

Transportable Gas Analyzer

# CGT-7100



# All-in-One Measure

An all-in-one transportable gas analyzer is ideal for a wide variety of applications in a range of locations.

ment



# Designed for Easy Operations

The CGT-7100 gas analyzer measures the concentration of CO, CO<sub>2</sub>, and CH<sub>4</sub> gases using a ratio photometric non-dispersive infrared absorption method, which offers superior stability.

## Perfect for On-Site Measurements

### All-in-One & Transportable

With all the pretreatment units required for measurement built-in, such as the pump, filter, and dehumidifier, gas concentration can be measured by simply introducing sample gas into the measurement gas inlet.



Recessed Handle

### Designed for Easy Maintenance

Filters, absorbers, and other consumables are located in the front for easy access when replacing them.



Filter and Absorbers

## Smooth Operability

### Front Controls

Switching gases, adjusting flow rates, and connecting gases can be performed from the front.

### Output Data to USB Flash Drives

Measurement data is recorded inside the analyzer and can be output as CSV format data using a USB flash drive.

This makes it easier to process the data on a computer.



## Check Data Wirelessly

### Transmit Data via Wi-Fi

Data can now be sent wirelessly via Wi-Fi. This allows measurement values to be displayed on smart devices in the vicinity and helps ensure that changes in concentration are identified. It also eliminates the need to transport a data recorder to the measurement site and configure cables.

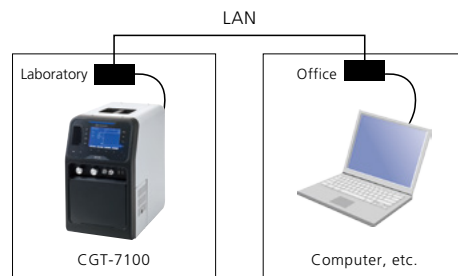


Trend display

## Data Monitoring From a Remote Location

### LAN Cable Connection

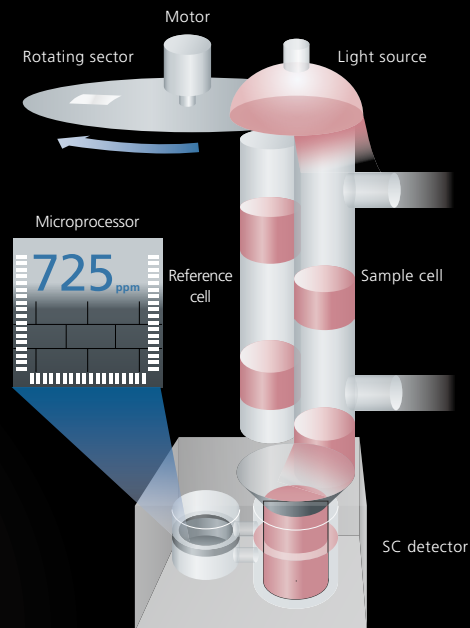
LAN connection enables users to check measurement values and variations in concentration. It is possible to access measurement data via the intranet even when not in the office or laboratory.



## Outstanding Stability

### Ratio Photometric Infrared Gas Analyzer

The infrared gas analyzer maintains a constant sensitivity level during sample concentration measurements by detecting a reference signal independently from the measurement signal and then proportionally correcting the measurement signal based on the reference signal.





Ratio Photometric Infrared Gas Analyzer



# Measure a Wide Range of Concentrations, from ppm-Levels to vol%-Levels

The CGT-7100 can measure a wide range of gas concentrations, from ppm-level concentrations in combustion equipment test and research applications to percent-level concentrations in fuel cells research applications.

## Type 1

Applications	Measured Components	Measurement Range	Examples of Use in Combination with Other Equipment
combustion Equipment Test / Research 	CO CO <sub>2</sub>	CO: 0–1000/ 5000 ppm CO <sub>2</sub> : 0–5/ 15 vol%	 External drain separator CGT-7100



## Type 2

Applications	Measured Components	Measurement Range	Examples of Use in Combination with Other Equipment
Fuel Cell Research 	CO CH <sub>4</sub>	CO: 0–5 vol% CH <sub>4</sub> : 0–20 vol%	 CGT-7100

## Measure Flow Rates as Low as 100 mL/min

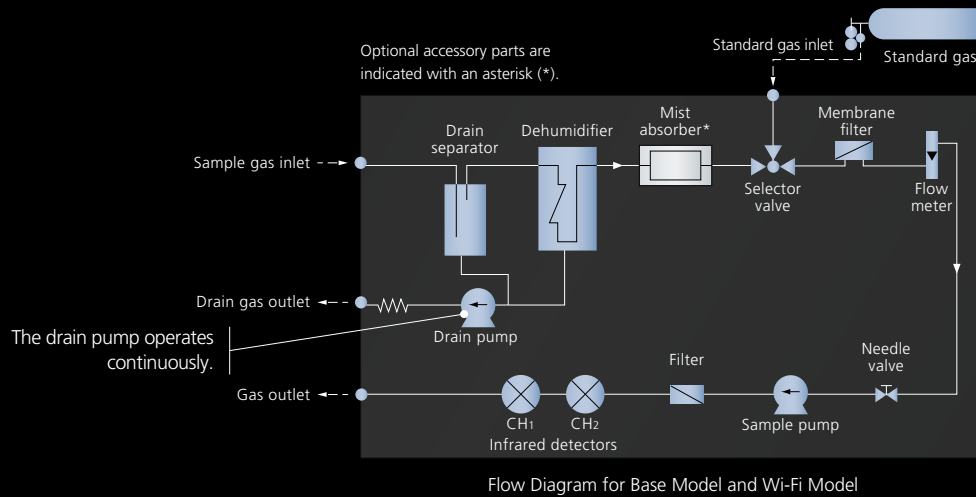
Gases can now be measured at extremely low sample gas flow rates of 100 mL/min. Therefore, the CGT-7100 can be used for a wide range of applications, such as catalyst reaction research.

## Type 3

Applications	Measured Components	Measurement Range	Examples of Use in Combination with Other Equipment
Catalyst Research 	CO CO <sub>2</sub>	CO: 0–10/ 20 vol% CO <sub>2</sub> : 0–10/ 20 vol%	 CGT-7100 (Low-flow set)

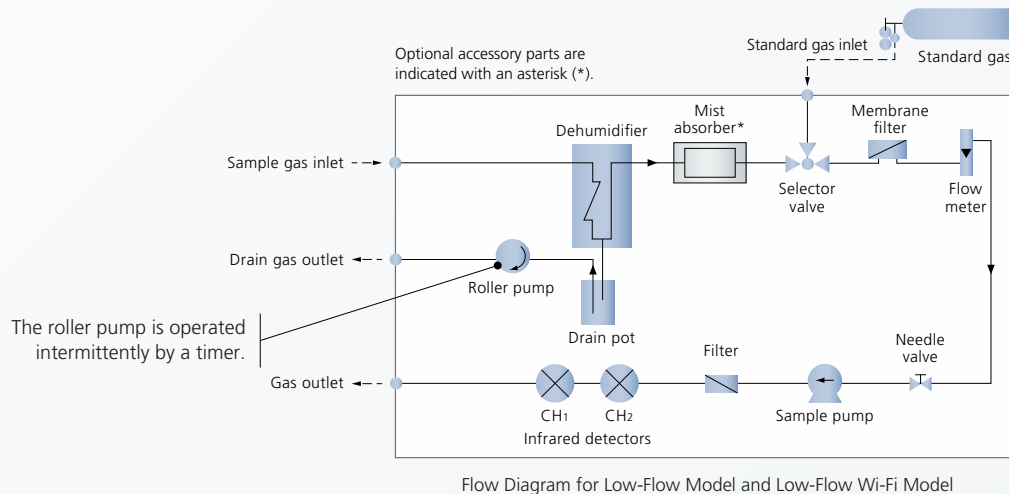
## Same Simple Flow Configuration as Previous Models

With fewer moving parts, the simple flow configuration is less likely to have any problems.



## Timer Automatically Discharges Generated Drain Liquid

The sample gas is dehumidified using the built-in dehumidifier and the generated drain liquid is automatically discharged by operating a roller pump intermittently at a frequency specified on the screen.



# Specifications

	Type 1	Type 2	Type 3
Applications	combustion Equipment Test / Research	Fuel Cell Research	Catalyst Research
Measured Components	CO, CO <sub>2</sub>	CO, CH <sub>4</sub>	CO, CO <sub>2</sub>
Measurement Range	CO: 0 to 1000/5000 ppm	CO: 0 to 5 vol%	CO: 0 to 10/20 vol%
	CO <sub>2</sub> : 0 to 5/ 15 vol%	CH <sub>4</sub> : 0 to 20 vol%	CO <sub>2</sub> : 0 to 10/20 vol%
Measurement Principle	CO, CO <sub>2</sub> , CH <sub>4</sub> : Single light source dual beam non-dispersive infrared absorption method (ratio photometry)		
Repeatability	Within ±0.5% of full scale		
Zero Drift	Within ±1% of full scale per day		
Span Drift	Within ±1% of full scale per day		
Linearity	Within ±2% of full scale	CO: Within ±2% of full scale	Within ±2% of full scale
		CH <sub>4</sub> : Within ±3% of full scale	
Response Time (Note 1)	CO, CO <sub>2</sub> , CH <sub>4</sub> : Selectable from 15, 30, or 60 seconds		Less than 3 minutes (at a sample gas flow rate of 100 mL/min)
Sample Gas Flow Rate	Approx. 2.5 L/min (The gas flow rate for the sample cell is 1.0 L/min.)		100 to 400 mL/min (variable)
Display	LCD. Allows a simultaneous display of 3 items.		
Transmission Output	0-1 V DC, 3-channel insulated output (non-insulated between channels)		
Wireless Signal Output (Note 2)	Yes		
Data Storage to External Media (Note 2)	Allows data in CSV format to be saved to a USB flash drive.		
Permitted Ambient Temperature	5 to 40°C. Should be protected from direct sunlight and radiant heat.		
Power Requirements	110 V, 115 V, 120 V, 127 V, 220 V, 230 V, 240 V AC, 50-60 Hz, max. 150 VA		
Dimensions	W260 × H452 × D420 mm (Excluding protrusions)		
Weight (Main unit)	Approx. 16 kg		
External drain separator	Yes	No	
Sample Gas Conditions (Note 3)	At the CGT-7100 main unit inlet Pressure: -980 to +980 Pa Temperature: Ambient temperature Dust: 0.1 g/Nm <sup>3</sup> max. Composition: N <sub>2</sub> : 70 vol% min.; SO <sub>3</sub> : Not contained; H <sub>2</sub> O: Below the saturation point at ambient temperature		
External Signal Input	0-1 V DC, 1 channel, signal input from an external analyzer, display		

Note 1: Response time is measured from the point the gas enters the sample gas inlet until 90% response is indicated (flow line purge time plus electrical system response time).

Note 2: Available smart devices and USB flash drives are posted on the Shimadzu Corporation website.

Note 3: If conditions are not satisfied, contact a Shimadzu representative. If a mist absorber set (option) is used, then an SO<sub>3</sub> mist can be used up to about 30 ppm.

If the concentration of a component other than N<sub>2</sub> is 30 vol% or more, then measurement specifications might not be satisfied in some cases.

Note 4: Please contact us if you would like other combinations of measurement components or measurement ranges.

Note 5: Please contact us if you wish to measure O<sub>2</sub> concentration.



# Optional Accessory Parts

## ■ Drain Separator Set

This is positioned next to the CGT-7100 unit to separate and drain away condensation from the sample gas in advance.

Use it for sample gases that contain higher moisture levels than the saturation level at the ambient temperature.

P/N: 638-93218-91



## ■ Mist Absorber Set

This removes SO<sub>3</sub> mist contained in sample gases.

P/N: 638-53244-91

## ■ GSP-100 Sampling Probe (with Heater)

P/N: 630-08284

Pipe Specifications: SUS-304 stainless steel, with 700 to 740 mm insertion length

(extendable to 1,340 mm)

Max. Operating Temperature: 400°C

## ■ Sampling Probe

This simple probe is especially useful for acquiring gases from indoor experimental furnaces.

P/N: 638-93071-01

Pipe Material and Insertion Length: Copper, with max. insertion length of 300 mm

Max. Operating Temperature: 150 °C

Flow Line Material and Length: 5 m long PTFE tubing with 6 mm I.D. and 8 mm O.D.

## ■ Gas Lines

This tubing is connected between the probe and CGT-7100 unit and between the standard gas cylinder and the CGT-7100 unit.

P/N	Specifications	Remarks
016-37519	PTFE tubing with 6 mm I.D. and 8 mm O.D.	For probe
016-37517	PTFE tubing with 4 mm I.D. and 6 mm O.D.	For standard gas cylinder

## ■ Signal Input Cable

This cable is used to input a signal from an external analyzer to the CGT-7100 unit.

P/N	Specifications
638-75038-91	Spade clip terminal type
638-75038-92	Plug terminal type

## ■ Carrier case

An aluminum carrier case for storing the CGT-7100 analyzer.

P/N: 631-90259



## CFP-8000 pretreatment unit

Used in combination with the CGT-7100 to perform continuous gas measurements. The unit is equipped with a built-in cooler, filters, pump, and flow meter, and enables users to send gas from which dust and moisture have been removed to analyzers in two lines.

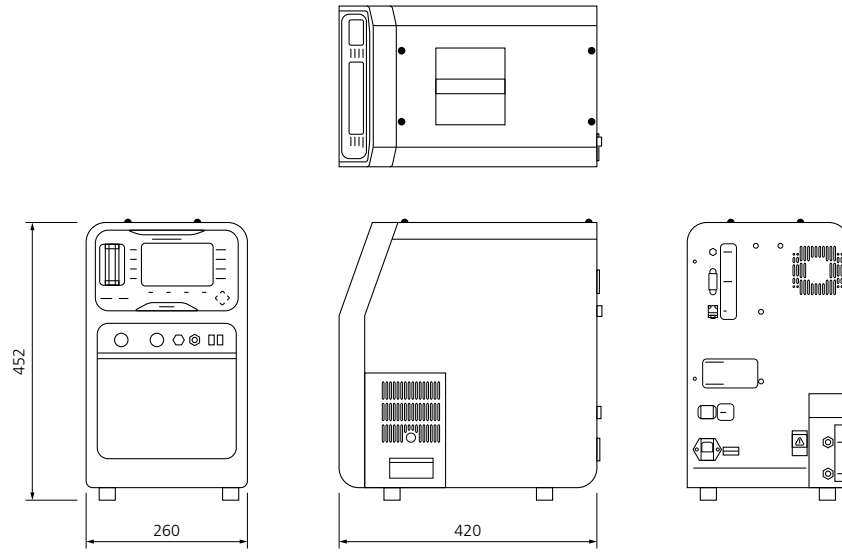
Note: The drain separator set is built the CFP-8000.



Intended use	Air and other gas samples
Permissible ambient temperature	5 to 40°C
Sampling quantity	Approx. 5 L/min (maximum)
Filter performance	Collection efficiency of at least 99.9% for particles 0.3 μm in diameter
Materials for gas connection parts	Hard glass, rigid PVC, PTFE, fluorocarbon rubber etc.
Gas drain interface	Sample gas and drain port, 8 mm diameter hose end Calibration gas inlet, 6 mm hose end
Power requirements	110/115/120/127/220/230/240 VAC
Weight	Approx. 12 kg
Pump performance (at 50 Hz)	No-load flow rate 5 L/min
Measurement gas conditions	Temperature : Ambient temperature (at external drain separator inlet) Pressure: ±980 Pa Dust: 0.1 g/Nm <sup>3</sup> or less. Must not contain special gases (Cl <sub>2</sub> , HF, etc.) that may affect gas connection parts.

## External Dimensions

(Units: mm)

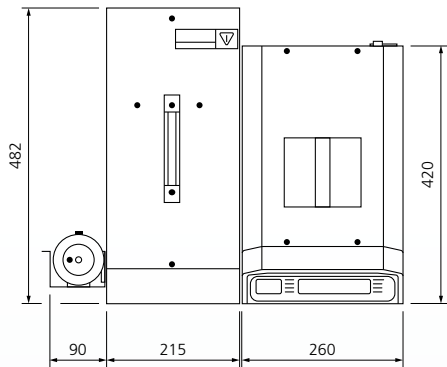


(Excludes protrusions)

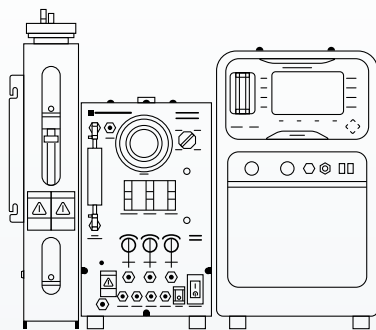
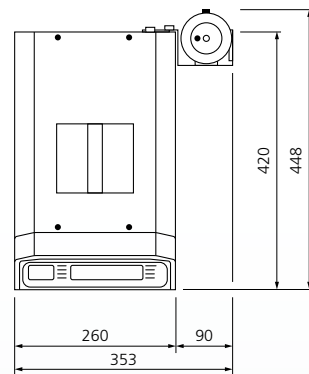
## Installation Space

(Units: mm)

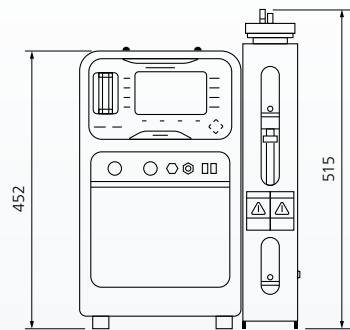
Combination with CFP-8000



Combined with the Drain Separator Set



Drain separator CFP-8000 CGT-7100



CGT-7100 Drain Separator Set

(Excludes protrusions)





## CAUTION

- This product does not include any special countermeasures for the leakage of a hazardous or flammable gas. If measuring hazardous or flammable gases, make sure the area around the analyzer is well ventilated. This product is not designed to be explosion resistant. Do not use it in locations with a risk of explosion or use it to measure explosive gases.
- Be sure to read the instruction manual before using the product.

"Wi-Fi" is a registered trademark of Wi-Fi Alliance.



Shimadzu Corporation

[www.shimadzu.com/an/](http://www.shimadzu.com/an/)

**For Research Use Only. Not for use in diagnostic procedures.**

This publication may contain references to products that are not available in your country. Please contact us to check the availability of these products in your country.

Company names, products/service names and logos used in this publication are trademarks and trade names of Shimadzu Corporation, its subsidiaries or its affiliates, whether or not they are used with trademark symbol "TM" or "®".

Third-party trademarks and trade names may be used in this publication to refer to either the entities or their products/services, whether or not they are used with trademark symbol "TM" or "®".

Shimadzu disclaims any proprietary interest in trademarks and trade names other than its own.

The contents of this publication are provided to you "as is" without warranty of any kind, and are subject to change without notice. Shimadzu does not assume any responsibility or liability for any damage, whether direct or indirect, relating to the use of this publication.