STACK GAS ANALYZER SYSTEM
ENDA-C2000series

NH₃, NOₓ, O₂
**STACK GAS ANALYZER SYSTEM**

**ENDA-C2000 series**

- Analysis for minimum range of 0 to 10ppm attained for NH₃, NOₓ
- Maintenance free materialized (Employment of longer life parts, self-diagnostics)

HORIBA has shipped 10,000 units of stack exhaust gas analyzers since its development of SO₂ analyzer in stack exhaust gas in 1964.

Based on HORIBA’s field experience for years, the ENDA-C2000 has been developed combined with latest analytical and electronic technologies in compliance with every possible measuring condition with further improved maintenance availability. The analytical and operational functions are integrated to facilitate operation by use of a microcomputer. It is complete of front operation part with displays in Japanese and self-diagnostic function to assure the system performance.

Monitoring and control of equipment such as monitoring for denitration catalyst deterioration, control of NH₃ addition, and prevention for ammonium sulfate crystalline formation will provide you with great help in operation.

### Zero-drift chemiluminescence analyzer (CLA) is installed.

The chemiluminescence analyzer employs our unique cross flow modulation technique which in principle causes no drift. NOₓ and NO in NH₃ lines is measured with one analyzer for calculation of NH₃, which further decreases a measuring error due to the drift of analyzer.

- Analysis for minimum range of 0 to 10ppm attained for NH₃, NOₓ
  
  A conventional detector has further been improved in sensitivity. The use of a semiconductor sensor assures a longer life.

### Further improved self-diagnostic functions

- Equipped with memory function for error contents

### Plentiful self-diagnostic functions

- Detector temperature error
- Sampling temperature error
- Low flow
- Solenoid valve stop (for cross flow modulation)
- Faulty CPU
- Low memory battery
- Calibration error (Automatic calibration)
- NH₃ measurement error
- Low residual gas for calibration (Optional)

### Standardization of 3-staged dehumidifier

Prevention of drain water condensation and ingress as well as reduction of NO₂ melting loss have been materialized.

### NH₃ reduction catalyst tube

Reduction catalyst

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**MEASUREMENT**

**Crossflow modulation technique**

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**DIMENSIONS**
MEASURING PRINCIPLE
Cross flow modulation chemiluminescence analyzer

The chemiluminescence technique utilizes chemiluminescence in the process to generate NO₂ by reacting NO against ozone. The luminous intensity being proportional to NO concentration, the change of NO concentration is continuously monitored by measuring the luminous intensity. The adoption of cross flow modulation system, which introduces sampling gas and comparison gas (zero gas) alternately at a given flow into the measuring cell by means of a solenoid valve continuously changed over at a given period, utilizes the modulation effect generated by the chemiluminescence of the sampling gas itself. Unless NO gas as the measuring element exist in the reaction chamber, primarily no chemiluminescence is generated. When the same gas (for example, zero gas) is supplied into both sampling gas and comparison gas lines, the detector output is zero and no drift is generated in principle. A conventional chemiluminescence system was readily affected by moisture and carbon dioxide as the coherent elements, and it was the cause of measuring errors. This system reduces moisture interference by the electronic cooler. For carbon dioxide interference, the concentration of carbon dioxide in the sampling gas is diluted in the pre-process of reaction chamber. In addition, a plenty flow of ozone is introduced into the reaction chamber for dilution, minimizing the interference and improving the measuring accuracy.

MEASURING PRINCIPLE AS NH₃ Analyzer

Reduction catalyst method

The reduction catalyst method utilizes the principle of selective catalytic reduction method currently used in the denitration system for boiler and turbine. In other words, prior to introduction into the analyzer, the following denitration reaction on the catalyst is used:

\[
\begin{align*}
NO + NH_3 + \frac{1}{4}O_2 &\rightarrow N_2 + 3/2H_2O \ldots \ldots (1) \\
NO + NO_2 + 2NH_3 &\rightarrow 2N_2 + 3H_2O \ldots \ldots (2)
\end{align*}
\]

Both equations of (1) and (2) show the reaction of NH₃ with NOx at 1:1. This reduces NOx having the same concentration of NH₃.

Therefore, NH₃ concentration is obtained by measuring NOx concentration passing through the catalyst in NH₃ line and NOx concentration not passing through the catalyst and calculating the difference.

The pre-process system is composed of the NH₃ line filled with catalyst and the NOx line not filled with catalyst. The catalytic part is temperature controlled at 350-400°C.

DIMENSIONAL OUTLINES

(UNIT : mm)
ENDA-C2430

Please read the operation manual before using this product to assure safe and proper handling of the product.

The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.

HORIBA continues contributing to the preservation of the global environment through analysis and measuring technology.