

Flue gas analyzer

HT-3000



TEST
HT-3000

HODAKA
Saving energy

Simultaneous measurement of up to 9 gas components

CO · CO₂ · 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)

O₂ 0 ~ 21.0 vol%	CO H ₂ compensation 0 ~ 10000ppm	NO 0 ~ 4000ppm	NO₂ 0 ~ 1000ppm	SO₂ 0 ~ 4000ppm	H₂S 0 ~ 1000ppm
H₂ 0 ~ 1.00vol%	CO · CO₂ · HC(CH₄) NDIR bench 0.2 ~ 10vol% 0 ~ 20vol% 0 ~ 2.5vol%				
CO · CO₂ · HC(C₃H₈) NDIR bench 0.2 ~ 10vol% 0 ~ 20vol% 0 ~ 5000ppm					
CO · CO₂ · HC(CH₄) NDIR bench 2000 ~ 10000ppm 0 ~ 20vol% 0 ~ 10000ppm			°C 0 ~ 650°C	hPa ±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>O₂</p> <p>0 ~ 21.0 vol%</p> <p>Standard</p>	<p>CO</p> <p>H₂ compensation</p> <p>0 ~ 10000ppm</p> <p>Standard</p>	<p>NO</p> <p>0 ~ 4000ppm</p> <p>HT-3059</p>	<p>NO₂</p> <p>0 ~ 1000ppm</p> <p>HT-3060</p>	<p>SO₂</p> <p>0 ~ 4000ppm</p> <p>HT-3061</p>	<p>CO · CO₂ · HC(CH₄)</p> <p>NDIR</p> <p>0.2 ~ 10vol% 0 ~ 20vol% 0 ~ 2.5vol%</p> <p>HT-3043</p>
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Standard set O₂/CO/NO/NO₂/SO₂ Price 2,209,000 yen (tax exclude)

<p>O₂</p>	<p>CO</p> <p>H₂compensation</p>	<p>NO</p>	<p>NO₂</p>	<p>SO₂</p>	<p>Standard Probe</p>	<p>Standard tube</p>
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Standard High class set O₂/CO/NO/NO₂/SO₂/CO · CO₂ · HC(CH₄) Price 2,699,000yen (tax exclude)

<p>O₂</p>	<p>CO</p> <p>H₂compensation</p>	<p>NO</p>	<p>No</p>	<p>SO₂</p>	<p>Standard Probe</p>	<p>Standard Tube</p>
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CO · CO₂ · HC(CH₄)

Standard set for industrial applications O₂/CO/NO/NO₂/SO₂ Price 2,561,000yen (tax exclude)

<p>O₂</p>	<p>CO</p> <p>H₂compensation</p>	<p>NO</p>	<p>NO₂</p>	<p>SO₂</p>	<p>Probe for industrial applications</p>	<p>Tube for industrial applications</p>
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Standard high class set for industrial applications O₂/CO/NO/NO₂/SO₂/CO · CO₂ · HC(CH₄)

<p>O₂</p>	<p>CO</p> <p>H₂compensation</p>	<p>NO</p>	<p>NO₂</p>	<p>SO₂</p>	<p>Probe for industrial applications</p>	<p>Tube for industrial applications</p>
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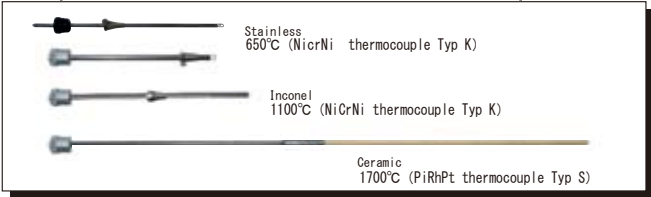



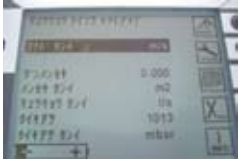

Price 3,051,000yen (tax exclude)

CO · CO₂ · HC(CH₄)



Flue gas analyzer HT-3000

Options

<p>Probe handle</p>	 <p>Industrial 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>Stainless 650°C (NiCrNi thermocouple Typ K) Inconel 1100°C (NiCrNi thermocouple Typ K) Ceramic 1700°C (PtRhPt thermocouple Typ S)</p>	<p>Probe tube Demantion : $\phi 8, \phi 10, \phi 12$, 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 O₂ 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+CO₂+CH₄ or CO+CO₂+C₃H₈ 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 ₂	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 ₂ *2	Electro chemical	0 ~ 200ppm (max. overload 1000ppm)	±10ppm (0 ~ 200ppm) ±10% of reading (201 ~ 1000ppm)	1 ppm	<100 sec.
SO ₂ *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 ₂ S *3	Electro chemical	0 ~ 200ppm (max. overload 1000ppm)	±10ppm (0 ~ 200ppm) ±10% of reading (201 ~ 1000ppm)	1 ppm	<100 sec.
H ₂ *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 ₂ HC(CH ₄)		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 ₂ HC(C ₃ H ₈)		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 ₂ HC(CH ₄)		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 ₂	0 ~ CO ₂ Max (calculated from O ₂) (if CO ₂ sensor is not installed)
NO _x	0 ~ calculated (if NO ₂ 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 ₂ calculation	0 ~ calculated (O ₂ = user)
mg/m ³	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-3030 or HT-3031) is required.

*3 : Either H₂S or H₂ 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
Aluminum case	HT-3015 About 9.5Kg
Veracity 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).

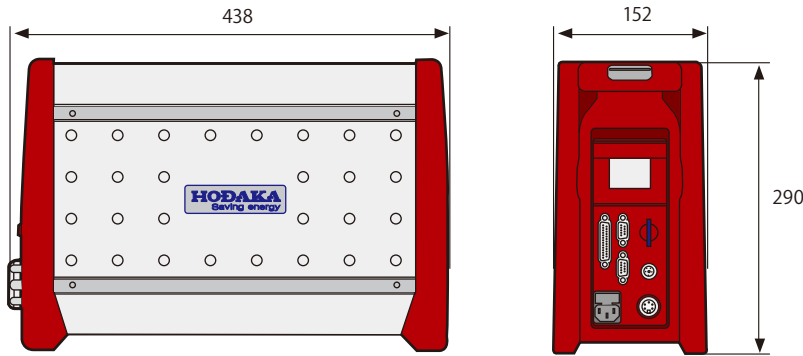
*8 : Pitot tube (HT-3051 ~ HT-3054) is required.

Dimension



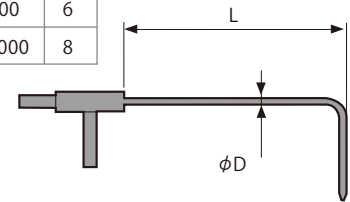
Flue gas analyzer HT-3000

Main unit



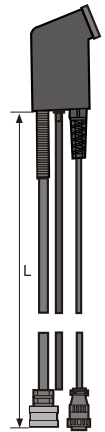
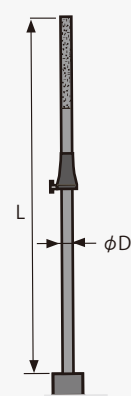
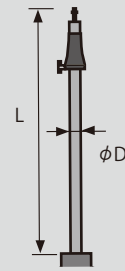
Pitot tube

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
Industrial probe tube	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

