CERTIFICATE NUMBER	25-0287854-PDA
EFFECTIVE DATE	08-May-2025
EXPIRY DATE	07-May-2030
ABS TECHNICAL OFFICE	London Engineering Department

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

VAF INSTRUMENTS

located at

VIERLINGHSTRAAT 24, , 3316 EL DORDRECHT, Netherlands

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product:	**Transmitter, Shaft Torque**
Model:	**T-Sense, TT-Sense**
Endorsements:	
Tier:	**3 - Type Approved, unit certification not required**

This Product Design Assessment (PDA) Certificate remains valid until 07/May/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

SBarua

Siddharth Barua,Engineer/Consultant

VAF INSTRUMENTS
VIERLINGHSTRAAT 24
3316 EL DORDRECHT
Netherlands
Telephone: 31-78-618-3100
Fax: 31-78-617-7068
Email: mvbeveren@vaf.nl
Web: www.vaf.nl

Tier: 3 - Type Approved, unit certification not required

Product: **Transmitter, Shaft Torque**
Model: **T-Sense, TT-Sense**
Endorsements:

Intended Service:
For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards.

Description:
The T-Sense optical torque sensor is intended for the measurement of torque and shaft power. The output can be used for the measurement of torque and shaft power. This system is used only for monitoring. It consists of three main components: the optical sensor on the shaft (rotor), the stator pedestal with coil and antenna and the electronic control box holding the data receiver, power supply and the data output. When a shaft is subject to torque this will result in a small strain at the shaft surface. A LED and an extremely accurate optical cell can detect these small movements of the surface. The measured values are transferred continuously from the rotating shaft to the stator part through a 2,4 GHz wireless data connection. Power transmission from the stator to the rotating shaft is performed by means of induction.

The TT-Sense optical thrust & torque sensor is intended for the measurement of torque, shaft power and propeller thrust. This system is used only for monitoring. It consists the optical sensors on the shaft (rotor), the stator pedestal with coil and antenna and the electronic control box holding the data receiver, power supply and the data output clamped onto the shaft by means of three rings. When a shaft is subject to thrust and torque this results in a small strain at the shaft surface. LEDs and extremely accurate optical sensors can detect these small displacements, in both axial and radial directions. The measured values are transferred continuously from the rotating shaft to the stator part through wireless data connection. Power transmission from the stator to the rotating shaft is performed by means of induction. The stator part consists of a power transmission coil, a data signal receiver and a control box equipped with digital or analogue output connections. These outputs can be linked directly to the vessels data network, monitoring- or control system.

Rating:
Stator
Supply:115 / 230 VAC ± 10%
Input: Wireless 2.4 GHz fully protected encrypted signal
Outputs: RS 485 for MODBUS protocol, Ethernet

Rotor
Input: Wireless 2.4 GHz fully protected encrypted signal
Power supply: 40 Watt through inductive coupling
Output: 2.4 GHz fully protected encrypted signal

Operating temperature: -10°C to 60°C
Protection degree stator control box IP65

Service Restriction:
1. Unit certification is not required for the product when it is used for display and monitoring functions for informational/administrative tasks as per 2025 ABS Marine Vessels Rules 4-9-3/7.1, Table 1 Computer-Based Systems Category I.
2. Unit certification is required by the user to customize this product where this product is used for Category II or III services in accordance with 4-9-3/7.1 Table 1 and Table 2 of 2025 Marine Vessels Rules.
3. The Unit Certification may be carried out during the Factory Acceptance Test of the overall system by the end user. When this product is used for Computer-Based Systems Category I, II or III services as per 4-9-3/7.1 Table 1 of the Marine Vessels Rules 2025, specific details are to be submitted for each specific application in accordance with 2025 Marine Vessels Rules 4-9-3/8.1.2Table 2.

VAF INSTRUMENTS
VIERLINGHSTRAAT 24
3316 EL DORDRECHT
Netherlands
Telephone: 31-78-618-3100
Fax: 31-78-617-7068
Email: mvbeveren@vaf.nl
Web: www.vaf.nl

Tier: 3 - Type Approved, unit certification not required

4. This certificate covers hardware only.
5. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:
1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. The systems do not generate alarms or are involved in other systems of a ship. They are used only for monitoring function for information only.

Notes/Drawing/Documentation:
Drawing Submit During Renewal
Drawing No. 20240160RPT01, 20240160RPT01 Amendment RE,Kiwa Dare BV Netherlands , Dated 16th May 2024 Revision: 1 , Pages: 20
Drawing No. Declaration of Conformity, Pages: 1

Previously Submitted Drawing
Drawing No. M18.005-P18.004, Climate test report, Sebert Trillingstechniek B.V , The Netherlands, Date: 30.11.2018, Pages: 14
Drawing No. 18C00990RPT02, EMC test, Dare Service B.V, The Netherlands, Date: 08.04.2019, Pages: 76
Drawing No. Functional test -tt-sense, VAF Instruments, The Netherlands, Date: 17.04.2019, Pages: 14
Drawing No. 2156301.0502, EMC test report- T-sense, Draka Certifications B.V, The Netherlands, Date: 06.05.2015, Pages: 35
Drawing No. 2156301.0502-EMC, Environment test report- T-sense, Draka Certifications B.V, The Netherlands, Date: 28.02.2013, Pages: 28
Drawing No. Final test report- T-sense, VAF Instruments, The Netherlands, Date: 25.07.2013, Pages: 09
Drawing No. IP 44 test, Rotor enclosure VAF Instruments, The Netherlands, Date: 24.05.2015, Pages: 03
Drawing No. PB-660, PB-660-GB-0119 T-sense Product Bulletin, Pages: 12
Drawing No. PB-663, PB663-GB-0119 TT-sense Product Bulletin, Pages: 12
Drawing No. TIB-661, TIB-661-GB-0319 T-sense Technical Manual, Pages: 46
Drawing No. TIB-674, TIB-674-GB-0819 TT-sense Technical Manual, Pages: 49
Drawing No. Test programma, TT-sense REV.C, Date: 27.09.2018,Pages: 05
Drawing No. M19.001-P19.001, Vibration test report, Sebert Trillingstechniek B.V, The Netherlands, Date: 05.02.2019, Pages: 14
Drawing No. Statement from Sebert trillingstechniek, Date: 16.03.2020,Pages: 01

Terms of Validity:
This Product Design Assessment (PDA) Certificate remains valid until 07/May/2030 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:
Marine Vessels Rules (2025): 1-1-4/7.7, 1-1-A3, 1-1-A4 which covers the following:

VAF INSTRUMENTS
VIERLINGHSTRAAT 24
3316 EL DORDRECHT
Netherlands
Telephone: 31-78-618-3100
Fax: 31-78-617-7068
Email: mvbeveren@vaf.nl
Web: www.vaf.nl

Tier: 3 - Type Approved, unit certification not required

4-8-3/1.7, 4-8-3/1.9, 4-9-9/Table 1 and 4-9-9/Table 2;

Offshore Rules (2025) 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
6-1-1/13 , 4-3-1/9, 4-3-1/11 , 4-3-1/17

National:
NA

International:
IACS E10 -Rev 9

Government:
NA

EUMED:
NA

OTHERS:
NA