



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

Certificate No:
MRA000001V
Revision No:
1

In accordance with Article 10.1 of EU Regulation 391/2009

This Certificate is issued to

**ADZ NAGANO GmbH Gesellschaft für Sensortechnik
Ottendorf-Okrilla, Sachsen, Germany**

for
Sensors

with type designation(s)
ADZ-SML-xxx, ADZ-SMH-xxx, ADZ-PS1-xxx

The product is found to comply with
EU RO Mutual Recognition Technical Requirements for Sensors

Intended service

Temperature [°C]: -25°C ~ +70°C
Vibration: All Locations (incl. open deck and masts)
EMC: All locations (incl. machinery, bridge and open deck)
IP Code: See limitation and reports on page 3

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 **2028-08-29**.

Issued at **Hamburg** on **2023-08-30**

for **DNV**

DNV local unit: **Hamburg**

Approval Engineer: **Didier Girardin**

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Joannis Papanuskas
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
ADZ Electronic Pressure Transmitter

Type ¹⁾	Max. Pressure Span	Special Application
ADZ-SML-xx.x	1000 bar	
ADZ-SMH-xx.x	5000 bar	
ADZ-PS1-xx.x	25 bar	submersible

Component naming & nomenclature

[Name].[xx].[x]¹⁾

[SML], [SMH], [PS1] maximum pressure range

[xx] sensor electronic type

[x] variable output ranges

Electronic Types

Max. Output Signal Range

xxx-10.0	two wire current output	4 ... 20 mA
xxx-16.0	two wire current output with additional EMC protection	4 ... 20 mA
xxx-20.x	non ratiometric voltage output	0 ... 10 V
xxx-37.x	ratiometric voltage output	0,25 ... 4,75 V

Housing, pressure cells and electronics modular design combining:

Pressure sensor cells:

- Stainless steel membrane
- Silicon sensor with oil filled stainless steel membrane
- Titanium alloy membrane

Sensor housings with different typical electrical connectors and air venting solutions for different enclosure protection class options:

- Connector with water diving sealed air filter (comparable with GORE-TEX®) for IP66, IP67, IP6K9K and salt mist environments
- Sealed connector without air venting (sealed reference sensor) for IP66, IP67, IP6K9K and salt mist environments
- Connector or cable adapter with simple air filter only for IP65
- Connector according DIN EN 175 301-803 sealed by the cable connector with vented cable only for IP65
- Cable adapter for submerged application for IP68 up to 30,5 m

Sensor electronics for different output signals and different EMC protection:

- Two wire current output with additional EMC protection
- Simple two wire current output for minimal supply voltage 9 V
- Ratiometric voltage output (output proportional to supply) for regulated 5 V supply voltage
- Non ratiometric voltage output

Manufactured by

ADZ NAGANO GmbH, Gesellschaft für Sensortechnik,
 Germany, Bergener Ring 43, 01458 Ottendorf-Okrilla

Application/Limitation

- The Type Approval covers hardware listed under type designation.
- Required ingress protection according IEC standard 60529 shall be provided upon installation on board

Type Approval documentation

Test Reports:					
Doc ID.	Rev.	Issuing Date	Tested Samples	Article-Number	IP Code
1087-17-GG-18-PP001	-	05.06.2018	SML-10.0	811158	IP65
1087-17-GG-18-PP002	-	14.06.2018	SML-16.0	805161-H	IP66, IP67, IP6K9K
1087-17-GG-18-PP003	-	05.06.2018	SML-20.0	811159	IP65
1087-17-GG-18-PP004	-	11.06.2018	SMH-37.0	811160	IP66, IP67, IP6K9K
1087-17-EG-18-PP005	-	14.06.2018	PS1-16.0	811614	IP68 (30,5 m)
1087-17-EA-18-PP005	Second	11.01.2018	SML-10.0	811158	
1087-17-EA-18-PP006	Second	11.01.2018	SML-16.0	805161-H	
1087-17-EA-18-PP007	Second	11.01.2018	SML-20.0	811159	
1087-17-EA-18-PP008	Second	11.01.2018	SMH-37.0	811160	
1087-17-EE-17-PB002	First	20.11.2017	SML-10.0	811158	
1087-17-EE-17-PB001	First	15.12.2017	SML-16.0	805161-H	
1087-17-EE-17-PB004	First	15.12.2017	SML-20.0	811159	
1087-17-EE-17-PB003	First	15.12.2017	SMH-37.0	811160	
1087-17-EE-21-PB005	-	03.02.2021	SML-10.0, SML-16.0, SML-20.0, SMH-37.0	811158, 805161-H, 811159, 811160	
TZO-LUW_PA_132-18	-	23.05.2018	SML-16.0, SMH-37.0, PS1-16.0	805161-H, 811160, 811614	
IPB-000238-A	-	20.04.2018	SML-10.0, SML-16.0, SML-20.0, SMH-37.0	811158, 805161-H, 811159, 811160	
Technical Drawings:					
IZ-800272-B	-	15.10.2021	SML-10.0	811158	
IZ-800274-B	-	15.10.2021	SML-16.0	805161-H	
IZ-800273-B	-	15.10.2021	SML-20.0	811159	
IZ-800271-B	-	15.10.2021	SMH-37.0	811160	
IZ-800301-A		14.06.2018	PS1-16.0	811614	
IZ-800310-A	-	06.07.2018	PS1-16.0, SML-16.0	805161-H, 811614	
Compliance Tabel to IEC60092.504					
Compliance Tabel to IEC 60533					

Marking of product

The products to be marked with:

- manufacturer name
- model name
- unique serial number
- certificate number

Other Conditions

ADZ Pressure transmitter have been verified for compliance with EU Mutual Recognition Technical Requirements for PRESSURE GAUGES – TRANSMITTERS version 0.0, dated 01-July-2016

Environmental test parameters:			DNV location classes
Temperature	IEC 60068-2-1/ -2-2	-25°C ~ +70°C	D
Vibration	IEC 60068-2-6 Test Fc	± 1,6mm/± 4,0g at 2-25Hz/25-100Hz ± 2,5mm/± 2,3g at 2-15Hz/15-50Hz	B C
Humidity	IEC 60068-2-30 test Db	93% to 98%RH, +55°C, 48 h	B
EMC ¹⁾	All Location including bridge and Deck		B

Note: ¹⁾ compliant with IACS E10 rev.07/08 (TR-1087-17-EE-21-PB005)

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 is to be performed annually and at renewal of this 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);
- Russian Maritime Register of Shipping (RS).

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)).