

GM700 In-Situ Laser Analyzer

Greater efficiency of process analysis by using TDLS technology. Even under most difficult conditions.



Modern Gas Analysis

High reliability and precision as well as minimal response times are the distinguishing features of the GM700 TDLS analyzer. Based on the principle of TDLS and by using specific light absorption the GM700 is able to measure several gas components, such as ammonia, oxygen or hydrogen fluoride. This technique is most advantageous in rapid in-situ measurement for gas concentrations in process control and emission monitoring.

Fields of application

- Process- and control optimization (FGD, DeNOx plants)
- Continuous monitoring of emissions
- Quality control
- Environmental protection

INDUSTRIES

- Power plants
- Cement industry
- Waste incineration plants
- Fertilizer production
- Plastics processing
- Glass making
- Automotive industry
- Chemical and petrochemical industry

KEY FEATURES

- Cross-duct and probe technology for a broad field of applications
- Highly stable system operation as there are no moving parts
- High spectral resolution – high selectivity
- Short response time
- No calibration necessary
- Applicable in harsh conditions around the measuring point
- Very low maintenance requirements and long servicing intervals

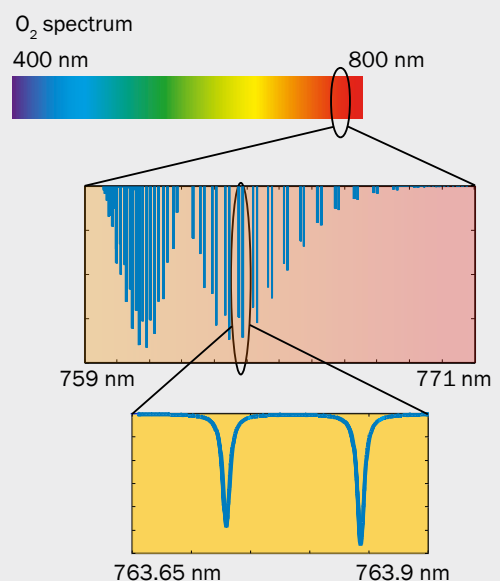
Tunable Diode Laser Spectroscopy (TDLS)

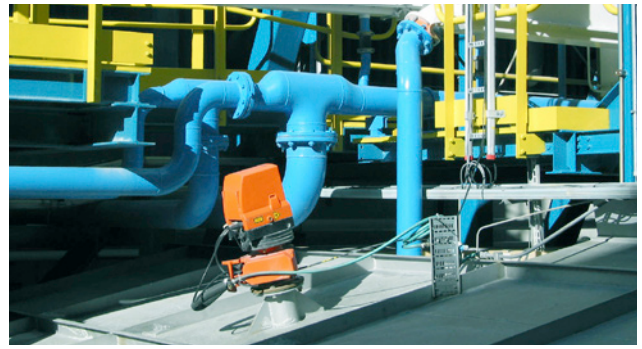
The sender/receiver (SR) unit is equipped with a sender and a highly sensitive detector, the photo diode. A laser beam is sent from the sender through the measuring gas on to the reflector, that aims the beam back to the photo diode. This means that the laser beam travels twice across the measuring path (double passing), providing a high measuring sensitivity.

The laser diode wavelength is tuned to one absorption line of the measuring gas component. This line is scanned by modulating the wavelength, and then the transmission signal is recorded by the photo diode. An appropriate signal evaluation delivers the size of the absorption line from which the gas concentration is calculated. The TDLS method allows for selective measurement of a component in a gas mixture.

Typical gas components measured by the GM700:

- NH₃ – ammonia
- HF – hydrogen fluoride
- HCl – hydrogen chloride
- O₂ – oxygen



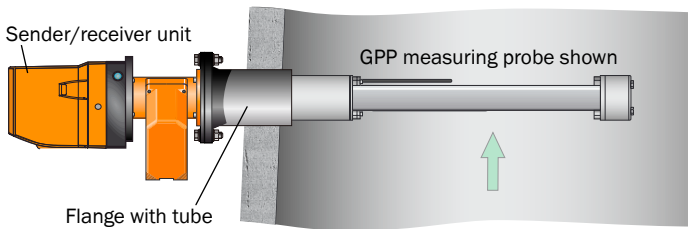


GM700 SYSTEM CONFIGURATION

Probe version

with a sender/receiver unit and measuring probe:

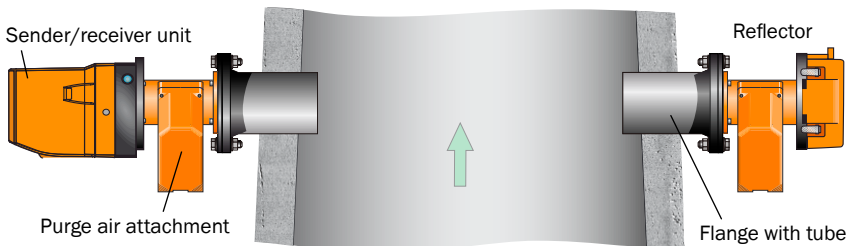
- **Sender/receiver unit**, fitted with the optical and electronic modules of the measuring system and the available interfaces to the evaluation unit (CAN to the measuring probe, RS232 for servicing purposes).
- **Measuring probe** offered in two versions: one with an aperture (GMP) and a second as a gas diffusion probe (GPP) – for greater adaptability to the measuring task. Both types come with a temperature and pressure sensor.



Cross-Duct version

with a sender/receiver unit and reflector unit:

- **Sender/receiver unit** fitted with the optical and electronic modules of the measuring system and the available interfaces to the evaluation unit (CAN to the reflector, RS232 for servicing purposes). A purge air attachment is included to enable the mounting of the SR unit to a flange with tube.
- **Reflector unit** with the corresponding triple reflector and a purge air attachment with flange and tube.



Additional components

- **Purge air unit** for GMP-measuring probe and for cross-duct version, offering protection against contamination and aggressive gases.
- **Evaluation unit (EVU)**
For processing, control and output of measuring data. The following parts are included:
 - Display and control components
 - Interfaces and signals: analog and binary in-/outputs

It is possible to install the EVU up to 1,000 m (3,300 ft) from the measurement point, for example in a control room or a monitoring center.



- **Optional**
 - Weather proof cover (recommended for outdoor use) and differential pressure monitor for monitoring of purge air supply
 - Flanges with tube for mounting of the device components

GM700 Technical Data				
Measurement Data				
Measuring range (at 20 °C/68 °F; 1000 hPa/14.5 psi; 1 m/3.3 ft measuring path) • Smallest recommended range • Largest recommended range • Minimum detection limit • Physical units	NH ₃ 0 ... 10 ppm 0 ... 5000 ppm 0.3 ppm ppm, mg/m ³ , vol.%	HF 0 ... 2 ppm 0 ... 2000 ppm 0.1 ppm ppm, mg/m ³	HCl 0 ... 10 ppm 0 ... 3000 ppm 0.3 ppm ppm, mg/m ³	O ₂ 0 ... 3 vol.% 0 ... 100 vol.% 2000 ppm vol%
Measurement conditions	The measuring ranges are subject to conditions on-site and on the individual configuration.			
Response time	0.2 ... 360 sec; adjustable			
Accuracy	<2 % ... <5 % of measuring value, subject to application			
Linearity • Linearity deviation	<1 % <1 % of measuring value			
Plant Conditions	Probe	Cross-duct		
Measuring gas temperature	0 ... +430 °C (32 ... 800 °F)			
Measuring gas pressure	GMP probe: depends on purge air supply GPP probe: < ±120 hPa (< ±250 psft)	depending on purge air supply		
Ambient conditions • Ambient temperature • Ambient humidity	-40 ... +50 °C (-40 ... +122 °F); in 4 ranges adjustable <85 % rel. humidity (above dew point)			
Dust concentration	GPP: <30 g/m ³	depending on the measuring path		
Influential variables • Measuring gas temperature • Measuring gas pressure • Ambient temperature • Ambient pressure	<2% <2 % at 50 hPa (104 psft)/deviation <1 % per 10 K of measuring value <1 % per 50 hPa (104 psft)			
Device Data	Probe	Cross-duct		
Power supply	115/230 V AC; +10/-6%, 50/60 Hz for evaluation unit; power consumption 50 VA max.			
Storage temperature	-40...+70 °C (-40 ... +160 °F)			
Dimensions	SR unit: 239 x 272 x 330 mm ³ 9.5 x 10.7 x 13 in ³ Probe: length 0.9/1.5/2.0/2.5 m 3/5/6.6 ft aperture 0.25/0.5/0.75/1.0 m 0.8/1.6/2.5/3.3 ft	SR unit: 239 x 272 x 330 mm ³ 9.5 x 10.7 x 13 in ³ Reflector unit: 250 x 250 x 155 mm ³ 10 x 10 x 6 in ³ Evaluation unit: 289 x 330 x 140 mm ³ 11.4 x 13 x 5.5 in ³		
Weight	SR unit: 13 kg (29 lb) GMP probe: max. 25 kg (55 lb) GPP probe: max. 45 kg (100 lb) Evaluation unit: 4 kg (9 lb)	SR unit incl. purge air att.: 25 kg (55 lb) refl. unit purge air att.: 25 kg (55 lb)		
Protection class	IP 65/NEMA 4x			
Compliance	CE, EMV according EN 61326,			
Signals and Interfaces (via evaluation unit)				
Signals	3 analog outputs/1 analog input: 0 ... 20 mA 3 relays: 48 V AC/DC, 1 A 3 status inputs: 24 V, electrically isolated			
Interfaces	RS232; CAN bus (for GM700 components)			