



NIPPON KAIJI KYOKAI

TYPE APPROVAL CERTIFICATE FOR AUTOMATIC DEVICES AND EQUIPMENT

Certificate No. TA20143M .

This is to certify that the undernoted product(s) has/have been approved in accordance with the requirements specified in Chapter 1, Part 7 of “Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use” and the relevant Society's Rules.

This certificate is issued to

Manufacturer: **VAF Instruments B.V.**
Place of Manufacturing: **Vierlingstraat 24 3316 EL Dordrecht, The Netherlands**
Product description: **Thrust and torque measuring system**
Model: **TT-Sense**

Approval No.: **20A012**
Valid until: **16 March 2025**

This certificate is subject to the conditions specified in the attached sheet(s).

Issued at Tokyo on 17 March 2020.

T. Shimada
General Manager
Machinery Department

Note: The manufacturer, if desired, is requested to apply to the Society for renewal prior to the expiration date.

Product description

TT-sense thrust and torque measuring system consist of 3 main components:

- a control box holding the data receiver, power supply and data output
- the stator pedestal with coil and antenna
- the optical sensors on the shaft (rotor)

Specification & documents:

1. Particulars:

Control box 0399-0428 at stator part

Power supply: 115 or 230 VAC, 50 or 60 Hz +/- 10%
Power consumption: 40 VA maximum
Input: 2.4 GHz fully protected encrypted signal
Outputs: RS 485 for MODBUS protocol : over TCP/IP,
Optional 4-20 mA isolated current output
Dimensions: 408 x 360 x 111 mm

Rotor equipment

Shaft speed detection: accelerometer signal
Output: 2.4 GHz fully protected encrypted signal
Dimensions: 200 mm to 1000 mm, depending on shaft diameter
Operating temperature: 0°C to 60°C
Measuring tolerance: Thrust [kN]: < 1.0% FS
Torque [kNm]: < 0.25% FS
Power [kW]: < 0.25% FS

2. Reference drawings:

[Specification]

PB-663-GB-0119 TT-Sense

[Technical manual]

TIB-674-GB-0319

3. Test Reports:

VAF Instruments functional test report TT-Sense dated 2018-10-29 and 2019-04-17

EMC test report DARE!! 18C0990RPT02 dated 2019-04-08

Climatic test report Sebert Trillingstechniek M18.005-P18.004 dated 2018-11-30

Vibration test report Sebert Trillingstechniek M18.004-P18.003 dated 2018-11-23

Vibration test report Sebert Trillingstechniek M19.001-P19.001 dated 2019-02-05

EMC test report by DEKRA 2156301.0501-EMC dated 2015-05-06

Test items & approval conditions:

1. Test items:

(Applied testing items are marked with X.)

ENVIRONMENTAL TESTS (IACS UR E10 Rev.7 basis)		Mark
External examination		X
Operation test and performance test		X
Electric power supply failure test		X
Power supply fluctuation test	Electric	X
	Pneumatic and Hydraulic	--
Insulation resistance test		X
High voltage test		--
Pressure test (Pneumatic and Hydraulic)		--
Dry heat test (Temperature 55°C × 16 hours)		X
Damp heat test (Temperature 55°C × 12 hours × 2cycles)		X
Vibration test (Acceleration ±0.7g × 2 hours for control box, ±4.0g × 2 hours for TT-Sense)		X
Inclination test		--
Cold test (0°C × 2 hours)		X
Salt mist test		--
Electrostatic discharge immunity test		X
Radiated radio frequency immunity test		X
Conducted low frequency immunity test		X
Conducted high frequency immunity test		X
Burst / Fast transient immunity test		X
Surge immunity test		X
Radiated emission test		X
Conducted emission test		X
Flame retardant test		--

2. Approval condition:

The product is not allowed to be installed in bridge and on open decks.

- The End -