# ZIRKOR series

## OXYGEN ANALYZERS –
## TOUGH PERFORMANCE, BUT EASY TO OPERATE

**In-situ gas analyzers**

**SICK**
Sensor Intelligence.

# THE ZIRKOR SERIES:

## RELIABLE MEASUREMENT RESULTS
## UNDER TOUGH CONDITIONS

ZIRKOR100          ZIRKOR200          ZIRKOR302

# TOUGH PERFORMANCE PRECISE ANALYSIS

Reliable oxygen measurement is just as important for controlling an optimized combustion process as it is for emissions monitoring. In one of the toughest applications of industrial process automation, the analyzer must be easy to integrate and extremely resistant. The extremely rugged ZIRKOR series from SICK, which consists of the ZIRKOR100, ZIRKOR200 and ZIRKOR302, unites very high quality and innovative performance. This makes it the first choice for incineration optimization – even in explosion-hazardous areas. And the ZIRKOR200 has another trick up its sleeve for safety-relevant measurements: It can be qualified in accordance with SIL 2 with 1oo1 (One out of One) as an option

**Precise, but not sensitive:**
**The zircon dioxide analyzers from SICK.**
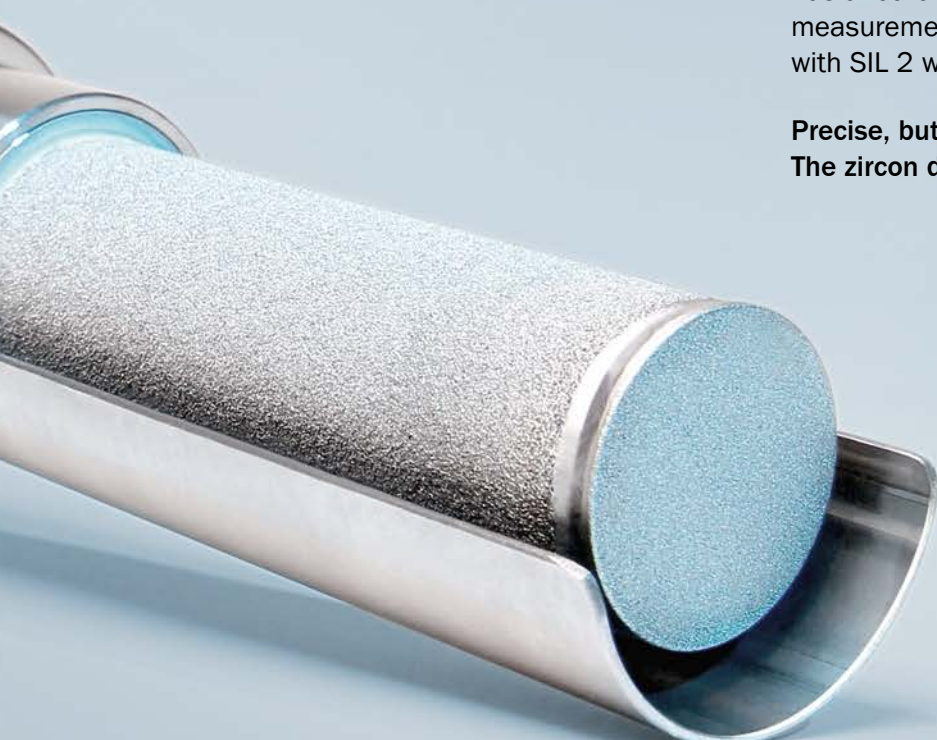
# MANY GOOD IDEAS FOR REACHING THE SAME GOAL: THE MOST RELIABLE MEASUREMENT RESULTS

### Oxygen – the driver of all combustion processes

Optimal combustion, however, relies on perfect dosing. Too little oxygen will result in incomplete combustion, leading to increased CO emissions.

Too much oxygen, on the other hand, leads to very high heat loss via the exhaust gas. The reliable oxygen analyzers of the ZIRKOR series measure immediately after combustion to monitor the combustion process. So you can set the optimal oxygen value for your fuel.

### Creating reference values for reliable measured values

Every combustion process creates different pollutants. That's why the ZIRKOR series provides an oxygen reference value for emission measurement in order to ensure reliable measurement results. The measured values are also standardized before and after the various flue gas cleaning processes. This means the values of the individual measurement stations remain comparable and enable exact process control. The type-approved ZIRKOR200 also complies with European regulations.

### Oxygen monitoring to improve processes

Insert gas atmospheres are used in some production processes. In these environments, the zircon dioxide analyzers from SICK measure the oxygen values and monitor the inert gas atmospheres which result in high-quality products.

## The best results without test gases:
## The flow sensor principle

The innovative flow sensor principle of the ZIRKOR302 provides very accurate measurement results. The measurement gas is led into the zircon dioxide measuring chamber, where it is warmed up, and the oxygen is ionized. Thanks to the cathodic effect of the $ZrO_2$, current flows when voltage is applied, which in turn delivers highly accurate and precise measured values throughout the entire measuring range. Calibration can be performed with ambient air; test gases are not required. Measuring oxygen could hardly be any more accurate.

### Flow sensor principle
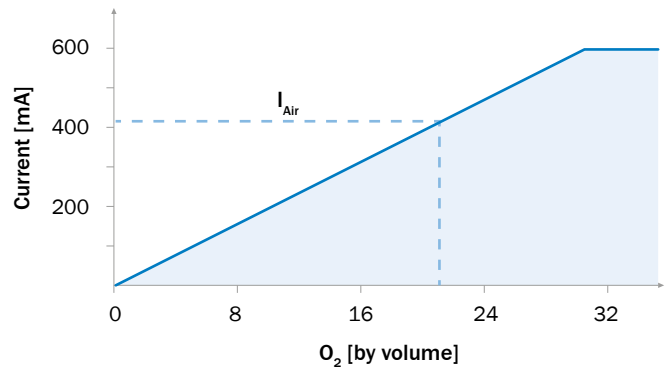


## Firmly soldered and accurate:
## The chambers are the key

The zircon dioxide analyzers from SICK measure very accurately and have an extremely long service life. Only durable materials are installed in the measuring chambers. They are also resistant to leaks: A special soldering process keep the measuring chambers sealed for a very long time. This results in very high reliability and maximum measurement accuracy for many years.

## Always know where you stand:
## Sensor diagnostics

The analyzers use the measurement curve progression and the response time of the measuring probe to calculate the remaining service life of the chambers. This is how you prevent unforeseen failures or incorrect measurement results.

## Two levels of durability:
## The LongLife technology

For the sensors of the ZIRKOR series, there are applications in which rugged is not rugged enough. The innovative LongLife technology of the ZIRKOR series enables reliable oxygen measurement. Even under extremely harsh conditions, such as contact with corrosive gases. The measuring chamber features additional protective layers on the measurement surface. These reduce the negative influence of corrosive gases and enable accurate oxygen measurement at the same time. For long sensor life, even under aggressive conditions.

Use in reducing atmospheres is no problem for the measuring chambers. We developed the LongLife[2] for exactly these applications. In addition to the extra protective layer of the LongLife technology, a chamber protective circuit protects the ceramic of the measuring chambers, preventing the platinum coating from gradually peeling off the electrode. This prevents premature wear and decreased measurement performance.

## Convenient and reliable:
## ZIRKOR Remote

ZIRKOR Remote makes it possible to completely control the ZIRKOR100 and ZIRKOR200 from a distance. This includes the output of test gases and inspection of the entire system. All process data and information on the analyzer can be saved in real time on mobile end devices and sent as an e-mail report. Thanks to the convenient app, settings can also be made for Ex devices without the Ex zone having to be released for maintenance work.

# ONE PRODUCT FAMILY
# FOR COUNTLESS REQUIREMENTS

## ZIRKOR100

### Oxygen measurement made easy

**For small systems**

Reliable oxygen measurement is also essential in small combustion plants. The ZIRKOR100 is extremely rugged thanks to its innovative chamber technology, yet the price is very affordable. The integrated chamber diagnosis function keeps maintenance work to a minimum and all important information and functions can be accessed via ZIRKOR Remote. With the ZIRKOR100, you don't have to worry about oxygen measurement in your combustion processes.

## ZIRKOR200

### The innovation is in the chambers

**Up to the challenges**

The ZIRKOR200 features additional properties and functions. Certified in accordance with EN 15267, it operates smoothly at process temperatures up to 1,600 °C, makes automated adjustments and can be equipped with the LongLife or LongLife[2] technology for a longer service life. Thanks to its variable probe lengths and a higher number of interfaces, it can be installed in all kinds of plants and applications.

**On the safe side**

The Ex types of the ZIRKOR200 are approved for IECEx and ATEX and are perfectly suited for applications in explosion-hazardous areas in Zone 1 and Zone 21. And qualified for SIL 2 with 1oo1 (One out of One), the ZIRKOR200 offers a high level of safety at minimal investment costs.

## ZIRKOR302

### A different kind of oxygen measurement

**Adjustment without test gas**

The main difference between the ZIRKOR302 and the other two analyzers is its automated calibration using the ambient air. The tried-and-tested flow sensor principle does not require any test gases for this calibration and ensures exceptionally precise, continuous measurement even at high temperatures. The ZIRKOR302 is not an ignition source in the measurement gas due to its safety-related construction. The quick response time is also an effective process control.
The ZIRKOR302 is available with either an integrated sample gas pump or an ejector powered by compressed air. The optional evaluation unit allows remote control of up to three analyzers at one time.

# THE ZIRKOR SERIES AT A GLANCE

| | ZIRKOR100 | ZIRKOR200 | ZIRKOR302 |
|---|---|---|---|
| **Sensor technology** | | | |
| Measuring chamber protection (option) | – | Yes | – |
| Chamber diagnostics | Yes | Yes | – |
| Chamber exchange | – | Yes | Yes |
| **Process gas temperature** | | | |
| Measuring probe | Up to 400 °C | Up to 600 °C | Up to 950 °C |
| Measuring probe with protective pipe | Up to 1,400 °C | Up to 1,600 °C | Up to 1,400 °C |
| **Measuring probe immersion depth** | | | |
| | 400 ... 500 mm | 520 ... 3,682 mm | 300 ... 1,800 mm |
| **Wireless remote control** | | | |
| | Yes | Yes | – |
| **Interfaces** | | | |
| Analog signal | Yes | Yes | Yes |
| WPAN | Yes | Yes | – |
| Modbus RTU RS-232 | – | Yes | Yes |
| Modbus RTU RS-485 | – | Yes | Yes |
| Hart | – | Yes | – |
| Fieldbus | – | Yes | – |
| **Enclosure rating** | | | |
| Analyzer unit | IP 20 | IP 65 | IP 65 |
| Control unit | IP 66 | IP 66 | IP 65 |
| **Adjustment** | | | |
| Test gas required | Yes | Yes | No |
| **SIL type** | | | |
| Safety integrity level | – | SIL 2 (1oo1) | – |
| **Ex type** | | ZIRKOR200 Ex-D, Ex-G | |
| ATEX/IECEx | – | Zone 1, Zone 21 | – |

# OXYGEN MEASUREMENT MADE EASY
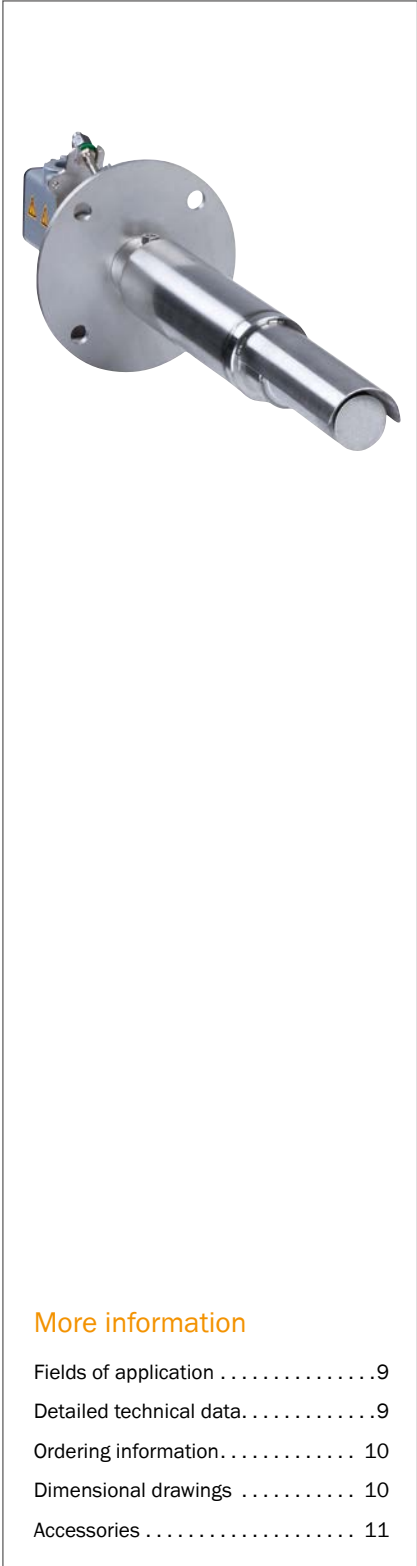
## Product description

The ZIRKOR100 gas analyzer from SICK provides robust and reliable oxygen measurement for small combustion plants. It is characterized by a measuring chamber with a long service life and a diagnostic function. This significantly reduces maintenance effort. The

ZIRKOR Remote app allows quick and easy wire-free access to the analyzer.

As a result, the simple ZIRKOR100 oxygen measurement relieves plant operators and frees them up to concentrate on other important tasks.

## At a glance

- Measuring chamber with long service life due to high-quality processing
- Self-monitoring measuring chamber
- Version for high temperatures available

- ZIRKOR Remote app for remote access to the analyzer
- Very short response time

## Your benefits

- High availability thanks to measuring chamber with long service life
- Reduction of analyzer failures due to internal self-monitoring

- Quick measurement close to the combustion process for timely control
- Easy analyzer operation – even from a distance

## More information

➜ **www.sick.com/ZIRKOR100**

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

## Fields of application

- Incineration optimization in small to medium-sized combustion plants
- Oxygen monitoring for process control

## Detailed technical data

The precise device specifications and product performance data may vary and are dependent on the respective application and customer specifications.

### Analyzer unit ZIRKOR100

| | |
|---|---|
| **Measurands** | $O_2$ |
| **Measurement principles** | Zirconium dioxide sensor |
| **Measuring ranges** | |
| $O_2$ | 0 ... 25% |
| **Adjustment time ($t_{90}$)** | 5 s, depending on the measurement gas flow |
| **Accuracy** | ± 0.5% of the measured value or 0.02% by $O_2$ volume, with the higher value being valid |
| **Process temperature** | |
| Measuring probe: | ≤ +400 °C |
| Measuring probe with cooling protection pipe: | ≤ +1,400 °C |
| **Process pressure** | –100 hPa ... 100 hPa<br>Maximum pressure fluctuation: ± 50 hPa |
| **Process gas speed** | ≤ 50 m/s |
| **Ambient temperature** | –40 °C ... +80 °C |
| **Electrical safety** | CE |
| **Enclosure rating** | IP20 |
| **Immersion depth** | |
| Measuring probe: | ≤ 500 mm |
| Measuring probe with cooling protection pipe: | ≤ 1,000 mm |
| **Material in contact with media** | Stainless steel 1.4571 |
| **Material** | Stainless steel 1.4571 |
| **Options** | Cooling protection pipe |

### ZIRKOR100 control unit

| | |
|---|---|
| **Ambient temperature** | –20 °C ... +55 °C |
| **Storage temperature** | –40 °C ... +80 °C |
| **Electrical safety** | CE |
| **Enclosure rating** | IP66 |
| **Analog outputs** | 1 output:4 to 20 mA, 500 Ω |
| **Digital outputs** | 2 outputs:<br>Up to 4 outputs possible as an option |
| **Display** | Status LEDs: "Alarm", "Maintenance", and "Fault" |
| **Operation** | Via LC display and membrane keyboard<br>Via Android end device with ZIRKOR remote app |
| **Type** | Sheet metal housing |
| **Dimensions (W x H x D)** | 300 mm x 440 mm x 240 mm |
| **Weight** | 17 kg ... 19 kg |

| Power supply | |
|---|---|
| Voltage | 104 … 126 V / 207 … 253 V |
| Frequency | 50 Hz / 60 Hz |
| Power consumption | ≤ 350 W |
| **Options** | Two oxygen limit value alarms (min/max value) |

## Ordering information

Our regional sales organization will be glad to advise you on which device configuration is best for you.
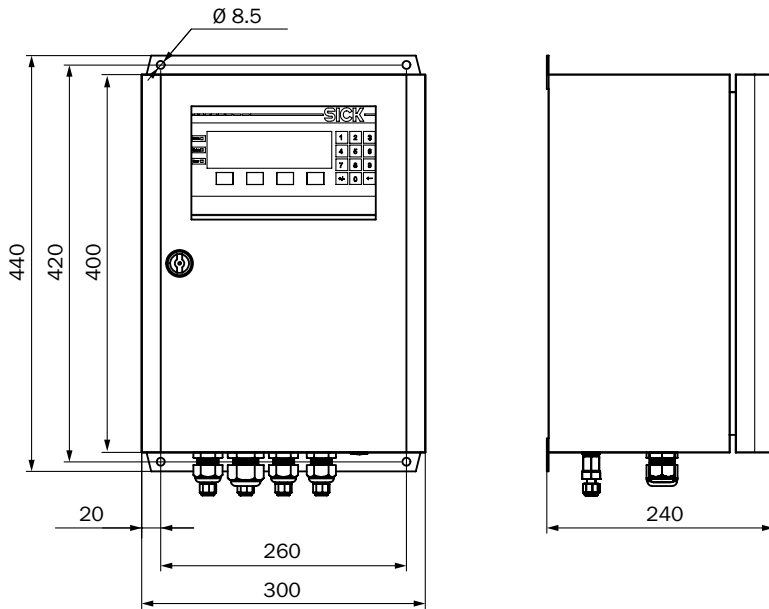
## Dimensional drawings (dimensions in mm)

Analyzer unit ZIRKOR100
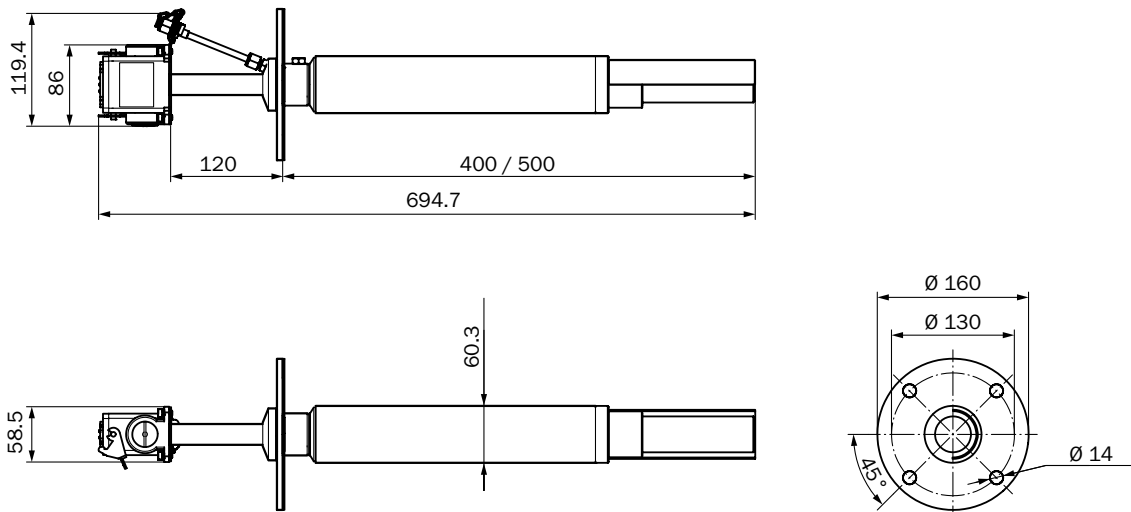


ZIRKOR100 analyzer unit with cooling protection pipe
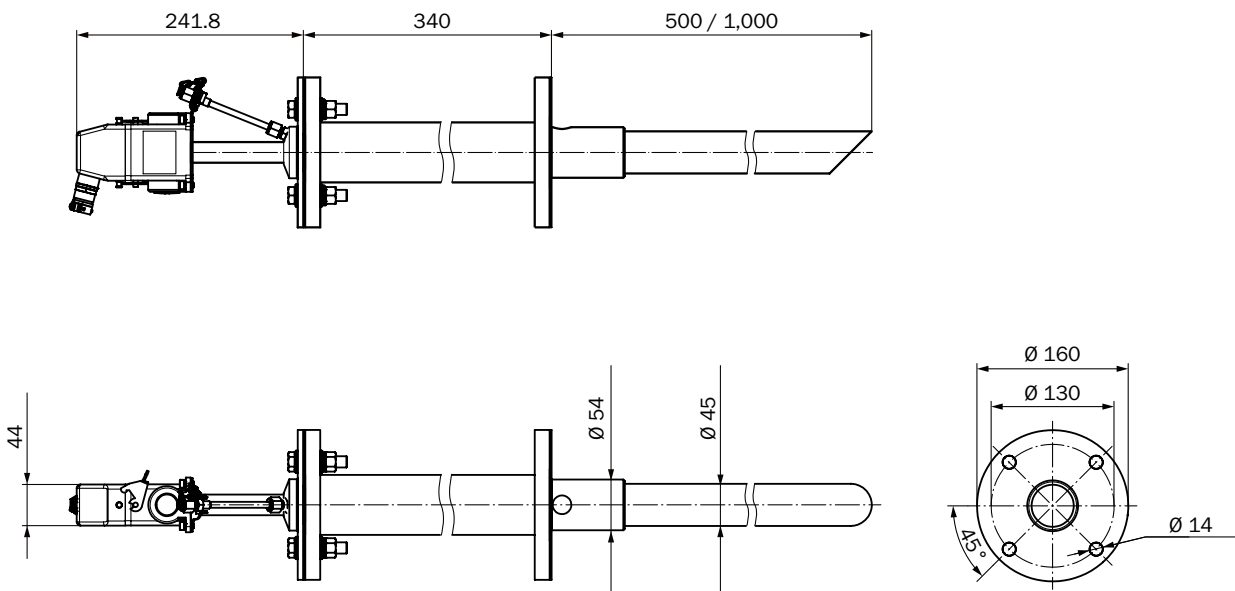
ZIRKOR100 / ZIRKOR200 control unit



## Accessories

### Flanges

Weld-in flange

| Brief description | Hole circle diameter | Threaded size | Part no. |
|---|---|---|---|
| Flange with pipe, internal diameter 72.1 mm, nominal length 100 mm, stainless steel 1.4571 | 130 mm | M12 | 5335407 |

### Device protection (mechanical)

Protective housing and pipes

| Brief description | Part no. |
|---|---|
| Insulation for cooling protection pipe 310 mm | 5335411 |
| Weather hood for analyzer unit, 1.4301, unpainted | 5335409 |
| Weather hood for control unit, 1.4301, unpainted | 5335410 |

# THE INNOVATION IS IN THE CHAMBERS

## Product description

SICK's ZIRKOR200 gas analyzer provides very robust, reliable, and suitability-tested oxygen measurement for small and large combustion plants. The ZIRKOR200 is characterized by a measuring chamber with a particularly long service life. The LongLife technology employed for this purpose increases the resistance of the measuring chamber in corrosive and reducing conditions in particular. The integrated measuring chamber monitoring system and fully automated adjustment significantly reduce the maintenance effort. The ZIRKOR Remote app allows quick and easy wire-free access to the analyzer. The ZIRKOR200 provides a low-maintenance, simple oxygen measurement system for incineration optimization. Thanks to its suitability test as per EN 15267, it is also suitable for emission monitoring.

## At a glance

- Measuring chamber with extremely long service life due to innovative protection mechanisms
- Self-monitoring measuring chamber
- Fully automated adjustment mechanism integrated into the control unit
- Version for high temperatures available
- ZIRKOR Remote app for remote access to the analyzer
- Very short response time
- Suitability-tested according to EN 15267
- Ex types for ATEX and IECEx, Zone 1 or Zone 21

## Your benefits

- Very high availability due to measuring chamber with extremely long service life
- High reliability due to innovative measuring chamber protection – even in corrosive or reducing conditions
- Reduction of analyzer failures due to internal self-monitoring
- No manual adjustment
- Quick measurement close to the combustion process for timely control
- Approved for emission monitoring
- Easy analyzer operation – even from a distance
- High safety levels due to outstanding Ex safety concept

## More information

➜ www.sick.com/ZIRKOR200

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

## Fields of application

- Incineration optimization
- Oxygen monitoring for process control
- Oxygen reference value for emission measurement
- Monitoring of inert gas atmospheres

## Detailed technical data

The precise device specifications and product performance data may vary and are dependent on the respective application and customer specifications.

### ZIRKOR200 analyzer unit standard version

| | |
|---|---|
| **Measurands** | $O_2$ |
| **Suitability-tested measurands** | $O_2$ |
| **Measurement principles** | Zirconium dioxide sensor |
| **Measuring ranges** | 0 ... 25% by vol. |
| **Certified measuring ranges** | |
| $O_2$ | 0 ... 25% by vol. |
| **Adjustment time ($t_{90}$)** | 5 s depending on the measurement gas flow |
| **Accuracy** | ± 0.5% of the measured value or 0.02% by $O_2$ volume, with the higher value being valid |
| **Process temperature** | |
| Measuring probe: | ≤ +600 °C |
| Measuring probe with cooling protection pipe: | ≤ +1,600 °C |
| **Process pressure** | –100 hPa ... 100 hPa |
| | Maximum pressure fluctuation: ± 50 hPa |
| **Process gas speed** | ≤ 50 m/s |
| **Ambient temperature** | –40 °C ... +80 °C |
| **Conformities** | EN 15267 |
| | 2000/76 / EG (17th German Federal Immission Control Act (BImSchV)) |
| | 2001/80 / EC (13th German Federal Immission Control Act (BImSchV)) |
| | 27. German Federal Immission Control Act (BImSchV) |
| | 30th German Federal Immission Control Act (BImSchV) |
| | German Technical Instructions on Air Quality Control (TA-Luft) |
| **SIL** | |
| Safety integrity level: | SIL 2 (IEC 61508) |
| Systematic suitability: | SC 2 (IEC 61508) |
| Device type: | Type B |
| Operating mode: | Low demand rate |
| System architecture: | 1oo1 assessment |
| | Option |
| **Electrical safety** | CE |
| **Enclosure rating** | IP65 |
| **Dimensions (W x H x D)** | See dimensional drawings |
| **Immersion depth** | |
| Measuring probe: | ≤ 3,682 mm |
| Measuring probe with cooling protection pipe: | ≤ 1,000 mm |
| **Material in contact with media** | Stainless steel 1.4571 |
| **Material** | Stainless steel 1.4571 |
| **Options** | Cooling protection pipe |
| | LongLife chamber |
| | LongLife[2] chamber |

## ZIRKOR200 analyzer unit Ex types

| | |
|---|---|
| **Measurands** | $O_2$ |
| **Suitability-tested measurands** | $O_2$ |
| **Measurement principles** | Zirconium dioxide sensor |
| **Measuring ranges** | 0 ... 25% by vol. |
| **Certified measuring ranges** | |
| $O_2$ | 0 ... 25% by vol. |
| **Adjustment time ($t_{90}$)** | 5 s depending on the measurement gas flow |
| **Accuracy** | ± 0.5% of the measured value or 0.02% by $O_2$ volume, with the higher value being valid |
| **Process temperature** | |
| ZIRKOR200 Ex-G measuring probe: | ≤ +500 °C |
| ZIRKOR200 Ex-G measuring probe with cooling protection pipe: | ≤ +1,400 °C |
| ZIRKOR200 Ex-D measuring probe: | ≤ +600 °C |
| **Process pressure** | –100 hPa ... 100 hPa |
| | Maximum pressure fluctuation: ±50 hPa |
| **Process gas speed** | ≤ 50 m/s |
| **Ambient temperature** | |
| ZIRKOR200 Ex-G: | –20 °C ... +55 °C |
| ZIRKOR200 Ex-D: | –20 °C ... +70 °C |
| **Conformities** | EN 15267<br>2000/76 / EG (17th German Federal Immission Control Act (BImSchV))<br>2001/80 / EC (13th German Federal Immission Control Act (BImSchV))<br>27. German Federal Immission Control Act (BImSchV)<br>30th German Federal Immission Control Act (BImSchV)<br>German Technical Instructions on Air Quality Control (TA-Luft) |
| **SIL** | |
| Safety integrity level | SIL 2 (IEC 61508) |
| Systematic suitability | SC 2 (IEC 61508) |
| Device type | Type B |
| Operating mode | Low demand rate |
| System architecture: | 1oo1 assessment |
| | Option |
| **Ex approvals** | |
| IECEx | ZIRKOR200 Ex-G: Ex db IIC T3 Gb<br>ZIRKOR200 Ex-D: Ex tb IIIC T133°C/T141°C Db |
| ATEX | ZIRKOR200 Ex-G: II 2G Ex db IIC T3 Gb<br>ZIRKOR200 Ex-D: II 2D Ex tb IIIC T133°C/T141°C Db |
| **Electrical safety** | CE |
| **Enclosure rating** | |
| ZIRKOR200 Ex-G, ZIRKOR200 Ex-D | IP66 |
| **Dimensions (W x H x D)** | Dimensions may vary, for details see dimensional drawing |
| **Immersion depth** | |
| ZIRKOR200 Ex-G measuring probe: | ≤ 924 mm |
| ZIRKOR200 Ex-D measuring probe: | ≤ 960 mm |
| **Material in contact with media** | Stainless steel 1.4571 |
| **Material** | Stainless steel 1.4571 |
| **Options** | Cooling protection pipe (not with ZIRKOR200 Ex-D)<br>LongLife chamber (already included with ZIRKOR200 Ex-D)<br>LongLife[2] chamber |

## ZIRKOR200 control unit standard version

| | |
|---|---|
| **Ambient temperature** | |
| Instrument air type: | –20 °C … +55 °C |
| Pump type: | +20 °C … +50 °C |
| GRP housing with heating: | –40 °C … +55 °C |
| **Storage temperature** | –40 °C … +80 °C |
| **Conformities** | EN 15267 |
| **SIL** | |
| Safety integrity level | SIL 2 (IEC 61508) |
| Systematic suitability | SC 2 (IEC 61508) |
| Device type | Type B |
| Operating mode | Low demand rate |
| System architecture: | 1oo1 assessment |
| | Option |
| **Electrical safety** | CE |
| **Enclosure rating** | |
| Sheet metal housing | IP66 |
| Stainless-steel housing | IP66 |
| GRP housing | IP66 |
| 19" rack housing | IP20 |
| **Analog outputs** | 1 output: |
| | 4 to 20 mA, 500 |
| | Galvanically isolated |
| **Analog inputs** | 1 input: |
| | 4...20 mA, 120 Ω |
| | Galvanically isolated |
| **Digital outputs** | 5 relay contacts |
| **Digital inputs** | 2 relay contacts: |
| | + 24 V AC/DC, 1 A |
| **Modbus** | ✔ |
| Type of fieldbus integration | RTU RS-232 |
| | RTU RS-485 |
| **HART** | ✔ |
| **Foundation Fieldbus** | ✔ |
| **Display** | Status LEDs: "Alarm", "Maintenance", and "Fault" |
| **Operation** | Via LC display and membrane keyboard |
| | Via Android end device with ZIRKOR remote app |
| **Type** | Sheet metal housing |
| | Stainless-steel housing |
| | GRP housing |
| | 19" rack |
| **Dimensions (W x H x D)** | |
| Sheet metal housing | 300 mm x 440 mm x 240 mm |
| Stainless-steel housing | 300 mm x 400 mm x 240 mm |
| GRP housing | 510 mm x 600 mm x 310 mm |
| 19" rack | 483 mm x 177 mm x 400 mm |

| Weight | |
|---|---|
| Sheet metal housing: | 17 kg ... 19 kg |
| Stainless-steel housing: | 17 kg ... 19 kg |
| GRP housing: | 19 kg ... 27 kg |
| 19" rack: | 10 kg ... 11 kg |
| **Power supply** | |
| Voltage | 104 ... 126 V / 207 ... 253 V |
| Power consumption | ≤ 400 W |
| **Options** | Semi-automated and automated adjustment (1-point or 2-point adjustment)<br>LongLife chamber<br>LongLife² chamber<br>Ejector and pump type |

## ZIRKOR200 Ex-G type control unit

| | |
|---|---|
| **Ambient temperature** | –20 °C ... +55 °C |
| **Storage temperature** | –40 °C ... +80 °C |
| **Conformities** | EN 15267 |
| **SIL** | |
| Safety integrity level | SIL 2 (IEC 61508) |
| Systematic suitability | SC 2 (IEC 61508) |
| Device type | Type B |
| Operating mode | Low demand rate |
| **Ex approvals** | |
| IECEx | Ex db IIC T6 Gb |
| ATEX | II 2G Ex db IIC T6 Gb |
| **Electrical safety** | CE |
| **Enclosure rating** | IP66 |
| **Analog outputs** | 1 output:<br>4 to 20 mA, 500 Ω<br>Galvanically isolated |
| **Analog inputs** | 1 input:<br>4...20 mA, 120 Ω<br>Galvanically isolated |
| **Digital outputs** | 5 relay contacts |
| **Digital inputs** | 2 relay contacts:<br>+ 24 V AC/DC, 1 A |
| **Modbus** | ✔ |
| Type of fieldbus integration | RTU RS-232<br>RTU RS-485 |
| **HART** | ✔ |
| **Foundation Fieldbus** | ✔ |
| **Display** | Status LEDs: "Alarm", "Maintenance", and "Fault" |
| **Operation** | Via LC display and membrane keyboard<br>Via Android end device with ZIRKOR remote app |
| **Type** | Pressure-resistant encapsulated housing |
| **Dimensions (W x H x D)** | 700 mm x 359.5 mm x 220 mm |
| **Weight** | 32 kg |
| **Power supply** | |
| Voltage | 104 ... 126 V / 207 ... 253 V |
| Power consumption | ≤ 400 W |

## ZIRKOR200 Ex-G pneumatic unit

| | |
|---|---|
| **Ambient temperature** | –20 °C ... +55 °C |
| **Electrical safety** | CE |
| **Enclosure rating** | IP65 |
| **Dimensions (W x H x D)** | Dimensions may vary, for details see dimensional drawing |
| **Auxiliaries** | |
| Test gas: | 150 l/h ... 180 l/h |
| Instrument air: | 30 l/h ... 40 l/h |
| | 2...10 bar; particle size max. 1 µm; particle content max. 1 mg/m³; oil content max. 0.1 mg/m³; pressure condensation point max. -40 °C |

## Ordering information

Our regional sales organization will be glad to advise you on which device configuration is best for you.

## Dimensional drawings (dimensions in mm)
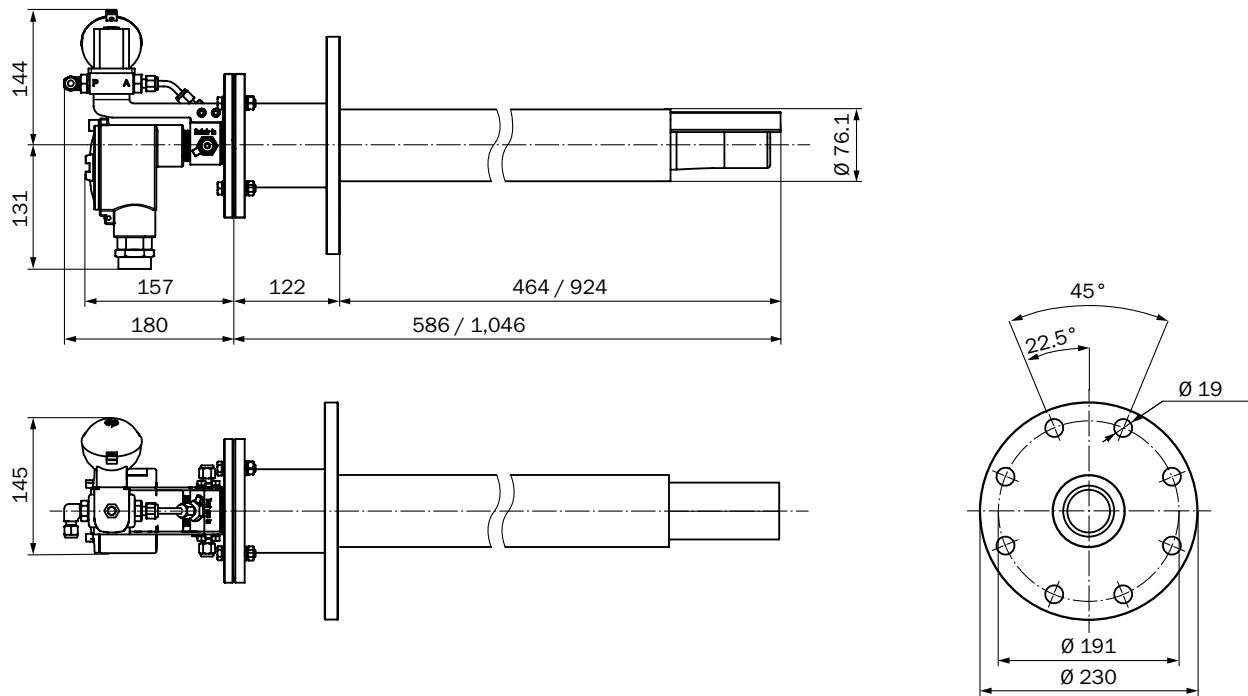
Analyzer unit ZIRKOR200
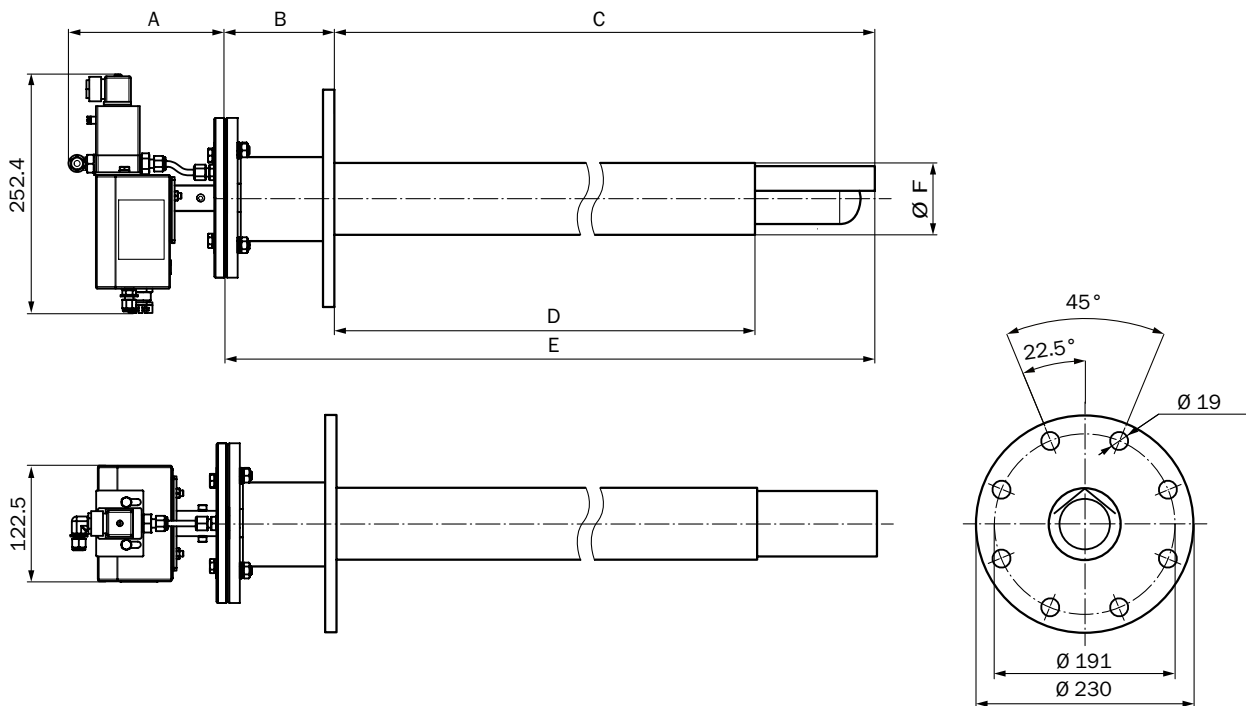


| Type | A | B | Immersion depth C | D | E | F | Weight |
|---|---|---|---|---|---|---|---|
| **Z200-X1...** | 135 | 97 | 520 | 380 | 615 | 57.0 | 11.0 |
| **Z200-Z2...** | 150 | 97 | 950 | 800 | 1,045 | 57.0 | 13.0 |
| **Z200-Z3...** | 150 | 120 | 1,835 | 1,720 | 1,955 | 76.1 | 17.5 |
| **Z200-Z4...** | 150 | 120 | 2,768 | 2,648 | 2,888 | 76.1 | 21.1 |
| **Z200-Z5...** | 150 | 120 | 3,682 | 3,562 | 3,802 | 76.1 | 25.0 |
| **All dimensions in mm, all weights in kg** | | | | | | | |

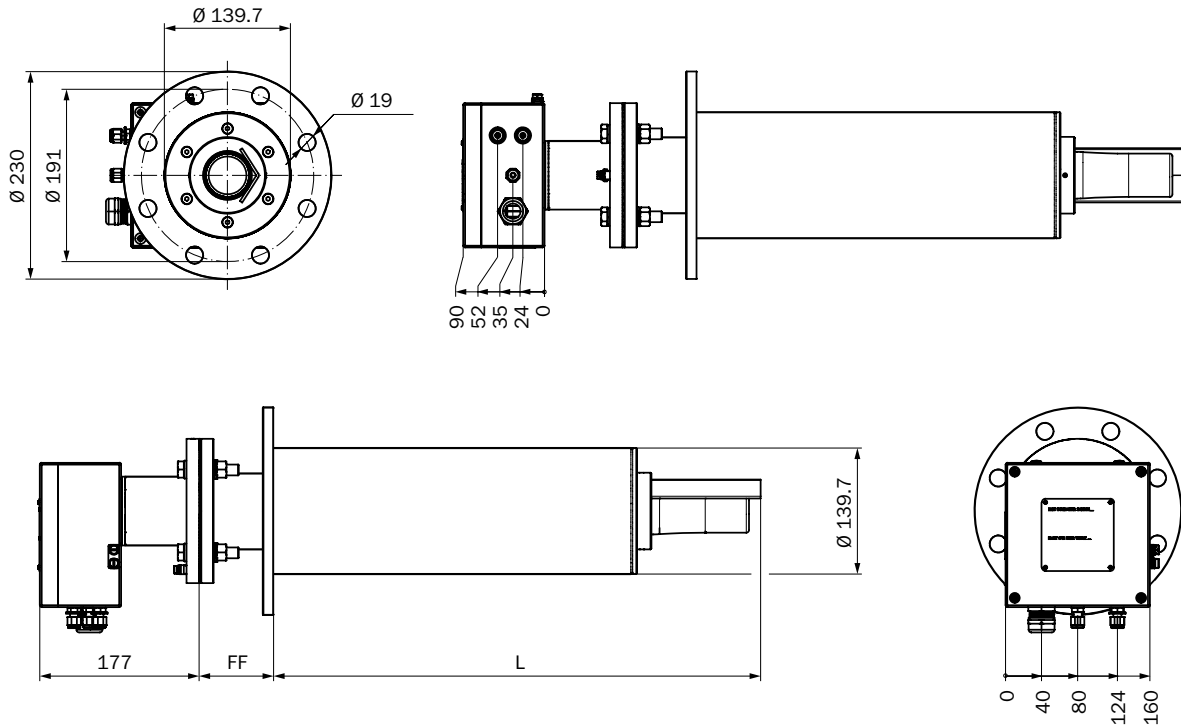ZIRKOR200 analyzer unit with cooling protection pipe
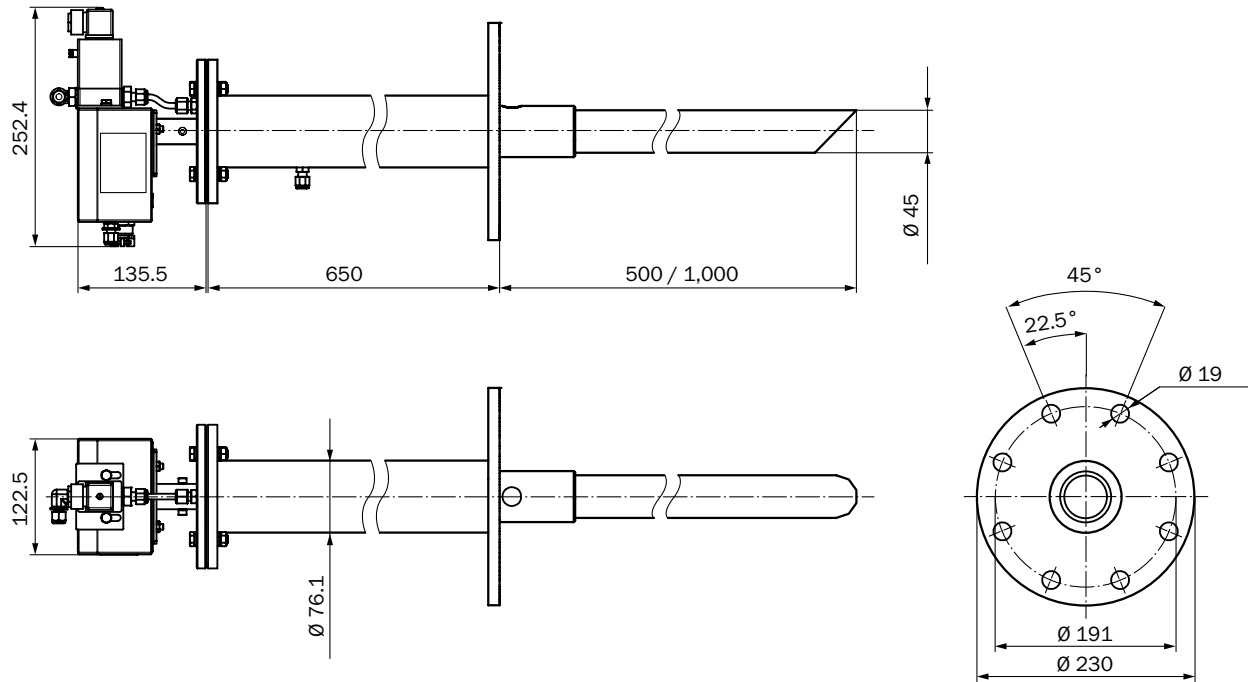


ZIRKOR200 Ex-G analyzer unit
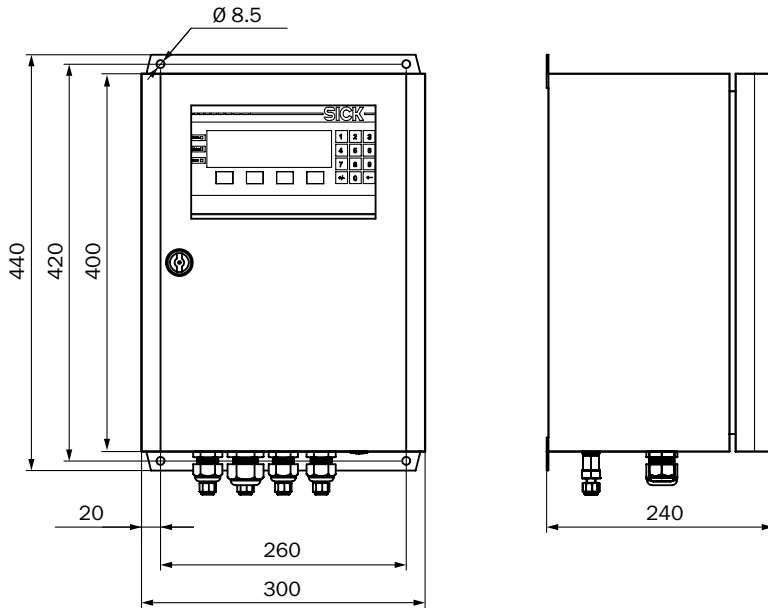
ZIRKOR200 Ex-G analyzer unit with cooling protection pipe
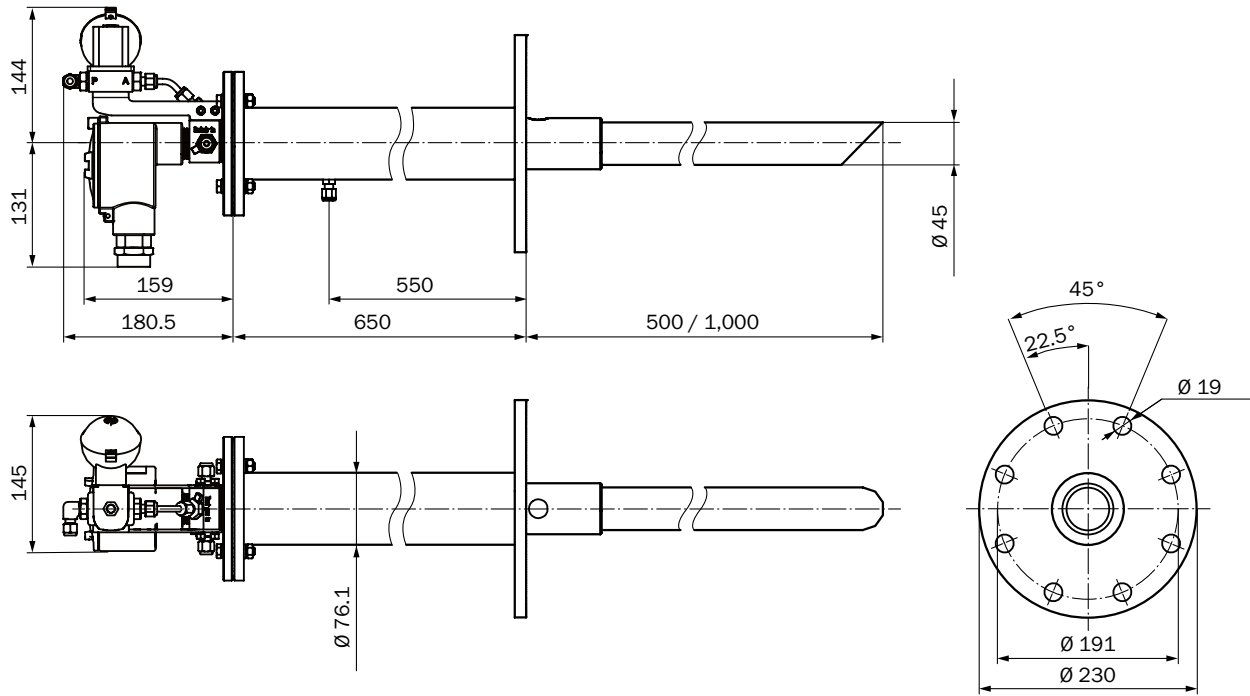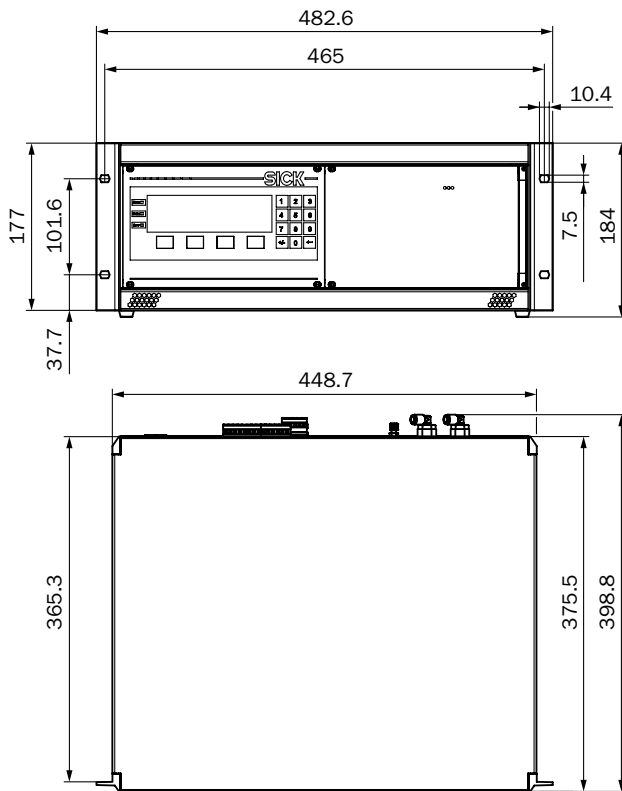


ZIRKOR200 Ex-D analyzer unit



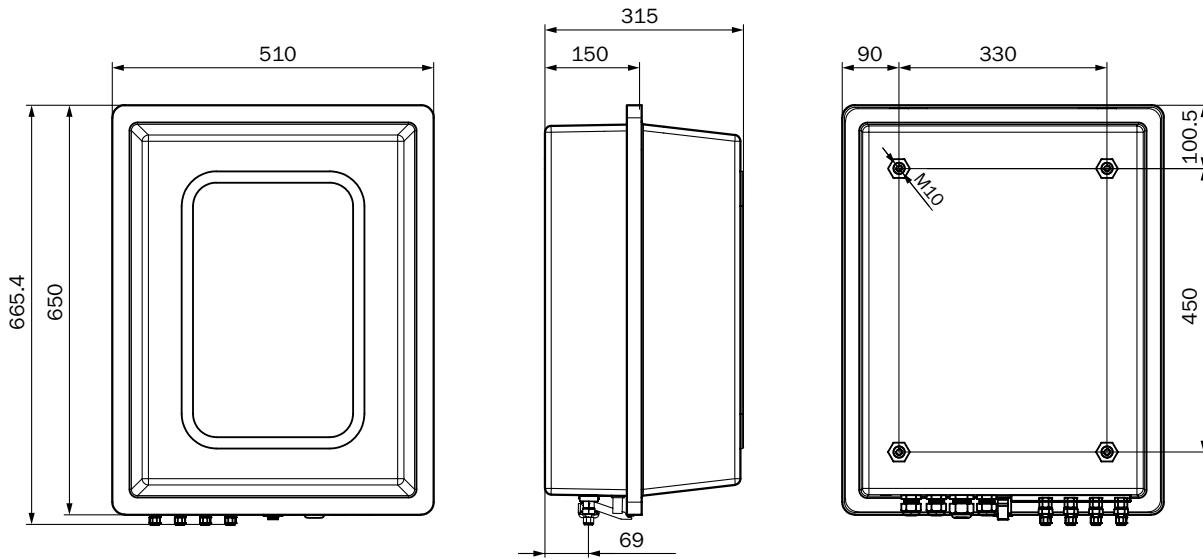| Type | Probe length L | Flange to flange distance FF | Weight |
|---|---|---|---|
| **Z200EXD-xxY...** | 960 | 112.5 | 32.8 |
| **Z200EXD-xxZ...** | 540 | 82.5 | 24.4 |
| **All dimensions in mm, all weights in kg** | | | |

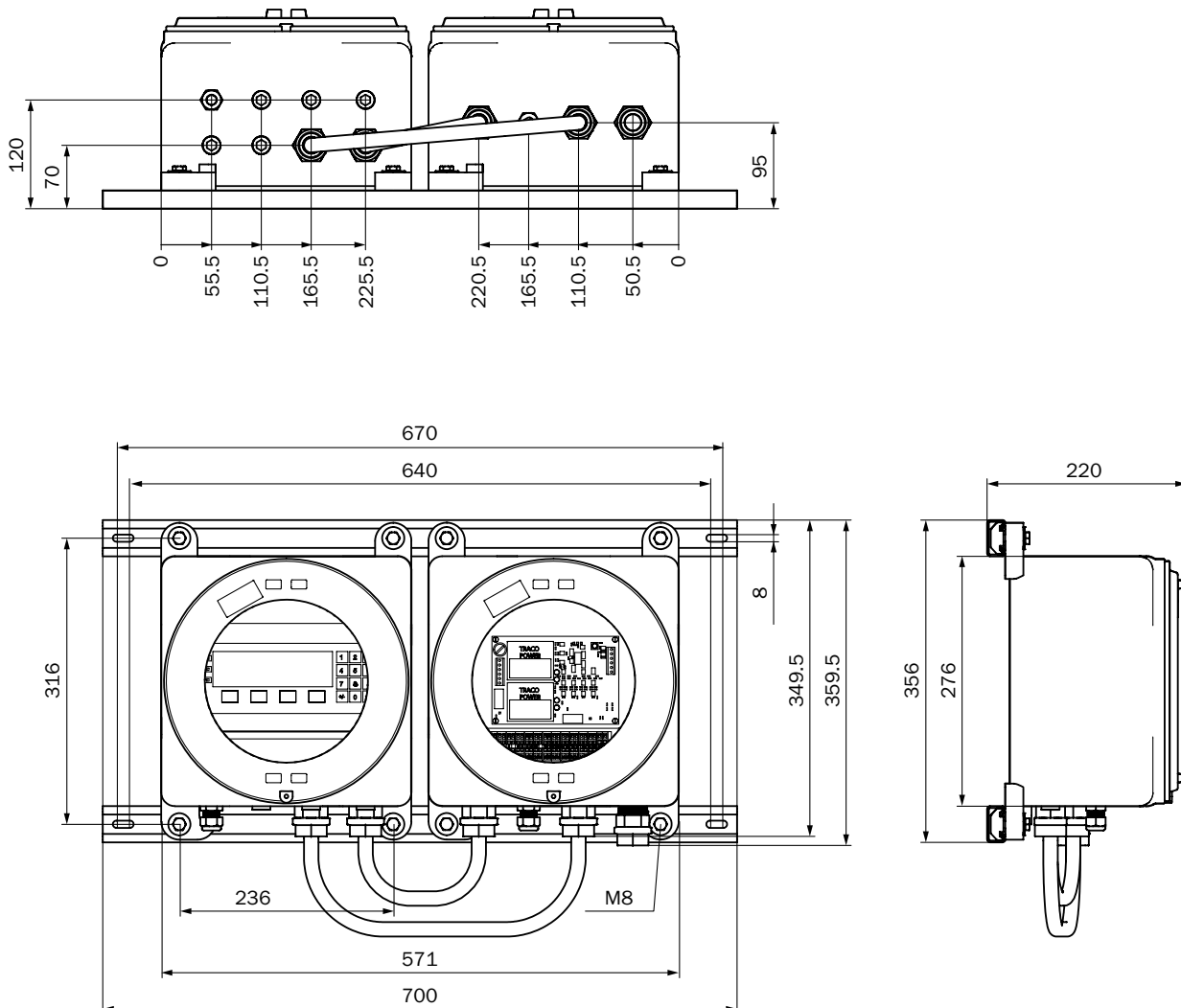ZIRKOR100 / ZIRKOR200 / ZIRKOR200 Ex-D control unit



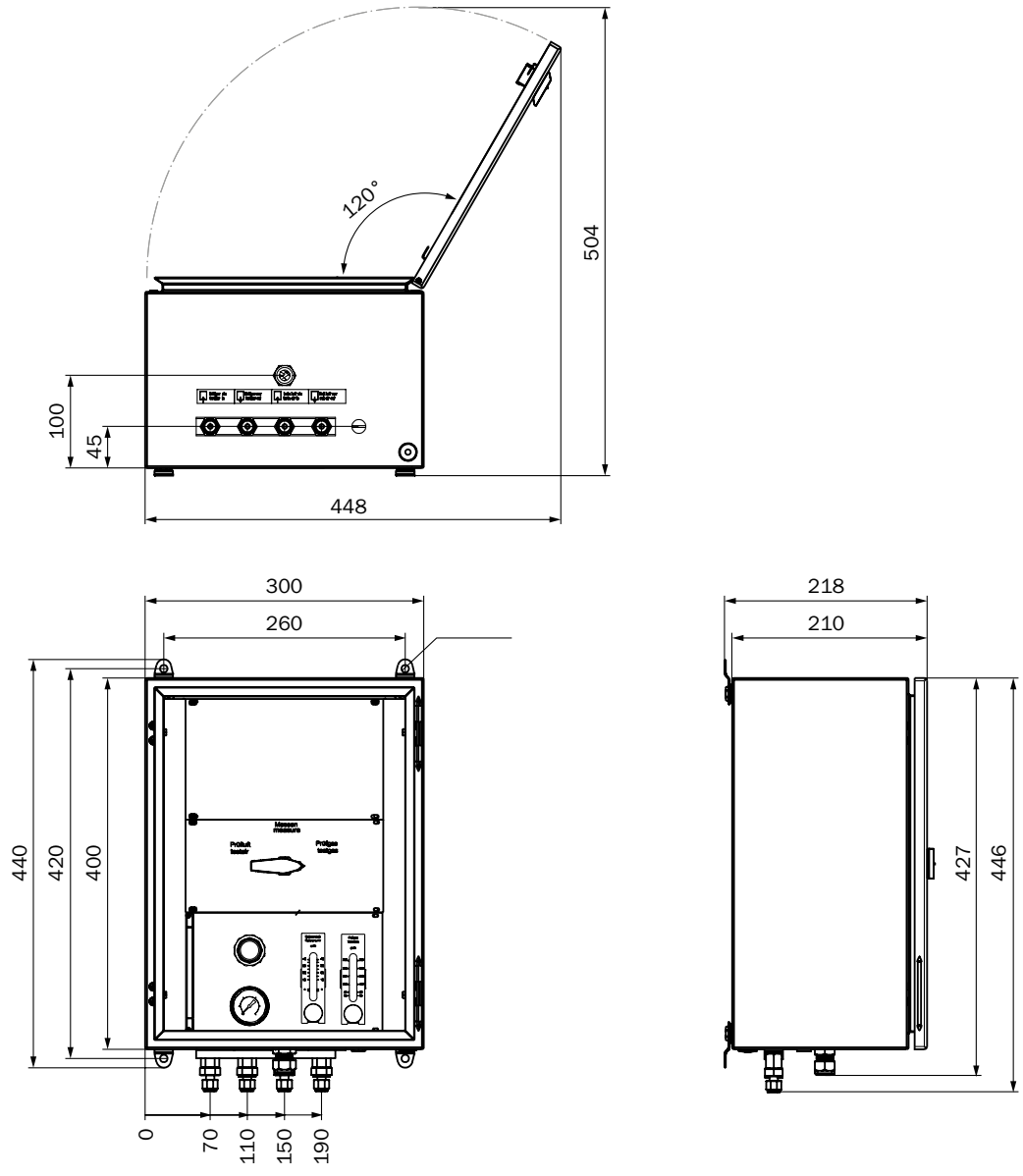ZIRKOR200 / ZIRKOR200 Ex-D control unit; 19″ rack housing

GRP housing for ZIRKOR200 / ZIRKOR200 Ex-D control unit



ZIRKOR200 Ex-G control unit

ZIRKOR200 Ex-G pneumatic unit

## Accessories

### Hardware

| Brief description | Part no. |
|---|---|
| Compressed air preparation including dryer/housing | 6063322 |
| Compressed air preparation including dryer | 6063324 |

### Flanges

Weld-in flange

| Brief description | Hole circle diameter | Threaded size | Part no. |
|---|---|---|---|
| Blind flange, ANSI 4", stainless steel 1.4571 | 190.5 mm | M16 | 4094575 |
| Flange plate, ANSI4 | 191 mm | M16 | 5335405 |
| Flange with pipe, ANSI 4", ST37 Nominal length: 500 mm | 190.5 mm | M16 | 2093590 |
| Flange with pipe, ANSI 4", ST37 Nominal length: 250 mm | 190.5 mm | M16 | 2093551 |
| Flange with pipe, ANSI 4", stainless steel 1.4571 nominal length: 500 mm | 190.5 mm | M16 | 2093591 |
| Flange with pipe, ANSI 4", stainless steel 1.4571 nominal length: 250 mm | 190.5 mm | M16 | 2093592 |

### Device protection (mechanical)

Protective housing and pipes

| Brief description | Part no. |
|---|---|
| Heating for control unit 115 V / 500 W, GFRP housing required for electronics | 6063321 |
| Heating for control unit 230 V / 500 W, GFRP housing required for electronics | 6063320 |
| GRP housing for analyzer unit, with heating 230 V / 500 W | 6063325 |
| GRP housing for analyzer unit, with heating 115 V / 500 W | 6063326 |
| Flange insulation for 75 mm measuring probe, suitable for measuring probes < 1 m | 5335847 |
| Flange insulation for 95 mm measuring probe, suitable for measuring probes > 1 m | 5335421 |
| Insulation for cooling protection pipe 625 mm | 5335830 |
| Weather hood for analyzer unit, 1.4301, unpainted For DN65 PN6 protective pipe flange | 5341512 |
| Weather hood for control unit, 1.4301, unpainted | 5335404 |
| Weather hood for analyzer unit, 1.4301, unpainted For protective pipe ANSI4°, DN80 PN10 (16) | 5335406 |

### Plug connectors and cables

Cables (ready to assemble)

| Brief description | Part no. |
|---|---|
| Connection cable for connecting analyzer and control unit | 6065208 |
| Connection cable [ATEX / IECEx] for connecting analyzer and control unit | 6070572 |
| Connection cable [ATEX / IECEx] for measuring probe magnet valve, 3-wire | 6070579 |
| Reinforced connection cable [ATEX / IECEx] for connecting analyzer and control unit | 6070573 |

Other plug connectors and cables

| Brief description | Part no. |
|---|---|
| NPT screw connection 1/2" for other cables | 6070582 |
| NPT screw connection 3/4" [ATEX / IEXEx], reinforced, for connecting analyzer unit and control unit | 6070581 |
| NPT screw connection 3/4" [ATEX / IEXEx] for connecting analyzer unit and control unit | 6070580 |

# A DIFFERENT KIND OF OXYGEN MEASUREMENT

## Product description

The ZIRKOR302 in-situ gas analyzer from SICK can be relied upon to measure oxygen quickly even at increased temperatures. Thanks to the flow sensor measurement principle, it does not require expensive test gases – ambient air is sufficient. The analyzer is not an ignition source in the measurement gas due to its safety-related construction. The optional evaluation unit allows you to operate up to three analyzers.

## At a glance

- Innovative flow sensor measurement principle
- Fixed physical zero point and linear measurement signal
- All parts in contact with gas are heated
- Version for high temperatures available
- Short response time
- Operation of up to 3 analyzers via one evaluation unit

## Your benefits

- Automated testing and adjustment with ambient air
- No expensive test gases required
- Reignition into the measurement gas not possible because the sensor is located outside the measurement gas
- Process monitoring even at high temperatures
- Quick measurement directly in the process for timely control

CE  EN 14181 certified

## More information

➜ **www.sick.com/ZIRKOR302**

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

## Fields of application

- Reference value formation during emission monitoring
- Monitoring of oxygen surpluses
- Monitoring of inert gas atmospheres

## Detailed technical data

The precise device specifications and product performance data may vary and are dependent on the respective application and customer specifications.

### ZIRKOR302 E analyzer unit

| Description | Analyzer with ejector powered by compressed air |
|---|---|
| **Measurands** | $O_2$ |
| **Suitability-tested measurands** | $O_2$ |
| **Measurement principles** | Zirconium dioxide flow sensor |
| **Gas flow** | 0.5 l/h |
| **Measuring ranges** | |
| $O_2$ | 0 ... 10 by vol. / 0 ... 25% by vol |
| **Certified measuring ranges** | |
| $O_2$ | 0 ... 21% by vol. |
| **Adjustment time** ($t_{90}$) | ≤ 20 s<br>With standard measurement gas withdrawal equipment, length = 1 m |
| **Zero point drift** | ≤ 0.2% by vol. in maintenance interval |
| **Reference point drift** | ≤ 0.2% by vol. in maintenance interval |
| **Process temperature** | |
| Stainless steel measuring probe: | 0 °C ... +700 °C |
| Inconel measuring probe: | 0 °C ... +950 °C |
| Ceramic measuring probe: | 0 °C ... +1,400 °C |
| **Process pressure** | 700 hPa ... 1,100 hPa |
| **Process gas moisture** | Non-condensing |
| **Ambient temperature** | –20 °C ... +55 °C |
| **Storage temperature** | –40 °C ... +85 °C |
| **Conformities** | Approved for system requiring permission<br>2001/80 / EC (13th German Federal Immission Control Act (BImSchV))<br>2000/76 / EG (17th German Federal Immission Control Act (BImSchV))<br>27.German Federal Immission Control Act (BImSchV)<br>EN 14181 |
| **Electrical safety** | CE |
| **Enclosure rating** | IP65 / NEMA 4x |
| **Analog outputs** | 1 output:<br>0/4 ... 20 mA, 800 Ω<br>0 ... 10 V<br>Volt-free; can be extended with additional I/O module |
| **Digital outputs** | 4 relay contacts:<br>+ 48 V AC, 1 A, 30 W / 48 V DC, 1 A, 60 W option |
| **Digital inputs** | 4 inputs:<br>+ 24 V option |
| **Display** | LC display |
| **Input** | Function buttons<br>Arrow keys |
| **Operation** | Menu-guided operator via LC display and membrane keyboard |
| **Dimensions (W x H x D)** | Details, see dimensional drawings |

| Weight | 27 kg<br>With standard measurement gas withdrawal equipment, length = 1 m |
|---|---|
| With heating for additional measurement gas withdrawal equipment: | 4 kg ... 6 kg |
| Material in contact with media | Stainless steel 1.4571 |
| **Power supply** | |
| Voltage | 115 V / 230 V |
| Frequency | 48 ... 62 Hz |
| Power consumption | ≤ 250 W |
| **Auxiliaries** | |
| Compressed air: | 4 ... 6 bar; particle size max. 1 µm; oil content max. 0.1 mg/m³; pressure condensation point max. −30 °C |
| Corrective functions | Automated testing and adjustment with ambient air |
| Integrated components | Sample gas pump |

## ZIRKOR302 P analyzer unit

| Description | Analyzer with integrated sample gas pump |
|---|---|
| Measurands | $O_2$ |
| Suitability-tested measurands | $O_2$ |
| Measurement principles | Zirconium dioxide flow sensor |
| Gas flow | 0.5 l/h |
| **Measuring ranges** | |
| $O_2$ | 0 ... 10 by vol. / 0 ... 25% by vol |
| **Certified measuring ranges** | |
| $O_2$ | 0 ... 21% by vol. |
| Adjustment time ($t_{90}$) | ≤ 20 s<br>With standard measurement gas withdrawal equipment, length = 1 m |
| Zero point drift | ≤ 0.2% by vol. in maintenance interval |
| Reference point drift | ≤ 0.2% by vol. in maintenance interval |
| **Process temperature** | |
| Stainless steel measuring probe: | 0 °C ... +700 °C |
| Inconel measuring probe: | 0 °C ... +950 °C |
| Ceramic measuring probe: | 0 °C ... +1,400 °C |
| Process pressure | 700 hPa ... 1,100 hPa |
| Process gas moisture | Non-condensing |
| Ambient temperature | −20 °C ... +55 °C |
| Storage temperature | −40 °C ... +85 °C |
| Conformities | Approved for system requiring permission<br>2001/80 / EC (13th German Federal Immission Control Act (BImSchV))<br>2000/76 / EG (17th German Federal Immission Control Act (BImSchV))<br>27.German Federal Immission Control Act (BImSchV)<br>EN 14181 |
| Electrical safety | CE |
| Enclosure rating | IP65 / NEMA 4x |
| Analog outputs | 1 output:<br>0/4 ... 20 mA, 800 Ω<br>0 ... 10 V<br>Volt-free; can be extended with additional I/O module |
| Digital outputs | 4 relay contacts:<br>+ 48 V AC, 1 A, 30 W / 48 V DC, 1 A, 60 W option |
| Digital inputs | 4 inputs:<br>+ 24 V option |
| Display | LC display |

| Input | Function buttons<br>Arrow keys |
|---|---|
| Operation | Menu-guided operator via LC display and membrane keyboard |
| Dimensions (W x H x D) | Details, see dimensional drawings |
| Weight | 27 kg<br>With standard measurement gas withdrawal equipment, length = 1 m |
| With heating for additional measurement gas withdrawal equipment: | 4 kg … 6 kg |
| Material in contact with media | Stainless steel 1.4571 |
| Power supply | |
| Voltage | 115 V / 230 V |
| Frequency | 48 … 62 Hz |
| Power consumption | ≤ 250 W |
| Corrective functions | Automated testing and adjustment with ambient air |
| Integrated components | Sample gas pump |

## ZIRKOR302 control unit; sheet steel housing

| Description | The control unit serves as the HMI and is responsible for data processing, data output, and control and monitoring functions |
|---|---|
| Enclosure rating | IP65 / NEMA 4x |
| Analog outputs | 3 outputs:<br>0/4 … 20 mA, 500 Ω<br>Galvanically isolated – one output of measured values per connected analyzer |
| Digital outputs | 3 relay contacts:<br>+ 48 V AC, 1 A, 60 W / 48 V DC, 1 A, 30 W |
| Digital inputs | 3 inputs:<br>+ 24 V<br>Preallocated for faults, maintenance and operational checks |
| Serial | ✔ |
| Type of fieldbus integration | RS-232 |
| Function | Connection to SOPAS ET software |
| CAN bus | ✔ |
| Function | Internal system bus |
| Display | LC display<br>Status LEDs: "Power", "Maintenance", and "Fault" |
| Input | Arrow keys<br>Function buttons |
| Operation | Menu-guided operator via LC display and membrane keyboard |
| Type | Sheet metal housing |
| Dimensions (W x H x D) | 200 mm x 346 mm x 97.5 mm |
| Weight | 4 kg |
| Power supply | |
| Voltage | 115 V / 230 V |
| Frequency | 50 Hz / 60 Hz |
| Power consumption | ≤ 50 W |

## ZIRKOR302 control unit; cast metal housing

| Description | The control unit serves as the HMI and is responsible for data processing, data output, and control and monitoring functions |
|---|---|
| Enclosure rating | IP67 / NEMA 4x |
| Analog outputs | 3 outputs:<br>0/4 … 20 mA, 500 Ω<br>Galvanically isolated – one output of measured values per connected analyzer |

| | |
|---|---|
| **Digital outputs** | 3 relay contacts:<br>+ 48 V AC, 1 A, 60 W / 48 V DC, 1 A, 30 W<br>Preallocated for faults, maintenance and operational checks |
| **Digital inputs** | 3 inputs:<br>+ 24 V |
| **Serial** | ✔ |
| Type of fieldbus integration | RS-232 |
| Function | Connection to SOPAS ET software |
| **CAN bus** | ✔ |
| Function | Internal system bus |
| **Display** | LC display |
| | Status LEDs: "Power", "Maintenance", and "Fault" |
| **Input** | Arrow keys<br>Function buttons |
| **Operation** | Menu-guided operator via LC display and membrane keyboard |
| **Type** | Cast metal housing |
| **Dimensions (W x H x D)** | 289 mm x 370 mm x 138 mm |
| **Weight** | 4 kg |
| **Power supply** | |
| Voltage | 115 V / 230 V |
| Frequency | 50 Hz / 60 Hz |
| Power consumption | ≤ 50 W |

## Ordering information

Our regional sales organization will be glad to advise you on which device configuration is best for you.

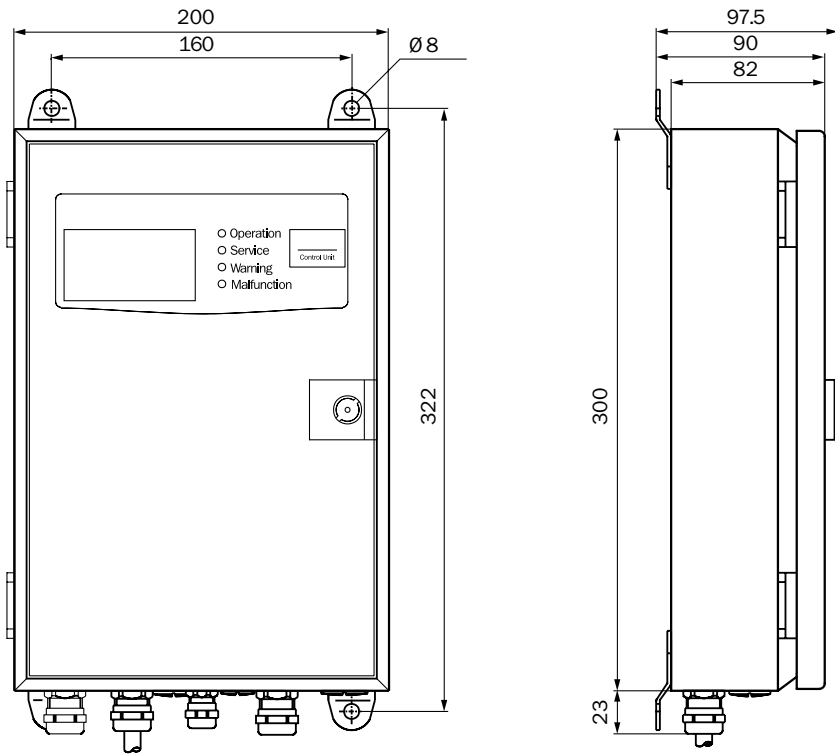## Dimensional drawings (dimensions in mm)
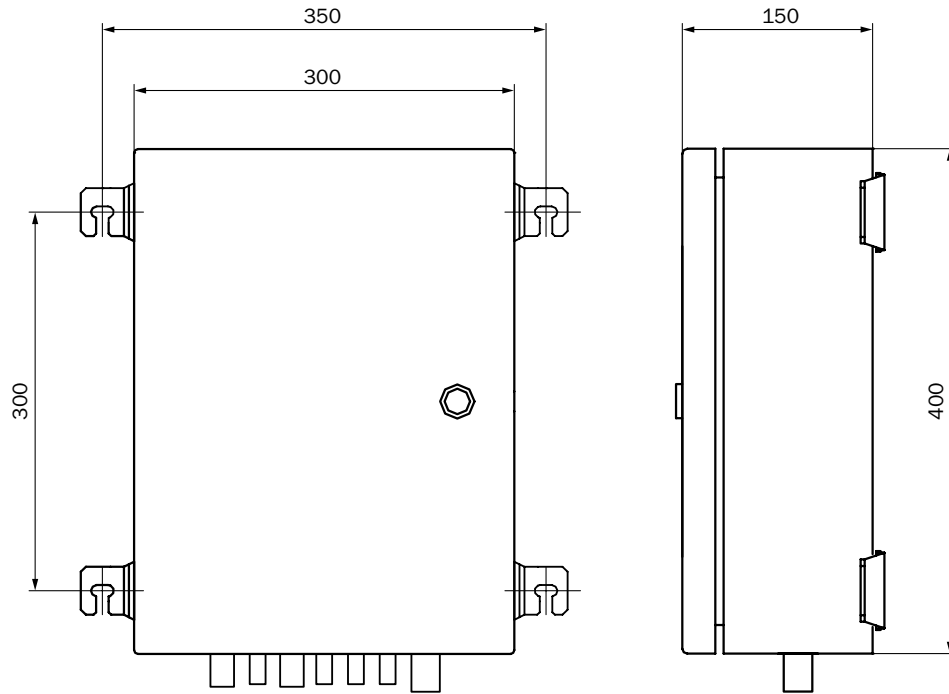
Analyzer unit ZIRKOR302
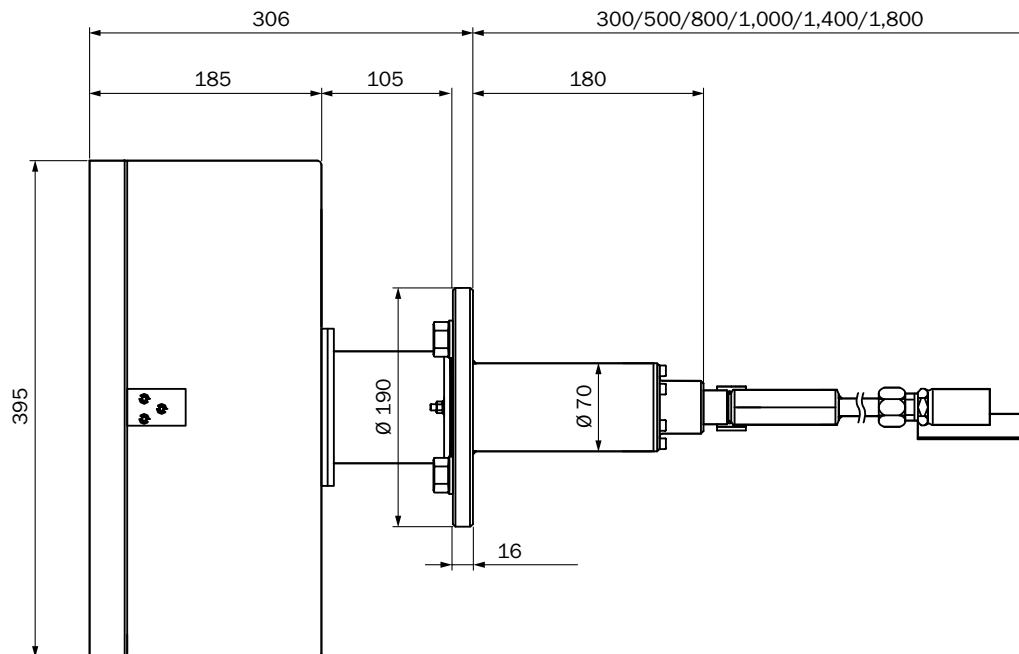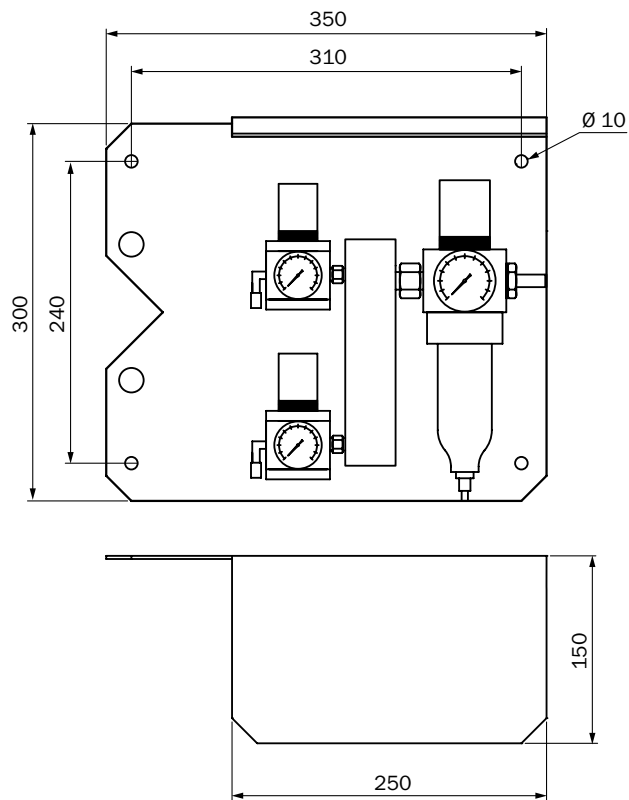
Control unit; cast metal housing
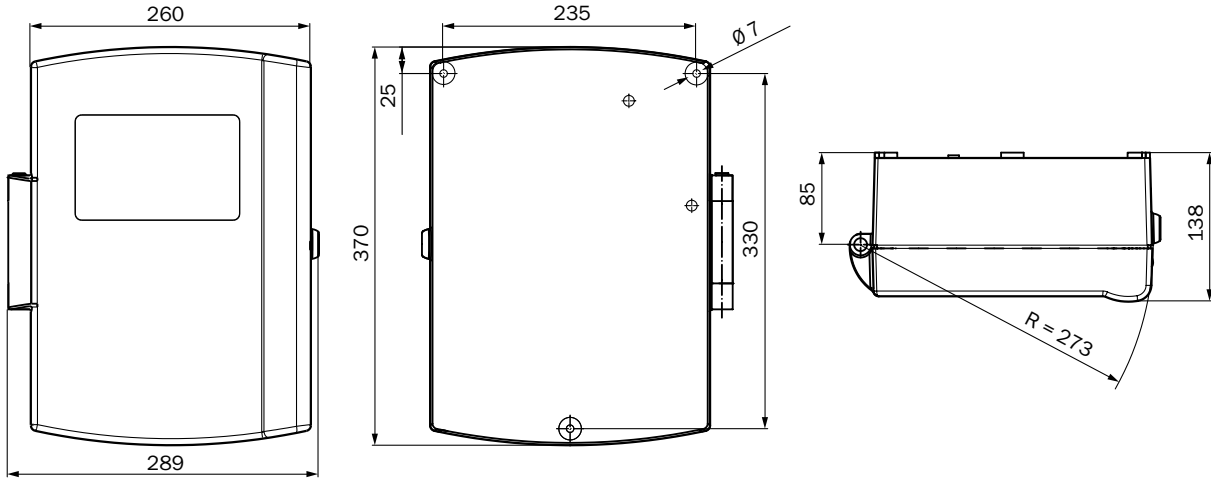


Control unit; sheet steel housing

Compressed air unit; housing type

Compressed air unit; mounting plate

## Accessories

### Flanges

Weld-in flange

| Brief description | Inner diameter | Threaded size | Part no. |
|---|---|---|---|
| Adapter flange with seal for heavy dust applications, structural steel 1.0037 | 82 mm | M16 | 5311412 |
| Adapter flange with seal for heavy dust applications, stainless steel 1.4571 | 82 mm | M16 | 5311413 |
| Flange with pipe, internal diameter 125 mm, structural steel 1.0254 | 125 mm | M16 | 5311342 |
| Flange with pipe, internal diameter 125 mm, stainless steel 1.4539 | 125 mm | M16 | 5314311 |
| Flange with pipe, internal diameter 125 mm, stainless steel 1.4571 | 125 mm | M16 | 5311343 |

### Plug connectors and cables

Other plug connectors and cables

| Brief description | Part no. |
|---|---|
| CAN extension cable, 6-wire, 15 m | 2020439 |
| Serial connection cable, 10 m | 6026308 |
| Extension cable, 10 m | 6026309 |

# SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 10,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

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

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Detailed addresses and further locations ➜ **www.sick.com**

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Sensor Intelligence.