

EU RO MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

Certificate No: MRA00001R

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

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 and service tank gauging.

Applicable for a ship as defined in Mutual Recognition Provisions Article 10 Regulation on Common Rules and Standards For Ship Inspection and Survey Organizations.

See product description on page 2 for further details.

Temperature [°C]: -35°C and 90°C Vibration: ±1 mm / 0.7 g

EMC: All locations including bridge and open deck IP Code: APT 500D: IP65, APT 500S: IP68 (50 m)

This Certificate is valid until 2023-02-27.

Issued at Høvik on 2018-02-28

DNV GL local station: Southampton

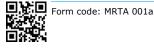
Approval Engineer: Ståle Sneen

for **DNV GL**

Odd Magne Nesvåg 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.

Revision: 2016-12



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Product description

APT 500 series analogue pressure transmitter for pressure and level gauging applications.

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

- APT 500S submersible with cable IP68 suitable for continuous immersion
- APT 500D with DIN plug 43650 IP65 suitable for mounting external to tank

Technical specifications:

Materials Sensor Body 316L or Titanium

Materials Diaphragm 316L, Titanium or Hastelloy C276

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

 $\begin{array}{lll} \text{Span accuracy} & \pm 0.1\% \text{ within compensated range} \\ \text{Zero accuracy} & \pm 0.1\% \text{ within compensated range} \end{array}$

Total error band ±0.2% 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 (-40°C to 100°C for short periods)

IECEx certification Refer to manufacturer for valid certification ATEX Refer to manufacturer for valid certification

Signal Output 4-20 mA / 2 wire loop powered

Power Supply 10-30 Vdc

Maximum load Supply dependant. (Vs-10)/0.02 = Load in Ohms

Manufactured by

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

Application/Limitation

Applicable for a ship as defined in Mutual Recognition Provisions Article 10 Regulation on Common Rules and standards For Ship Inspection and Survey Organizations.

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

Type Approval documentation

Name	Number	Rev. / Date
APT 500 data sheet	DAT54	В
Installation operation & maintenance instruction manual	Man 085	A / 2018-02-09
APT Outline drawing	P19000-APT-GA	A / 2017-06-31
APT Exploded drawing	P19001-APT-GA	A / 2017-06-31
APT 500 Series block diagram	P19025-APT-DT	A / 2017-08-20
Cable drawing	700054734	00 / 2014-01-04
TPS 120 (FR) material specification	MI_R120_04	2013-09-12
TPS 130 material specification	MI_R_04	2013-09-12
Test report overview	AP02801	-
Witnessed testing (visual inspection, performance, power supply variation)	AP02802	2017-10-12
Test report (200% static pressure and performance)	AP02805	2017-10-09
Test report (IPX8 50 m for 24 hours)	N70157429A	2017-10-09
Test report (climatic)	TL17081	1 / 2017-07-31

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Test report (environmental)	TL17118	1 / 2017-10-19
EMC Test report	17J462 CR	1 / 2018-01-29
EU RO MR TA PQA Scheme periodical assessment checklist	-	2018-02-21

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 0.0, dated 2016-07-01.

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

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 GL 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

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