

## Optical Dissolved Oxygen controller - autoclean

### Applications

- water treatment
- activated sludge
- de-nitrification
- fish pond

Input from optical D.O. sensor

Scales: PPM - mg/l - % air sat. - mmHg

Autoranging

Microprocessor-based instrument

Temperature readout in °C or °F

Dual filter software

Accuracy: +/- 0.2%

Calibration parameters display

Dual set-point and alarm conditions display

Autocalibration in air

Automatic or manual temperature compensation

Pressure, R.H., salinity compensation

Dual isolated output:

- 0/20 mA or 4/20 mA selectable
- programmable input on the span

Automatic or manual operation

Dual set-point with hysteresis, delay, and min/max programmable functions

Autoclean relay and holding function for input and outputs

EEPROM parameters storage

Automatic overload protection and reset

Extractable terminal block

96x96 (1/4 DIN) housing

Power: 110/220VAC



### Technical Specifications

in addition to those common in the series 7685

#### \* Optical D.O. sensor

cable length: 10 m

#### \* Scales

0/400 - 0/200.0 mmHg

0/400 - 0/200.0 % air saturation

0/40.0 - 0/20.0 PPM

0/40.0 - 0/20.00 mg/l

\* Software filter 90%RT: 0.5/50.0 s for small/large variations

Zero: ± 40 mV

Sensitivity: 20/250 %

#### Temperature

measuring and compensation range: +2/+52 °C or 28,4/125,5 °F

Zero: ± 2 °C or ±3,6 °F

Input: Pt1000 2 wires

#### Temperature compensation

Internal table

Reference temperature: 20 °C or 68 °F

Manual compensation: 0/50.0 °C or 32/122 °F

#### Secondary parameters

Pressure: 500/850 mmHg

Salinity: 0/60,000 PPM

Relative humidity: 0/100 %

#### Analog outputs

Dual isolated for D.O and temperature

#### Set points

Dual with ON/OFF programmable functions

#### \* Autoclean function

Disable - manual - auto + manual

\* Repetition cycle: 0.1/24 hours

\* Number of cycles: from 1 to 10

\* Compressor time: 0.5/60.0 sec.

\* Discharge time: 0.5/10.0 sec.

\* Holding time: 0/20.0 min. (for measuring, outputs, relays)

#### Option

**091.4143** 9/36VDC power supply

## Optical D. Oxygen sensor - autoclean

This unique submersible probe has been designed to measure dissolved oxygen based on fluorescent technology.

The measuring system consists of:

- optical device complete with a layer of fluorescent material,
- electronic circuit with an exciting beam for the fluorescence detection,
- built-in amplifier,
- Pt1000 for temperature compensation
- digital input for calibration and configuration
- nozzle for the autoclean by external pressure air

The probe is powered by the B&C controller OD 7685.110, which provides the measuring readout, 2 set-points, 2 analog outputs and the relay to activate the cleaning cycle.

The most common applications of this probe include: water quality monitoring, municipal and industrial water treatment and aquaculture.

### Principle of operation

A light beam of a specific wavelength is sent to a special fluorescent layer in contact with the sample.

The absorbed light energy is partially released as a light pulse with an higher wavelength.

This phenomena is called fluorescence.

If oxygen molecules are in contact with the sensing layer, the fluorescing is reduced (quenching).

By measuring the amount of quenching it is possible to determine the oxygen concentration.

The advantages of this measuring method are the absence of electrolyte and membrane, the possibility to measure the oxygen concentration in water or in air, and a good sensitivity in a low oxygen concentration.

### Spare

**OD 8391** Replacement optical disk

### Accessories

**0012.450043** Adapter for extension pipe

**0012.000624** Swivel mounting.

The supply includes 0012.450043

**0012.440040** 33 mt PVC tubing



### Technical Specifications

|                                  |                                   |
|----------------------------------|-----------------------------------|
| <b>Sensing element:</b>          | replaceable                       |
| <b>Scale:</b>                    | 0.0/200.0 % air                   |
| <b>Resolution:</b>               | 0.1 % air                         |
| <b>Drift:</b>                    | < 1% year                         |
| <b>Response time:</b>            | < 30s                             |
| <b>Temperature compensation:</b> | internal table                    |
| <b>Temperature sensor:</b>       | RTD Pt1000                        |
| <b>Compensation range:</b>       | 0.0/50.0 °C                       |
| <b>Power supply:</b>             | from OD 7685.110                  |
| <b>Operating temperature:</b>    | -5/+50 °C                         |
| <b>Pressure:</b>                 | 1 bar max                         |
| <b>Autoclean:</b>                | built in nozzle                   |
| <b>Air pressure:</b>             | 3 bar max                         |
| <b>Material:</b>                 | PVC, silicon                      |
| <b>Diameter:</b>                 | 60 mm                             |
| <b>Length:</b>                   | 165 mm total                      |
| <b>Thread:</b>                   | 2"NPT                             |
| <b>Cable:</b>                    | 8x0,25 L=10m                      |
| <b>Sensor life:</b>              | >1 year, not exposed to sun light |
| <b>Protection:</b>               | IP68                              |
| <b>EMC/RFI conformity:</b>       | EN 61326                          |
| <b>Marking:</b>                  | CE                                |



# 0012.001246

The controller can be installed in the autoclean module **0012.001246**, which provides the required pressured air in those applications where is needed.

The module is made of the following parts:

- an IP65 enclosure, with a front panel location for installing the 7685 controller,
- a printed circuit for controlling the air compressor, the solenoid valve and an alarm relay for the compressor malfunctioning,
- an air compressor that generates air up to 3 Bar,
- a safety valve to avoid over pressure,
- a S.Steel reservoir, of approx. 9 cm in diameter, where the air is accumulated.

The cleaning is completely automatic, and the user can program the frequency through the controller software and dedicated menu.

The cleaning cycle is activated by the autoclean relay of the controller.

During this cycle, and during the set holding time, the measures remains steady to the value detected before the cleaning. The holding time can be programmed by the user, based on his application and process.

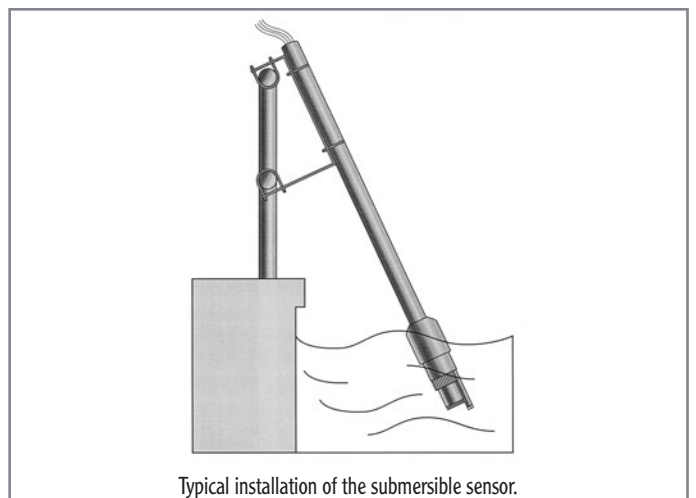
Once the cleaning is over, the module remains in stand-by until the next cycle.

It is also possible to activate the cycle manually, as described in the controller instruction manual.



## Technical Specifications

|                               |                                    |
|-------------------------------|------------------------------------|
| <b>Power supply:</b>          | 110/220 Vac $\pm 10\%$ , 50/60 Hz. |
| <b>Operating temperature:</b> | -5/+50 °C, 0-95% humidity          |
| <b>Enclosure:</b>             | plastic                            |
| <b>Mounting:</b>              | wall                               |
| <b>Cleaning system:</b>       | pressured air at 3 Bar             |
| <b>Air output:</b>            | PVC tubing, length 15 m            |
| <b>Power:</b>                 | 300VA max.                         |
| <b>Protection:</b>            | IP65                               |



Typical installation of the submersible sensor.

# 7685 Series microprocessor-based

## General information

The **7685 Series** includes all of the most complete and most performing analyzers of B&C Electronics.

They include all of the following measures:

- **pH - ORP**
- **Conductivity - Resistivity**
- **Free residual chlorine, combined and total**
- **Residual chlorine dioxide**
- **Residual dissolved ozone**
- **Dissolved oxygen**
- **Turbidity and Suspended Solids**
- **Residual dissolved Sulfide/Sulfite**
- **ISE**

All controllers are manufactured in robust aluminum enclosures DIN 43700, with front panels in polycarbonate. Their reliability and precision, along with their functionality, make them easy to use in all applications. Finally, 7685 Series guarantees one of the best performance-price ratio in the marketplace.

## Common features

Selectable input  
Input from RTD Pt100 3 wires  
Temperature readout  
Dual filter software  
Operating mode: automatic and manual  
Calibration parameters display  
Set-point and alarm conditions display  
Automatic or manual temperature compensation  
0/20 mA or 4/20 mA programmable isolated output  
Dual set-point with hysteresis, delay and min/max programmable functions  
Min/max and set-points timing alarm relay  
Software: 3 access levels, user friendly, keyboard lock, watch-dog  
EEPROM parameters storage  
Automatic overload protection and reset  
Extractable terminal blocks  
96X96 (1/4" DIN) housing

## Fieldbus Communication

The system is based on a digital communication through an open Modbus protocol, which interacts with the following Fieldbus: Profibus DP, Profinet, Modbus-TCP, DeviceNet, CANopen, EtherNet /IP/Modbus-TCP

Customers can view the main data and functions, such as:

- Primary and secondary measuring values
- Error messages
- Set-points relay, alarm relay and autoclean relay status

The "Virtual Instrument" is an innovative solution through which Customers can perform, from a remote station, all specific operations. Custom versions with bidirectional communication of data are available for O.E.M. and system integrators.

## Technical Specifications

common to all instruments of the 7685 Series

### Temperature

Input: RTD Pt100 2/3 wires

### Set point A and B:

Operation: ON/OFF

Hysteresis: adjustable

Delay: 0.0/99.9 s

\* Function: Max/Min

Relay contacts: SPDT 220V 5 A (resistive load)

### Alarm:

Low/High: adjustable

Delay: 0.0/99.9 s

\* Relay status: activated/deactivated

\* Alarm on max. operating time of set-point A/B: ON/OFF

\* Max operating time of set-point A/B: 0/60 minutes

\* Relay contacts: SPDT 220V 5 A (resistive load)

### Analog output N° 1

\* Input corresponding to the analog output (option 091.371x): selectable

\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

Response time: 2.5 s for 98%

Isolation: 250Vac

Load: 600 ohm max

### Analog output N° 2 (option 091.371x)

\* Input corresponding to the analog output: selectable

\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

Response time: 2.5 s for 98%

Isolation: 250Vac

Load: 600 ohm max

### Configuration (\*)

The above parameters indicated by asterisks "\*", may be selected in the Configuration menu

### General Specification

Alphanumeric display: 1 line x 16 characters

Operating temperature: 0/50 °C

Humidity: 95% without condensation

Power supply: 110/220Vac ± 10% 50/60 Hz

Isolation: 4 kV between primary and secondary (IEC 348)

Power: 5VA max.

Terminal block: extractable

Weight: 850 g

Dimensions: 96 x 96 x 155 mm

### Options

**091.701** RS 232 isolated output

The output sends the data to the serial port of the computer.

**091.404** 24Vac power supply

**091.414X** 9/36VDC power supply

The technical specifications could be changed without notice

