



# NIPPON KAIJI KYOKAI

## TYPE APPROVAL CERTIFICATE FOR AUTOMATIC DEVICES AND EQUIPMENT

Certificate No. TA18198M

**This is to certify** that the undernoted product(s) has/have been approved in accordance with the requirements specified in Chapter 1, Part 7 of “Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use” and the relevant Society's Rules.

This certificate is issued to

Applicant:	<b>NORSK ANALYSE AS.</b>
Place of Applicant:	<b>Wirgenesvei 10, 3157 Barkåker, Norway</b>
Manufacturer:	<b>Svensk Analys AB</b>
Place of Manufacturing:	<b>Nyängsgaten 5, 66434 Grums, Sweden</b>
Product description:	<b>Continuous Emission Monitoring System</b>
Model:	<b>ShipCEMS</b>
Approval No.:	<b>18A009</b>
Valid until:	<b>9 May 2023</b>

This certificate is subject to the conditions specified in the attached sheet(s).

Issued at Tokyo on 10 May 2018



T. Shimada  
General Manager  
Machinery Department

Note: The manufacturer, if desired, is requested to apply to the Society for renewal prior to the expiration date.

**Specification & documents:**

1. Particulars: Power supply: 120 / 230V, 50 / 60 Hz

Measuring range:

Item	Specification
SO <sub>2</sub>	0 - 50 ppm (min)
	0 - 1000 ppm (max)
CO <sub>2</sub>	0 - 5 % (min)
	0 - 15 % (max)

2. Components and reference drawings:

Main Components	
Analyser Cabinet	Online Analyser Module for analysis of SO <sub>2</sub> and CO <sub>2</sub>
	LOGO PLC with LOGO TD unit for alarm display and auto calibration, TCP/IP Module for bus communication
	Peltier cabinet cooler system
	Solenoid valves for stream switching and validation and for analyser calibration
	24 VDC power supply
	48 VDC power supply (for Peltier cooler only)
	Terminals for power and signal interfaces
Sample Conditioning System	Heated cabinet
	Sample gas pump
	Sample gas filter
	Sample gas dryers
	Sensors for flow, temperature and moisture
	Junction box
Sample probe	Heated sample probe (SC-SP)

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Attached sheet -2/3 to the Certificate No.TA18198M

### 3. Documentation and Test Reports:

- ShipCEMS Continuous Emission Measurement System User Manual, NA-E-USM-001, Rev. 08
- General Arrangement Drawing Analyser Cabinet External View, P300-1001, Rev.06
- General Arrangement Drawing Analyser Cabinet Interior Hook-Up Locations, P300-1002, Rev.08
- General Arrangement Drawing Analyser Cabinet Interior Interface Unit, P300-1003, Rev.02
- General Arrangement Drawing Analyser Cabinet Hook-Up/ Wall Mounting External View, P300-1005, Rev.08
- General Arrangement Drawing Heated Sample Probe Flange DN65-PN6 230Vac Electric Heated, P300-1202, Rev.04
- General Arrangement Drawing Calibration Gas Cylinder Support Frame External View, P300-1401, Rev.02
- General Arrangement Drawing Sample Conditioning System External View Hook-Up Details, P300-1801, Rev.07
- General Arrangement Drawing Sample Conditioning Cabinet Hook-Up/ Wall Mounting External View, P300-1804, Rev.06
- General Arrangement Drawing Sample Conditioning System Junction Box Layout, P300-1805, Rev.04
- General Arrangement Drawing Emergency Stop External/ Interior View, P300-1901, Rev.04
- System Diagram Analyser Cabinet Stream Switching System, P300-3001, Rev.06
- System Diagram Analyser Cabinet PLC & Signal Conditioning, P300-3002, Rev.05
- System Diagram Analyser Cabinet PLC & Signal Conditioning Interface Unit, P300-3003, Rev.01
- System Diagram Sample Conditioning System, P300-3801, Rev.06
- Termination Diagram – Power Analyser Cabinet – Interface ShipCEMS SO<sub>2</sub>/CO<sub>2</sub> Analysis, P300-5001, Rev.04
- Termination Diagram PLC LOGO Analyser Cabinet, P300-5002, Rev.04
- Termination Diagram Sample Conditioning System Heater & Flow Control Logic Junction Box, P300-5101, Rev.07
- Termination Diagram Sample Conditioning System Back-Flush Option Junction Box, P300-5102, Rev.07
- Termination Diagram – Signal Analyser Cabinet – Interface Emission Monitoring System, P300-5201, Rev.05
- Termination Diagram – Signal Analyser Cabinet – Interface Emission Monitoring System, Interface Unit, P300-5202, Rev.01
- Termination Diagram Heated Sample Probe Model 222.15/222.17 Plug Connections, P300-5301, Rev.04
- Termination Diagram Cabinet Cooler System 194 Watt Peltier Element Analyser Cabinet, P300-5401, Rev.04
- Termination Diagram Signal SO<sub>2</sub>/CO<sub>2</sub> Analyser D-Sub Pinout, P300-5501, Rev.03
- Termination Diagram Signal, SO<sub>2</sub>/CO<sub>2</sub> Analyser D-Sub Pinout, P300-5502, Rev.04
- Termination Diagram Emergency Power Switch SCS/ Analyser Cabinet, P300-5601, Rev.04
- Termination Diagram Emergency Power Switch System Layout – Loop, P300-5701, Rev.04
- Termination Diagram Signal Emission Monitoring System Interface Unit, P300-5802, Rev.01
- System Block Diagram Pipe and Gas Distribution Overview, P300-6001, Rev.01
- Electrical Block Diagram Signal and Power Distribution Overview Interface Unit, P300-6101, Rev.01
- Data Specification List ShipCEMS Interface Unit, P300-9802, Rev.02
- Test Report: Test for Marine Type Approval of NA-ShipCEMS, DANAK-19/13168, 21 June 2013

- To be continued -

**Test items & approval conditions:**

## 1. Test items:

(Applied testing items are marked with X.)

ENVIRONMENTAL TESTS		Mark
External examination		X
Operation test and performance test		X
Electric power supply failure test		X
Power supply fluctuation test	Electric	X
	Pneumatic and Hydraulic	--
Insulation resistance test		X
High voltage test		X
Pressure test (Pneumatic and Hydraulic)		--
Dry heat test (Temperature 55°C × 16 hours)		X
Damp heat test		X
Vibration test (Acceleration ±0.7g × 2.5 hours)		X
Inclination test		X
Cold test (Temperature 5°C × 16 hours)		X
Salt mist test		--
Electrostatic discharge immunity test		X
Radiated radio frequency immunity test		X
Conducted low frequency immunity test		X
Conducted high frequency immunity test		X
Burst / Fast transient immunity test		X
Surge immunity test		X
Radiated emission test		X
Conducted emission test		X
Flame retardant test		--

## 2. Approval condition:

The product is not allowed to be installed in the bridge or on open decks.