Dr.Oxygen
OXYGEN - CONTROLLER

INSTALLATION

1.0 Wiring

Cables The temperature sensor and oxygen probe signals are to be led in separately via screened (US shielded) wiring at least 10 cms from the mains power cables.

Connection for	The terminals are described in numerical order
220 V AC	0 (Zero) to terminal 1 and Phase to terminal 2
Aerator	Terminals 3 and 4 (change-over, normally open) are for activating the power relay for the aerator. Use any voltage convienient. An RC-unit should be connected across the coil of the power relay. Lamp "A" lights when 3 and 4 are closed.
Pump no.1	Terminals 5 and 6 (change-over, normally open) are for activating the power relay for pump no.1. Use any voltage convienient. An RC-unit should be connected across the coil of the power relay. Lamp "B" lights when 5 and 6 are closed.
Pump no.2	Terminals 7 and 8 (change-over, normally open) are for activating the power relay for pump no.2. Use any voltage convienient. An RC-unit should be connected across the coil of the power relay. Lamp "C" lights when 7 and 8 are closed.
Oxygen valve no.1	Terminals 9 and 10 (change-over, normally open) are for activating the oxygen valve no.1. Use any voltage convienient. An RC-unit should be connected across the coil . Lamp "D" lights when 9 and 10 are closed.
Oxygen valve no.2	Terminals 11 and 12 (change-over, normally open) are for activating the oxygen valve no.2. Use any voltage convienient. An RC-unit should be connected across the coil . Lamp "E" lights when 11 and 12 are closed.
Alarm	Terminals 13, 14 and 15 are controlled by the alarm relay. 13 and 14 are closed and 14 and 15 are open when there is no alarm. Green lamp "AL OK" lights when system is OK or alarm monitoring is switched off.
Temperature sensor no.1 (intake)	Pos. (+) to terminal 16, neg.(-) to terminal 17. (neg. is *not* GND) White wire is pos. (+)
Temperature sensor no.2 (outlet)	Pos. (+) to terminal 18, neg.(-) to terminal 19. (neg. is *not* GND) White wire is pos. (+)
Oxygen probe no.1	Pos. (+) to terminal 20, neg.(-) to terminal 21. (neg. is *not* GND) Brown wire is pos. (+)

Oxygen probe no.2	Pos. (+) to terminal 22, neg.(-) to terminal 23. (neg. is *not* GND) Brown wire is pos. (+)
Oxygen suplied by motorvalve	Pos. to terminal 24, neg. to terminal 25. 0-10 V control signal Several units can be controlled in parallel. Not used where magnetic valves are employed.
Printer	A printer with an RS232 serial may can be connected to terminals 26, 27 and 28. Distanceup to about 20 m (66'). One unit - one printer. This setup option are rarely used as communication with PC and alarm supervision system cannot be operated at the same time. You may prefere to print out via the PC instead.
PC and Alarm Supervision System	Dr.Oxygen may be connected to RS485 net for communication with a PC and alarm supervision system: Dr.Mayday or Dr.Sherlock with Dr.Bell Speech Computer and Telephone Call System. Fixed network or GSM wireless. Connect to terminals 29 (A) and 30 (B). Shield to terminal 27 (GND). Connect to the PC through a RS485/RS232 converter. Use Professor Partyline for Windows® to retreive and view data from Dr.Oxygen. View data on line charts, control input on Dr.Oxygen, experience the tools for displaying changes in set-up, save and retrieve set-up.

Fuse	There is a lidded fuse box, "F1", to the left of the terminals. It must be equipped with a 1 AT cartridge fuse.

2.0 To TEST relay functions

Before the functioning of the relays can be tested, the temperature and oxygen probes must be properly connected (check readings ② **O_2,** ① **TEMP,** ① **O_2** and ② **TEMP**.

Testing	Mode of action	
Aerator	Set ① **MIN SET** to under ① **AUT SET**:	lamp "A" lights
	Set ① **MIN SET** to above ① **AUT SET**:	lamp "A" goes out
Pump no.1	Set **O_2 OUTPUT%** to 0	lamp "B" goes out
	Set **O_2 OUTPUT%** to above 0	lamp "B" lights
Pump no.2	Set **O_2 OUTPUT%** to between 0 - 50	lamp "C" goes out
	Set **O_2 OUTPUT%** to above 50	lamp "C" lights
Oxygen valve no.1	Set **O_2 OUTPUT%** to 0	lamp "D" goes out
	Set **O_2 OUTPUT%** to 50	lamp "D" lights
Oxygen valve no.2	Set **O_2 OUTPUT%** to 50 or under	lamp "E" goes out
	Set **O_2 OUTPUT%** to 100	lamp "E" lights
Alarm	Make sure there is no alarm situation (ALARM lamp flashing). Press **START STOP** if necessary.	
	Press **SHIFT** - **ALARM SETTINGS**	lamp "AL OK" goes out
	Press **ALARM SETTINGS** again	lamp "AL OK" lights

2.1 Siting of oxygen probes/temperature sensors

At the inlet, the oxygen probe/temperature sensor should be sited after the supply of oxygen - preferably far enough away for the water to be properly mixed.

At the outlet, the oxygen probe/temperature sensor should be sited in a representative/heavily loaded basin. Ensure that the through-flow time is as short as possible, and the controller will react correspondingly quickly. If the probe is sited in a less heavily loaded basin, you may compensate by raising the SET point.

3.0 Dipswitches

A block with eight small dipswitches is mounted on the back of the front panel. Loosen the six screws.

No.	
1	Normal (OFF). Transmission of temperature to net (ON).
2	OFF.
3	Log of mg oxygen/l only (OFF). Holds data for up to 3 times longer period Log of IDEAL, mg/l and % (ON).
4	RS232 (ON) or RS485 (OFF)
5	OFF.
6	OFF.
7	OFF.
8	OFF At start-up, ON will erase the memory and start up at factory setting if switches 1, 2 and 3 are OFF as well. (This takes some seconds, while the display is off.)

N.B. Normally only dipswitch 3 should be ON.

4.0 Adjustment of sensors and oxygen probes

Temperature probes are adjusted once and for all on installation.
Oxygen probes to be adjusted every 2 to 4 weeks when provision of oxygen is necessary.

ADJUSTMENT OF	INSTRUCTIONS
Temperature sensor, intake.	The temperature probe is calibrated by the manufacturer and supplied with a calibration figure, which should be keyed in: **SHIFT -** ① **TEMP** (Offset value for temperature sensor, intake).
Temperature sensor, outlet	The temperature probe is calibrated by the manufacturer and supplied with a calibration figure, which should be keyed in: **SHIFT -** ② **TEMP** (Offset value for temperature sensor, intake).
Oxygen probe, intake	The oxygen probe and temperature sensor to be removed from the water and hung up out of the sun. After at least ½ an hour's acclimatisation time, press **SHIFT -** ① **O_2**. Then press *both* arrow buttons at the same time. You will hear three rapid "beeps", and the probe is calibrated.
Oxygen probe, outlet	The oxygen probe and temperature sensor to be removed from the water and hung up out of the sun. After at least ½ an hour's acclimatisation time, press **SHIFT -** ② **O_2**. Then press *both* arrow buttons at the same time. You will hear three rapid "beeps", and the probe is calibrated.

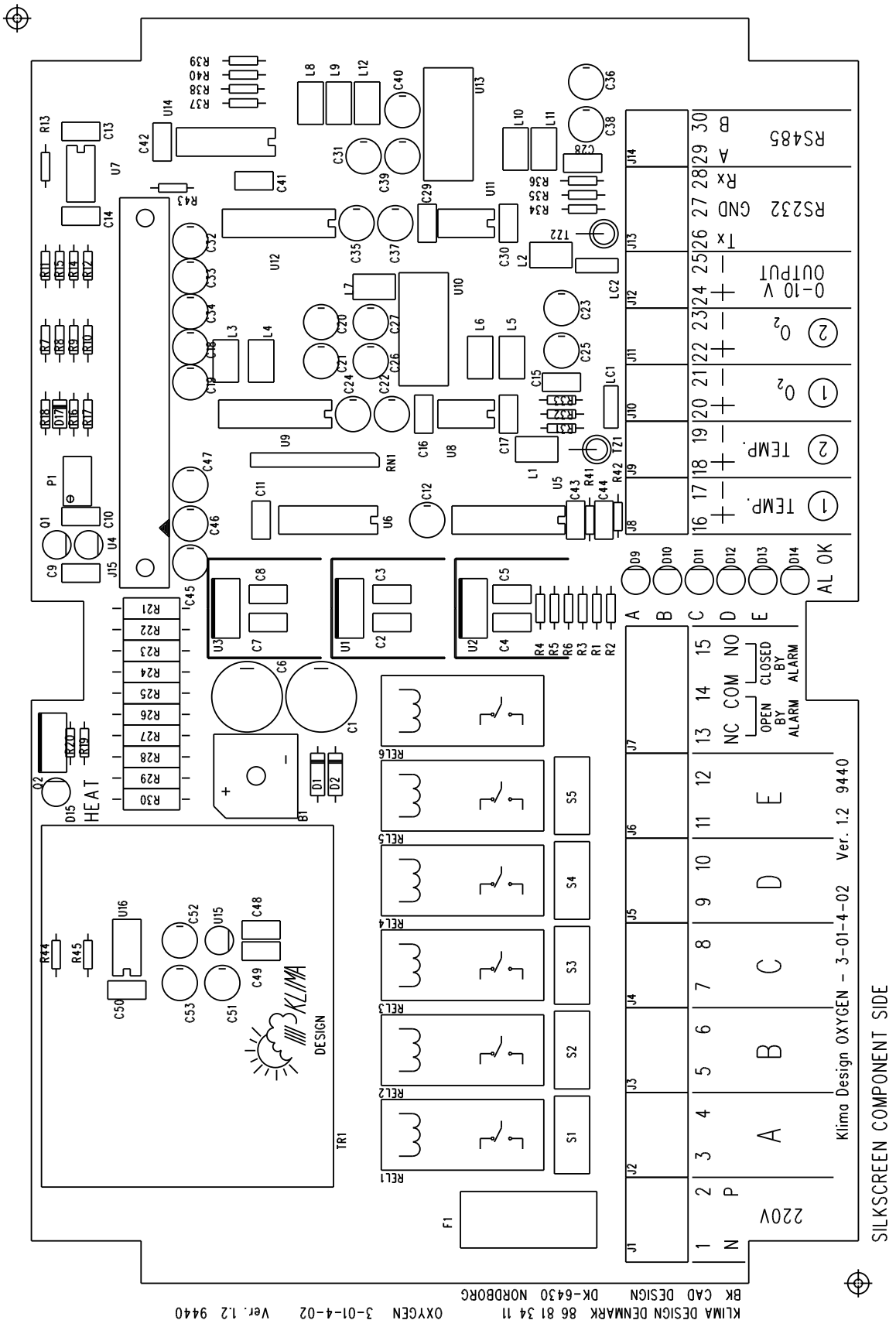
4.1 Adjustment of offset on the oxygen probe inputs

Offset only needs checking on installation or if a new program is put in.

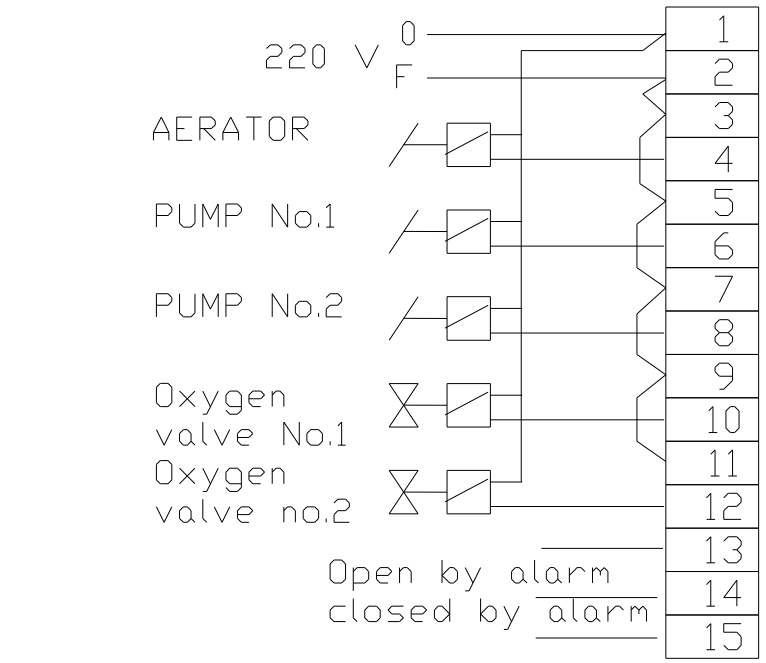
① **O_2^2** means press this button twice.

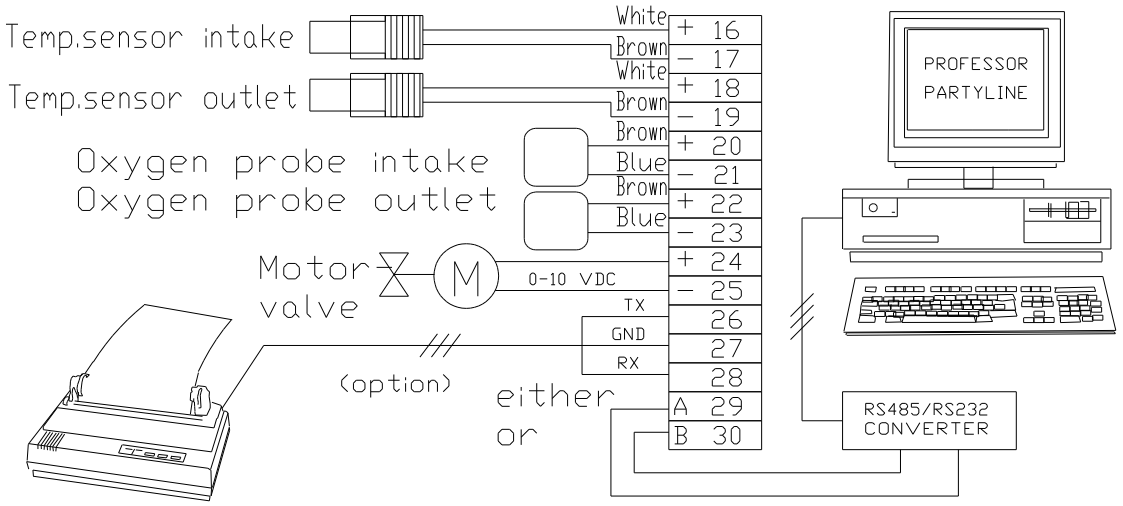
ADJUSTMENT OF	INSTRUCTIONS
Oxygen probe, intake	Short out the input. Check that ① **O_2** shows 0.0 +/-0.1. If not, adjust by changing **SHIFT -** ① **O_2^2** by the same amount but the opposite way.
Oxygen probe, outlet	Short out the input. Check that ② **O_2** shows 0.0 +/-0.1. If not, adjust by changing **SHIFT -** ② **O_2^2** by the same amount but the opposite way.

PRINT LAYOUT



WIRING DIAGRAM





Separate switches must be installed on the pumps so that they can be started if the Dr.Oxygen is not operating.

The pos.(+) and neg.(-) must be installed the right way round on the probes and sensors.
Connections to be made with the greatest care, followed up by silicone bushes, since the voltages and currents here are very low.