

TYPE APPROVAL CERTIFICATE

This is to certify:
that the Flow Transmitter

with type designation(s)
TCM series, with TCA1000

issued to
KEM Flow Measurement GmbH
Bad Kötzing, Bayern, Germany

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location Classes

Temperature	D
Humidity	B
Vibration	A
EMC	A
Enclosure	B

Issued at **Hamburg** on **2026-06-08**

This Certificate is valid until **2031-06-07**.

DNV local unit: **Augsburg**

Approval Engineer: **Ramy Abdelal**



for **DNV**

This document has been digitally signed and will
therefore not have handwritten signature

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 USD 300 000.

Product description

TCM Classic Series – Coriolis Mass Flow Meters with TCA1000 transmitter

Variants covered by the Type Approval are specified by model code containing the following:

Model Group	Design Type	Key Difference	Power Supply	Max Flow depending on model (lb/min)
TCM0325 / 0650 / 1550 / 3100	Diamond	Small to medium flow range	24 V DC (standard)	12 / 24 / 57 / 114
TCM5500 / 7900 / 028K / 065K	U-shape	Large flow range / different tube geometry	24 V DC (standard)	202 / 290 / 1,029 / 2,388

Model codes are structured as follow: TCMXXXX-XX-XXXX-TSDS-XX

Where "XXXX" defines the meter size and remaining positions define mechanical, electrical, and interface configuration.

Place of manufacture

KEM Flow Measurement GmbH

Wetzeller Straße 22
 93444 Bad Kötzing
 Germany

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Material suitability for specific process media is not assessed as part of this Type Approval and shall be verified for each application.

Start guide (Manual-Version TCA_Q_EN_260528_E003) must be observed before installation.

Type Approval documentation

Test Report 80267429-00 Rev_0, issued at CSA Group, on 2026-03-06
 Test Report 250200-AU01+E01, issued at Element, on 2026-01-07
 Test Report 80294632-00 Rev_0, issued at CSA Group, on 2026-05-07
 Type approval assessment report issued at Augsburg on 2026-01-12

supporting documentation:

Technical Data Sheet: TCM CLASSIC Product Line
 Environmental Test Programme TCM028K, Document No. 24002-02, Rev. 03, dated 2026-03-09
 Environmental Test Programme TCM3100, Document No. 24002-03, Rev. 03, dated 2026-03-09
 Environmental Test Programme TCM0650, Document No. 24002-04, Rev. 03, dated 2026-03-09
 Manual-Version TCA_Q_EN_260528_E003

List of drawings:

TCM-5500.7900-X-ASM-BOM-X-1
 TCM-028K-X-ASM-BOM-X-1
 TCM-1550.3100-X-ASM-BOM-X-1
 TCM-0325.0650-X-ASM-BOM-X-1
 TCM-065K-X-ASM-BOM-X-1

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply rating

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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE