Confirmation of Product Type Approval

Company Name: VAF INSTRUMENTS

Address: VIERLINGHSTRAAT 24 3316 EL DORDRECHT Netherlands

Product: Transmitter, Shaft Torque

Model(s): T-Sense, TT-Sense

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	20-LD1964534-PDA	01-APR-2020	31-MAR-2025
Manufacturing Assessment (MA)	22-5160469	24-FEB-2022	04-MAR-2027
Product Quality Assurance (PQA)	NA	NA	NA

Tier
3 - Type Approved, unit certification not required

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.

Ratings

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 Restrictions
1. Unit certification is not required for the product when it is used for display and monitoring function for informational/administrative tasks as per 2020 ABS Marine Vessels Rules 4-9-3/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/Table 1 and Table 2 of 2020 Marine Vessels Rules.

3. The Unit Certification may be carried out during 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/Table 1 of the Marine Vessels Rules, specific details are to be submitted for each specific application in accordance with 2020 Marine Vessels Rules 4-9-3/Table 2.T

4. This certificate covers hardware only.

5. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments
The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

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, Drawings and Documentation
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

Term of Validity
This Product Design Assessment (PDA) Certificate remains valid until 31/Mar/2025 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.

ABS Rules
- Marine Vessels Rules (2020): 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-3/1.7, 4-8-3/1.9, 4-8-3/1.11, 4-9-3/11.9, 4-9-9/7, and 4-9-9/Table 1 and 4-9-9/Table 2;
- Facilities on Offshore Installations (2019): 1-1-4/9.7, 1-1-A2, 1-1-A3, 3-7/3.5
- Mobile Offshore Units (2020): 1-1-4/9.7, 1-1-A3, 1-1-A4, 6-1-1/9, 6-1-1/13; 4-3-1/9, 4-3-1/11, 4-3-1/15;
- Steel Vessels for Service on Rivers and Intracoastal Waterways (2020): 1-1-4/7.7, 1-1-A3, 1-1-A4;
- High Speed Crafts (2020): 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-7-9/7, 4-7-9 Table 9 and 4-7-9 Table 10;
- Steel Barge Rules (2020): 1-1-4/7.9, 1-1-A3, 1-1-A4;

International Standards
IACS E10 rev7:2018

EU-MED Standards
NA

National Standards
NA

Government Standards
NA

Other Standards
NA

Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 27-Sep-2024 3:00

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

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 prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.