



Lloyd's  
Register

## Type Approval Certificate

*This is to certify that the undernoted products have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.*

This certificate is issued to:

<b>PRODUCER</b>	ABB Engineering (Shanghai) Ltd.
<b>PLACE OF PRODUCTION</b>	No. 4528 Kangxin Highway, Pudong New Districty, Shanghai, 201319 P. R. China
<b>DESCRIPTION</b>	Continuous Emissions Monitoring System
<b>TYPE</b>	GAA610-M Analyser system cabinet Analyser module Uras26 for continuous monitoring of SO <sub>x</sub> and analyser module Limas21 UV for NO <sub>x</sub> emission continuous monitoring Options with air conditioning unit: types T-20 and T29
<b>APPLICATION</b>	Marine applications for use in environmental categories ENV1 and ENV2 in the "General Power Distribution Zones" as defined in LR Type Approval System Test Specification No. 1 July 2015.
<b>DESIGN CODE STANDARD</b>	IMO Resolution MEPC.259 (68) – 2015 Guidelines for Exhaust Gas cleaning Systems NO <sub>x</sub> Technical Code 2008 --Technical Code on control of emission of nitrogen oxides from marine diesel engines, where applicable.
<b>RATINGS</b>	Power Supply: AC 115/230V, 50/60Hz

Component	Sensor type	Measuring range	SO2/CO2 Ratio(Calculated)
SO2	NDIR	0~250ppm/0~500ppm	0~250
CO2	NDIR	0~20 vol.%	
O2	Electrochemical cell	0~25 vol.%	

<b>Certificate No.</b>	18/80070
<b>Issue Date</b>	08 October 2018
<b>Expiry Date</b>	07 October 2023
<b>Sheet</b>	1 of 2



KL Zhang  
Shanghai Technical Support Office

*Lloyd's Register Classification Society (China)Co., Ltd*  
19<sup>th</sup> Floor, Ocean Towers, 550 Yan An Dong Road, Shanghai 200001

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**ADDITIONAL TESTS**      Vibration test for gas sample probe JES-301:  
2Hz-25Hz, Displacement:  $\pm 1.6\text{mm}$ ;  
2Hz-100Hz, Acceleration:  $\pm 4.0\text{g}(39\text{ms}^2)$

**OTHER  
CONDITIONS**

1. The system type approval is limited to continuous monitoring of SOx emissions, as defined in IMO Resolution MEPC.259 (68) and NOx emissions, as defined in NOx Technical Code 2008 --Technical Code on control of emission of nitrogen oxides from marine diesel engines
2. In order to completely fulfil the requirements of MEPC.259 (68) for "Continuous Emission Monitoring" and NOx- monitoring, additional equipment (e.g. sample probe, sampling tubes, gas dryer, data recording, engine performance measurements) will have to be installed in according to relevant requirements, and requirements of MEPC.259 (68) chapter 6.6 and 6.7 regarding SO<sub>2</sub> losses have to be observed.
3. In case ambient temperature is above 45°C, "Uras26 and Limas21 UV" may only be operated in an air conditioned cabinet.
4. The "ABB AO2000-Uras26 and Limas21 UV" shall be installed, calibrated and operated in compliance with the manufacturer's instructions.
5. Data recording and processing device is not covered by this certificate.
6. In justified cases where the CO<sub>2</sub> concentration is reduced by the EGC unit, the CO<sub>2</sub> concentration can be measured at the EGC unit inlet, provided that the correctness of such a methodology can be clearly demonstrated.
7. If more than one analyser is to be used to determine the SO<sub>2</sub>/CO<sub>2</sub> ratio, these should be tuned to have similar sampling and measurement times and the data outputs aligned so that the SO<sub>2</sub>/CO<sub>2</sub> ratio is fully representative of the exhaust gas composition.

*"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Classification Society (China) Co., Ltd. of any modification or changes to the equipment in order to obtain a valid certificate."*

*The attached Design Appraisal Document No. STS/TA/18/80070, Issue No. 0, dated 08 October 2018 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

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KL Zhang  
Shanghai Technical Support Office  
Lloyd's Register Classification Society China Co Ltd

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**KL Zhang**  
Shanghai Technical Support Office

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*19<sup>th</sup> Floor, Ocean Towers, 550 Yan An Dong Road, Shanghai 200001*

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