

Flue gas analyzer

# HT-3000



TEST  
HT-3000

**HODAKA**  
Saving energy

Simultaneous measurement of up to 9 gas components

CO · CO<sub>2</sub> · HC measurement by means of NDIR 3-ags bench.

Automatic interval measurement program.

Effective integrated flue gas conditioner with Peltier gas cooler.

Heated sampling line operation. (option)

<b>O<sub>2</sub></b> 0 ~ 21.0 vol%	<b>CO</b> H <sub>2</sub> compensation 0 ~ 10000ppm	<b>NO</b> 0 ~ 4000ppm	<b>NO<sub>2</sub></b> 0 ~ 1000ppm	<b>SO<sub>2</sub></b> 0 ~ 4000ppm	<b>H<sub>2</sub>S</b> 0 ~ 1000ppm
<b>H<sub>2</sub></b> 0 ~ 1.00vol%	<b>CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)</b> NDIR bench 0.2 ~ 10vol%   0 ~ 20vol%   0 ~ 2.5vol%				
<b>CO · CO<sub>2</sub> · HC(C<sub>3</sub>H<sub>8</sub>)</b> NDIR bench 0.2 ~ 10vol%   0 ~ 20vol%   0 ~ 5000ppm					
<b>CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)</b> NDIR bench 2000 ~ 10000ppm   0 ~ 20vol%   0 ~ 10000ppm			<b>°C</b> 0 ~ 650°C	<b>hPa</b> ±100hPa	

Sensor  
Combination  
sample



HT-3000  
Standard set

- Main unit
- Sampling probe
- Ambient temperature sensor
- Power supply cable
- Teflon filter
- Shoulder strap
- Soft case
- Printer paper
- User manual

<p><b>O<sub>2</sub></b></p> <p>0 ~ 21.0 vol%</p> <p>Standard</p>	<p><b>CO</b></p> <p>H<sub>2</sub> compensation</p> <p>0 ~ 10000ppm</p> <p>Standard</p>	<p><b>NO</b></p> <p>0 ~ 4000ppm</p> <p>HT-3059</p>	<p><b>NO<sub>2</sub></b></p> <p>0 ~ 1000ppm</p> <p>HT-3060</p>	<p><b>SO<sub>2</sub></b></p> <p>0 ~ 4000ppm</p> <p>HT-3061</p>	<p><b>CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)</b></p> <p>NDIR</p> <p>0.2 ~ 10vol%    0 ~ 20vol%    0 ~ 2.5vol%</p> <p>HT-3043</p>
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Standard set O<sub>2</sub>/CO/NO/NO<sub>2</sub>/SO<sub>2</sub>

Price 2,072,000 yen (tax exclude)

<p><b>O<sub>2</sub></b></p>	<p><b>CO</b></p> <p>H<sub>2</sub>compensation</p>	<p><b>NO</b></p>	<p><b>NO<sub>2</sub></b></p>	<p><b>SO<sub>2</sub></b></p>	<p>Standard Probe</p>	<p>Standard tube</p>
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Standard High class set O<sub>2</sub>/CO/NO/NO<sub>2</sub>/SO<sub>2</sub>/CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)

Price 2,529,000yen (tax exclude)

<p><b>O<sub>2</sub></b></p>	<p><b>CO</b></p> <p>H<sub>2</sub>compensation</p>	<p><b>NO</b></p>	<p><b>NO<sub>2</sub></b></p>	<p><b>SO<sub>2</sub></b></p>	<p>Standard Probe</p>	<p>Standard Tube</p>
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**CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)**

Standard set for industrial applications O<sub>2</sub>/CO/NO/NO<sub>2</sub>/SO<sub>2</sub>

Price 2,396,000yen (tax exclude)

<p><b>O<sub>2</sub></b></p>	<p><b>CO</b></p> <p>H<sub>2</sub>compensation</p>	<p><b>NO</b></p>	<p><b>NO<sub>2</sub></b></p>	<p><b>SO<sub>2</sub></b></p>	<p>Probe for industrial applications</p>	<p>Tube for industrial applications</p>
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Standard high class set for industrial applications O<sub>2</sub>/CO/NO/NO<sub>2</sub>/SO<sub>2</sub>/CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)

Price 2,853,000yen  
(tax exclude)


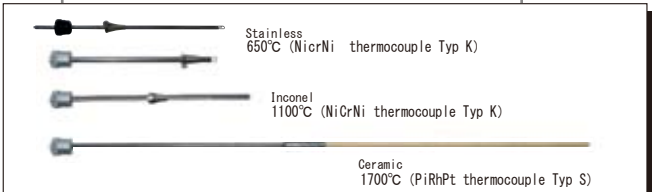



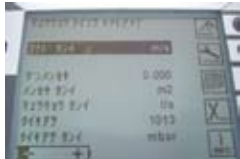

<p><b>O<sub>2</sub></b></p>	<p><b>CO</b></p> <p>H<sub>2</sub>compensation</p>	<p><b>NO</b></p>	<p><b>NO<sub>2</sub></b></p>	<p><b>SO<sub>2</sub></b></p>	<p>Probe for industrial applications</p>	<p>Tube for industrial applications</p>
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**CO · CO<sub>2</sub> · HC(CH<sub>4</sub>)**



# Flue gas analyzer HT-3000

## Options

<p>Probe handle</p>		<p>2 type of industrial probe handle          Heated hose type: with heater for filter of inside of handle and hose.          Always require external electric supply.          Standard probe handle: suitable for clean and dry flue gas and short time measurement.</p>
<p>Probe tube</p>		<p>Probe tube          Demantion : <math>\phi 8, \phi 10, \phi 12</math>,          Length : 300mm to 2000mm          Temperature : 650°C, 1100°C, 1700°C</p>
<p>Sensor module</p>		<p>Thanks to compact size electrochemical sensors, in addition to standard O<sub>2</sub> and CO sensor, 4 more sensors can be mounted.</p>
<p>Analog output</p>		<p>Max. 8 measurement items output. 4 to 20mA.</p>
<p>SD card</p>		<p>Interface for MMC (SD) card with Multi Media Card 2 GB (incl. data logging software)</p>
<p>Flow velocity measurement</p>		<p>Stack gas flow velocity measurement by using a pitot tube          Inclusive mass flow calculation (mass measurement)</p>
<p>Aluminum case</p>		<p>Size 500×520×300 mm          Weight about 9.5Kg</p>
<p>NDIR moduel</p>	<p>CO+CO<sub>2</sub>+CH<sub>4</sub> or CO+CO<sub>2</sub>+C<sub>3</sub>H<sub>8</sub>          Note each NDIR module has different measurement range.</p>	
<p>Analyzer heating device</p>	<p>In oder to have correct measurment range, HT-3000 does not operate under too cold enviroment. This device keeps analyzer certin operative temperature revel.</p>	

# Specification

## Measurement items

Items	Sensor	Range	Accuracy	Resolution	Response
O <sub>2</sub>	Galvanic	0 ~ 21.00vol%	±0.2vol%	0.01vol%	<40 sec.
CO (Hzcompensation)	Electro chemical	0 ~ 2000ppm (max. overload 10000ppm)	±20ppm or ±5 % of reading (0 ~ 2000ppm)*1 ±10% of reading (2001 ~ 10000ppm)	1 ppm	<40 sec.
NO	Electro chemical	0 ~ 1000ppm (max. overload 4000ppm)	±5ppm or ±5 % of reading (0 ~ 1000ppm)*1 ±10% of reading (1001 ~ 4000ppm)	1 ppm	<100 sec.
NO <sub>2</sub> *2	Electro chemical	0 ~ 200ppm (max. overload 1000ppm)	±10ppm (0 ~ 200ppm) ±10% of reading (201 ~ 1000ppm)	1 ppm	<100 sec.
SO <sub>2</sub> *2	Electro chemical	0 ~ 2000ppm (max. overload 4000ppm)	±10ppm or ±5 % of reading (0 ~ 2000ppm)*1 ±10% of reading (2001 ~ 4000ppm)	1 ppm	<100 sec.
H <sub>2</sub> S *3	Electro chemical	0 ~ 200ppm (max. overload 1000ppm)	±10ppm (0 ~ 200ppm) ±10%of reading (201 ~ 1000ppm)	1 ppm	<100 sec.
H <sub>2</sub> *3	Electro chemical	0 ~ 0.50vol% (max. overload 1.00vol%)	±0.05vol% or ±5 % of reading (0 ~ 0.50vol%) ±10% of reading (0.51 ~ 1.00vol%)	0.01vol%	<100 sec.
CO *4	NDIR (For 3 measurement items)	0.2 ~ 10vol%	±0.03vol% or ±5 % of reading*1	0.01vol%	<60 sec.
CO <sub>2</sub> HC(CH <sub>4</sub> )		0 ~ 20vol%	±0.5vol% or ±5 % of reading*1	0.01vol%	<60 sec.
CO *4	NDIR (For 3 measurement items)	0 ~ 2.5vol%	±0.05vol% or ±5 % of reading*1	0.001vol%	<60 sec.
CO <sub>2</sub> HC(C <sub>3</sub> H <sub>8</sub> )		0 ~ 5000ppm	±100ppm or ±5 % of reading*1	1ppm	<60 sec.
CO *4	NDIR (For 3 measurement items)	2000 ~ 10000ppm	±5 % of reading	1ppm	<60 sec.
CO <sub>2</sub> HC(CH <sub>4</sub> )		0 ~ 20vol%	±0.5vol% or ±5 % of reading*1	0.01vol%	<60 sec.
Flue gas temperature	K thermocouple	0 ~ 650°C 0 ~ 1100°C (depend on probe tube)	0 ~ 100°C : ±2°C 100°C ~ : ±2% of reading	0.1°C	
		S thermocouple	0 ~ 1700°C	0 ~ 200°C : ±2°C 200°C ~ : ±1% of reading	0.1°C
Ambient air temperature	K thermocouple	0 ~ 100°C	±2°C	0.1°C	
Differential pressure	Piezoregistive semi-conductor sensor	±100 hPa	F.S.±2%	0.01 hPa	

## Standard equipment

**Integrated**  
Pump, CO Purge pump, RS232 interface, data logger, Electrical gas cooler (Peltier cooler), Thermo printer, External input, Auto drain exhaust pump, Differential measurement unit

**Accessory**  
Power cable, Teflon filter, Printer paper, Shoulder strap, Ambient air temp. sensor

## Calculated items\*5

CO <sub>2</sub>	0 ~ CO <sub>2</sub> Max (calculated from O <sub>2</sub> ) (if CO <sub>2</sub> sensor is not installed)
NO <sub>x</sub>	0 ~ calculated (if NO <sub>2</sub> sensor is not installed)
Air ratio	1.00 ~ 50.0
Losses	0 ~ 100%
Efficiency	0 ~ 100%
Velocity	0 ~ 130m/s
Flow rate	0 ~ calculated
O <sub>2</sub> calculation	0 ~ calculated (O <sub>2</sub> = user)
mg/m <sup>3</sup>	0 ~ calculated

## Required items

Standard Probe handle *6	HT-3092	Hose length 2700mm (teflon hose)
	HT-3093	Hose length 5000mm (teflon hose)
Standard Probe tube*6	HT-3007	Insert L=300mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3008	Insert L=500mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3081	Insert L=300mm φ10mm Flue gas temp.0 ~ 650°C
	HT-3082	Insert L=750mm φ10mm Flue gas temp.0 ~ 650°C
	HT-3083	Insert L=750mm φ10mm Flue gas temp.0 ~ 650°C with metal filter
	HT-3084	Insert L=1000mm φ10mm Flue gas temp.0 ~ 650°C
	HT-3085	Insert L=1000mm φ10mm Flue gas temp.0 ~ 650°C with metal filter
	HT-3086	Insert L=1000mm φ10mm Flue gas temp.0 ~ 1100°C
	HT-3087	Insert L=1500mm φ10mm Flue gas temp.0 ~ 650°C
	HT-3088	Insert L=1500mm φ10mm Flue gas temp.0 ~ 650°C with metal filter
HT-3089	Insert L=2000mm φ10mm Flue gas temp.0 ~ 650°C	
Industrial Probe handle*6	HT-3028	Hose L 2700mm (w/o heated hose)
	HT-3029	Hose L 5000mm (w/o heated hose)
	HT-3030	Hose L 3000mm (with heated hose)
	HT-3031	Hose L 5000mm (with heated hose)
Industrial Probe tube*6	HT-3009	Insert L=300mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3010	Insert L=500mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3011	Insert L=750mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3012	Insert L=1000mm φ8mm Flue gas temp.0 ~ 650°C
	HT-3032	Insert L=300mm φ12mm Flue gas temp.0 ~ 650°C
	HT-3033	Insert L=750mm φ12mm Flue gas temp.0 ~ 650°C
	HT-3034	Insert L=1000mm φ12mm Flue gas temp.0 ~ 650°C
	HT-3035	Insert L=1500mm φ12mm Flue gas temp.0 ~ 650°C
	HT-3036	Insert L=2000mm φ12mm Flue gas temp.0 ~ 650°C
	HT-3037	Insert L=1000mm φ12mm Flue gas temp.0 ~ 1100°C
HT-3038	Insert L=2000mm φ12mm Flue gas temp.0 ~ 1100°C	
High temp. probe set	HT-3027	Insert L=1000mm φ10mm Flue gas temp.0 ~ 1700°C Hose L 2700mm (w/o heated hose)
High temp. probe set	HT-3072	Insert L=1000mm φ10mm Flue gas temp.0 ~ 1700°C Hose L 3000mm (with heated hose)
High temp. probe set	HT-3073	Insert L=1000mm φ10mm Flue gas temp.0 ~ 1700°C Hose L 5000mm (with heated hose)

\*1 : Valid the higher values.

\*2 : Probe with heated hose (HT-3030orHT-3031) is required.

\*3 : Either H<sub>2</sub>S or H<sub>2</sub> sensor is selectable.

\*4 : Only one of them is selectable.

\*5 : Depend on the field, flue data has slight difference so calculated data might also has difference.

## Fuels

13A, 12A, 6C, 5C, 5B, LPG, Kerosene, Light oil, Heavy A, Heavy C, user selected fuel

## Main unit

Temperature	Operation : +5°C ~ +45°C Storage : -20°C ~ +50°C
Dimension	(W×H×D) 438×290×152 mm
Weight	About 7Kg
Battery	AC90-240V Main battery Internal battery DC1.2V Adapter (Option HT-3016)

## Options

DC12V power cable	HT-3016
Ambient air temp. sensor L=300mm	HT-3014
Analyzer heating device	HT-3022
SD interface*7	HT-3074 with SD card 2GB
Bluetooth*7	HT-3105 For measurement software Online View2000
Analog output 4-20mA	HT-3025 8 items, analog output
Draft probe	HT-1050 Length L=180mm φ5mm Hose L=3000mm
Measurement SW, Online View2000	HT-2094 RS232 communication cable
Measurement SW, Online View2000	HT-2084 RS232 communication cable • USB cable
Aluminium case	HT-3015 About 9.5Kg
Verocinity measurement SW*8	HT-3047 Select at least 1 pitot tube
Pitot tube	HT-3051 L=300mm φ6mm
	HT-3052 L=500mm φ6mm
	HT-3053 L=800mm φ6mm
	HT-3054 L=1000mm φ8mm

## Consumable parts

Teflon filter	HT-3018
Glass wool filter	HT-3021
Printer filer (rolls)	HT-1636

\*6 : Select at least one probe handle and one probe tube. (For Standard probe handle, select standard tube. For Industrial handle, select industrial tube).

If select HT-3027/3072/3073, no need to select other handle or tube.

\*7 : Measurement SW is required (HT-2094 or HT-2084).

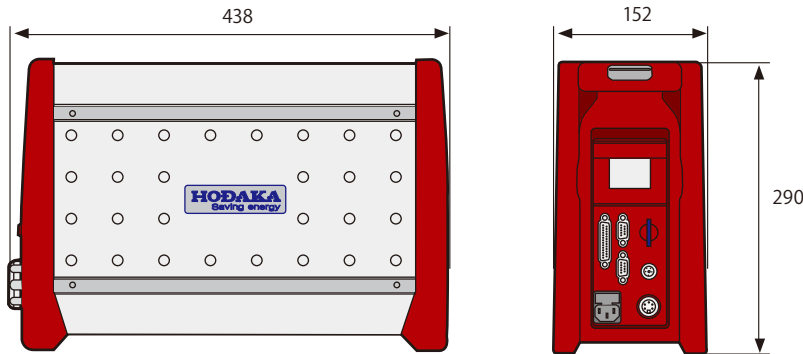
\*8 : Pitot tube (HT-3051 ~ HT-3054) is required.

# Dimension



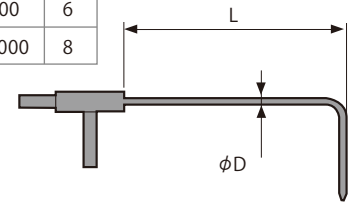
# Flue gas analyzer HT-3000

## Main unit



## Pitot tube

Art.No.	L	φD
HT-3051	300	6
HT-3052	500	6
HT-3053	800	6
HT-3054	1000	8



## Standard probe

Standard probe handle	HT-3092	2700mm with hose (teflon)	
	HT-3093	5000mm with hose (teflon)	
Standard probe tube	HT-3007	L=300mm φ8mm 0 ~ 650°C	
	HT-3008	L=500mm φ8mm 0 ~ 650°C	
	HT-3081	L=300mm φ10mm 0 ~ 650°C	
	HT-3082	L=750mm φ10mm 0 ~ 650°C	
	HT-3084	L=1000mm φ10mm 0 ~ 650°C	
	HT-3086	L=1000mm φ10mm 0 ~ 1100°C	
	HT-3087	L=1500mm φ10mm 0 ~ 650°C	
	HT-3089	L=2000mm φ10mm 0 ~ 650°C	
	HT-3083	L=750mm φ10mm 0 ~ 500°C with metal filter	
	HT-3085	L=1000mm φ10mm 0 ~ 500°C with metal filter	
HT-3088	L=1500mm φ10mm 0 ~ 500°C with metal filter		

## Industrial probe

Industrial probe tube	HT-3028	2700mm with hose	
	HT-3029	5000mm with hose	
	HT-3030	3000mm with heated hose	
	HT-3031	5000mm with heated hose	
Industrial probe tube	HT-3009	L=300mm φ8mm 0 ~ 650°C	
	HT-3010	L=500mm φ8mm 0 ~ 650°C	
	HT-3011	L=750mm φ8mm 0 ~ 650°C	
	HT-3012	L=1000mm φ8mm 0 ~ 650°C	
	HT-3032	L=300mm φ12mm 0 ~ 650°C	
	HT-3033	L=750mm φ12mm 0 ~ 650°C	
	HT-3034	L=1000mm φ12mm 0 ~ 650°C	
	HT-3035	L=1500mm φ12mm 0 ~ 650°C	
	HT-3036	L=2000mm φ12mm 0 ~ 650°C	
	HT-3037	L=1000mm φ12mm 0 ~ 1100°C	
HT-3038	L=2000mm φ12mm 0 ~ 1100°C		
High temperature probe set	HT-3027	L=1000mm φ10mm 0 ~ 1700°C	Probe handle 2700mm with hose
	HT-3072	L=1000mm φ10mm 0 ~ 1700°C	Probe handle 3000mm with heated hose
	HT-3073	L=1000mm φ10mm 0 ~ 1700°C	Probe handle 5000mm with heated hose