

optiqua

EventLab™



Real Time On-Line

Water Quality Monitoring

Optiqua EventLab

Optiqua EventLab offers a unique real time water quality monitoring system, or Early Warning System, that can be deployed as a high density sensor network throughout a water distribution network. EventLab is based on Optiqua's awarded and patented Lab-on-Chip sensor technology and uses a single optical sensor to monitor the full spectrum of possible chemical contaminants, without the use of reagents or other consumables. The optical sensor is a Mach Zehnder Interferometer (MZI) which allows for continuous real time measurements of minute changes of refractive index (RI) in the water. In combination with Optiqua's proprietary event detection algorithms, the system is calibrated to the specific requirements of any water matrix, providing an effective monitoring solution and protection throughout the distribution grid.

Continuous real time monitoring

The EventLab sensors are sensitive to the full spectrum of possible chemical contaminants (organic and inorganic) and monitor the water quality continuously and real time.

Installation throughout the distribution grid

EventLab is installed as a network of sensors to monitor the distribution grid online. Easy installation and wireless data communication allow for a distribution network wide Early Warning System. Proprietary event detection algorithms are calibrated to the specific conditions of the water matrix and provide optimum protection.

Cost efficient

One system, no reagents, no moving parts

Slipstream connection

EventLab can be installed and accessed for servicing without interrupting the main flow. The system can be mounted on a flat wall, placed in a cabinet or installed in a field enclosure (mounting flanges provided).

Ease of maintenance

EventLab sensors are easily cleaned with commercially available cleansing agents. Maintenance intervals depend on the local water quality conditions.

Easy data integration

RS232 and GPRS modem allow integration into existing infrastructures for data transmission.

EventLab Specifications

Table 1: EventLab Parameters

1.Refractive Index	
Method/Type	MZI
Range	-10000 to +10000 Rad
Accuracy	NA
Precision	±3.2 mrad
2.Temperature	
Method/Type	Resistance Temperature Detector (RTD)
Range Contact Optiqua for alternative settings	Default settings: 5 to 35 °C
Accuracy	±0.26 °C
Precision	±0.002 °C

Table 2: EventLab controller

Component Description	Microprocessor-controlled unit
Controller Operating Temperature. Contact Optiqua for alternative settings	Default settings: 5 to 45 °C
Controller Storage Temperature	0 to 70 °C; 95% Relative humidity, Non-condensing
Laser (inside Controller)	Vertical Cavity Surface Emitting Laser (VCSEL) Low power laser with radiation wavelength 850nm
Enclosure	Dust and splash-proof plastic enclosure
Power Requirements	AC powered: 100 to 240 VAC, 50/60 Hz; Typical power load 8WAC with maximum at 17 WAC
Outputs	COM1: 1 x RJ 45 connector for connection to computer. COM2: 1 x serial (RS232) for connection to modem.
Modem	Quad band 850/900/1800/1900 MHZ GPRS Class B Class 10 modem assembled within controller with power supply and wiring connection to COM2. Modem's antenna is placed at controller's exterior. Communication between EventLab and the server is one-way and is transmitted as a TCP/IP packet via the cellular network. The server internet Protocol (IP) address will be pre-loaded into the modem prior to installation.
Controller Dimensions	300 x 200 x150 mm (11.81 x 7.87 x 5.91 inches)
Controller Weight	3.15 kg

Table 3: EventLab sensor and flow cell

Wetted Material	Ertalyte® PolyEthylene Terephthalate Polyester body bonded with Reltek Epoxy. Natural rubber o-ring seals.
Flow configuration	Flow through
Environment Contact Optiqua for alternative settings	Default settings: 10 to 35°C water temperature; No chemical. No reagents
Minimum Flow rate	100 ml/min
Maximum Pressure rate	1.5 bar
Built-in Temperature Element	Resistance Temperature Detector (RTD)
Sensor Housing	Polyvinyl Chloride (PVC) flow cell
Sensor Storage Temperature	5°C to 40°C; 0 to 95% Relative humidity, Non-condensing
Sensor Dimensions	∅50 X 165 mm (1.97 x 6.5 inches)
Sensor weight	0.5 kg

Fluidic connections and installation

Optiqua EventLab requires minimal installation and setup time. All parts are provided unless indicated. Depending on the local water quality conditions a filter may be advised to be installed (not provided).

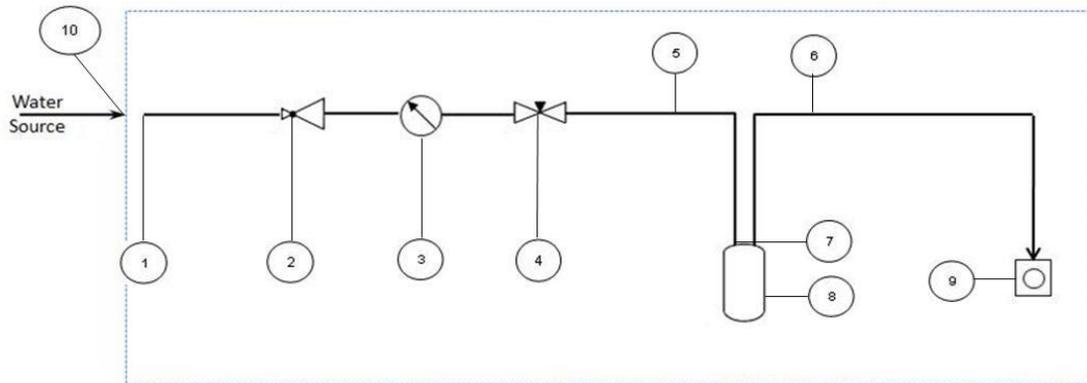
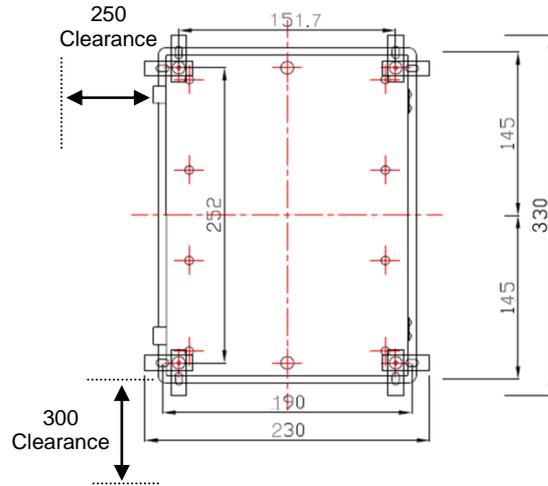
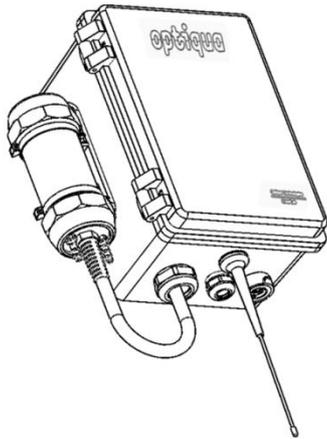


Figure 1: Fluidic Connections

1	Brass fitting: ½" NPT male (attached to pressure reducing valve)
2	Pressure reducing valve
3	Pressure gauge (attached to pressure reducing valve)
4	Brass needle valve: 1/4" NPT female (Attached to pressure reducing valve)
5	7mm outer diameter (OD) (4mm ID) soft PVC flexible clear tubing (length 0.6 meters)
6	7mm outer diameter (OD) (4mm ID) soft PVC flexible clear tubing (length 2 meters)
7	Nylon fittings (2x) for 4 mm ID tubing for Inlet and outlet of sample flow
8	EventLab flow cell
9	Drain
10	Filter (necessity and filter pore size depends on water quality; placed before pressure reducing valve if required)

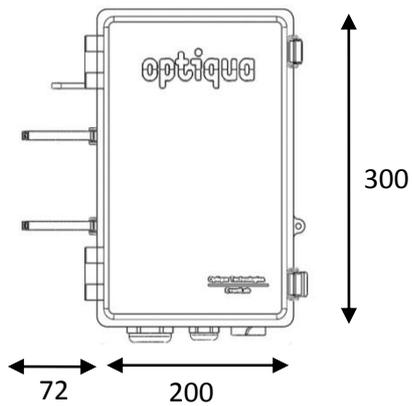
Dimensional Data (All dimensions in mm)

1.1.1.1. EventLab Controller's Dimensions

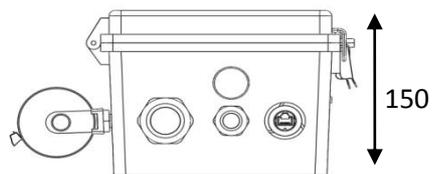
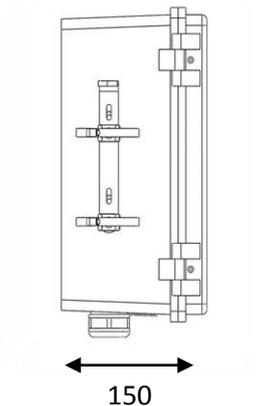


Isometric view of EventLab

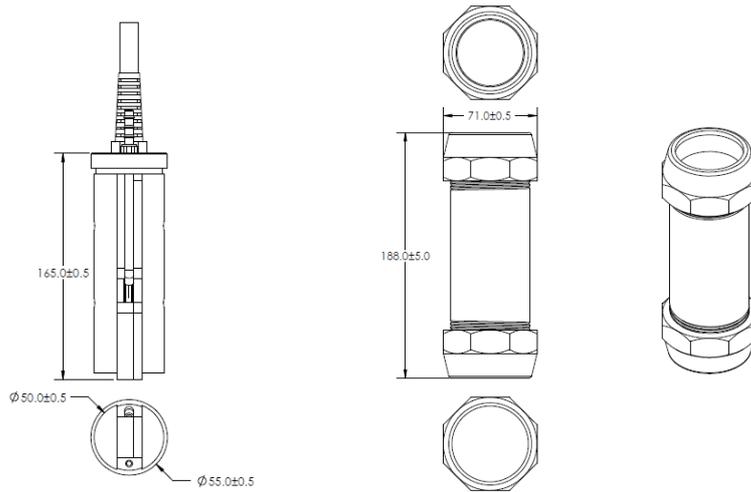
Dimensions of flanges' locations



(For assembled EventLab sensor)



Dimensions of controller



Dimensions of sensor

Dimensions of flow cell

Event Detection

Optiqua’s proprietary event detection software (EventLab Network Protection Software) is an internet-based software application that allows EventLab users to monitor the water quality continuously and in real time. The Software provides EventLab clients with an overview of their EventLab sensor network, as well as detailed information per individual sensor unit.

All EventLab units in the client’s EventLab sensor network transmit their data via a GPRS modem to the designated Optiqua databases and servers, where the data is processed using Optiqua’s proprietary event detection algorithms.

The algorithms identify statistically relevant deviations (“events”) in the water quality against the background of normal water variations. Events are categorized, representing different alarm limits or thresholds that can be set by the user. Algorithms and thresholds are calibrated to the specific requirements of the water matrix in order to optimize the contamination detection limits and minimize false alarms.

Authorized users will be provided with an URL, user name as well as password to access the software. Please contact our technical support team for detailed information on the EventLab Network Protection Software and the User Manual.

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