

## Short user instruction of the Aquacolor Biofilm Sensor for industrial applications

### Application

The biofilm sensor is placed in a water line, operated as flow through sensor, and continuously measures real time and inline the water quality and the formation of biofilm. The sensor is sensitive for turbidity, the presence of chromophores with absorption at 461 nm, like humic acids, and for biofilm formation in the sensor.

### Installing the sensor

The sensor wires with numbers 1 and 2 are connected to +12V and 0V respectively. The sensor wires with numbers 3 and 4 provide a sensor output signal between 0V and 5V. Wire #3 is the plus, wire #4 is 0V. A voltage difference of 0 Volt between wires 3 and 4 corresponds to clean water and a voltage difference of 5V between wires 3 and 4 with dirty water.

### Monitoring of the sensor using a smartphone

After taking the sensor in operation, you can connect to it through wifi using a laptop or smartphone. You can do this by connecting to the wifi network with ssid Biofilm\_Sensor and when prompted you type the password Biofilm007.

You can now open a browser and type the following in the address bar: 192.168.4.1 or <http://www.aquacolor.start>. Adding this address to your favorites, facilitates quick future connections. After connecting, you'll see the sensor menu and the sensor output.

### Changing the network name (ssid)

In case you use several sensors at the same farm, it can be convenient to change the network name of the sensors so that you can recognize them easily. Example:

Biofilm\_sensor\_stable\_1 and Biofilm\_sensor\_stable\_2.

Example: In case you want to change the default network name into Biofilm\_sensor\_stable\_1 you type in the input field: newssidBiofilm\_sensor\_stable\_1 and press send. If you now disconnect the power from the control-unit and switch it on again, the new setting will be activated.

### Calibration of the biofilm sensor

The sensor is already calibrated ex works and plug and play.

In case of already colored clean water, caused for example by the presence of humic acids in the water, the clean water value needs to be adjusted. For this purpose, a connection to the sensor is made and the sensor is filled with clean water. The sensor value is read and typed in the input field followed by pressing the send button. The result of this action is that the sensor reads 0 Volt when it is filled with clean water containing humic acids.

### Connecting the sensor to the control-unit

The sensor can be used in combination with a control unit with LED alarm indication and

datalogger. Additionally, the control-unit also is equipped with a relay and a pulse train generator for steering the dosing rate of standard industrial dosing pumps. For connecting the sensor to the control-unit, please read the short instruction manual of the control unit.

#### Changing the factory settings for sensor sensitivity

The sensor is already calibrated ex works using clean water (output voltage is 0 Volt) and dirty water (output voltage is 5 Volt). These settings originate from a sensor application to measure drinking water quality in poultry farms. We noticed that these factory settings are also feasible in other applications and we advice not to change the sensitivity of the sensor.

However, in case your application requires a different sensitivity of the sensor, you can adjust it as follows:

1. fill the sensor with a water quality at which the sensor should read 5 Volt.
2. read the sensor output at the water quality using the app and type factory directly followed by the sensor value and press send. Example: if you read a sensor value of 1200 you type factory1200 and press send. This will set the sensitivity of the sensor to the desired value.