IRP 20
Portable Gas Analyzer
Easy-to-use functions packed in a compact body
A portable gas analyzer showing its strength in the field

In recent years gas analyzers have been in high demand in terms of environmental problems, caused by emissions of flue and other gases, increased concerns about energy saving, catalyst research, and process control. With a combination of its extensive experience in gas analysis and state-of-the-art analysis/electronics technology, Yokogawa has developed a new portable gas analyzer, Model IRP20. The IRP20 features a compact, lightweight design for ease of use, and a single unit can measure up to 3 components—CO, CO₂, and O₂ (zirconia or galvanic cell method).

A single unit can measure up to 3 components—CO, CO₂, and O₂
The IRP20 utilizes a non-dispersive infrared absorption method for CO, CO₂, and a zirconia or galvanic cell method for O₂ measurements. This provides extremely reliable and highly selective measurement that is comparable to large-sized, specialized analyzers.

Compact, lightweight, and stackable design
The IRP20 has a handle for easy carrying and stackable construction for optional sample pretreatment units so that it requires a minimum space and can be installed anywhere.

Built-in sampling unit-filter, mist catcher, pump, electronic cooler, etc.
A sampling unit including a secondary filter, SO₂ mist catcher, sampling pump, electronic cooler for dehumidifying and automatic solenoid valve for draining is incorporated into the analyzer. The IRP20 can take a sample at a flow rate of as low as about 0.4 L/min, allowing highly precise measurement even with a small volume of samples.

Large, clear, easy-to-read display
(1) Measurement screen
Indicates concentrations of 3 components simultaneously. Also indicates the measuring range and sample flow rate on the same screen.

(2) Warm-up screen
Appears while the analyzer is going through a warm-up period upon power up and indicates the remaining time. After the warm-up, switches to a measurement screen. The warm-up takes 30 minutes, but if the range of CO is 200 ppm, it takes 60 minutes.

Application

(3) Calibration screen
Indicates span calibration settings, zero/span calibration readings (individually for each component, collectively), compensated values, etc.

(4) Other screens include:
• Menu screen: Menu selection, indication and reset of operating days.
• Setup screen: Response time; moving average in 10 and 30 seconds.
• No battery screen: Indicates a battery for memory has been expired.
• Purge screen: Indicates that the analyzer is purging.
• Draining
Drain is performed automatically upon power up and off (during purge) and every 10 operating hours. Indicates drain is on (during the draining, measured values are held).

Optional pretreatment units best suited for continuous measurement for long period-gas equipment, boilers, and incinerators
For measurement under harsh environments, available are pretreatment units, which can be used in a combination that suits your application.
Note: Pretreatment units must be used for measurement in flue gases at incinerators and furnaces.
Please arrange with tube kit (K9640CE) of the option parts, when you want to each tube parts are ordered.

One year spare parts:
- Name: Joint (note) Part No. K9640CD Description: 6/4 mm PTFE tube L=0.2m (for Mist catcher bypass)
- Name: Tube (note) Part No. K9640DD Description: 2.5m (220 to 240V AC) (When select power supply code "C","D" or "E")
- Name: Power cord Part No. K9640DC Description: 2.5m (100 to 115V AC) (When select power supply code "A" or "B")

Optional parts:
- Name: Filter probe Part No. K9640CA Description: For sampling filter, 24 pieces
- Name: Power cord Part No. K9640DC Description: For serial communication (9-pin)
- Name: Filter probe Part No. K9640CB Description: For sampling filter, 40 pieces in 1 box 10 boxes/set

IRP20H Electronic Cooler unit

- Name: Replacement parts Part No. K9640EM Description: R22-A
- Name: Replacement parts Part No. K9640DN Description: Vacuum battery
- Name: Replacement parts Part No. K9640DP Description: Tube Kit

IRP20H Portable Gas Analyzer

- Name: Fuse Part No. K9640CE Description: F 5A T (T : Time Delay Type)
- Name: Fuse Part No. K9640CF Description: F 5A Time Delay Type T

Primary filter probe

- Name: Filter Probe Part No. K9640CA Description: Dust cover (for keeping) 6mm straight (for the sample line connection)
- Name: Filter Probe Part No. K9640CB Description: Ø 114 x 285(H) mm

Drain separator unit/Drain pot unit

- Name: Joint Part No. K9640CA Description: 6mm straight (for the drain)
- Name: Tube Part No. K9640CE Description: 2.5m (220 to 240V AC)
- Name: Tube Part No. K9640CF Description: 2.5m (100 to 115V AC)

Electronic cooler unit

- Name: Filter probe Part No. K9640CA Description: For memory back-up
- Name: Replacement parts Part No. K9640DD Description: Tube Kit
- Name: Filter probe Part No. K9640CB Description: For memory back-up

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Name</th>
<th>Drain Separator Unit</th>
<th>Drain Pot Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part No.</td>
<td>K9640CC</td>
<td>K9640CC</td>
</tr>
<tr>
<td>Sample Gas Condition</td>
<td>0 - 40°C</td>
<td>0 - 40°C</td>
</tr>
<tr>
<td>Temperature</td>
<td>Minimum: 5°C (or less)</td>
<td>Minimum: 5°C (or less)</td>
</tr>
<tr>
<td>Moisture</td>
<td>Saturated or less at 0°C (or greater than 40°C)</td>
<td></td>
</tr>
</tbody>
</table>

| External Dimensions   | Ø 114 x 285(H) mm    | Ø 114 x 285(H) mm |

**Please consult when temperature condition is 120°C or more.**
**IRP20H Electronic Cooler Unit**

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Option code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRP20H</td>
<td>-A</td>
<td>-N</td>
<td>Electronic Cooler Unit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With chlorine scrubber</td>
</tr>
<tr>
<td>Power supply</td>
<td>A</td>
<td>100V AC 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>115V AC 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>220V AC 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>230V AC 50/60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>240V AC 50/60Hz</td>
<td></td>
</tr>
<tr>
<td>Panel</td>
<td>E</td>
<td>English</td>
<td></td>
</tr>
</tbody>
</table>

Please consult about a probe material and other usages.
**IRP20 SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Components measured</th>
<th>Analysis Principle</th>
<th>Ranges</th>
<th>Repeatability</th>
<th>Linearity</th>
<th>Drift</th>
<th>Response Time (T90)</th>
<th>Sample Gas Flow Rate</th>
<th>Display</th>
<th>Output</th>
<th>Warm-up time</th>
<th>Ambient Temperature</th>
<th>Ambient Humidity</th>
<th>Power Supply</th>
<th>Power Consumption</th>
<th>Weight</th>
<th>Dimensions</th>
<th>Sample Gas Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 components</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRP20-A</td>
<td>CD/Co 2</td>
<td>Non-dispersive Infrared Absorption (NDIR)</td>
<td>CO : 0<del>200/500/1000/2000/5000ppm 0</del>0.5/1/5/15/15vol% (Only Galvanic Cell method when Os analyzer is attached.)</td>
<td>±0.5% of F.S. (at 1ppm range or more)</td>
<td>±0.2% of F.S.</td>
<td>±0.2% of F.S./day</td>
<td>±0.5% of F.S. (at 1ppm range or more)</td>
<td>40s or less (From the instrument inlet, electrical response time set to 10 seconds.)</td>
<td>Approx. 0.4 L/min</td>
<td>Measured value (3 or 4 digits) active, range, flow rate</td>
<td>30 minutes ±2.0% of F.S. (60 minutes, when SO 2 and CO(200ppm range) are included in measured components.)</td>
<td>5~40°C</td>
<td>85% or less</td>
<td>100<del>120V AC : ±10%, 200</del>240V AC : ±10% : 50/60Hz</td>
<td>Approx. 14 kg</td>
<td>260(W) X 260(H) X 510(D) mm / 10.2(W) X 10.2(H) X 20.0(D) in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 components</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRP20-C</td>
<td>CD/Co 2/Co O 2</td>
<td>Zirconia or Galvanic Cell method (Refer to Note 1)</td>
<td>CO : 0<del>200/500/1000/2000/5000ppm 0</del>0.5/1/5/15/15vol% (Only Galvanic Cell method when Os analyzer is attached.)</td>
<td>±0.5% of F.S. (at 1ppm range or more)</td>
<td>±0.2% of F.S.</td>
<td>±0.2% of F.S./day</td>
<td>±0.5% of F.S. (at 1ppm range or more)</td>
<td>40s or less (From the instrument inlet, electrical response time set to 10 seconds.)</td>
<td>Approx. 0.4 L/min</td>
<td>Measured value (3 or 4 digits) active, range, flow rate</td>
<td>30 minutes ±2.0% of F.S. (60 minutes, when SO 2 and CO(200ppm range) are included in measured components.)</td>
<td>5~40°C</td>
<td>85% or less</td>
<td>100<del>120V AC : ±10%, 200</del>240V AC : ±10% : 50/60Hz</td>
<td>Approx. 15 kg</td>
<td>260(W) X 260(H) X 510(D) mm / 10.2(W) X 10.2(H) X 20.0(D) in</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. When high density CO, H 2 , and THC exist, the Os sensor becomes a galvanic cell method. There is a possibility of breaking down and the Zirconia method.
2. As a rule, the calibration is executed from the calibration gas line.

**IRP20 MODEL AND SUFFIX CODES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Option code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRP20</td>
<td>-A</td>
<td>CD/Co 2</td>
<td>CO/CO 2</td>
</tr>
<tr>
<td></td>
<td>-C</td>
<td>CD/Co 2/Co O 2</td>
<td>CO/CO 2/O 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurable component</th>
<th>Range for CO analyzer</th>
<th>Always N</th>
<th>Os analyzer (note 1)</th>
<th>Output</th>
<th>Power supply</th>
<th>Consumable parts kit</th>
<th>Panel letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0~200/500/1000/2000/5000ppm</td>
<td>Always N</td>
<td>Zirconia O 2 analyzer (impropriety when high density CO, H 2 or THC exists)</td>
<td>0-1V DC Non isolation</td>
<td>100V~240V AC 50/60Hz</td>
<td>With consumable parts kit</td>
<td>-E</td>
<td>English</td>
</tr>
</tbody>
</table>

**Note:**
1. When concentration of reducing gas in sample gas high, zirconia Os cell become unable to measure the gas and there is a possibility of breakdown. Therefore, always verifying the following condition before using this instrument.
   - Reducing gas : CO, H 2, THC (Total hydrocarbon)
   - Usable concentration range : CO : 5000ppm or less H 2 : 1000ppm or less THC : 2000ppm or less
2. Hydrocarbon concentration equivalent
   - example : CH 4 1vol% -> equivalent THC concentration 1vol%
   - C 3 H 8 1vol% -> equivalent THC concentration 3vol%

**Note:**
Hydrocarbon concentration is dehumidified by the electronic cooler, therefore this condition is 5°C saturation (approx. 7000ppm to 8000ppm). Calculate equivalent THC concentration as shown below depending on number of carbon atoms per molecule of gas.
SYSTEM DIAGRAM (3 components)

EXTERNAL DIMENSIONS (Unit: mm)

Conformable Directive:
- The Low Voltage Directive 70/23/EEC

Standards:
- Emission: class A
- Immunity: for Industry Location

Installation Environment:
- Installation Categories: (Overvoltage Categories)
- Pollution Degree: 2

Please read the operation manual before using this product to assure safe and proper handling of the product.

The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.

The color of the actual products may differ from the color pictured in this catalog due to printing limitations.

Subject to change without notice

YOKOGAWA ELECTRIC CORPORATION
World Headquarters
World Sales Headquarters
9-32 Nakacho 2-chome, Musashino-shi,
Tokyo 180-8750, JAPAN
Tel: +81-422-52-6339 (Analytical Products Sales)

North America
Manufacturing/Service/Offices
YOKOGAWA CORPORATION OF AMERICA
Headquarters & Plant
Georgia, U.S.A

South America
YOKOGAWA America Do Sul S.A.
BRAZIL

Europe
YOKOGAWA EUROPE B.V.
European Headquarters
THE NETHERLANDS

Russia
YOKOGAWA ELECTRIC
RUSSIAN FEDERATION

Middle East
YOKOGAWA MIDDLE EAST E.C.
BAHRAIN
Asia
YOKOGAWA ENGINEERING ASIA PTE LTD.
SINGAPORE
YOKOGAWA ELECTRIC KOREA CO., LTD.
KOREA
YOKOGAWA XYY CO., LTD.
YOKOGAWA (SHANGHAI) INSTRUMENTATION CO., LTD.
SHANGHAI YOKOGAWA PETROCHEMICAL INSTRUMENTATION CO., LTD.
YOKOGAWA SICHUAN INSTRUMENT CO., LTD.
BEIJING METALLURGY YOKOGAWA AUTOMATION ENGINEERING CO., LTD.
CHINA
YOKOGAWA TAIWAN CORPORATION
TAIWAN
YOKOGAWA BLUE STAR LTD.
INDIA

Oceania
YOKOGAWA AUSTRALIA PTY LTD.
AUSTRALIA

YOKOGAWA ELECTRIC CORPORATION

Printed in Japan, 307(YG)

All Rights Reserved. Copyright © 2002, Yokogawa Electric Corporation.