

### Product Description

The MS2000 is an on-line Total Trihalomethane monitoring system which provides low level measurements of THMs in water that requires no reagents.

Regulations limiting the levels of **Disinfection By-Products (DBPs)**, such as Trihalomethanes (THMs), in drinking water have made the ability to measure DBP levels throughout the distribution network essential. Multisensor's THM monitor provides that facility, efficiently and accurately.

Measuring Total THMs with an accuracy of +/-10%\*, the MS2000 provides the confidence that is needed in a process control instrument which is vital in meeting regulatory and legal requirements.

### Applications

- **Monitoring of THMs post treatment**
- Monitor THMs in the distribution network
- System modelling using THM Formation Potential
- Swimming pools



**“... and it's thanks to the MS2000  
we don't have to spend a  
fortune in reagents”**

### Key Benefits

- No sensor contact with water: **low maintenance, no sensor cleaning**
- **NO REAGENTS:** low running costs
- **Frequent sampling:** to 30 minutes
- **The most cost effective solution**
- High sensitivity: ideal for potable water
- **Alarms to SCADA** and other communication interfaces
- **THM Formation Potential generation** for system modelling

*\*30 – 150 ppb, Temp 10 – 30 °C*

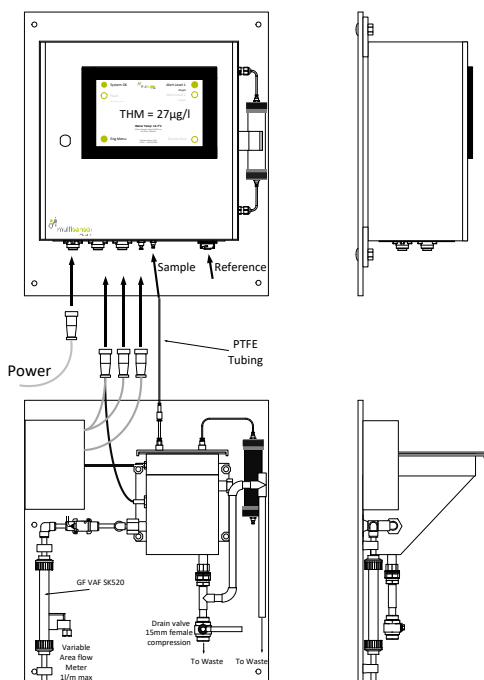
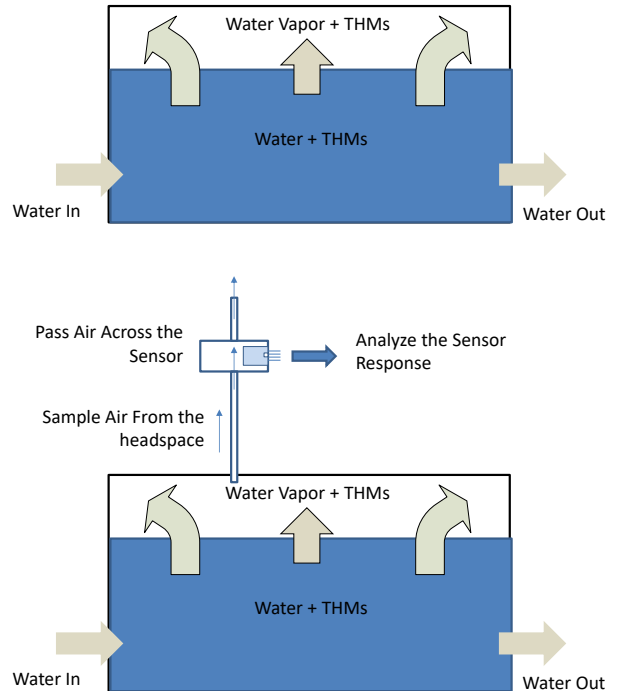
### Principle of Operation

The principle of operation is the measurement of **headspace gases** from a sample tank containing the water to be measured. According to Henry's Law the concentration of gases in the headspace is proportional to the concentration of the substance in the water. Therefore, measurement of the gases provides a technique to measure the concentration of the substance in the sample water.

Calibration of the instrument is done by presenting known concentrations to the sensors and generating calibration data from the responses obtained.

The MS2000 works by passing water through a sample tank as shown on the right. The **volatile components** in the water will pass into the headspace above the water where they will be trapped. This will continue until an equilibrium is reached.

A sample of the headspace gases are then passed across sensors in the MS2000 which respond to the THMs in the headspace. This response is then analysed by the instrument and a concentration value is generated based upon the relationship between the concentration present in the headspace and that in the water.



### Sensor Replacement

Sensors are replaced every 6 months, this removes the need for validation: the sensor is always factory calibrated and refurbished for maximum accuracy and stability.

### Installation

Installation is a very straightforward process: the instrument requires only connection to a power source, to a water source and to waste. It is supplied mounted on two panels and to be bolted to a wall or onto a frame.

### Typical THM monitoring application

**Story:** The local health authority had warned that the THM levels in the water supplied to households in the region was above or near the limit imposed by the law. For this reason the local WTP was asked to install an **on-line THM monitoring system** and to implement improved control of the process.

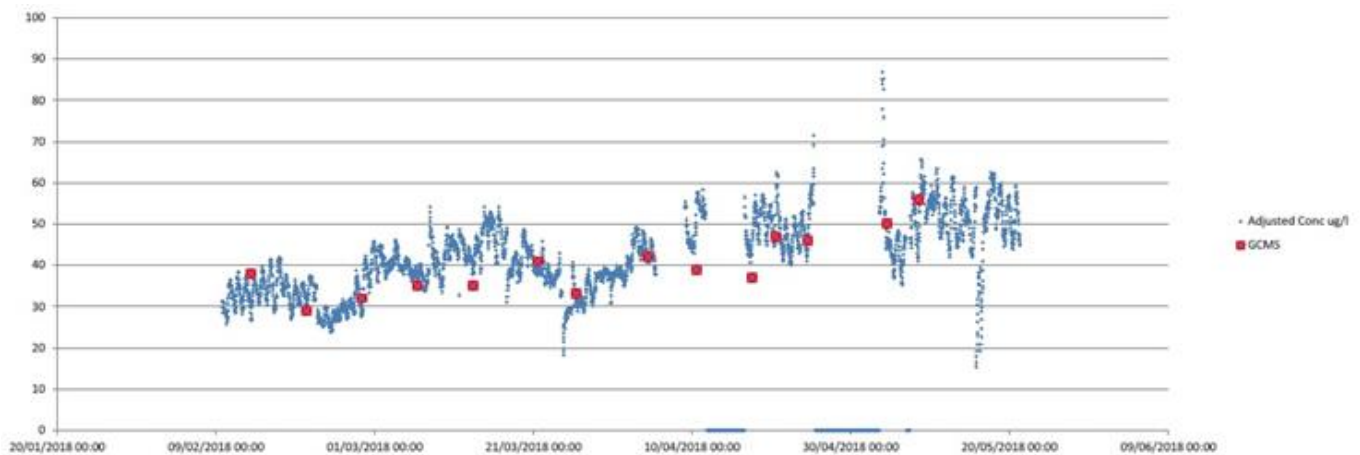
The **MS2000** is ideally suited this application providing accuracy and reliability in operation. The key benefits for the customer are the low running costs of the system - **No reagents or gases** are needed for operation. System integration is simple using the MS2000's communications interfaces.

**Possible solutions:** THM levels tend to increase with pH, temperature, time, and the level of "precursors" present. Precursors are **organic materials** which react with chlorine to form THM's. THM's can be reduced by the use of enhanced coagulation to remove as many precursors as possible and by limiting chlorination levels and contact time to a minimum.



### Correlation between GCMS and the MS2000

Comparison between the GCMS and the Multisensor System instruments over a test period of 4 months when different tests were carried out. This graph was produced from the application above.



### Key Performance Parameters

Parameter	Operational Requirements		Notes
	Minimum	Maximum	
Supply Voltage	90 V AC	240 V AC	50 Hz or 60 Hz
Power Consumption:		45 W	Typical 25 W during operation
Water Supply	0.5 l/min 0.13 Gall/min	1.0 l/min 0.26 Gall/min	
Water Pressure		4.0 bar 58 psi	
Working Temp: Ambient	0 °C / 32 °F	40 °C / 104 °F	Higher temperature available
Working Temp: Water	1 °C / 33 °F	40 °C / 104 °F	Higher temperature available
Sampling Period	60 mins		User selectable. High concentrations may limit the minimum time period allowed
Detection range	5 ppb	200 ppb	Measured against Chloroform standard.
Repeatability	-2%	+2%	100 ppb sample measured using standard 1.5 l solution (Water plus Chloroform dissolved in DMSO) in glass 2.5 l Winchester type bottle using magnetic stirrer at 25 °C
Display range (Default)	0 ppb	200 ppb	Configurable on commissioning
Analog Output	4 mA	20 mA	Scalable to range required, max load 900 R
Analog Output Isolation	400 V		Continuous. Opto-isolated.
Relay Voltage		50 V	3x, Alarm 1, Alarm 2 and Fault Relays with NO and NC contacts
Relay Current		5 A	
Flow Switch	Contacts closed if flow below set point		Option available on request
Instrument Case	IP65, Coated Mild Steel		
Sample Tank Material	316 Stainless Steel		Other materials and coatings available
Weight	25 kg / 55 lbs		
Dimensions	1170 x 490 x 300 mm 46 x 19.2 x 12 inches		Mounted on 2 separate PVC backboards

### Consumables

Every 6 Months: Air Filter Contents (Active Carbon), Dust Filter Element  
 Every 12 Months: Sample Tank Gasket

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