



# EUROPEAN UNION RECOGNISED ORGANISATION (EU RO) MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

Certificate No:  
**MRA000001R**  
Revision No:  
**2**

In accordance with Article 10.1 of EU Regulation 391/2009

This Certificate is issued to

**PSM Instrumentation Ltd**  
**Haywards Heath, West Sussex, United Kingdom**

for

**Pressure Gauges/Transmitters**

with type designation(s)

**APT 500 series analogue pressure and level transmitters,  
SPT 900 Series analogue pressure and level transmitters,  
APT 1000 Series analogue and digital pressure and level transmitters,  
SPT 9000 Series analogue and digital pressure and level transmitters**

The product is found to comply with

**EU RO Mutual Recognition Technical Requirements for Pressure Gauges – Transmitters**

Intended service

**Pressure transmitters for use in control, alarm, monitoring and instrumentation systems subject to classification, including ballast, cargo, and service tank gauging.**

**Temperature [°C]: -35°C and 90°C**  
**Vibration: ±1 mm / 0.7 g**  
**EMC: All locations including bridge and open deck**  
**IP Code: APT 500S/1000S: IP68 (50 m), APT 500D/1000D: IP65,  
SPT 900S/9000S: IP68 (50 m), SPT 900D/9000D: IP65**

## This is to certify:

that the Product referred to herein has been inspected for the Manufacturer, pursuant to the relevant requirements of the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10.1 of EU Regulation 391/2009, and has been found in accordance with those requirements.

This Certificate is valid until **2029-04-09**.

Issued at **Høvik** on **2024-04-10**

DNV local unit: **UK & Ireland CMC & VMC**

for **DNV**

Approval Engineer: **Martin Skårerverket**

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**Frederik Tore Elter**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

APT 500 series analogue pressure transmitter and APT 1000 series dual mode 4-20 mA and RS485 Modbus intelligent transmitter for pressure and level gauging applications.

- APT 500S/1000S – submersible with cable – IP68 suitable for continuous immersion
- APT 500D/1000D – with DIN plug 43650 – IP65 suitable for mounting external to tank
- SPT 900S/9000S – submersible with cable – IP68 suitable for continuous immersion
- SPT 900D/9000D – with DIN plug 43650 – IP65 suitable for mounting external to tank

Fully submersible construction may be mounted internal or external to tank.

### Technical specifications:

Materials Sensor Body	316L, Titanium, or Hastelloy C276
Materials Diaphragm	316L, Titanium, or Tantalum
Standard Measurement Ranges (Bar)	-1.0, -0.35, -0.2, 0.2 0.35. 1.0, 2.5, 4.0, 6.0, 10, 16, 25, 40, 60
Measurement Type	Vented Gauge or Absolute
Overload	2 x Nominal Range
Span accuracy	±0.1% within compensated range
Zero accuracy	±0.1% within compensated range
Total error band APT 500 / SPT 900	±0.2% of Nominal Range
Total error band APT 1000 / SPT 9000	±0.1% of Nominal Range
Thermal compensation	No thermal effect within range 0°C to 70°C
Long term stability	Error not exceeding ±0.1% per annum
Max / Min process temperature	-35°C to 85°C Continuous
IECEX certification	Refer to manufacturer for valid certification
ATEX	Refer to manufacturer for valid certification
Signal Output APT 500 / SPT 900	4-20 mA / 2 wire loop powered
Signal Output APT 1000 / SPT 9000	4-20 mA / 2 wire loop powered & RS485 Modbus RTU
Power Supply	10-30 Vdc
Maximum load	Supply dependant. $(V_s - 10) / 0.02 = \text{Load in Ohms}$
Firmware version APT 500 / SPT 900	1.0
Firmware version APT 1000 / SPT 9000	1.0

## Manufactured by

PSM Instrumentation Ltd,  
 Unit 3, Burrell Road, Haywards Heath,  
 West Sussex, RH16 1TW, United Kingdom

## Application/Limitation

The pressure transmitter shall be powered by the 4-20 mA loop by an instrument power supply.

## Type Approval documentation

### Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

### Other conditions

The pressure transmitters have been verified for compliance with EU Mutual Recognition Technical Requirements for Pressure gauges – transmitters version 0.2, dated 2023-01-01.

#### Environmental test parameters

Temperature:	-35°C ~ +90°C
Vibration:	±1.0 mm / 0.7 g
Humidity:	95%RH @ 55°C, damp heat cyclic
EMC:	All locations including bridge and open deck
Enclosure:	IP65 – when delivered with DIN plug 43650 IP68 (50 m, 24 hours) – when delivered with cable (IP-ratings according to IEC 60529)

#### DNV location classes

D  
A  
B  
B  
B  
D

The technical requirements do not specify any special design requirements for the cable. The vented gauge transmitters are delivered with an integrated special cable (Habia Cable R 2019 STR 2x2 + Vent Tube) that has been reviewed and found to comply with DNV rules for classification of ships Pt.4 Ch.8 Sec.9.

### **Periodical assessment**

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment will be performed annually and at renewal of the certificate.

END OF CERTIFICATE

### Generic Statement for EU RO MR Type Approval Certificate

When a product is presented with this EU RO MR Type Approval Certificate for given application, its acceptability with regards to the limitations stated in the certificate conditions defined in 1b, 1c and 1d of the applied Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.

In accordance with Article 10 of Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 "on common rules and standards for ship inspection and survey organizations", the following organizations, recognized by the EU on this date, have agreed on the technical and procedural conditions under which they will mutually recognize this certificate:

- American Bureau of Shipping (ABS);
- Bureau Veritas (BV);
- China Classification Society (CCS);
- Croatian Register of Shipping (CRS);
- DNV;
- Indian Register of Shipping (IRS);
- Korean Register (KR);
- Lloyd's Register Group Ltd. (LR);
- Nippon Kaiji Kyokai General Incorporated Foundation (ClassNK);
- Polish Register of Shipping (PRS);
- RINA Services S.p.A. (RINA).

The scheme for the mutual recognition of class certificates for materials, equipment and components laid down by Article 10(1) of Regulation (EC) No 391/2009 is only enforceable within the Union in respect of ships flying the flag of a Member State. As far as foreign vessels are concerned, the acceptance of relevant certificates remains at the discretion of relevant non-EU flag States in the exercise of their exclusive jurisdiction, notably under the United Nations Convention on the Law of the Sea (UNCLOS). (In accordance with COMMISSION IMPLEMENTING REGULATION (EU) No 1355/2014 amending Regulation (EC) No 391/2009 - recital (25)).