



# Type Approval Certificate

[ Gas Monitoring System ]

**Initial Approval** 3 June 2022  
**Manufacturer** Protea Limited  
 Unit 2 Venture Park, Stirling Way, Peterborough Cambridgeshire, PE3 8YD, UK  
**Product Description** Type : P2000  
 Intended for the measurement of SO<sub>2</sub> and CO<sub>2</sub> concentrations in exhaust gas

" See Appendix 1 "

**Approval Condition** " See Appendix 1 "

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Pt. 6, Ch. 2, Art. 301 of the Rules for Classification, Steel Ships, MEPC.340(77), MARPOL Annex VI and NO<sub>x</sub> Technical Code 2008

This Certificate is valid until 2 June 2027

Reissued at Busan, Korea on 15 November 2022



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No(ME22033828768) and certificate No.(LDN41636-AC001).



**KOREAN REGISTER**

*General Manager of  
Marine & Ocean Equipment Team*

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
  2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
  3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
  4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

## Product Description and/or Approval Condition

Date of Issue : 15 November 2022

### A. Product Description

#### 1. Product Specification

- 1) System Description  
P2000 is a continuous emission monitoring system analyzer, designed to provide In-Situ analysis.
- 2) General Specification
  - Power Supply : 115/230V AC, 50/60Hz
  - System Comprising : Marine Analyzer (Model: P2000)  
Heater (Model : 1-0031)  
P-PC Marine (Model : 1-0400, 1-0420)  
Marine Analyzer PSU (Model : 1-0217)
  - Operating temperature : -25°C to +55°C
  - Sample temperature : up to +350°C
  - Ingress protection : IP65
  - Software Version : 4.1.3
- 3) Gas Analyzer
  - Measuring Principle : SO<sub>2</sub> - NDIR(Non Dispersive Infra-Red)  
CO<sub>2</sub> - NDIR(Non Dispersive Infra-Red)
  - Measuring Range
    - i) SO<sub>2</sub> : 0-100ppm, 0-1500ppm
    - ii) CO<sub>2</sub> : 0-10%, 0-15%

#### 2. Approved Drawings and Documents

- 1) Datasheet No. 19-6PD080 V2, 19-6PD102 V1, 19-6PD130 V1
- 2) Drawing No. 19-0069 Rev.02, 19-0070 Rev.2, 19-0071 Rev.2, 19-0072 Rev.2,  
19-0115 Rev.03
- 3) Test Plan MS Testing Issue 14 (2019-07-23)
- 4) Inspection & Factory Acceptance Test Plan No. FAT 19-0067\_Iss01

#### 3. Test Reports, etc.

- 1) Test Reports
  - TL21087 Marine Type Approval Testing (2021-10-11)
  - TL21087 Salt Mist Test Report (2021-09-16)
  - TL21087 IP Test Report (2021-09-29)
  - FAT Report No. FAT 19-0067\_Iss01 (2021-12-14)
  - 2009070133/102153/QE2100/MCERTS/Procal2000/J2 (2013-08-31)
  - TL22219B High Temp. Test Report (2022-06-30)
  - TL22219 Issue 5 Marine Type Approval Testing for P-PC Marine 1-0420 (2022-11-11)
- 2) Operating manual, Calibration procedure, Software documents

### B. Approval Condition

#### 1. Application & Limitation

- 1) Unless specially directed by the Administration, this approval is not to be construed as a substitute for a flag Administration's approval.
- 2) This approval is granted on the basis of the approved documentation and test reports.
- 3) Degree of protection shall be complied with Rule Pt.6 Ch.1 Sec.2 201.2.(5).
- 4) The manufacturer should inform this Society of all kinds of revisions of the equipment including software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 5) Installation is to be in accordance with manufacturer's instruction.
- 6) This approval only covers hardware listed under Product description. The keyboard for P-PC Marine 1-0420 in the drawing No. 19-0115 Rev. No.3 is not covered by this certificate.
- 7) When the product is used in installations intended to comply with MEPC.340(77), installation and performance as per requirements in Annex section 6,7,8 of MEPC.340(77) are to be confirmed by the Society.

#### 2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual product certification is not required.

#### 3. Marking

- 1) The product or packing is to be marked with the manufacturer's name and type designation on a suitable position.

## Product Description and/or Approval Condition

Date of Issue : 15 November 2022

### 4. Others

#### 1) Test condition (IACS UR E10 Rev.8 basis)

Test	Condition	Remark
EMC	All locations including the bridge and deck zone	-
Temperature	-25°C ~ +70°C	-
Vibration	Acceleration $\pm 0.7g$	-
Salt mist	Applied	-
Ingress protection	IP65	-

#### 2) Compass safe distance

Type	Standard compass	Steering compass
P-PC Marine (P-PC Marine 1-0400)	120 cm	80 cm
P-PC Marine (P-PC Marine 1-0420)	250 cm	130 cm
Marine Analyzer PSU	60 cm	40 cm
Marine Analyzer and Heater	50 cm	40 cm

&lt; End of Certificate &gt;