is a little under the desired value the first setpoint will activate pulsed dosing, if the DO value is further from the desired setpoint the second setpoint will cause continuous dosing.

Setup	*Timer setup list*	*Timer 2 (Ena)*	Enabled Period = 20s Offset = 0s Ontime = 10s Meas freeze OFF Restart if: "#" OFF Restart if: Setpoint 2 Pause if: none Enable if: Setpoint 2 Disable if: none Save Cancel
Setup	*Relay setup list*	*Relay 2(Ena)*	Relay 2 Enabled Normal Bound to: Timer 2 Save Cancel

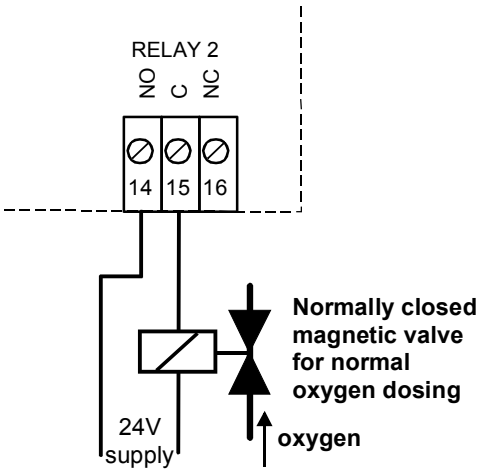
Emergency Oxygen

Standard dosing uses normally closed valves. With these there will be no oxygen supply in the event of power failure. By letting Atlantic hold a normally open valve closed during normal operation, an emergency oxygen supply will be provided if there is a power failure. If the relay is operated by a set point with a very low value emergency oxygen will also be supplied when the DO falls under this value.

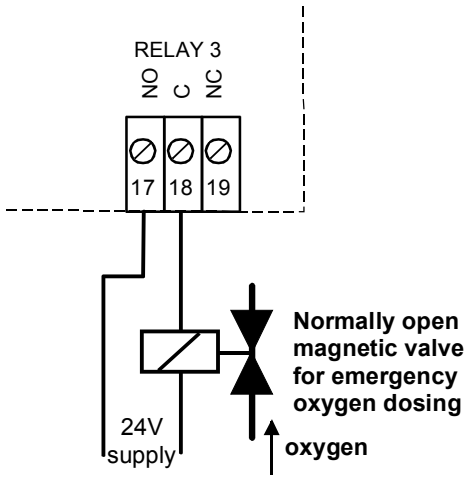
This can be achieved with the following setting, where relay 3 is used together with setpoint 8 (instead of being used as a high alarm or general alarm relay)

Setup	*Setpoint setup list*	*Setpoint 3*	Alarm Active if: % Sat < 50.000 Hyst = 2.0 Enable if: none Disable if: none Buzzer off
Setup	*Relay setup list*	*Relay 3(Ena)*	Relay 3 Enabled Inverted Bound to: Setpoint 8 Save Cancel

Note that the set point value depends on the fish species.



Normal dosing



Emergency supply

Oxygen Control with Atlantic

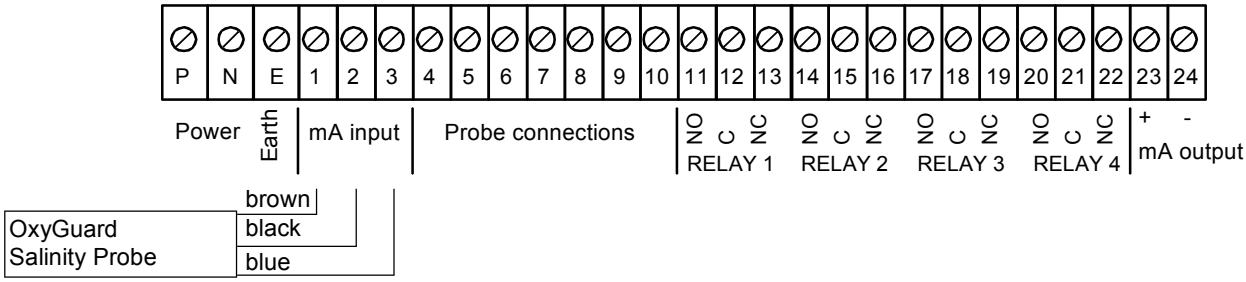
The normal control uses a normally closed valve that is opened when needed. The emergency supply uses a normally open valve that is usually held closed, but that will open if power fails or if the DO level drops below the setpoint.

NB Oxygen supplies should be fitted with pressure reduction valve, needle valves and flowmeters to obtain the desired flow.

Setup for DO measurement with salinity compensation using OxyGuard salinity probe

Connect the OxyGuard salinity probe between Atlantic terminals 1 (brown wire), 2 (black wire) and 3 (blue wire). Note that the % sat will not be affected since % sat indicates the percentage of oxygen dissolved in relation to the maximum that can be obtained by saturating the water with air. What will be affected is mg/l since dissolved salt reduces the amount of oxygen in milligrams per litre that can be dissolved when saturating the water with air. The following example assumes that the salinity probe is calibrated to 4-20 mA = 0-50 ppt salt.

Setup	*mA input setup (on)*	*Enabled*	Enabled
Setup	*mA input setup (on)*	*Use as 4-20 mA*	*Use as 4-20 mA*
Setup	*mA input Setup (on)*	*Scaling:* *4mA =>* *0.00*	
Setup	*mA input setup (on)*	*20mA =>* *50.00*	
Setup	*mA input setup (on)*	*Units:* *ppt*	
Setup	*mA input setup (on)*	*Use for comp.:* *Salinity*	
Setup	*mA input setup (On)*	*Save*	Save Done Continue

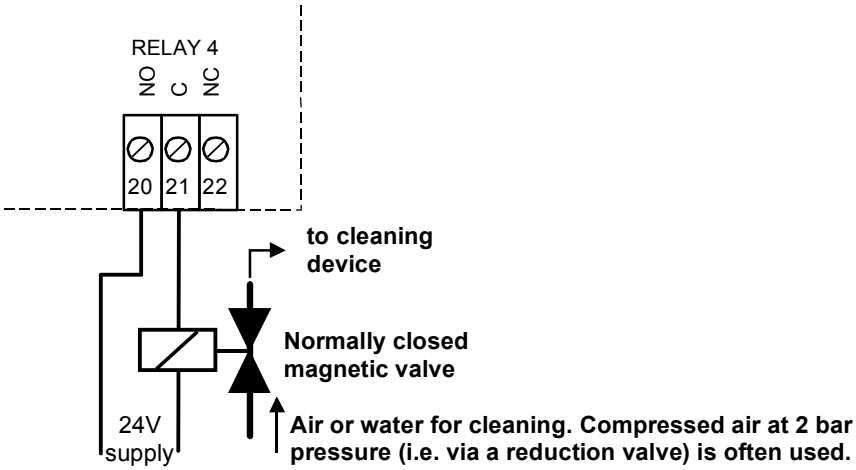


Automatic cleaning

For automatic cleaning the probe must be fitted with a cleaner. Atlantic can then control a supply of compressed air or clean water to the cleaner. The air or water is sprayed from the cleaner onto the membrane of the probe to clean it. A supply of air at about one or two bar pressure is often enough, so a pressure reduction valve is needed.

In the following the "ON" time will activate the relay 5 seconds once an hour to send cleaning gas or water to the probe. NB the relay activates at the start of the cycle.
If you put "Restart if #" to "ON" you will also be able to clean the probe by pressing the "#" button.

Setup	*User interface*	Visible measurements	mg/l (on) °C (on) °F (off) % SAT (on) mA input (off) PPM (off) %VOL (off) mbar O_2 (off)
Setup	*User interface*	*Decimals*	Standard
Setup	*Calibration setup*	*Cal. precision*	Field
Setup	*Calibration setup*	*Cal to units (%SAT)*	%SAT
Setup	*Calibration setup*	*Set cal to (100.5)*	
Setup	*Calibration setup*	*Auto calib (off)*	
Setup	*Timer setup list*	*Timer 1 (Ena)*	Enabled Period = 3600s Offset = 0s Ontime = 5s Meas freeze ON Restart if: "#" OFF Restart if: none Pause if: none Enable if: none Disable if: none Save Cancel
Setup	*Relay setup list*	*Relay 4(Ena)*	Relay 4 Enabled Normal Bound to: Timer 1 Save Cancel



Cleaner Control with Atlantic

The probe cleaner directs a jet of compressed air or water onto the membrane to clean it. Often compressed air at about 2 bar is enough. The air connection should have a reduction valve.

Setup to display only % vol and temperature

Setup	*User interface*	Visible measurements	mg/l (off) °C (on) °F (off) % SAT (off) mA input (off) PPM (off) %VOL (on) mbar O_2 (off)
Setup	*User interface*	*Decimals*	Standard

Calibration setup for % volume calibration

Setup	*Calibration setup*	*Cal. precision*	Field
Setup	*Calibration setup*	*Cal to units (%VOL)*	%VOL
Setup	*Calibration setup*	*Set cal to (XY.Z0)*	

NB. SET THE CALIBRATION VALUE "XY.Z0" TO THE OXYGEN PERCENTAGE OF THE GAS USED FOR CALIBRATION.
IF AIR IS USED SET TO 20.94

Make sure that autocalibration is off:

Setup	*Calibration setup*	*Auto calib (off)*

Setup for % volume measurement in closed vessel at constant pressure

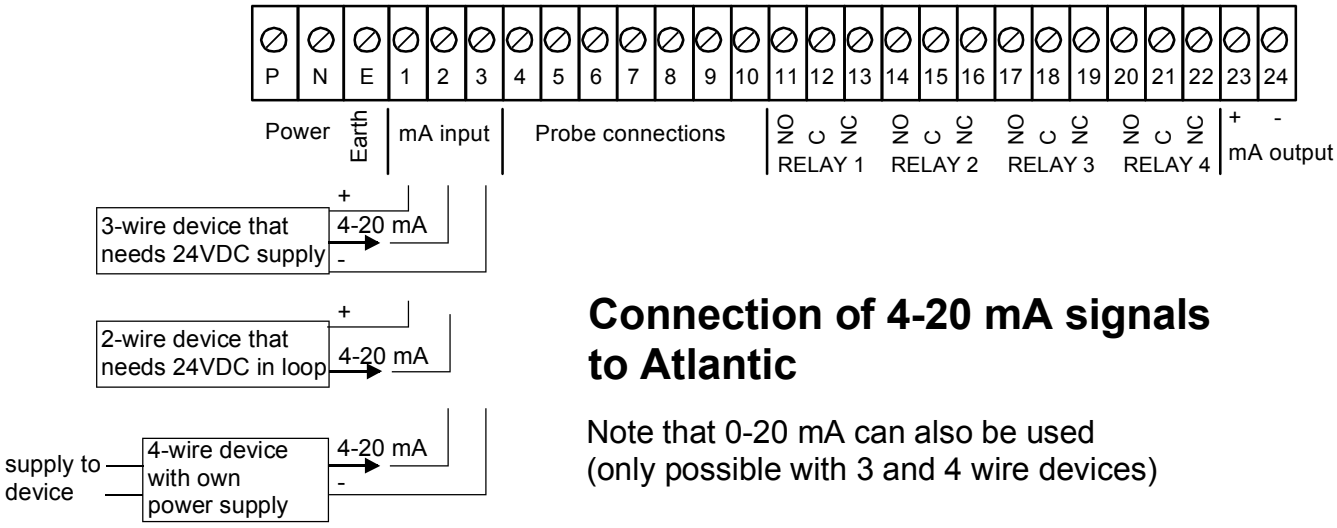
(No pressure measurement)
NB This setup disables the built-in atmospheric pressure compensation. Calibration and measurement must be carried out at the same pressure.
The procedure forces Atlantic to compensate with a non-existent mA input that always gives the same factor.

Setup	*mA input setup (off)*	*Disabled*	Disabled
Setup	*mA input setup (off)*	*Use as 4-20 mA*	*Use as 4-20 mA*
Setup	*mA input Setup (off)*	*Scaling:* *4mA =>* *1013.25*	
Setup	*mA input setup (off)*	*20mA =>* *1013.25*	
Setup	*mA input setup (off)*	*Units:* *mbar*	
Setup	*mA input setup (off)*	*Use for comp.:* *Pressure*	

Setup for % volume measurement in closed vessel with pressure compensation using pressure measurement with mA signal to Atlantic

NB This setup disables the built-in atmospheric pressure compensation. The procedure forces Atlantic to compensate with the mA input. The settings for 4 mA and 20 mA must correspond to the range of the pressure signal in absolute terms, in this example 4-20 mA = 1-2 bar absolute (0-1 bar gauge).

Setup	*mA input setup (on)*	*Enabled*	Enabled
Setup	*mA input setup (on)*	*Use as 4-20 mA*	*Use as 4-20 mA*
Setup	*mA input Setup (on)*	*Scaling:* *4mA =>* *1.00*	
Setup	*mA input setup (on)*	*20mA =>* *2.00*	
Setup	*mA input setup (on)*	*Units:* *bar*	
Setup	*mA input setup (on)*	*Use for comp.:* *Pressure*	



Connection of 4-20 mA signals to Atlantic

Note that 0-20 mA can also be used
(only possible with 3 and 4 wire devices)

Connecting a mA signal to Atlantic

The above indicates how different types of 4-20 mA and 0-20mA devices are connected to the Atlantic. The mA input signal can either be used to compensate the oxygen measurement, as an input signal that can be seen on the display, and/or can be acted on by setpoints and activate a relay output.
For example a pH Manta can be connected - one relay can then be used to regulate DO, another to regulate temperature and a third to regulate pH (all with simple on/off setpoint regulation).

Automatic Calibration when using the AirAlarm

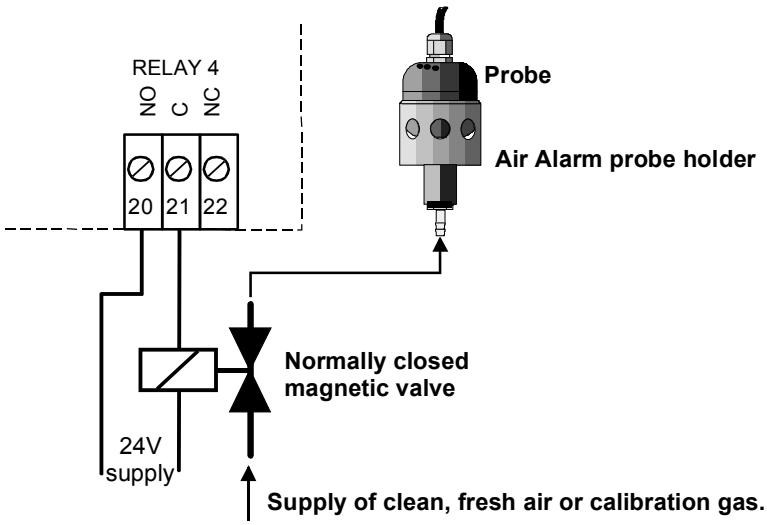
For automatic calibration when using Atlantic to monitor ambient air with the Air Alarm armature.
In this example relay 4 must be connected to a magnetic valve that when open sends a supply of calibration gas to the calibration gas connection on the Air Alarm. The example assumes air is used, if another gas is used the calibration value must be set accordingly.

In the example the 300 second "ON" time will activate relay 4 for 5 minutes once a week (604800 sec.) to send calibration gas to the probe, and the calibration value will be saved at the end of these 5 minutes. The relay activates at the start of the cycle.

The "Max cal diff" setting of 5% in the example means that automatic calibration can only adjust calibration up to 5% from the previous setting. When the Atlantic is switched on "ERROR" will thus probably be displayed after the 5 minutes. The probe must then be calibrated "manually" - i.e. start calibration using the pushbuttons.

Setup	*User interface*	Visible measurements	mg/l (off) °C (on) °F (off) % SAT (off) mA input (off) PPM (off) %VOL (on) mbar O_2 (off)
Setup	*User interface*	*Decimals*	Standard
Setup	*Calibration setup*	*Cal. precision*	Field
Setup	*Calibration setup*	*Cal to units (%VOL)*	%VOL
Setup	*Calibration setup*	*Set cal to (20.94) (or the value of the calibration gas)*	
Setup	*Calibration setup*	*Auto calib (on)*	Auto calibration Enabled Calibrate at falling edge of: Timer 1 Max cal diff=5.0% Calib error gives Warning Save Cancel
Setup	*Timer setup list*	*Timer 1 (Ena)*	Enabled Period = 604800s Offset = 0s Ontime = 300s Meas freeze ON Restart if: "#" OFF Restart if: none Pause if: none Enable if: none Disable if: none Save Cancel

Setup	*Relay setup list*	*Relay 4(Ena)*	Relay 1 Enabled Normal Bound to: Timer 1 Save Cancel



Automatic calibration when using the AirAlarm

It is important that the gas used as calibration gas is either clean fresh air or a calibration gas with known oxygen content. If a gas other than air is used the oxygen content must be set in the Atlantic using:
"Setup, Calibration setup, Set cal to (oxygen content)