



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 (hxw)

Housing with

surrender connector: 109 x 109 x 205 mm
(hxwxd)

Cut-out in front panel:

113 x 113 mm (hxw)

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:

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All specifications subject to change without prior notice.