FT-IR8500 FT-IR Gas Analyzer

Description

FT-IR8500 is a purpose-built FT-IR gas analyzer for continuous on-line monitoring of flue gas, green gas and VOC emissions from fixed sources (coal-fired power plants, steel mills, cement works, waste-to-energy and chemical plants). Covering 500–5000 cm^{-1}, it delivers ppm–% sensitivity, simultaneous quantification of up to 50 gases per scan, and calibrated models for 300+ compounds with expandable concentration ranges — new gases can be added without hardware changes. It ensure reliable, real-time performance in high-temperature, high-humidity and corrosive flue gas environments for compliance, process control and emissions reduction.

Features

- DTGS detector, no cooling required
- Beam splitter: uses moisture-proof window material
- Wavenumber range : 500cm-1 to 5000cm-1
- Sample chamber heating temperature: not lower than 180℃
- Total optical path length should be no less than 4.5 meters
- Sample gas chamber volume should be less than 1.0 liter
- The inner walls of the sample gas chamber and the inner walls of the reflecting mirror have anti-corrosion coatings to prevent erosion by corrosive gases and can be used to measure gases with high temperature, high humidity, and strong corrosiveness
- Scanning frequency should be no less than 5 times/second
- Spectral resolution: 4cm-1 or 1cm-1 (optional)

Software

- Real-Time Monitoring: The software displays key parameters, such as interferometer height, light source intensity, and sample chamber temperature.
- Multi-Component Analysis: Easily measure and display the concentrations of all target gases simultaneously.
- Flexible Concentration Units: Adjust the gas concentration units to your preference (ppm, mg/m³).
- Dry/Wet Correction: Automatically convert between dry and wet concentrations based on your sample conditions.
- Data Logging & Reporting: Save measurement data at user-defined intervals (minutes or longer). Display hourly and daily average concentrations for each substance.
- Automatic Corrections: Pressure and temperature compensation ensure accurate measurements in varying environments. Built-in algorithms automatically correct for interferences between components.
- Continuous Data Recording: Enables continuous on-site data storage and automatic saving of measured spectra. Displays concentration vs. time trends for easy visualization. Previously saved spectra can be replayed for future analysis.
- Excel Export: Analysis results can be exported in Excel-compatible format for easy report generation.
- One-Click Help: A one-click function creates a help file that can be sent to service engineers for quick analysis of instrument status.

Portable full heating sampling system

- Independent portable full heating sampling system, heating temperature not lower than 180℃
- Sampling flow rate not less than 1.8 liters/minute
- Pump suction force not less than 80KPa
- Filtering requirements: at least a three-stage dust removal filtering system, material is resistant to high temperature, corrosion-resistant, and does not adsorb, can filter (0.5~5)μm particle size particles
- Full heating not lower than 180℃, constant temperature control. Full heating includes: sampling probe, sampling handle, gas guiding tube, sampling device, sampling pump, sample chamber
- At least 5 meters long heating gas guiding tube, at least 1 meter long heating gas guiding tube, heating temperature not lower than 180℃
- Can display the temperature of the heating gas guiding tube
- At least 1 meter long heating sampling probe, heating temperature not lower than 180℃, the front end of the probe must install a dust filter

Gas components and related performance indicators requirements

Factory gas components calibration range

No.	Compound Name	Molecular Formula	Range
1	Sulfur Dioxide	SO_2	0-2000 ppm
2	Nitric Oxide	NO	0-500 ppm
3	Nitrogen Dioxide	NO_2	0-500 ppm
4	Carbon Monoxide	CO	0-5000 ppm
5	Carbon Dioxide	CO_2	0-90%
6	Ammonia	NH_3	0-500 ppm
7	Hydrogen Chloride	HCl	0-200 ppm
8	Water Vapor	H_2O	0-30%
9	Nitrous Oxide	N_2O	0-500 ppm
10	Methane	CH_4	0-2000 ppm
11	Ethane	C_2H_6	0-100 ppm
12	Propane	C_3H_8	0-100 ppm
13	Hydrogen Fluoride	HF	0-100 ppm
14	Benzene	C_6H_6	0-100 ppm
15	Toluene	C_7H_8	0-100 ppm
16	Ethylbenzene	C_8H_{10}	0-100 ppm
17	Xylene	C_8H_{10}	0-100 ppm

Indication Error Requirement:

- For CO2, the relative error is within ±5%.
- For other substances, when the calibration range is >60 μmol/mol, the relative error is within ±5%.
- When the calibration range is ≤60 μmol/mol, the absolute error is within ±3 μmol/mol.
- System Error Requirement:
- For CO2, the relative error is within ±5%.
- For other substances, when the calibration range is >60 μmol/mol, the relative error is within ±5%.
- When the calibration range is ≤60 μmol/mol, the absolute error is within ±3 μmol/mol.
- Zero Drift Requirement: Within ±3%.
- Span Drift Requirement: Within ±3%.
- Influence of Sample Flow Rate Variation Requirement: No more than ±2.0% F.S. (Full Scale).
- Influence of Ambient Temperature Variation Requirement: No more than ±5.0% F.S. (Full Scale).
- Influence of Power Supply Voltage Variation Requirement: No more than ±2.0% F.S. (Full Scale).

- Qualitative and Semi-Quantitative Substance Spectral Library Included
- Acetylene, Ethylene, Ethanethiol, Ethylamine, Ethyl ketone, Acetophenone, Nitrobenzene, Carbon Disulfide, Bromoethane, Butane, Sulfur Hexafluoride, Nitrogen Trifluoride, Ethyl Acetate, Methyl Acetate, Acetic Anhydride, Diethyl Ether, Dichloromethane, Dimethyl Disulfide, Dimethylamine, Phosgene, Perfluoropropane, Vinyl Chloride, Chloroethane, Chloroform, Chloromethane, Methanethiol, Dimethyl Sulfide, Methylamine, Methyl Formate, Aniline, Furfuryl Alcohol, n-Butanol, Isopropanol, Heptane, Tetrachloroethylene, Carbon Tetrachloride, Propanal, Trichloromethane, Trimethylamine, Propanol.

Flue Gas Pretreatment System

- Semiconductor Cooling Capacity: Two-stage cooling, ≥80 NL/h, cooling time ≤30 min.
- Sample Gas Inlet Temperature: ≤180°C. Sample Gas Outlet Dew Point: ≤5°C. Sample Gas Cooling Temperature: ≤5°C. Precision Filtration Grade: 0.1 μm, L = 50 mm.
- Exhaust Capacity: 3.3 NL/min, Negative Pressure Resistance Capacity: -5000 Pa, 1 L/min.
- Exhaust Flow Meter: 25-250 NL/h, Instrument Flow Meter: 10-100 NL/h.
- Sampling Cavity Heating Temperature: ≥120°C.
- Sampling Probe: 1 meter or more stainless steel sampling probe, heating line ≥3 meters, ≤2 μm front filter.
- Phosphoric Acid Titration Device: Phosphoric acid concentration 20%-80%, peristaltic pump speed 1-5 rpm/min.
- Power Supply: 220V 50Hz 300WThe instrument can simultaneously

Quantify the following gas components:

S/N	Gases	Rmin mg/m³	Rmax mg/m³
1	O_2	0 - 20.9%Vol	
2	CO	0 - 75	0 - 1000
3	NO	0 - 80	0 - 600
4	NO_2	0 - 50	0 - 600
5	N_2O	0 - 50	0 - 400
6	SO_2	0 - 75	0 - 1000
7	NH_3	0 - 15	0 - 50
8	HCl	0 - 15	0 - 100
9	HF	0 - 15	0 - 50
10	HCN	0 - 50	0 - 100
11	CH_4	0 - 200	0 - 2000
12	C_3H_8	0 - 50	0 - 1000
13	C_2H_4	0 - 50	0 - 1000

14	HCHO	0 - 50	0 - 100
15	C_6H_6	0 - 50	0 - 1000
16	C_7H_8	0 - 100	0 - 1000
17	C_8H_8	0 - 100	0 - 1000
18	H_2O	0 - 25%Vol	0 - 40%Vol
19	CO_2	0 - 25%Vol	
20	C_3H_6O	0 - 100	0 - 1000
21	C_8H_{10}	0 - 100	0 - 1000
22	C_2H_2	0 - 15	0 - 50
23	C_3H_4O	0 - 50	0 - 100
24	C_6H_6O	0 - 100	0 - 1000
25	$C_6H_5NO_2$	0 - 150	0 - 1000
26	C_8H_{10}	0 - 120	0 - 1000
27	C_8H_{10}	0 - 120	0 - 1000
28	C_8H_{10}	0 - 120	0 - 1000
29	C_2H_6	0 - 50	0 - 1000
30	TVOC	0 - 50	0 - 1000
31	C_6H_{14}	0 - 200	0 - 1000
32	C_6H_{12}	0 - 120	0 - 1000
33	$C_2H_4O_2$	0 - 25	0 - 50
34	C_3H_6O	0 - 100	0 - 1000
35	CH_3OH	0 - 100	0 - 1000
36	C_2H_5OH	0 - 100	0 - 1000
37	CH_2Cl_2	0 - 100	0 - 1000
38	$CHCl_3$	0 - 100	0 - 1000
39	$C_2H_4Cl_2$	0 - 30	0 - 1000
40	$C_2H_4Cl_2$	0 - 200	0 - 1000
41	C_2HCl_3	0 - 100	0 - 1000
42	C_2Cl_4	0 - 200	0 - 1000
43	$C_3H_6O_2$	0 - 100	0 - 1000
44	C_3H_9N	0 - 130	0 - 1000
45	C_6H_5Cl	0 - 100	0 - 1000
46	C_3H_7N	0 - 180	0 - 1000
47	CS_2	0 - 15	0 - 50
48	$C_6H_5NH_2$	0 - 100	0 - 1000
49	C_2H_3Cl	0 - 100	/
50	C_2H_4O	0 - 100	0 - 1000
51	$C_4H_6O_2$	0 - 200	0 - 1000