

Газоанализаторы MeGAS, Dewhecker

Технические характеристики

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Measuring Amplifier MV 20

Function:

The **MV20** buffer amplifier converts all physical variables such as temperature, humidity, pressure, pH values, etc. into electrical signals. The compact construction and pluggable screw terminals enable space-saving assembly in the switching cabinet. The unit is available with snap-in holders for top-hat rails.

Technical Data:

Construction:

Black plastic housing for snapping onto top-hat rail

Dimensions:

48 x 96 x 150 mm (wxhxd)

Connection:

Connector with screw terminal
Wire cross section: max. 2.5 mm

Auxiliary voltage:

115 or 230 Vac $\pm 10\%$ /50-60 Hz, approx. 4 VA

Input:

- mV, μ A, mA (also alternating quantities)
- various thermoelements and resistance thermometers
- resistance variables

Output:

Short-circuit-proof voltage output
0...10 V or according to customer specification (e.g. -10...0...+10V), max. 5 mA or current output with active current limiting 0(4)...20 mA, load max. 550 ohm (=11 V at 20 mA)

Note:

Only voltage values can be output if a thermoelement input is linearized!

Climate:

Storage: -10...+70 °C

Operation: 0...+50 °C

Accuracy:

- $\leq 0.1\%$ of final value ± 1 digit
at input voltage DC, current DC, resistance, Pt 100, remote transmitter
- $\leq 0.2\%$ of final value ± 1 digit
at input voltage AC, current AC, frequency, thermoelement type "K" and "S" (in the range > 200 °C), reciprocal formation
- $\leq 0.3\%$ of final value ± 1 digit
at input thermoelement type "J" and "L"

Temperature influence:

$< 0.1\%/10$ K

Other features:

- active 2nd order filter for effective disturbance signal suppression; mains frequency (50/60 Hz) is reduced by 70 dB
- end value (maybe zero or power adjustment) adjustable by spindle potentiometer.

Options:

- integrated shearing pin and compensating device in thermoelement input
- linearization of thermoelements and Pt 100 resistance thermometers
- ac voltage and ac measurement by active rectifiers
- magnifying function (e.g. $0...20$ mA = $800...1200$ °C)
- frequency output
- impulse output (e.g. for counters)



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Smart Measurement Transducer Carbo 1000

Special Features:

- **Direct communication using the Siemens Simatic Backplane Protocol for the S7-300 product family.**
- **Measuring, parameterization and error correction occurs via predefined or symbolized data blocks.**
- **The Carbo 1000 is a stand-alone module and requires no additional Siemens modules, such as the communications module.**
- **Excellent reliability based on the galvanic isolation of all input and output circuits.**
- **Determination of the residual oxygen content for oxygen-sensitive processes.**
- **Calculation of the C-level based on the residual oxygen content or the CO₂ content when refining steel.**
- **Conversion of the L-sensor voltage to match the voltage curve of the zirconium oxide sensor.**
- **The thermocouple can be switched between the types "K" and "S".**
- **An additional inlet to directly connect a CO analyzer is available.**
- **Extensible by up to five modules in a longer housing.**

Functions:

The Carbo 1000 performs as a measurement transducer for use with a wide range of sensors to determine the residual oxygen and calculate the C-level at the L-sensor, the O₂-sensor and the CO₂ analyzer.

The Carbo 1000 processes the incoming signals from all sensors in the system, calculates the desired baseline value, and stores these data in a predefined or symbolized data block in the PLC (programmable logic controller). Data blocks are used to set the configuration and error processing for the Carbo 1000. This makes it easy to integrate the Carbo 1000 into existing programs and to further process the obtained data.

The Carbo 1000 communicates directly via the "Siemens Backplane Bus Protocol", thus allowing the use of the PLC from the Siemens Simatic S7-300 family of products. There is no need for additional components!

Despite the compact design of the Carbo 1000, we have still been able to achieve galvanic isolation between all input and output circuits.

The Carbo 1000 is ready for use in an oven zone or it may be extended by up to five modules inside a longer housing.

Options at a Glance:

Type	Input
1:	L-Sensor, Thermocouple type "K" or "S"
2:	L-Sensor, Thermocouple type "K" or "S"
3:	ZrO ₂ Thermocouple Type "K" or "S"
4:	CO ₂ Analyzer, Thermocouple type "K" or "S"
5:	L-Sensor for residual oxygen
6:	O ₂ -Sensor

Selectable Parameters (Fixed Value, Thermocouple):

- CO content (in the absence of a CO analyzer)
- Actual value correction data (e.g. derived from using a foil probe)
- L-sensor correction factors
- Temperature correction factor
- Actual value correction of the calculated O₂-sensor voltage

The customer directly feeds in the parameters for the calculation of the measurement values using predefined data blocks.

Actual Value Correction: C-Level

The calculated C-level can be corrected to eliminate measuring errors and deviations due to special conditions in the oven. Especially the so-called foil sampling backs up the determination of the C-level. The Carbo 1000 E executes this function directly so that there is no need to program the function in the PLC.

Actual value correction %O₂

Connections:

Wiring: 32-pin Adapter Connectors
with screw-in connections

Specifications (Basic Unit):

Housing:

Siemens S7 compatible DIN rail housing (top-hat housing)

Dimensions:

40 x 125 x 120 mm (W x H x D)
1.58" x 4.92" x 4.72" (W x H x D)

Weight:

approx. 0.4 kg / 0.88 lbs

Protection Class:

IP 32 according to DIN 40050

Climate Conditions:

Storage: -10...+70 °C (14...158 °F)
Operation: 0...+50 °C (32...122 °F)
5...95 % relative humidity, condensation-free storage

Auxiliary Supply:

24 V

Input:

approx. 15 VA

Fuse:

200 mA

Analog Inputs:

for Type 1:

- Thermocouple, type "K" or "S"
- L-Sensor

for Type 2:

- Thermocouple, type "K" or "S"
- L-Sensor
- CO Analyzer

for Type 3:

- Thermocouple, type "K" or "S"
- CO-Analyzer 0...3 % log. or 0...5 % linear

for Type 4:

- Thermocouple, type "K" or "S"
- ZrO₂-Sensor
- CO Analyzer

for Type 5:

- L-Sensor

for Type 6:

- O₂-Sensor
- Thermocouple, type "K" or "S"



C-Level-Controller Carbo 100

Special features:

- Vacuum fluorescent display
- Calculates C-level from the residual oxygen or CO₂-content in furnace atmospheres
- Menu-guided operation
- High safety in operation by galvanic separation of all inputs
- Optional connection of two thermocouples Type "K" or "S"
- Additional input for CO-analyzer
- External programmer linking possible
- Use with motorized gas valve or gas- and air solenoid valve
- Control output for proportional valve
- Recorder output
- Foil equalizing
- Direct numerical data on display
- Relay outputs with 16 A capacity

Function:

The **Carbo 100** is an intelligent C-Level-Controller for connecting different types of sensors. The unit calculates the C-level from input signals and controls the C-level.

This controller offers a favourably priced system for controlling carbon potentials in heat treatment furnaces.

The system still contains the facilities offered by more expensive systems, such as actual C-level value correction. The investment is soon amortized even on smaller furnaces.

Parameter (fixed values):

CO content if CO analyzer is not connected
Correction data (e.g. foil test)
Correction factors L-probe
Temperature correction factor

Actual value correction:

To eliminate measuring errors and deviations due to special conditions in the furnace, a correction of the calculated C-level which is based on foil samples, is provided.

Control panel housing Made of sheet-steel.
Fixed by brackets.

Dimensions:

Front panel: 144 x 144 mm (hwx)

Housing including connector: 109 x 109 x 210 mm (hxwxh)

Cut-out in front panel: 113 x 113 mm (hwx)

Weight:

approx. 1.5 kg

Protection type:

IP 50 according to DIN 40050

Climate:

Storage: -10...+70 °C

Operation: 0...+50 °C

5...95 % relative humidity, non condensing

Auxiliary voltage:

24 Vdc ±10 %

Power consumption:

approx. 15 Watt

Analog outputs:

C-level: 0...1,5 %C -> 0...20 mA or 4...20 mA (Recorder output)

y-output Gas: 0...10 V

y-output Air: 0...10 V

Digital outputs:

2 output controls max. 250 V / 1 max. 16 A, AC 1

Probe flushing max. 250 V / 1 max. 16 A, AC 1

Soot limit alarm max. 250 V / 1 max. 16 A, AC 1

"open collector" max. 30 mA / 30 V

Needed Accessories:

- Power supply 24 V

Optional Accessories:

-

All specifications subject to change without prior notice.



Intelligent Transmitter Carbo 15

Special features:

- **Calculates C-level from the residual oxygen content of a gas or CO₂-content from the furnace atmosphere**
- **Converts the L-probe voltage to the voltage curve of a zirconium oxide probe**
- **Parameter input via plug-in terminal**
- **Menu-guided operation**
- **High operation per galvanic separation of all inputs**
- **Optional connection of two thermocouples Type "K" and "S"**
- **Additional input for CO-analyzer**

Function:

The **Carbo 15** is an intelligent transmitter designed for connecting different types of sensors. The unit processes the input signals and outputs the desired output variable as a voltage or current unit signal.

The versions described here convert the residual oxygen content of a gas to other components such as C-level based on the assumed gas equilibrium.

Determination of the C-level in conjunction with a conventional controller enables a favourably priced system for controlling carbon atmospheres in heat treatment plants.

The system still contains the facilities offered by more expensive systems, such as actual value correction (see below). The investment is soon amortized even on smaller furnace systems.

Another practical function of the unit is the conversion of the L-probe voltage into the probe voltage of a conventional zirconium oxide probe (see the appropriate data sheet for the **L-probe**). This allows the cheaper, more robust L-probe to be adapted to existing control systems.

Overview of types:

Type	Input	Output
1:	L-probe, thermocouple Type "K" or "S"	0...1300mV ZrO ₂ -probe- charakteristik
2:	L-probe, thermocouple Type "K" or "S"	C-level 0(4)...20 mA (0...10 V)
3:	ZrO ₂ -, thermocouple Type "K" or "S"	C-level 0(4)...20 mA (0...10 V)
4:	CO ₂ -analyzer, thermocouple Type "K" or "S"	C-level 0(4)...20 mA (0...10 V)

C-level measurement (principle):

measured:	output:
Temperature	C-level (0...20 mA)
Ref. pt temperature	
O ₂ content via ZrO ₂ or L-probe	

Parameter (fixed value):

CO content
Correction data

Actual value correction:

To eliminate measuring errors and deviations due to special conditions in the furnace, a correction of the calculated C-level which is based on foil samples, is provided.

Technical Data (basic unit):

Housing:

Control panel housing Made of sheet-steel.
Fixed trough bracket.

Dimensions:

Front panel: 144 x 144 mm (hxd)

Housing with
surrender connector: 109 x 109 x 205 mm
(hxd)

Cut-out in front panel: 113 x 113 mm (hxd)

Weight:

approx. 1.5 kg

Protection type:

IP 50 according to DIN 40050

Climate:

Storage: -10...+70 °C
Operation: 0...+50 °C
5...95 % relative humidity, non condensing

Auxiliary voltage:

24 Vdc ±10 %

Power consumption:

approx. 6 Watt

Fuse:

230 V: 1 x 0,35 A slow blow

Analog inputs:

Type 1:

- thermocouple, Type "K" or "S"
- L-probe

Type 2:

- thermocouple, Type "K" or "S"
- L-probe
- CO-analyzer

Type 3:

- thermocouple, Type "K" or "S"
- ZrO₂-probe
- CO-analyzer

Type 4 :

- thermocouple, Type "K" or "S"
- CO₂-analyzer 0...3 % log. or 0...0.5 % lin.

Terminal Type: T-200 M

Analog outputs:

Type 1:

ZrO₂ - probe: 0...1300 mV -> 0...1300 mV

Type 2:

C-level: 0...1,5 %C -> 0(4)...20 mA or
0...10 V

Temperature: 0...1200 °C -> 0...10 V

ZrO₂ - probe: 0...1300 mV -> 0...10 V

L-probe: 0...1300 mV -> 0...10 V

Type 3:

C-level: 0...1,5 %C -> 0(4)...20 mA or
0...10 V

Temperature: 0...1200 °C -> 0...10 V

ZrO₂ - probe: 0...1300 mV -> 0...10 V

Type 4:

C-level: 0...1.5 %C -> 0...10 V or
0(4)...20 mA

Temperature: 0...1200 °C -> 0...10 V

CO₂ -Analysator:

0...3,0 % log.
or 0...0,5 % lin. -> 0...10 V

Digital output:

"open collector" max. 30 mA / 30 V

Display:

see input terminal T-200 M

Connections:

cable: 32 pin surrender connector
with screw connection

T-200 M: 2 x 9 pin D-Sub connector
on the Front panel

Housing:

Plastic

Dimensions:

91.5 x 146.3 x 32 mm (wxhxd)

Weight:

approx. 0,2 kg

Climate:

Storage : -10...+70 °C

Operation: 0...+50 °C

5...95 % relative humidity, non condensing

Display:

twolines Display (16-digit)
with lighting in the background

Character size:

5,6 x 3,0 mm (h x w)

Keyboard:

16 Keys

Connection:

2 x 9-pol. D-Sub connector (housing backside)

Needed Accessories:

- Power supply 24V

Optional Accessories:

-



Universal Digital Display A075

Special features:

- **100 mm (or 57 mm) digit height available**
- **Bright, well visible displays**
- **Short-circuit-proof analog output (also linearized)**
- **High interference resistance due to overvoltage protection and active filter at the input**
- **Direct connection of an L-probe for oxygen measurement**
- **Frequency and pulse input**
- **Computing functions**
- **Options:**
 - up to 2 limit values
 - reciprocal display
 - magnifying function

Function:

The display unit is used for measuring and displaying different physical variables such as temperature, humidity, pressure, flow, oxygen etc. The consistent modular construction allows the unit to be adapted individually to customer requirements.

Displays with a greatly improved efficiency enable a clearly visible display of the measured values.

With the 100 mm high display, the unit is excellently suited to all applications in which good visibility from a great distance is required (e.g. workshops and storerooms, schools and institutes).

Technical Data:

Construction:

Polycarbonate housing (light grey) for wall mounting

Protection type:

Front IP 65 according to ICE 529

Dimensions:

400 x 300 x 170 mm
(wxhxd)

Connection:

Connector with screw terminal
Wire cross section: max. 2.5 mm

Auxiliary voltage:

115 or 230 Vac +/-10%/50-60 Hz

Power consumption:

approx. 25 VA

Measuring input:

- mV, uA, mA (also alternating quantities)
- various thermoelements and resistance thermometers
- resistance variables
- frequency and pulse input (also for measuring the period)
- L-probe (oxygen measurement)

Measuring rate:

3 measurements/second

Output:

Short-circuit-proof analog output
e.g. 1 mV/°C or 0...10 Vdc (max 5 mA) or 0...20 mA or 4...20 mA (max. load 10 Vdc) or according to customer specification (active current limiting e.g. +/- 23 mA)

Pulse output for external counter
(e.g. as volume counter for flow volume)

Note: Only voltage values can be output if a thermoelement input is linearized.

Display:

4-digit, 7-segment display with sign

Digit height:

100 mm or 57 mm (optional)

Climate:

Storage: -10...+70 °C
Operation: 0...60 °C

Other features:

- active 2nd order filter for effective disturbance signal suppression; (e.g. 50 Hz signal is reduced by more than 70 dB).
- end value (maybe zero or power adjustment) adjustable internally.
- overflow indicator

Options:

- integrated shearing pin and compensating device in thermoelement input
- linearization of thermoelements and Pt 100 resistance thermometers
- ac voltage and ac measurement by active rectifiers
- reciprocal display (display = 1/input signal)
- magnifying function (e.g. 0...20 mA = display 800...1200 °C)
- calculation of 1 or two inputs (summation, difference formation, multiplication, division, root extraction, logarithmizing, delogarithmizing)
- up to 2 limit values
Note: limit values internally adjustable
- display mode:
 - limit value 1, limit value 2 or actual value selectable by internal switch
 - load capacity of the contacts:
230 V/6 A
 - contacts as changeover contacts

All specifications subject to change without prior notice.



Function:

The **SG004** is used for set-point output in relation with controllers for all physical values, such as temperature, moisture, pressure and pH-value.

The output is available as a current or a voltage. Notice at the order, that only one of the two outputs is calibrated exactly.

Digital Set point unit SG004

Technical Data:

Construction:

Black plastic housing according to DIN 43700 for the control panel installation

Protection type:

Front panel: IP 50 according to DIN 40050

Dimensions:

96 x 48 x 110 mm (w x h x d)

Front panel cutout:

92 x 45 mm (w x h)

Connection:

Plug-in terminals,
Wire cross-section: max. 2.5 mm²

Auxiliary voltage:

115 or 230 Vac \pm 10%, / 50-60 Hz
5, 12 or 24 Vdc

Power consumption:

approx. 4 VA

Output:

Short-circuit proof analogous output,
e.g. 1 mV/°C, 0...10 Vdc (max. 5 mA),
0...20 mA, 4...20 mA (max. 10 Vdc)
or according to customer specification

Display and setting:

3-digit BCD-switch, 3-digit BCD-switch with sign \pm or
4-digit BCD-switch

Precision:

$\pm 0.1\%$ of the full scale value ± 1 digit

Temperature influence:

$< 0.1\%$ / 10 K

Climate:

Storage: $-10\dots+70$ °C

Operating: $0\dots+50$ °C

Other features:

LED for the indication of the operating state



Universal Digital Indicator with set point setter A009SG

Function:

A009SG offers the user to attitude of set points in relation with controllers for all physical numbers, such as temperature, moist, pressure and pH value.

As an output it can be available alternatively as current or voltage.

It has to be taken care at the order that only one of the two outputs is calibrated with the accomplish precision .

The indication of the set-pint shows out via a 3 ½ or 4-digit digital display (Technish Data of digital display please see the data sheet “universal digital indicator type A004”)

Technical Data:

Construction:

Black plastic housing according to DIN 43700 for the switchboard installation

Protection type:

Front panel IP 50 according to DIN 40050

Dimensions:

96 x 96 x 110 mm (w x h x d)

Front panel cutout:

92 x 92 mm (w x h)

Connection:

Plug-in terminals,
wire cross section: max. 2.5 mm²

Auxiliary voltage:

115 or 230 Vac ± 10%/50-60 Hz
5, 12 or 24 Vdc

Power consumption:

approx. 4 VA

Output:

Short-circuit proof analogous output,
e.g. 1 mV/°C, 0...10 Vdc (max. 5 mA), 0...20 mA,
4...20 mA (max. 10 Vdc), or according to cus-
tomer specification

Display:

3 ½ or 4-digit 7-segment display with sign

Indicating range:

0... ± 199.9

Setting:

3-digit BCD-switch, 3-digit BCD switch with sign or 4-digit BCD switch

Precision:

± 0.1% of the final value of ± 1 Digit

Temperature influence:

< 0.1%/10 °K

Climate:

Storage: -10...+70 °C

Operation: 0...+50 °C

Other features:

LED for the indication of the operating state



Smart Measurement Transducer Carbo 1000 E

Special Features:

- Computation of the residual oxygen during oxygen-sensitive processes at up to five points.
- Computation of the C-level using the data for the residual oxygen or alternatively, the CO₂-content when refining steel. Measurements can be taken at up to five points.
- The unit can be directly connected to the Siemens Simatic backplane bus without additional modules, such as communications modules.
- Measuring, parameterization and error handling are done using predefined or symbolic data blocks.
- Excellent reliability due to the galvanic isolation of all input and output circuits.
- Conversion of the L-sensor voltage to match the voltage curve of the zirconium oxide sensor.
- Additional inlet to directly connect an CO analyzer.
- Option to select between thermocouple type "K" or "S".

Functions:

The "Carbo 1000 Extension" is a smart measurement transducer for multiple applications and measurements in up to five zones.

The Carbo 1000 E connects directly to the Siemens Simatic backplane bus, computes the primary signals, and outputs the desired baseline value using the defined or symbolic data blocks of the PLC.

The here described versions compute for example the residual oxygen content of a gas based on the expected gas equilibrium. Alternatively, the residual oxygen content is measured directly in situ.

The Carbo 1000 E directly executes optional features of more expensive systems, such as the correction of an actual oven value via a "foil probe". In this way, the costs of purchase are soon recovered even for small oven units.

Another handy device function is the conversion of the L-sensor voltage into the sensor voltage of a regular zirconium oxide sensor. In this system, the considerably more robust and lower priced L-sensor can be mated with already existing control systems.

The Options at a Glance:

Type Input

- 1: L-Sensor,
Thermocouple type "K" or "S"
- 2: ZrO₂
Thermocouple type "K" or "S"
- 3: CO₂ Analyzer,
Thermocouple type "K" or "S"
- 4: L-Sensor for residual oxygen
- 5: O₂-Sensor for residual oxygen

Selectable Parameters:

- CO content (in the absence of a CO analyzer)
- Actual value correction data (e.g. derived from foil sampling)
- L-sensor correction factors
- Temperature correction factor
- Actual value correction of the calculated O₂-sensor voltage

Actual Value Correction: C-Level

The calculated C-level can be corrected to eliminate measuring errors and deviations due to special conditions in the oven. Especially the so-called foil sampling backs up the determination of the C-level. The Carbo 1000 E executes this function directly so that there is no need to program the function in the PLC.

Specifications (Basic Unit):

Housing:

Siemens S7 compatible DIN rail housing (top-hat housing)

Dimensions:

160 x 125 x 115 (WxHxD)

Weight:

approx. 2 kg

Protection Class:

IP 32 according to DIN 40050

Climate Conditions:

Storage: -10...+70 °C (14...158 °F)

Operation: 0...+50 °C (32...122 °F)

5...95 % relative humidity, condensation-free storage

Auxiliary Supply:

24 V

Input:

approx. 15 VA

Fuse:

... A

Analog Inputs:

for Type 1:

- Thermocouple, type "K" or "S"
- L-Sensor
- CO Analyzer or fixed value without input

for Type 2:

- Thermocouple, type "K" or "S"
- ZrO₂-Sensor
- CO Analyzer or fixed value without input

for Type 3:

- Thermocouple, type "K" or "S"
- CO₂ Analyzer
- CO Analyzer or fixed value without input

for Type 4:

- Thermocouple, type "K" or "S"
- L-Sensor

for Type 5:

- Thermocouple, type "K" or "S"
- O₂-Sensor

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