

Tunable Laser Gas Analyzer

TX-100



For monitoring HCl concentration in incineration plants and the control of HCl removal process in cement factories and petrochemical plants, etc.

HORIBA's Laser HCl analyzer makes a difference in cost and maintainability

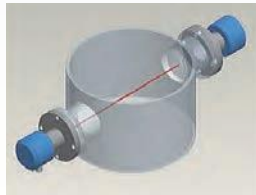
TX-100 single probe laser analyzer clears concerns on cross-stack type analyzer

Probe type analyzer



- ▶ Both the laser and the receiver are installed at the same side of the stack
- ▶ Just one flange installation is sufficient for the setup
- ▶ Easy replacement for an existing analyzer requires no additional work
- ▶ Implements calibration while the probe remains inserted into the stack
- ▶ The stabilized optical axis provides excellent performance
- ▶ The function to correct continuous moisture supports high accuracy measurement.

Cross-stack type analyzer



- ▶ Both the laser and the receiver exist in opposite side of the stack
- ▶ Flange installation on both sides of the stack is required
- ▶ The probe must be detached each time calibration is conducted
- ▶ The optical axis is unstable because the projector and the receiver are attached separately

Calibration is available while the facility is in operation

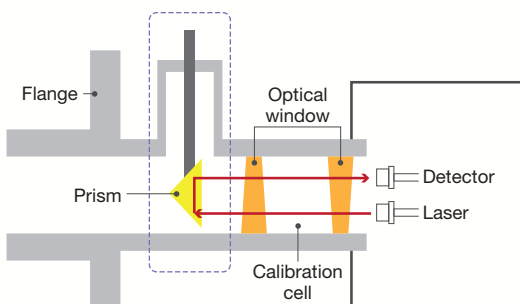
US Patent No.: US8934101 China Patent No. ZL201280039440.7 Patent applied for: Europe and Japan

By HORIBA's original calibration system, calibration work can be implemented regardless of the facility's operation status. Auto zero point checking enables stable measurement over a long period of time.

Measurement Zero point checking and measurement are conducted alternately.

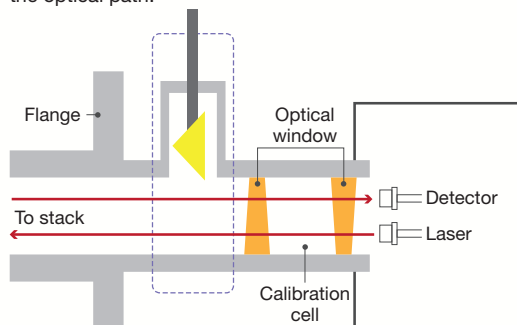
Zero point checking mode

Zero point checking is carried out while the prism is inserted into the optical path at fixed intervals.



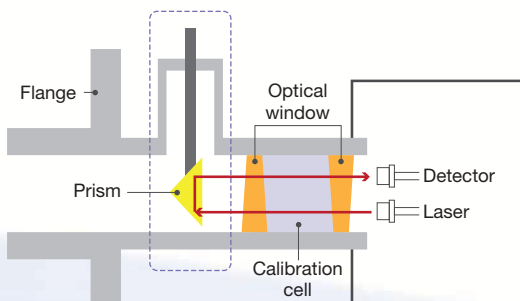
Measurement mode

In measurement mode, the prism moves upward and leaves the optical path.



Calibration Calibration is conducted after span gas is filled in the calibration cell.

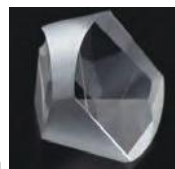
Gas calibration is completed leaving the probe attached in the stack.



POINT

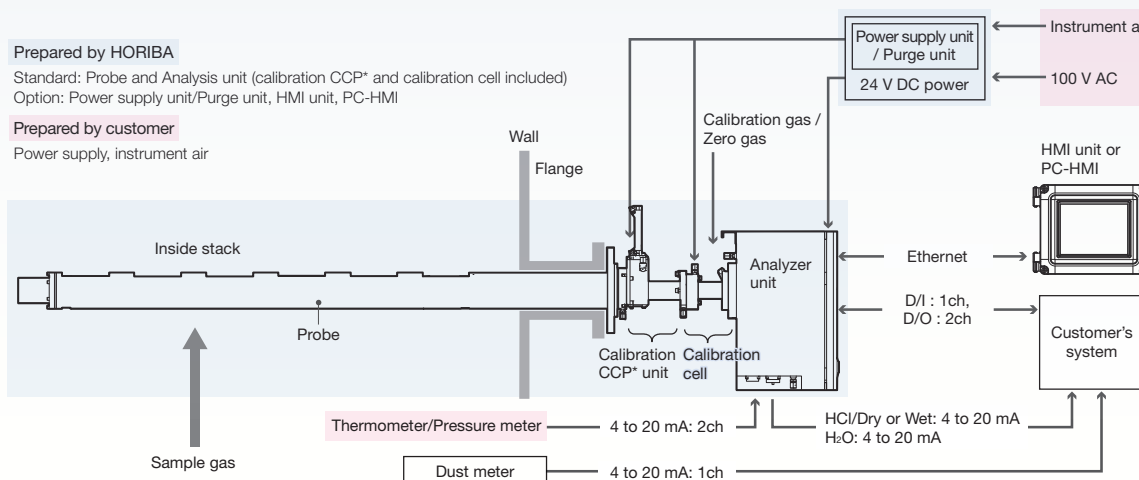
Laser light is controlled by a corner cube prism moving in and out of the optical path and stable signals are caused by zero point checking, execution of measurement and calibration. Those activities enable maintenance without interruption of the plant operation.

Corner cube prism



Simple configuration for easy installation

TX-100 is an easy-to-install analyzer, since it consists of a probe inserted into the stack and an analyzer unit (calibration CCP* unit and calibration cell included), and both are connected to each other at the flange. Measurement can be executed if AC power and instrument air are prepared.



*CCP: Corner Cube Prism

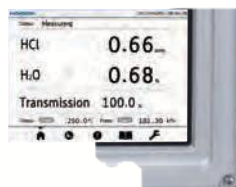
Selectable Interface

For TX-100, "HMI (Human Machine Interface unit)" and "PC-HMI" are available in addition to the "Analysis unit display" for data management.



Analysis unit display

Basic display to confirm and control information such as equipment status, gas status and communication status.



HMI unit (option)

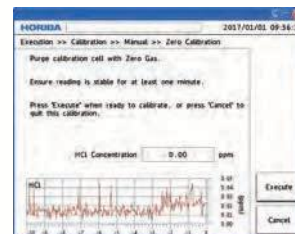
A touch panel screen that can set and confirm concentration, transmittance, trend graph, maintenance info, and alarm status, etc.



PC-HMI (software)

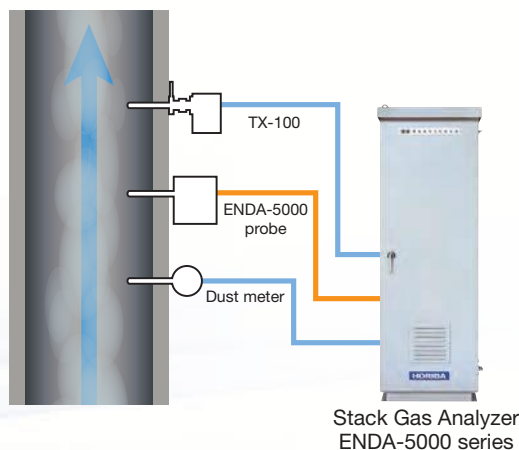
PC-HMI is a software that includes almost the same function as the software installed in HMI unit. Install this software in a PC or other devices to operate. Ethernet is available for data transmission between PC and TX-100.

Free download available from our website.
www.horiba.com/en/software/tx-100/



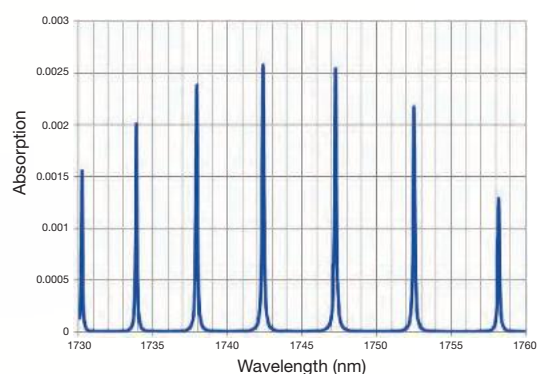
HORIBA's Total Solution

Up to 7 components can be measured combining TX-100 with our Stack Gas Analyzer and dust meter (NOx/SO₂/CO/CO₂/O₂). HORIBA can provide one stream support from planning to maintenance in accordance with customer's request.



Tunable Laser Absorption Spectroscopy (TLAS)

Since the laser linewidth is narrower than absorption width, the TLAS technique realizes the high resolution measurement without interference effect.



Specifications

Name	Tunable Laser Gas Analyzer	
Model	TX-100	
Measurement principle	NDIR (Tunable Laser Absorption Spectroscopy method)	
Measurement combination	HCl, or HCl and H ₂ O simultaneous measurement	
Component	HCl	H ₂ O
Measurement range (250°C, 101.3 kPa)	0 to 50/100/200/300/400/500 ppm	0-50%
Measured optical path length	2m	
Repeatability	Within ±1.0% of full scale	Within ±2.0% of full scale
Linearity	Within ±1.0% of full scale	Within ±2.0% of full scale
Data updating cycle	Approx. 2 seconds	
Zero drift	±2.0% of full scale/6 months	±2.0% of full scale/6 months
Span drift	±2.0% of full scale/6 months	±2.0% of full scale/6 months
Calibration cycle	6 months	
Ambient temperature	-20 to 55°C (no direct sun rays, radiant heat and heat conduction from flange)	
Total interference	Within ±2.0% of full scale Gas conditions (at standard process gas condition range)	
Process gas conditions	Temperature: 150 to 250°C Flow speed: 25 m/s or less	Pressure: 101.3±10kPa Dust: 0.1 mg/Nm ³ or less
Power consumption	Maximum 100 W	
Communication function	Modbus™/TCP	

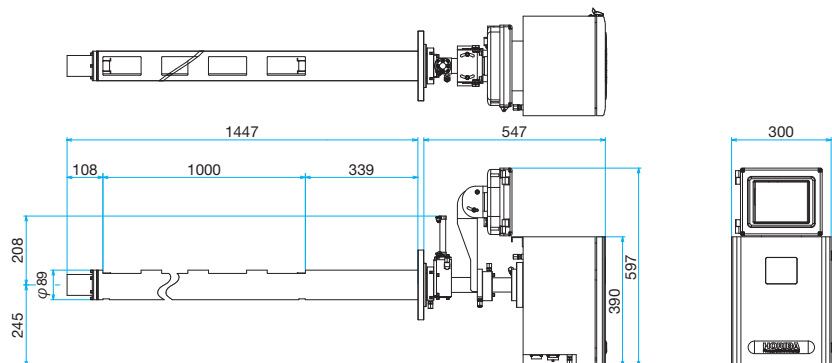
* Modbus is a trademark of Schneider Electric Inc.

Analog output	Two channels (Process gas concentration, transmission, process gas temperature, process gas pressure) 4 to 20 mA (isolated output) Max. load: 550 Ω
Analog input	Two channels (Process gas temperature, process gas pressure) 4 to 20 mA (isolated input)
Digital output	Two channels (Warning/Calibration/Warm-up/Maintenance state/Fault), Relay contact output (isolated output) Max. 24 V, 1 A at each terminal
Digital input	One channel (External alarm) Non-voltage digital input (isolated input) Input open signal: 100 kΩ or more Input close signal: 200 Ω or less
External dimensions	Analyzer: 358 (W) x 517 (D) x 453 (H) mm Probe: Flange diameter (Max.) Φ235 mm, Length 1500 mm Probe diameter Φ89 mm
Mass	Analyzer: 19kg, Probe: 20kg
Protection degree	IP65
Air purge flow rate	60 L/min or more (depending on the process gas conditions)
Air purge	Instrument air (must not contain oil or mist; no dew formation) Pressure: 0.2 MPa to 0.25 MPa*

* This value is supplied pressure to TX-100 main unit. In case air passes through the purge unit, the pressure value at the purge unit is 0.2 to 0.9 MPa.

* Consult HORIBA if special probe length is required.

Dimensional outline (Unit: mm)



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



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