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mesa electronic

3.03.1

Dewpoint measuring instrument Dewchecker 1.0

Special features:

- **Easy and simple to operate**
- **Accurate results**
- **Speedy repetition of operation**
- **Uneffected by corrosive atmospheres**
- **No problems with dusty atmospheres**
- **Robust construction**

Technical Data:

Construction:
Transportable Instrument
(sheet-steel housing)

Dimensions:
330 x 310 x 240 mm (w x h x d)

Power supply:
115 or 230 Vac ± 10 % / 50 - 60 Hz

Weight:
approx. 20 kg

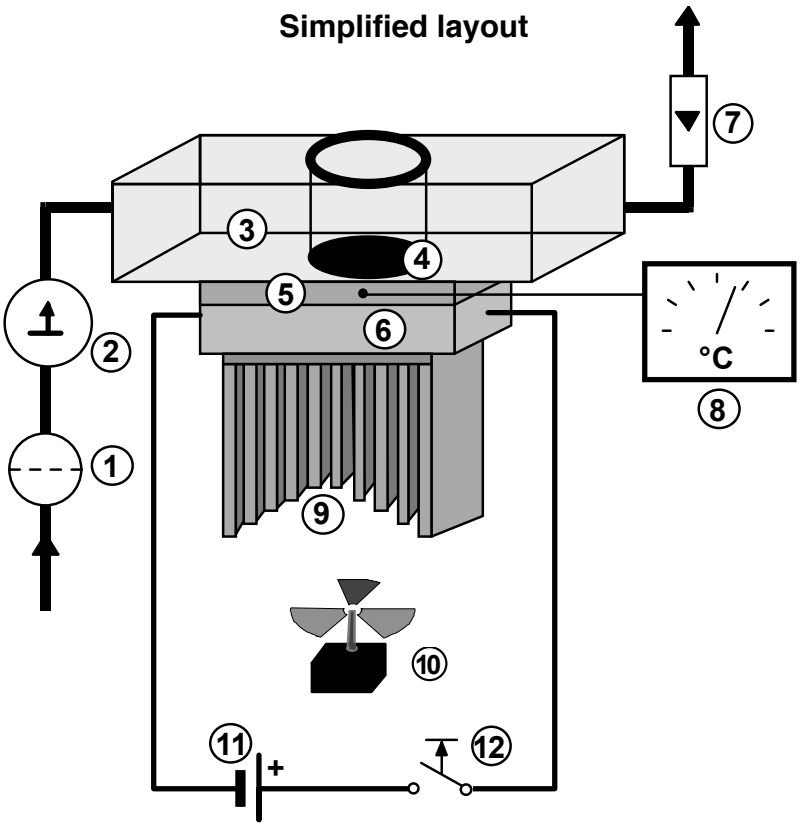
Operation range:
-20 to +20 °C

Application:
Dewpoint measurement of gases

Operating principles:

A sample of the gas to be measured is drawn into the measuring chamber. The surface of a mirror in the chamber is cooled using a thermo-electric cooling element until condensation occurs. This is readily and accurately observed since the mirror is constructed to have the dew form a pattern rather than overall. The temperature of the cooler part of the mirror is continously indicated and the dewpoint can be read as soon as the dew pattern appears.

Simplified layout



1 Filter for gas sample
2 Pump for gas sampling
3 Measuring chamber
4 Contrast mirrorl
5 Mirror backing plate and measuring point
6 Peltier cooling element
7 Gas flow meter
8 Temperature indicator
9 Heat exchanger
10 Cooling fan
11 Power supply
12 Switch for cooling system

mesa electronic

3.03.1

Dewpoint measuring instrument Dewchecker 2.0

Special features:

- **Easy and simple to operate**
- **Accurate results**
- **Speedy repetition of operation**
- **Unaffected by corrosive atmospheres**
- **No problems with dusty atmospheres**
- **Robust construction**

Technical Data:

Construction:
Transportable Instrument
(sheet-steel housing)

Dimensions:
545 x 300 x 280 mm (w x h x d)

Power supply:
115 or 230 Vac ± 10 % / 50 - 60 Hz

Weight:
approx. 18 kg

Operation range sensor:
-80 to +20 °DP
Tolerance:
- ± 2.0 °DP
- measurement range of the mirror adjusting on ± 0.5 °DP

Output:
0...20 mA

Operating range mirror:
-40 to +25 °DP
Tolerance: • ± 0.5 °DP

Application:
Dewpoint measurement of gases

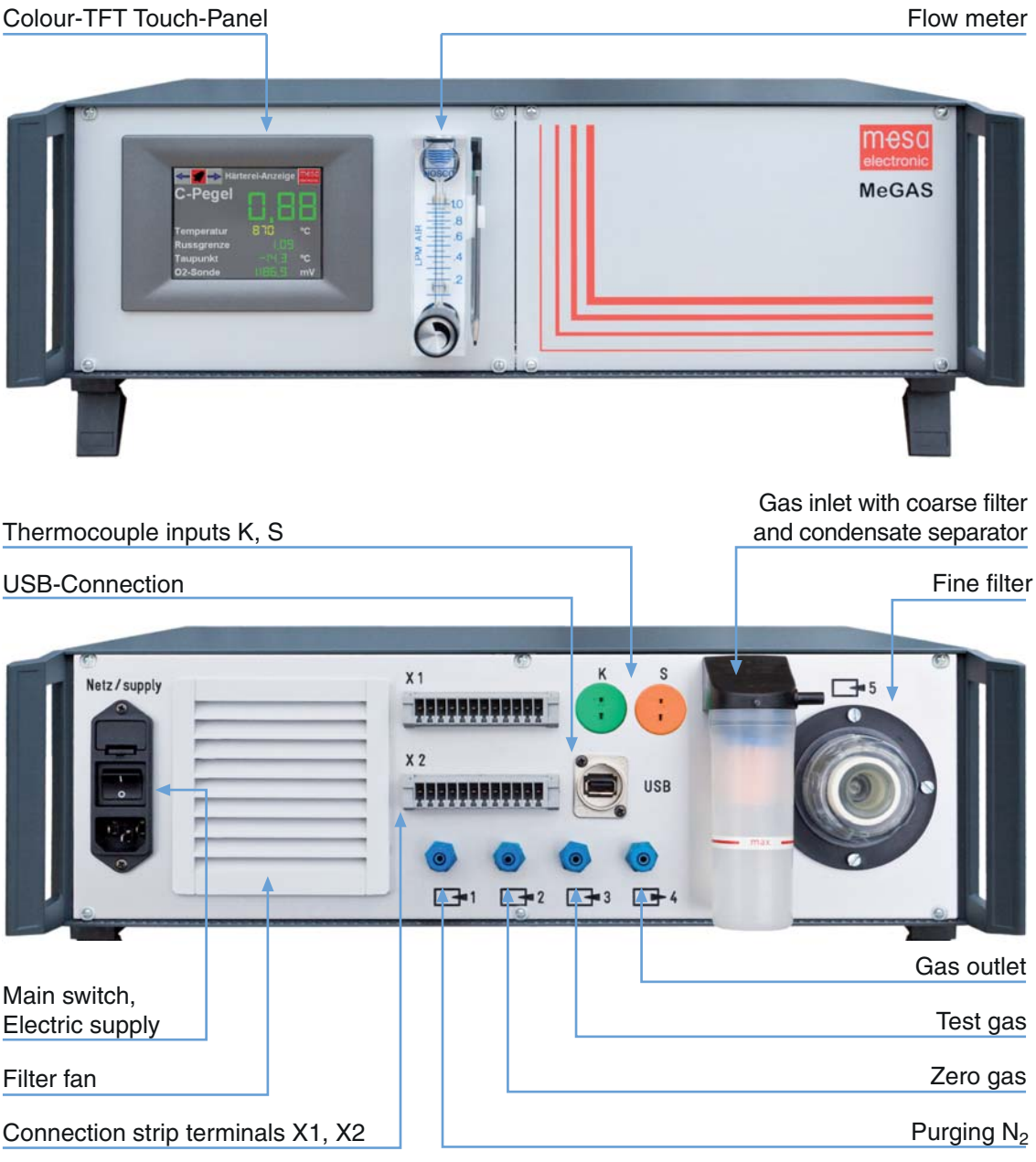
Data sheet **MeGAS 2.0**

General

Intelligent gas analysis system for measuring furnace atmospheres during the heat treatment process with direct calculation of the main parameters.

- Colour display with Touch-Panel
- Profibus, Modbus, DeviceNet,...
- Remote operation via Wi-Fi Ethernet
- CO, CO_2, H_2, CH_4, ...
- Direct C-Level-Calculation
- Display of the theoretical Gas-Dew point, the theoretical probe voltage of an O_2-Probe
- Free configurable analogue outputs e.g. for simulation of a O_2-Probe
- Dew point control of the sensor system for protection of the electronic equipment

Front and backside



Data sheet MeGAS 2.0

Description

The Colour-TFT Touch-Panel offers a simple and transparent operation.
In the heat treatment shop version the following measuring ranges are provided (Fig.1):

Carbon monoxide	0,0.....	35,0 Vol %CO
Carbon dioxide	0,000..	1,000 Vol %CO_2
Hydrogen	0,0.....	80,0 Vol %H_2
Methane	0,00.....	10,00 Vol %CH_4
Temperature	0.....	1200 °C

Other measuring ranges on request.

From the measured values the following parameters are calculated and indicated (Fig.2):
C-Level in %C
O_2-Probe voltage in mV
Gas dew point in °C
Soot limit in %C

Individual readings can be deselected by the user and be switched over to manual input. This offers the possibility to simulate every measured value and to use the complete extent of the mathematical function also for partly loaded equipment.
In this way evaluation using tables can be omitted completely in every expansion stage (Fig.3).

In addition to the indication of numerical values and text messages, variation of the measuring value in time can be displayed graphically too (Fig.4).

Each parameter can be assigned to an alarm. For the alarms a collecting alarm is available as a potential free relays contact (Fig.5).

All measuring values can be saved via a USB-interface on a corresponding data carrier and the used ASCII-format can be processed directly by spreadsheets, like Excel. Buffering in an internal memory is also possible (Fig.6).

Via 4 free configurable analogue outputs the equipment can be adjusted to all stationary units and by this it can be used as a short term replacement for defective analysis systems. For example in this way a load can be saved by simulation of the sensor voltage in case the oxygen probe fails (Fig. 7).

Fig.1 Measuring data display

Fig.2 Calculated data

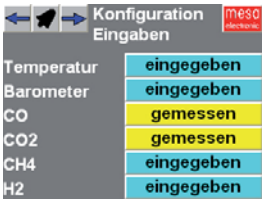


Fig.3 Selection of the measured and simulation data

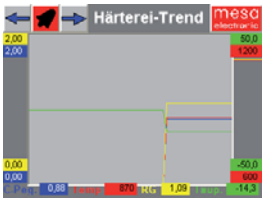


Fig.4 Diagram

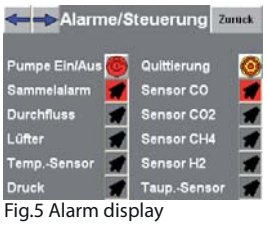


Fig.5 Alarm display

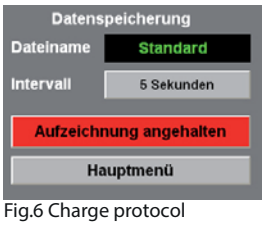


Fig.6 Charge protocol

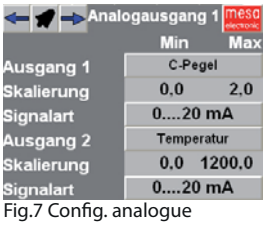


Fig.7 Config. analogue

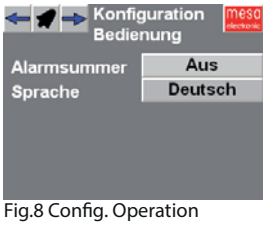


Fig.8 Config. Operation

Control of flow and fan of the measuring system are integrated.

A speciality is the dew point control of the sensor system. The calculated dew point of the gas is continuously compared to the ambient temperature in the equipment and is signalized via a adjustable alarm. In this way condensation of water in the equipment with high repair costs can be avoided by the user.

The portable 19“ housing can also be used for stationary functions. For this purpose the equipment offers a nitrogen-purge for the measuring lines, a start of an automatic adjustment routine, as well as an external permission of the measurement.

Data sheet MeGAS 2.0

Device versions

Mobile measurement unit

Mobile measurement unit for gas analyzer system MeGAS with 2 load floors, gas bottle holder and desk upright panel. Additionally integrated, a rechargeable battery for reliable power supply in mobile deployment for at least 4 hours of operation.

Dimensions: W x H x D 500 x 1300 x 1150 mm

Weight: ca. 45 kg (including battery)

Max load: 150 kg

Material: steel, powder coated, RAL 5012

Connection cable: 10 m with cable retractor

Power supply: 230 VAC

Internal battery: 12V, 9.0 Ah

Battery operation: 4 - 7 hours

Charging time: about 5 hours to 95% capacity.

Mobile measurement unit

Mobile measurement unit for gas analyzer system MeGAS with 2 load floors and lockable desk upright panel. Additionally integrated, a rechargeable battery for reliable power supply in mobile deployment for at least 4 hours of operation.

Dimensions: W x H x D 500 x 1300 x 1150 mm

Weight: ca. 35 kg (including battery)

Max load: 150 kg

Material: steel, powder coated, RAL 5012

Connection cable: 10 m with cable retractor

Power supply: 230 VAC

Internal battery: 12V, 9.0 Ah

Battery operation: 4 - 7 hours

Charging time: about 5 hours to 95% capacity.

Accessories

Protective case

Protective casing for transportation and operation.
- 19" case
- 7 mm birch multiplex panel,
- 3 HE,
- 2 lids,
- 4 butterfly locks,
- 2 handles,
- 25 / 25 mm aluminum frame profile,
- aluminum rail with rubber strip.

Remote operation unit

Tablet PC with OS, Android or Windows operating system, as an external control unit. The communication is established via an optional Wi-Fi module and provides full remote control of the Megas 2.0.

Filter for CO_2 zero adjustment

Disposable filter for zero adjustment in gas analyzers by filtering out the CO_2 content in the ambient air.

Data sheet MeGAS 2.0

Technical data

General data	
Output Pump	max. 5 l/min
Volume flow	0,8 l/min
Flow control	0,6 l/min
Max. capacity press. pump	160 mbar
Max. intake pressure	100 mbar
Inlet pressure	max. 250 mbar
Analogue outputs	4
Output signal	0/4...20 mA, programmable
Resolution analogue output	16 Bit = 0,0006 µA
Interfaces	USB, Modbus over TCP / IP - Ethernet (option), Profibus (option), Wi-Fi (option)
Collective alarm	Relay output as change over
Switching capacity	6 A at 250 V AC, 4 A at 400 V AC, 6 A at 30 V DC
Auxiliary energy	24 V or 100-240 V AC , – 10 % / + 15 %, 50 / 60 Hz
Installed fuses	2 St. 5 x 20 mm – 1 resp. 2 A, slow
Total power consumption	ca. 70 W

Temperature inputs	
Prog. characteristic curves	Thermocouples Type S (PtRh-Pt) and K (NiCr-Ni) according to EN 60584 Part 1, others programmabl.
Accuracy	better than 1,0 °C
Resolution	16 bit
Integrat. reference junction	± 0,5 °C in the range 0...50 °C ambient temperature
Connections	via Mini thermo connectors
Dew point control	The not used input is shorted with the supplied white thermo connectors. In this way the equipment is able to measure the ambient temperature and to give an alarm in case of a possible condensation above the calculated dew point..

Analysing module	Infrared-module for CO, CO_2 and CH_4	Heat Conductivity-Module for H_2
Measuring process	Non dispersing Infrared-Measuring process with two wavelengths (NDIR), irradiate-process, no moving parts	Measuring process: Heat Conductivity-Module for H2 Micro-heat conductivity sensor on silicon basis
Capacity diameter	3,0 mm	
Heat up time	5 minutes, 30 minutes for equipment specification	
Reaction time	up to 45 seconds	
Accuracy	± 2.0 % of final end value	
Accuracy of repeatability	± 0,2 % of final value at 0 Vol%, ± 1,0 % of final value at final value	
Long time stability	± 2.0 % of final value during 12 month	
Temperature dependency	± 1,0 % of final value /10 °K bei 0 Vol%, ± 2,0 % of final value / 10 °K at final value	
Pressure dependency	± 0,0 % of final value / 10 mbar (± 0,2 % of final value / 10 mbar pressure compensated (optional)	

Pressure sensor (Option)	
Measuring range	900...1100 hPa abs
Accuracy	0,5 % of final value

With loaded pressure sensor automatic pressure compensation for all gases in the range 900...hPa is activated for all gas modules.

Data sheet MeGAS 2.0

Order code

Serie A B C D E F G H I J K L M

MeGAS 2.0 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

	A	Power supply
	2	100-240 V AC, 50-60 Hz +10 / -15 %
	3	24 V DC
	4	100-240 V AC, 50-60 Hz with battery buff. for 10 min

	B	Housing version
	0	built-in version 19"
	1	portable housing, without carrying case 19"
	2	portable housing, with carrying case 19"
	3	wall housing 500 x 500 x 300 mm (WxHxD)
	5	portable housing, with carrying case 19" 6 HE
	6	wall housing 600 x 720 x 360 mm (WxHxD)

	C	Thermocouple input
	0	w/o
	1	2 x type "K"
	2	2 x type "S"
	3	1 x type "K" und 1 x type " S"

	D	Gas 1
	0	w/o
	1	0,0.....0,5 Vol.-% CO_2
	2	0,0.....1,0 Vol.-% CO_2
	3	0,0.....2,5 Vol.-% CO_2
	4	0,0.....5,0 Vol.-% CO_2
	5	0,0..... 10,0 Vol.-% CO_2
	6	0,0.....20,0 Vol.-% CO_2
	7	0,0.....30,0 Vol.-% CO_2
	8	0,0..... 1,5 Vol.-% CO_2
	T	0,0..... 10,0 Vol.-% H_2
	B	0,0..... 35,0 Vol.-% CO + 0,0...1,0 Vol.-% CO_2
	S	0,0..... 21,0 Vol.-% O_2 (electrochemical)

	E	Gas 2
	0	w/o
	1	0,0.....5,0 Vol.-% CO
	2	0,0.....35,0 Vol.-% CO
	3	0,0.... 100,0 Vol.-% CO
	A	0,0.....35,0 Vol.-% CO + 0,0.....1,0 Vol.-% CO_2
	B	0,0.....35,0 Vol.-% CO + 0,0.....1,5 Vol.-% CO_2
	C	0,0.....35,0 Vol.-% CO + 0,0.....2,5 Vol.-% CO_2
	F	0,0.....35,0 Vol.-% CO + 0,0...20,0 Vol.-% CO_2

	F	Gas 3
	0	w/o
	1	0,0 .....1,0 Vol.-% CH_4
	2	0,0.....2,0 Vol.-% CH_4
	3	0,0 .....5,0 Vol.-% CH_4
	4	0,0 .....10,0 Vol.-% CH_4
	5	0,0 .....20,0 Vol.-% CH_4
	6	0,0... 100,0 Vol.-% CH_4
	A	(-60) -45...+30 °C dew point external
	C	0,0 .....10,0 Vol.-% CH_4 + 0,0...1,0 Vol.-% CO_2
	S	0,0..... 21,0 Vol.-% O_2 (electrochemical)

	G	Gas 4
	0	w/o
	1	0,0.....1,0 Vol.-% H_2
	2	0,0.....5,0 Vol.-% H_2
	3	0,0.....10,0 Vol.-% H_2
	4	0,0.....50,0 Vol.-% H_2
	5	0,0.....80,0 Vol.-% H_2
	6	0,0....100,0 Vol.-% H_2
	A	0,0.....1,5 Vol.-% CO_2
	B	-60...+30 °C dew point
	S	0,0.....21,0 Vol.-% O_2 (electrochemical)

	H	Software
	0	Gas analyse software
	1	C-level calculation software
	2	Hardening calculation software
	3	KC-calculation software
	4	2-channel version

	I	Pressure compensation
	0	w/o
	1	with
	2	2x, only for channel version (H= 4)

	J	Serial interface
	0	w/o
	1	ModBus slave
	2	ModBus over TCPIP-Ethernet
	3	ProfiBus
	4	ModBus over TCPIP-Ethernet + Profibus
	5	W-LAN + TCPIP-Ethernet
	6	W-LAN with higher range + TCPIP-Ethernet
	7	W-LAN + TCPIP-Ethernet + Profibus
	8	W-LAN h. range. + TCPIP-Ethernet + Profibus

	K	Sample gas cooler
	0	w/o
	1	with

	L	Display
	2	4,3" TFT touchscreen
	3	7,0" TFT touchscreen, only for 6 HE (B=5)

	M	Options
	0	w/o
	1	0,0...21,0 Vol.-% O_2 (electrochem.) + -100 hPa diff.-pres.
	2	(-60) -45... +30 °C dew point external
	3	(-60) -45... +30 °C dew point internal

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