

# Smart Measurement Transducer Carbo 1001 E



## Functions:

The “Carbo 1001 Extension“ is a smart measurement transducer for multiple applications and measurements in up to five zones. The Carbo 1001 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 1001 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.

## 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 CO<sub>2</sub>-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”.

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## The options at a glance:

Type	Input
1:	L-Sensor, Thermocouple type "K" or "S"
2:	ZrO <sub>2</sub> Thermocouple type "K" or "S"
3:	CO <sub>2</sub> - Analyzer Thermocouple type "K" or "S"
4:	L-Sensor for residual oxygen
5:	O <sub>2</sub> -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 O<sub>2</sub>-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 1001 E executes this function directly so that there is no need to program the function in the PLC.

## Communication:

Profibus, Profinet

## 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:**  
- Thermocouple, type "K" or "S"  
- ZrO<sub>2</sub>  
- Sensor  
- CO Analyzer or fixed value without input

**for Type 3:**  
- Thermocouple, type "K" or "S"  
- CO<sub>2</sub> 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"  
- O<sub>2</sub>-Sensor