

# MACView<sup>®</sup>

## ETHYLENE POSTHARVEST ANALYSER

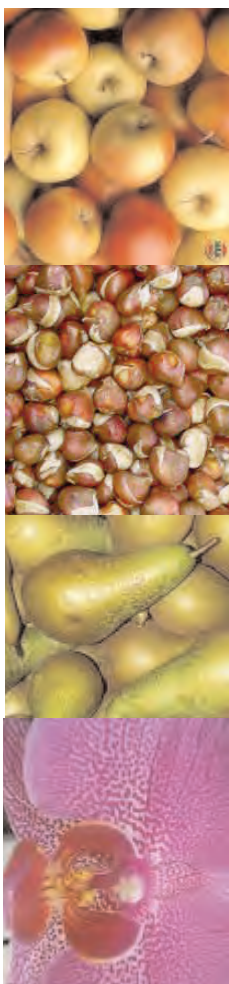
**The concept for guaranteed storage of fruit, vegetables, bulbs, trees, plants and tuberous plants**

### The product

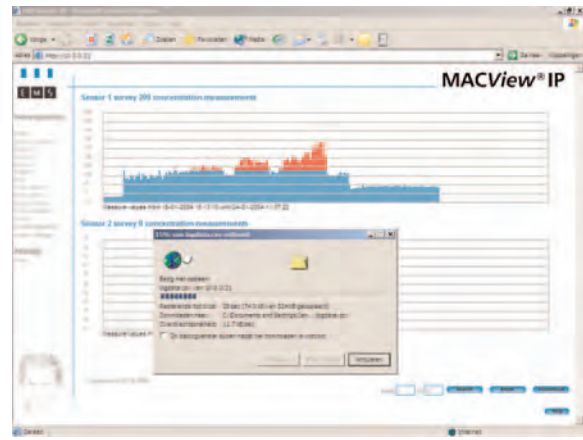
The MACView<sup>®</sup>-Ethylene Postharvest Analyser is an extreme sensitive ethylene measurement device suitable for measurement of ethylene in postharvest storage rooms, and scrubbers. Levels around 1 ppb resolution can be measured.

### Postharvest monitoring

Ethylene (ISO-name ethene), is a plant hormone that is produced by trees, plants, vegetables, fruit, flowers and tulip bulbs. Several cultivars of these vegetations are extremely sensitive for the presence of ethylene in air. Ethylene cause a trigger of ripening and is thus a stress-hormone that can cause irreversible damage to the stored product. Monitoring of ethylene gives information about ethylene production. This information can prevent unexpected rising of ethylene levels that are higher then the harmful level that a product can handle. The MACView<sup>®</sup>-Ethylene Postharvest Analyser is a helpfull instrument that helps interpreting what has happened during the storage of your valuable product.



Also available: **MACView®  
Ethylene Postharvest  
Portable Analyser :**



**Applications**

The markets that have direct advantage of the MACView®-Ethylene Postharvest Analyser are fruit producers (growers), storage facilities, distributors, flower growers, greenhouse owners and research laboratories.

**How to use**

Most customers that use the MACView®-Ethylene Postharvest Analyser says that the value of the instrument is that you can see what happens with the product and that you got the feeling with the process. You will see things that you have never seen before and can relate the change in quality with situations that occur. To prevent rising ethylene, ventilation or scrubbing the ethylene is an important automatic coupling that can be made. Ethylene can be measured 24 hours a day and can be controlled by external (climate) computers. For example in storage cells for fruit, the ethylene can be reduced by scrubbing out the ethylene by filters. It gives on long term a better quality of fruit. An other applica-

tion is ethylene dosing for potato storage. Dosing ethylene improves the quality of potatoes. In several flower types very low levels of around 50 ppb will damage the flowers. For example, roses or phalaenopsis are very sensitive, and any increase of ethylene must be avoided.

**Control panel**

The MACView®-Ethylene Postharvest Analyser is available in 2 measurement ranges: 0-5000 ppb and 0-500 ppm. In the 0-2000 ppb version it gives the measured values in number of ppb's (parts per billion) on the display. In the 0-500 ppm version it gives a minimum value of 0.1 ppm resolution. Data is logged in the analyser, where also date and time is stored. The complete menu has a intuitive control panel.

The MACView®-Ethylene Postharvest Analyser can be integrated to practically every climate control system, multi cell sampling with Ultra Low Oxygen control (ULO) systems for CA storage.



Computer / Database

### Alarming

With the MACView®-Ethylene Postharvest Analyser an alarm can be send to external systems. The analyser contains as an option a TCP/IP connection with a HTML pages control interface. As output, all kinds of parameters can be selected. Relays, e-mail, scheduling alarms, alarm delay rates, alarm acceptance, logging interval etc. can be adjusted to personal settings. This gives a state of the art control to the system.

### Connection to external control systems (CA / ULO)

In most storage facilities there are control systems for Ultra Low Oxygen (ULO), Controlled Atmosphere (CA), ventilation or circulation systems. These control systems already measure oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>). The MACView®-Ethylene Postharvest Analyser has an extended range of possibilities for interconnection with these systems. In short can the control system send some pulses for: Start ethylene measurement, start zero measurement and start calibration. The analyser is then functioning as a slave machine and send back the measured values by the analog outputs.



### Auto Calibration

The MACView®-Ethylene Postharvest Analyser has an option for an internal low pressure gas bottle that contains calibration gas. The calibration interval can be determined by the user. With a calibration interval of 2 weeks, the calibration bottle can be used approximately 1 year.

### Tests carried out by the WUR

The MACView®-Ethylene Postharvest Analyser is tested at important institutes in the Netherlands: The device is tested at the WUR in the Netherlands. (WUR = Wageningen University and Research). The WUR department PPO flowerbulbs and WUR department Agrotechnology Food Sciences Group (Postharvest Quality) tested the device. They tested our device against their GC and they concluded that the accuracy was better then the lowest accuracy they achieve with their existing GC. (Better then 10 ppb) The WUR also was looking for a good device to do research in practice at farmers locations for the measurement of very low ppb levels. It shows excellent results. The cross sensitivity is none to all common gases in normal air. For example apples emit very much aromates. None of these these aromates does have any effect on the measurement. Also variations like temperature, humidity, CO<sub>2</sub> and O<sub>2</sub> variations are tested and show all very good results.

With many thanks for all the tests and co-operation with the Wageningen University and Research (WUR) Netherlands.



# TECHNICAL SPECIFICATIONS

## MACView®-Ethylene Postharvest Analyser

<b>Type of instrument</b>	MACView®-Ethylene Postharvest Analyser, based on the nanogold electrochemical sensor technology
<b>Versions available</b>	0-5000 ppb ethylene resolution 1 ppb max. inaccuracy $\pm 0.3\%$ 0-500 ppm resolution 0.1 ppm max. inaccuracy $\pm 0.3\%$
<b>Interface to climate computers</b>	2 analog outputs, separate adjustable at 4-20mA, 0-20mA or 0-10 Volt for the ethylene signal (range adjustable)
<b>Digital inputs</b>	3 inputs, configurable in menu for: Start ethylene measurement, start zero measurement, start calibration
<b>Digital outputs</b>	3 outputs, configurable in menu for: Error signal, concentration alarm, cooltrap, status ready indication, backflush alarm, baseline trigger output
<b>Sample speed</b>	180-7200 seconds per cell (Start command given by input or automatic programm)
<b>Inputs / outputs flow</b>	Input1, input2, zero, calibrate, output
<b>Material of housing</b>	Stainless steel IP61 19" rack mount housing
<b>Standards</b>	NEN-EN-IEC 61000-6-1 up to 4, CE
<b>Operation modes</b>	Measurements, dosing, standby, flushing or real-time measurement mode
<b>Signals / alarms</b>	ppb / ppm hysteresis adjustable on relays (programmable per function) analog output 4-20mA (programmable per function), status messages, power, failure, Relais
<b>Data collection</b>	By internal database with date time for 6700 records, software enclosed
<b>Service connection</b>	Serial RS 232 interface and RS485 interface
<b>Supply</b>	110 - 230 VAC 75W
<b>Working temperature</b>	-10 + 50 degrees Celsius, relative humidity 5 - 99%, not condensed
<b>Software</b>	Included with graphs, tables data and time, suitable for Windows 95, 98, Windows XP, Windows 2000 and Vista
<b>Languages device/software</b>	Give up 2 languages at order: English, Dutch, German, Italian, Spanish, French
<b>Control panel</b>	Intuitive menu with graphical display and backlight
<b>Dimensions</b>	Case: W 431 x H 132 x d 273 mm, front: W 482 x H 135 d 40 mm (incl. grip 40 mm)
<b>Weight</b>	12 Kg.
<b>Options</b>	Internal calibration bottle for automatic periodic calibration TCP/IP connection with internal HTML pages via networks or internet

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