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EMISSION MONITORING SYSTEMS

VARIOluxx

QUICK START GUIDE



1 About the Quick Start Guide

This Quick-Start-Guide is intended to give you an initial overview of the analyser, its basic functions and the basic operation.

The Quick Start Guide does not replace the complete User manual of the analyser or the safety manual supplied with the analyzer.

- ▶ Read and observe the separately supplied Safety manual.
- ▶ Read the complete User manual before starting the measuring operation.
- ▶ Get familiar with the analyser before using it.



2 USB-Stick

The complete User manual can be found on the supplied USB stick.

- ▶ Remove the cap of the USB stick.
- ▶ Insert the USB stick into your computer.

NOTE

You can download the complete User manual directly using the following QR code.



- ▶ Scan the QR Code with a QR Code Scanner.
- ⇒ The complete User manual will be downloaded.



3 Intended use

The main task of the analyser is the gas analysis for Emission control measurements on large combustion plants and engines.

- The analyser is optimized for this purpose and includes all components from the gas sampling probe to data processing.
- The analyser also performs other measurement tasks such as pressure and temperature measurement or measurement of flow velocity.

For an actual overview of the available options please visit the MRU homepage or contact our sales representatives.

4 Analyser, Probe and Connectors

4.1. Analyser

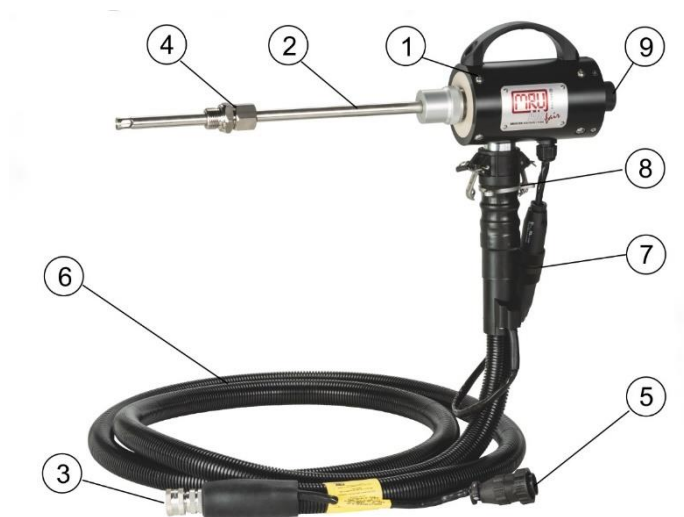
The analyser consists of a compact and robust metal housing with shock-absorbing rubber corners. All electrical and pneumatic connections are located on the both front sides of the instrument. It is operated exclusively via the touch-sensitive touch screen.



4.2. Probes

In combination with the analyser, probes in different versions are offered.

Heated Gas sampling probe



► Check the probe filter before and after each measurement.

1	Probe handle	2	Probe tube
3	Fast locking coupling	4	Probe cone
5	Cable plug (14-pin)	6	Heated hose line
7	Cable coupler (5-pin)	8	Fast locking coupling
9	Filter lock		

⚠ WARNING



Danger of burns and fire hazards from Heated hose line

Injuries and burns may result.

- ▶ Roll out the heated hose line completely for each measurement.

ATTENTION



When measuring with coiled heated hose line, the hose line is destroyed due to strong heat development.

- ▶ Roll out the heated hose line completely for each measurement.

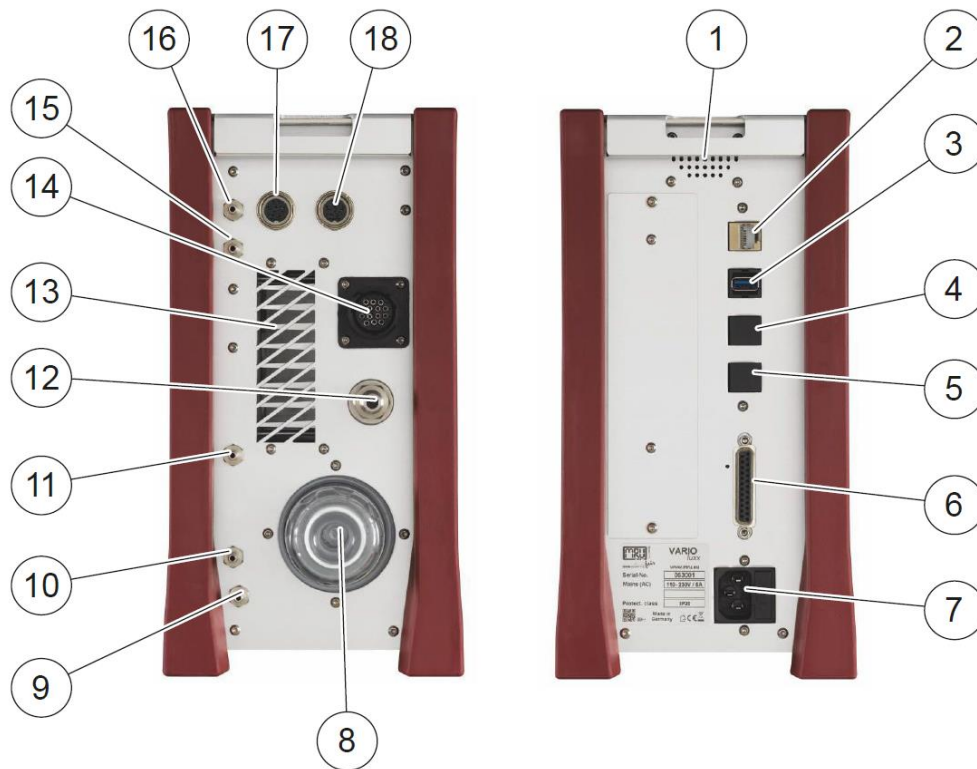
Unheated Gas sampling probe



- ▶ Check the probe filter before and after each measurement.

1	Filter lock	2	Fast locking coupling
3	Cable coupler (5-pin)	4	Cable plug (14-pin)
5	Fast locking coupling	6	Unheated hose line
7	Probe cone	8	Probe tube
9	Probe handle		

4.3. Connectors





Front side right			
1	Loudspeaker	2	Ethernet (LAN)
3	USB socket	4	Second USB socket (option)
5	RS485 (Option)	6	Analog outputs 4 ... 20 mA Analog-inputs 4 ... 20 mA
7	Mains power supply		

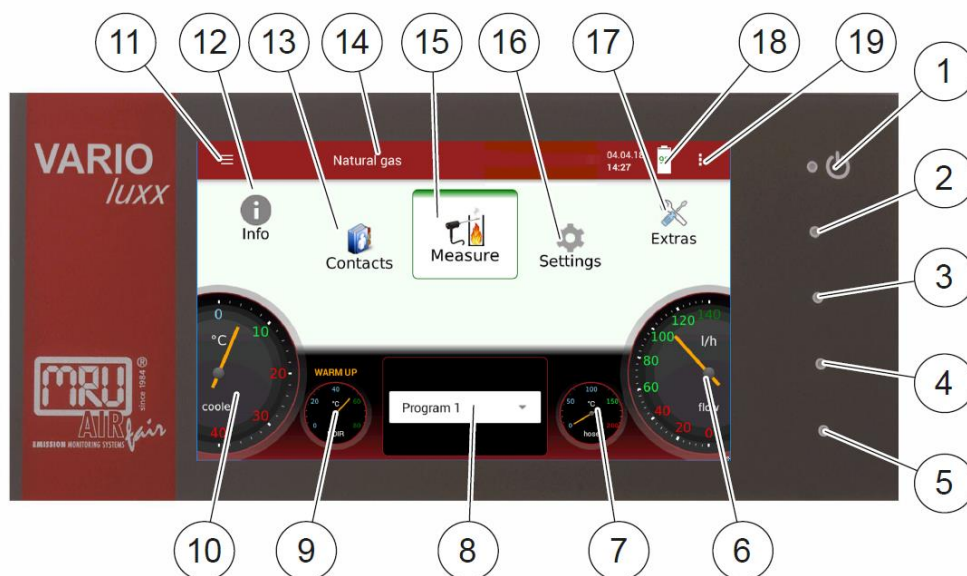
Front side left			
8	Sample gas filter	9	Condensate outlet port Hose connection DN 4/6
10	Sample gas outlet port (VENT) Hose connection DN 4/6	11	Fresh air inlet port
12	Sample gas inlet port	13	Outlet fan of gas cooler
14	Probe connection, electrical	15	Pressure-/diff. pressure
16	Pressure-/diff. pressure (Absolute pressure)	17	Combustion air temperature
18	AUX socket		

5 Operation

5.1.Commissioning

- ▶ Connect the mains plug.
- ▶ Press Power on / off (1)
 - ⇒ The analyser switches on.
 - ⇒ The operating system boots.
 - ⇒ Die blaue LED für Power und die blaue LED für Netzbetrieb leuchten. (Im Fehlerfall leuchtet die Power LED rot)
 - ⇒ Blue LEDs for ON and power supply are switched on. (In the event of an error, the Power LED lights red)
 - ⇒ The device runs through a start routine of 30 minutes. The start routine includes:
 - self-test
 - warm-up of the NDIR bench
 - cool down of the double stage gas cooler, indicated by the symbol 
 - Zeroing, indicated by symbol. 
 - The remaining time until the end of zeroing is displayed.
 - Ready for operation after 30 min

5.2.Operation panel



All functions are controlled via the touch surface of the instrument. Different gestures are available in the individual menus and windows.

1	Power-on and Reset	2	Reserve
3	Reserve	4	LED display mains operation/battery charging mode
5	Reserve	6	Current flow rate
7	Current temperatures heated hose	8	Selected measuring program, e.g. Test or measurement program
9	Current temperatures of NDIR bench	10	Current temperatures of gas cooler
11	Access to detailed information on the instrument components. Especially for service or inquiry	12	Menu info
13	Menu contacts	14	Status bar: display of zero point, alarms, executed measuring program, selected fuel, heat-up-, cool-down phase
15	Menu measure	16	Menu settings
17	Menu extras	18	Battery Charge indicator
19	Context menu with window-dependent additional functions		

6 Measurement

ATTENTION



- ▶ Operate the analyser in a standing position only.
 - ☞ See also chapter 4.3 Connectors, Page 5. Set up and operate the analyser only as shown in the illustration.
- ▶ Never operate the analyser in a lying position. The analyser may otherwise be damaged.

6.1. Prepare measurement

Operating temperature

If the analyser has been stored in a very cold place (below 5°C), wait about one hour for it to acclimatize in a warm environment before switching it on.

Power supply

The analyser can be operated with an internal battery to warm up the instrument or to use internal instrument functions. A mains connection is required for the measurement including heated gas sampling probe and heating hose.

**ATTENTION**

When measuring with coiled heated hose line, the hose line is destroyed due to strong heat development.

- ▶ Roll out the heated hose line completely for each measurement.

Connections to the analyser

☞ See also Chapter 4 Analyser, Probe and Connectors, page 3.

- ▶ Connect the gas sampling probe to Sample gas inlet port (12) (gas coupling and round plug).
- ▶ Note that acidic condensate as well as phosphoric acid is discharged from the condensate out port (9). Consider to connect a hose or collecting container to the condensate outlet when appropriate. Ensure that the empty volume of the collection container is sufficient (24ml/h). The hose must not be closed and the collection container must have a ventilation opening.
- ▶ Please note that measuring gas may leak at the analyser side or at the Sample gas outlet port (10)
- ▶ Ensure that ambient fresh air can be sucked in at the Fresh air inlet port (11). Consider to connect a hose leading fresh air to analyser.

6.2. Take a measurement

► Touch the menu Measure.

⇒ The measured value window appears.

⇒ The measurement starts with the set parameters.

The screenshot shows a measurement display for 'Programm 1, Natural gas' on 10/02/19 at 08:47. The display is organized into a grid of measurement cells. The 'pump load' cell includes a vertical bar chart showing the current level at 66%.

Programm 1, Natural gas		
O2 [%] 20.93	CO @0%O2 [ppm] 0.0	NO2 [mg/Nm³] 0.5
NO2 [ppm] 0.2	NOx @0%O2 [ppm] 0.0	NOx @3.0%O2 [ppm] 0.0
CO2 [%] 0.07	CH4 [mg/Nm³] 0.5	CO @0%O2 [ppm] 0.0
current pump load [%] 66	Sample flow [l/h] 60.0	CO [ppm] -0.1



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