

Pan-EMS CEMS

Type Approval (ABS)



Continuous Emission Monitoring System



Product Overview

The Continuous Emission Monitoring System (CEMS) measures and records the concentration and volume of exhaust gases emitted from ships or industrial sites in real time.

Applying Method D, the EU-recognized official emission calculation method, CEMS enables accurate data-based emission management and regulatory compliance. It also contributes to creating a stable and efficient operating environment for vessels.

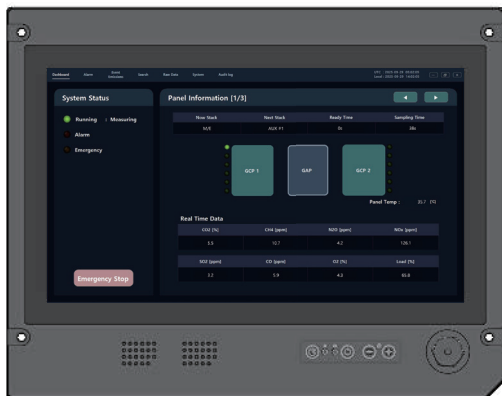
Features

- Stable and accurate multi-gas measurement according to Appendix 3 of NO_x Technical Code 2008
- Calculation of NO_x (g/kWh) vs Tier I, II, III Limits according to MARPOL Annex VI Reg.13 and MEPC.103(49)
- Calculation SO₂/CO₂ Ratio according to MEPC.340(77)
- CO₂ Emission Index (g/CO₂ /tonne) Reports according to MEPC/Circ.471
- Calculation of Greenhouse gas (GHG) emission according to EU MRV and/or IMO Regulation
- Multiple stack Management
- Providing satellite control/monitoring services (Pan-MSCS™)

Technical Specification

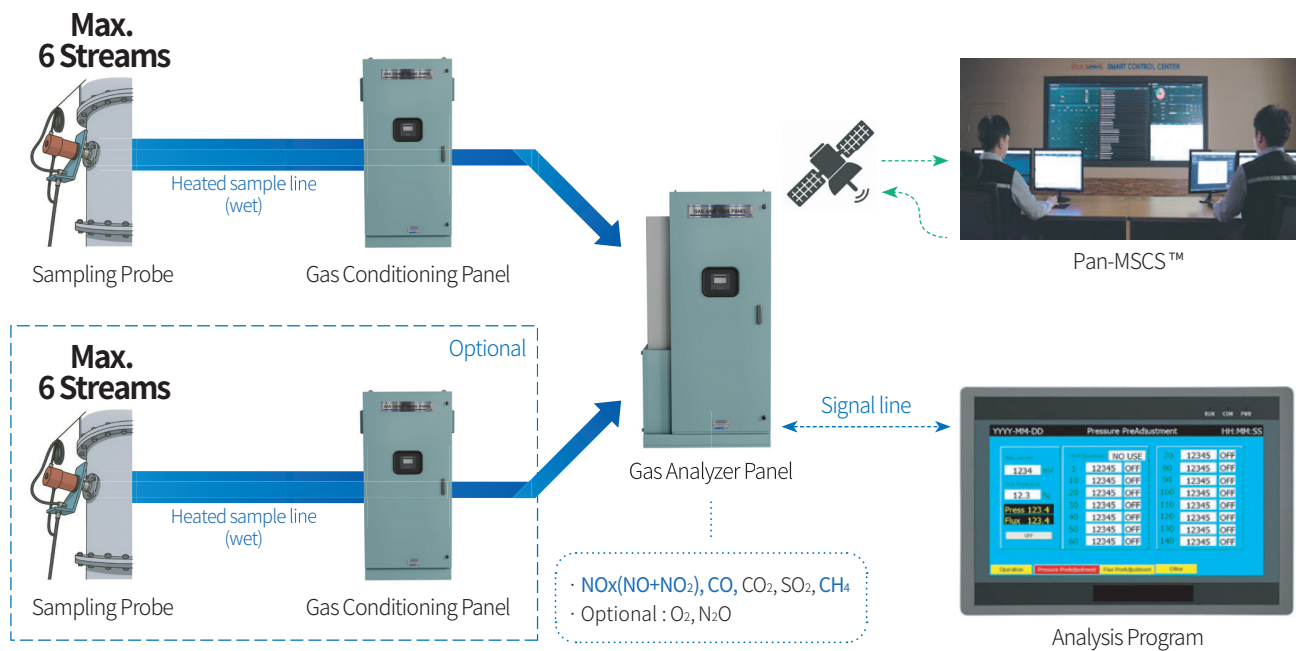
System Configuration	Sampling Probe + Heated Sample Line + Gas Conditioning Panel + Gas Analyzer Panel + Analysis program
Measuring Method	NDIR : NO _x (NO with NO ₂ to NO Converter), SO ₂ , CO, CO ₂ , CH ₄ , N ₂ O Zirconia or Electro chemical : O ₂ (Optional)
Operating Temperature	0 ~ 55°C
Accuracy	±2% of Full Scale
Repeatability	±1% of Full Scale
Zero Drift	±2% of Full Scale
Span Drift	±2% of Full Scale
Response Time	1~15 s
Max. Measuring Point	12 Stacks
Sampling/Measuring Time	within 3 min

Analysis Program



- 1. Gas concentration and emission measurement**
Temperature, velocity, flow rate, pressure, and humidity compensation functions
- 2. Data recording and storage**
Visualization of daily, monthly, and quarterly data
- 3. Real-time monitoring and alarms**
- 4. Automatic calibration of gas analyzers**
Scheduled automatic calibration function
Calibration history management and results recording
- 5. Automated report generation and transmission**
- 6. Integration with Panasia Integrated Control System (Pan-MSCS™)**

System Diagram



Key Benefits

Measured Gases Nitrogen Oxides (NO _x , NO ₂) Sulfur Dioxide (SO ₂) Carbon Monoxide (CO) Carbon Dioxide (CO ₂) Methane (CH ₄) Nitrous Oxide (N ₂ O) Oxygen (O ₂)	All-in-One System Integrates all gas monitoring functions required for vessel operations into a single system, enabling efficient reporting.
Automated Regulatory Reporting Enhances management efficiency by automatically generating reports in compliance with international formats such as IMO and EU MRV.	Real-Time Remote Monitoring Enables real-time remote monitoring via the Maritime Satellite Communication System (MSCS).