

**Greenhouse Gas Analyzer: ethylene, nitric oxide, nitrogen dioxide, carbon oxide, carbon dioxide**

	Offered equipment:  Manufacturer:  Type/Model:  Country of origin:
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No.	Required parameters	Offered parameters
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1.	Greenhouse Gas Analyzer (GGA). The analyzer must measure the concentration at least: ethylene (C <sub>2</sub> H <sub>4</sub> ), nitric oxide (NO), nitrogen dioxide (NO <sub>2</sub> ), carbon oxide (CO), carbon dioxide (CO <sub>2</sub> ).	
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Ethylene measurements (C<sub>2</sub>H<sub>4</sub>)

2.	Measurement range: min. 0 – 2 000 ppb	
3.	Resolution: min. 1 ppb	
4.	Inaccuracy: <200 ppb: max. ± 1%	
5.	Inaccuracy: ≥200-2 000 ppb: max. ± 2%	

Nitric oxide measurements (NO)

6.	Measurement range: min. 0 – 2 000 ppb	
7.	Resolution: min. 1 ppb	
8.	Inaccuracy: <200 ppb: max. ± 1%	
9.	Inaccuracy: ≥200-2 000 ppb: max. ± 2%	

Nitrogen dioxide measurements (NO<sub>2</sub>)

10.	Measurement range: min. 0 – 2 000 ppb	
11.	Resolution: min. 1 ppb	
12.	Inaccuracy: <200 ppb: max. ± 1%	
13.	Inaccuracy: ≥200-2 000 ppb: max. ± 2%	

Carbon oxide measurements (CO)

14.	Measurement range: min. 0 – 2 000 ppb	
15.	Resolution: min. 1 ppb	
16.	Inaccuracy: <200 ppb: max. ± 1%	
17.	Inaccuracy: ≥200-2 000 ppb: max. ± 2%	

Carbon dioxide measurements (CO<sub>2</sub>)

18.	Measurement range: min. 0 – 2 000 ppm	
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19.	Resolution: min. 10 ppm	
20.	Inaccuracy: <400 ppm: max. $\pm$ 1%	
21.	Inaccuracy: $\geq$ 400-2 000 ppm: max. $\pm$ 1%	
Other parameters		
22.	Number of measurements of ethylene (C <sub>2</sub> H <sub>4</sub> ), nitric oxide (NO), nitrogen dioxide (NO <sub>2</sub> ), carbon monoxide (CO), carbon dioxide (CO <sub>2</sub> ), per hour: min. 4	
23.	Number of gas inlets: min. 3	
24.	Gas inlets placed at 2 different heights. It must be possible to connect a tube with a length of at least 2.5 m for sampling in top of the crop	
25.	Modes of measurement min.: measure, standby, flushing	
26.	Possibility to enable flushing mode in an automated manner from the climate computer, to ensure the protection of measuring sensors	
27.	The results of measurement displayed on a backlit graphic LCD screen located on the device	
28.	Menu languages of GGA: min. English and Dutch	
29.	Operations via keyboard	
30.	Possibility to save min. 10 000 records of measurements with simultaneous recording of the date and time in the internal memory of the device	
31.	The software for read-out of records, supplied with the GGA. Compatibility of software with every climate computer and Letsgrow platform.	
32.	Possibility to control the device from the computer	
33.	GGA equipped with RS 485 interface for communication with an external I/O unit	
34.	Housing made of stainless steel	
35.	Working temperature: min. from -10°C to 45°C	
36.	Working humidity: min. from 5% to 99%	
37.	Max. GGA dimensions (WxDxH): 170 x 130 x 1600 mm	
38.	Max. GGA weight: 26 kg	
39.	Power supply: 230V / 50Hz	
External I/O unit		
40.	External I/O unit supplied with GGA for remote reading the measurements and control of GGA. External I/O unit equipped with a backlit graphic LCD display and keyboard	

41.	Communication between External I/O unit and GGA via RS 485 interface	
42.	Possibility to connect an external I/O unit with GGA using a Cat-5 UTP cable without the use of additional devices at a distance of min. 950 meters	
43.	Menu languages of external I/O unit: min. English and Dutch	
44.	<p>External I/O unit equipped with min.:</p> <p><u>3 digital interfaces:</u></p> <ul style="list-style-type: none"> <li>- RS 485 for connection to a GGA</li> <li>- RS 232 for connection to a computer or modem</li> <li>- RS 232 for connection to a service computer</li> </ul> <p><u>2 digital inputs:</u></p> <ul style="list-style-type: none"> <li>- for connection to a climate computer and for switching between modes of GGA</li> </ul> <p><u>2 digital outputs:</u></p> <ul style="list-style-type: none"> <li>- for connection to a climate computer and error status transmitting</li> </ul> <p><u>5 analogue outputs:</u></p> <ul style="list-style-type: none"> <li>- for connection to a climate computer and transmitting of measured concentrations of ethylene, nitric oxide, nitrogen dioxide, carbon monoxide, carbon dioxide</li> </ul>	
45.	Max. external I/O unit dimensions (WxDxH):350 x 230 x 110 mm	
46.	Power supply: 230V / 50Hz	
<b>Additional requirements</b>		
47.	All devices must have the CE mark Declaration of conformity CE enclosed with the offer	
48.	<b>Warranty:</b> - warranty for all device components, minimum 12 months from the date of delivery	
49.	<b>Post-warranty service:</b> - post-warranty service, available on request and the cost of the Purchaser - availability of spare parts for a minimum of 10 years from the date of installation	
50.	<b>User and installation manuals:</b> Delivered with devices in English, in paper and electronic version.	