

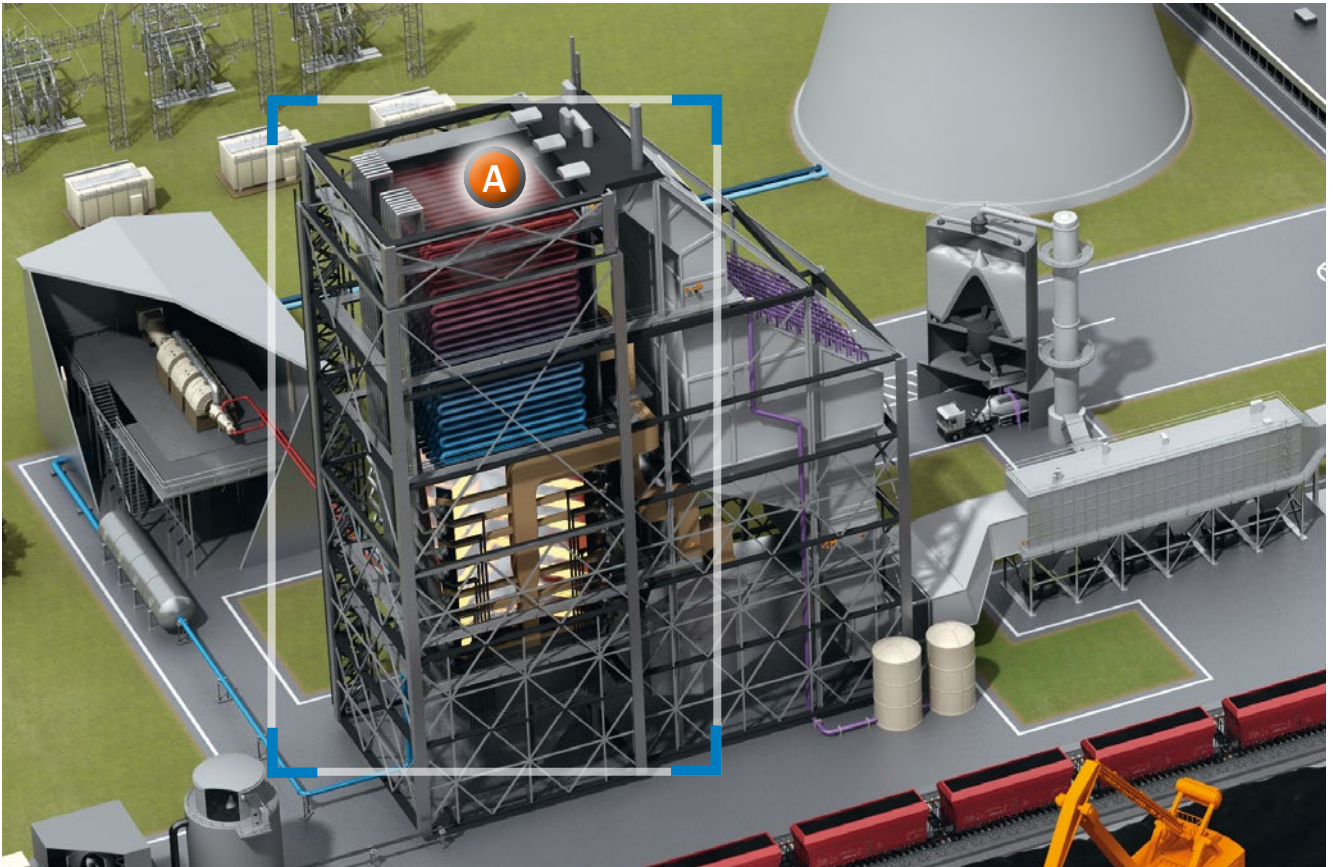


GM960

STOP BOILER WALL CORROSION

Boiler wall monitors

SICK
Sensor Intelligence.



Despite the continuous development of alternative energy concepts, coal-fired power plants still remain and as yet irreplaceable form of technology. Corrosion caused by flue gas poses a particular challenge as it eats right into the boiler wall where it can cause irreparable damage and bring the entire plant to a standstill. This, in turn, has a significant detrimental effect on the efficiency of this type of combustion plant. The SICK boiler wall monitor GM960 has been designed to prevent this from happening by monitoring boiler walls.

Functionality and measurement principle

Corrosive processes generally occur in reducing atmospheres with a low oxygen content and high levels of carbon monoxide. By detecting these components, it is possible to identify corrosion hazards in good time and take appropriate countermeasures to reduce the potential for any impending wear. The boiler wall monitor GM960 takes constant measurements

of the CO and O₂ concentrations at up to 40 measuring points on the boiler wall. The concentrations of gas detected are analyzed as indicators of a corrosion hazard and the relevant CO corrosion level and CO corrosion load values are calculated.

CO corrosion level

The CO corrosion level is an averaged measured value composed primarily of the measured CO and O₂ values. It describes the actual potential corrosion hazard to the boiler wall. It is specified in ppm or % by volume and is the basic value for calculating the CO corrosion load.

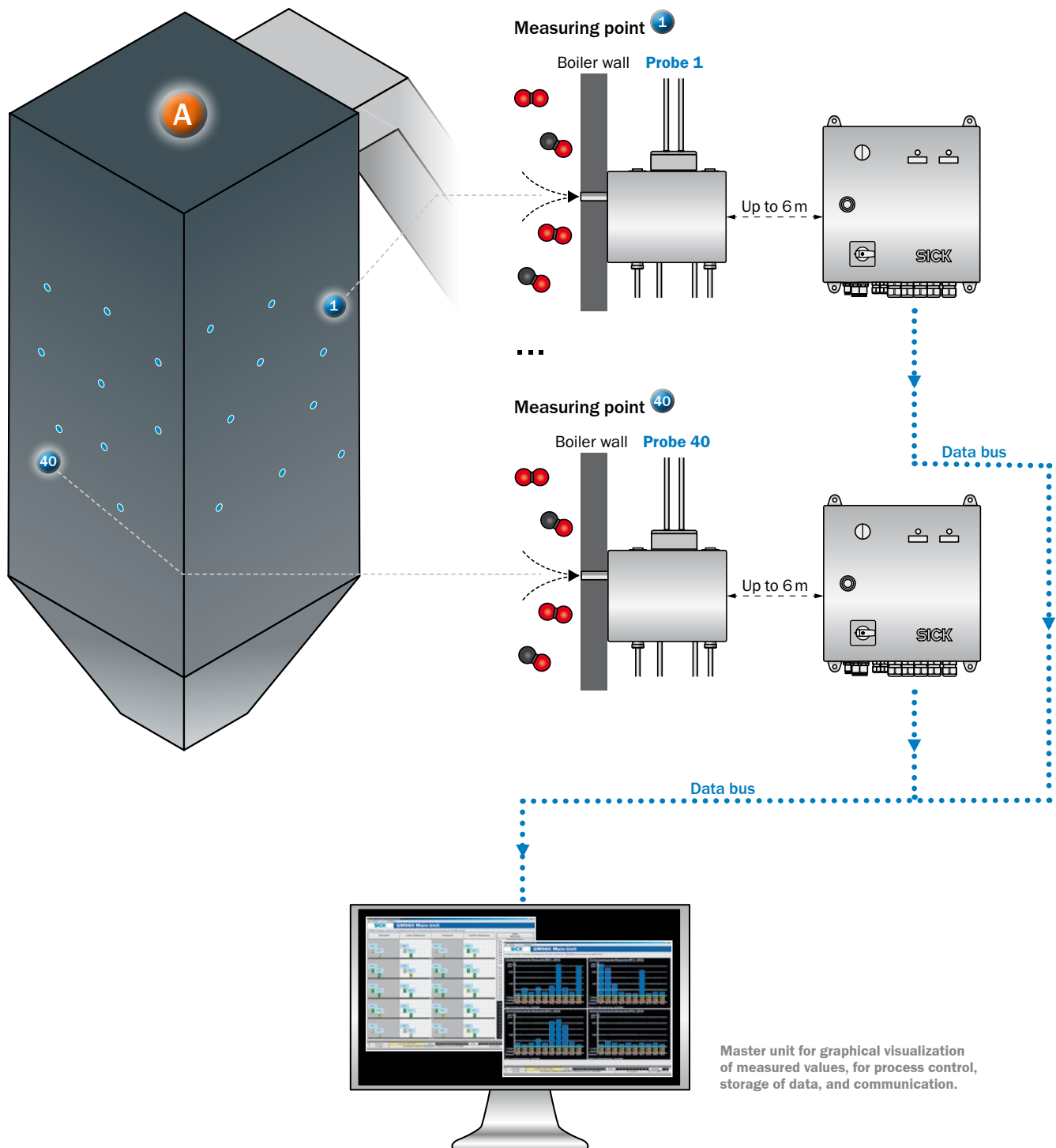
CO corrosion load

The CO corrosion load indicates the level of long-term corrosive impact the boiler wall was exposed to near the measuring point. It is defined by the load average (LAV) and load period (T_L). The load average is made up of all valid CO corrosion level daily average values.

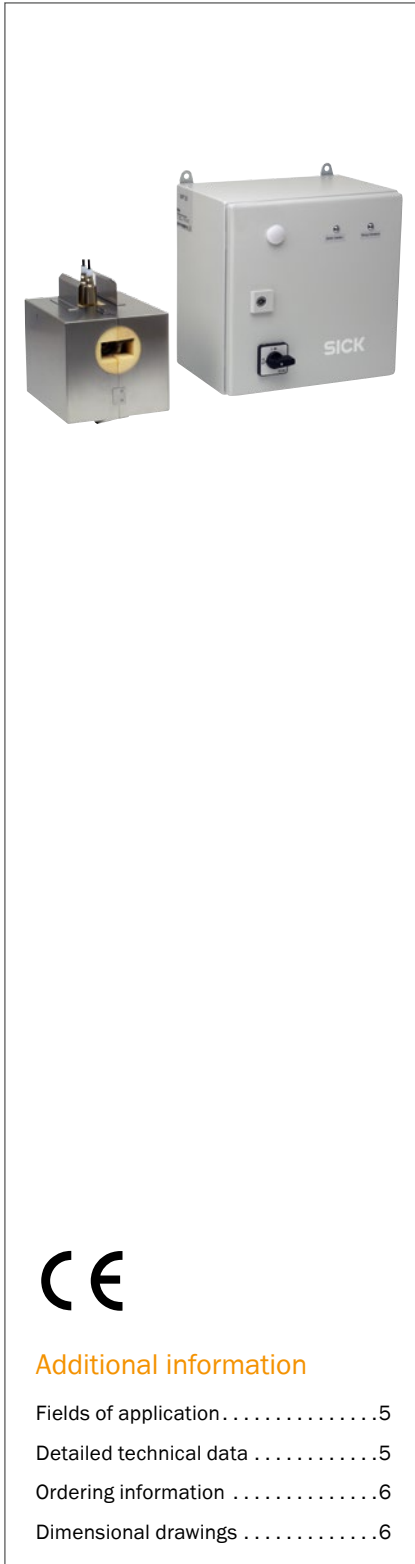
System configuration

To ensure that boiler walls are monitored reliably, measured values should be recorded at a representative number of measuring points. With the GM960 system, up to 40 probes can be operated at once. It even comes complete with a connection unit which supplies the probes with power (supply) and compressed air. All of the measuring points are connected via data bus to a master unit with standard network interfaces.

This is where all data that has been identified by the system is evaluated, saved, and graphically depicted. The operator can use this data to estimate the corrosive hazard to the boiler wall and take the appropriate measures. In addition, linking the unit to the company's own network provides an overview of the most important measurement data on each workplace PC in the power plant.



STOPP BOILER WALL CORROSION



Product description

The GM960 boiler wall monitor is a trend measuring system for the analysis of CO and O₂ at the inner boiler wall of a steam generator powered by hard coal. The CO corrosion level as well as the CO corrosion load are determined at each of up to 40 measuring points. The CO and O₂ values and the CO corrosion levels

are aimed at detecting potential danger of corrosion so that immediate action can be taken against the corrosive erosion of the boiler wall. The value of the CO corrosion load represents the long term CO corrosion exposure acting on the boiler wall.

At a glance

- Up to 40 boiler wall probes, each with one CO and O₂ sensor for installation directly in the boiler wall
- Up to 40 connection units for pressurized air, power supply and data bus
- One master unit with fieldbus interface (Modbus) to the process control
- Software MEPA-GM960 for graphical visualization of readings, for process control, storage of data and communication

Your benefits

- Online monitoring of values relevant to corrosion for the minimization of corrosive wearing off
- Effects of adjustment of the burners and combustion air can be followed online
- Lowering of operational costs and potentially improved safety through early warning of potential dangers caused by corrosive erosion of the boiler wall
- Efficient location of possible problem areas of the boiler wall
- Use of data for creation of effective maintenance and revision plans
- Installation and commissioning possible while boiler running

→ www.mysick.com/en/GM960

For more information, just enter the link and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.

Fields of application

- Monitoring of hard coal fired steam generators
- Determination of CO corrosion level and CO corrosion load
- Boiler monitoring in power plants and combustion plants

Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

GM960

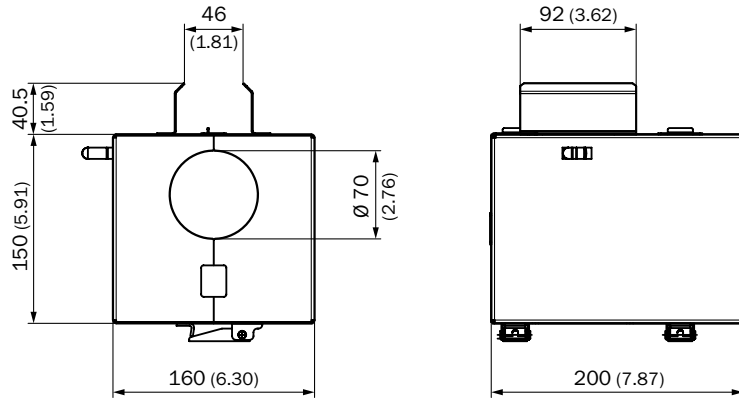
| | | | | | | | |
|--|---|--|-------------------------|----------------|-----------------|-------------------|--------|
| Measured values | CO, O ₂ , CO corrosion level, CO corrosion load | | | | | | |
| Measurement principles | Zirconium dioxide sensor | | | | | | |
| Gas flow rate | ≤ 30 l/h Per measuring point | | | | | | |
| Measuring ranges | <table> <tr> <td>CO</td> <td>0 ... 1 Vol.-%</td> </tr> <tr> <td>O₂</td> <td>1 ... 10 Vol.-%</td> </tr> </table> <p>Calculated values: CO corrosion level and CO corrosion load Max. 40 measuring points in the flue gas of hard coal fired combustion plants (others on request)</p> | CO | 0 ... 1 Vol.-% | O ₂ | 1 ... 10 Vol.-% | | |
| CO | 0 ... 1 Vol.-% | | | | | | |
| O ₂ | 1 ... 10 Vol.-% | | | | | | |
| Process pressure | -50 hPa ... 100 hPa | | | | | | |
| Ambient temperature | -10 °C ... +50 °C | | | | | | |
| Storage temperature | -20 °C ... +50 °C | | | | | | |
| Ambient humidity | ≤ 80 % Non-condensing | | | | | | |
| Electrical safety | CE | | | | | | |
| Enclosure rating | Connection unit: IP 54 | | | | | | |
| Interfaces | RS-485 RS-232 (service interface) | | | | | | |
| Bus protocol | Modbus ASCII | | | | | | |
| Indication | Master unit: LED flat screen | | | | | | |
| Weight | Connection unit: 10.5 kg Boiler wall probe: 5.5 kg | | | | | | |
| Power supply | <table> <tr> <td>Voltage</td> <td>115 V / 230 V</td> </tr> <tr> <td>Frequency</td> <td>50 Hz / 60 Hz</td> </tr> <tr> <td>Power consumption</td> <td>120 W:</td> </tr> </table> | Voltage | 115 V / 230 V | Frequency | 50 Hz / 60 Hz | Power consumption | 120 W: |
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| Frequency | 50 Hz / 60 Hz | | | | | | |
| Power consumption | 120 W: | | | | | | |
| Auxiliaries | <table> <tr> <td>Compressed air (each measuring point):</td> <td>≤ 0.4 m³/h</td> </tr> </table> <p>Instrument air: 2.5 ... 6 bar; particle size max. 40 µm; particle content max. 10 mg/m³; oil content max. 5 mg/m³; water content max. 8 g/m³ (at 3 °C)</p> | Compressed air (each measuring point): | ≤ 0.4 m ³ /h | | | | |
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Ordering information

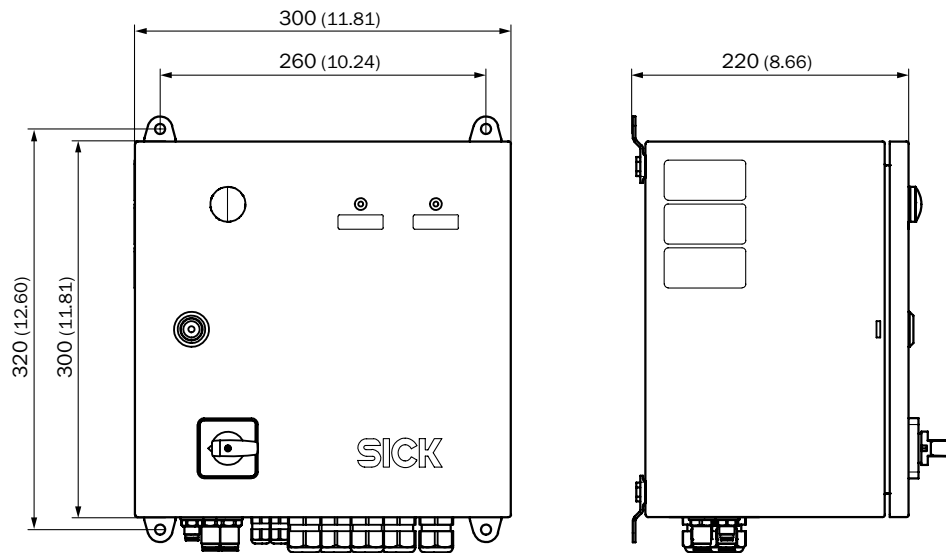
Our regional sales organization will help you to select the optimum device configuration.

Dimensional drawings (Dimensions in mm (inch))

Boiler wall probe

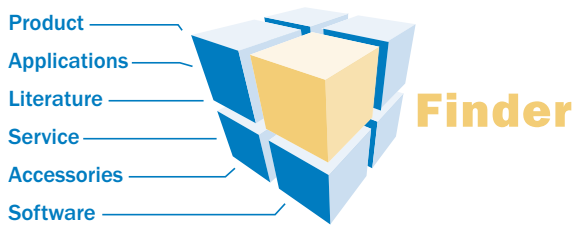


GM960 connection unit



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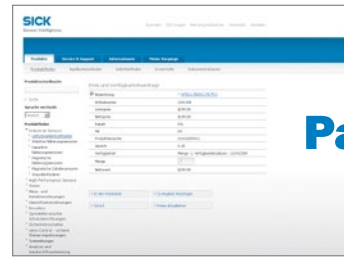


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Upgrade & Retrofits

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Training & Education

Employee qualification for increased competitiveness

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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Detailed addresses and additional representatives → www.sick.com