



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAA00001JX**  
Revision No:  
**2**

## This is to certify:

**That the Test and Calibration Equipment**

with type designation(s)  
**JOFRA ETC, MTC, CTC, RTC-159, PTC-125, mAcal**

Issued to

**Ametek Denmark A/S**  
**Allerød, Denmark**

is found to comply with

**DNV rules for classification – Ships, offshore units, and high speed and light craft**

## Application :

**The instruments are only approved as portable test instruments.**  
**Traceable calibration certificate is available from the manufacturer.**

Issued at **Høvik** on **2022-09-13**

for **DNV**

This Certificate is valid until **2027-06-30**.

DNV local station: **Denmark CMC**

Approval Engineer: **Ståle Sneen**

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**Frederik Tore Elter**  
**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

Calibrators type: JF and JOFRA

Parameter	Type no JF	Type no. JOFRA	Lower cal. setpoint	Upper cal. setpoint
Temperature		JOFRA MTC-650 A MKII	5°C to 50°C *	650°C
Temperature		JOFRA CTC-155 A/C	-37°C to -7°C	155°C
Temperature		JOFRA CTC-350 A/C	5°C to 55°C	350°C
Temperature		JOFRA CTC-660 A/C	5°C to 55°C	660°C
Temperature		JOFRA ETC-125 A	-18°C to 6°C *	125°C
Temperature		JOFRA ETC-400A	5°C to 45°C *	400°C
Temperature		JOFRA ETC-400R	5°C to 45°C *	400°C
Temperature		JOFRA PTC-125 A/B/C	-90°C to -73°C *	125°C
Temperature		JOFRA RTC-159 A/B/C	-100°C to -83°C *	155°C
milliamp Calibrator		JOFRA mAcal		

\*Depending upon environmental temperature (see technical specification)

## Application/Limitation

The Type Approval covers hardware listed under Product description.

Products approved by this certificate are accepted used for calibration on all vessels classed by DNV.

## Type Approval documentation

The approval is based on the following documentation:

### Specification sheets:

SS-CTC	issue 2001
SS-ETC	issue 1109
SS-MACAL	issue 122018
SS-MTC_Marine	issue 1905
SS-PTC-125	issue 2111
SS-RTC-159	issue 2111

### Technical Specifications:

ETC-125 A:	124034 01	dated 2003-02-13
ETC-400 A:	124035 02	dated 2019-04-12
ETC-400 R:	124501 00	dated 2003-11-19
mAcal:	103936 00	dated 1997-08-21

### User Manuals:

mAcal:	103887 03	dated 2021-11-10	
ETC-125A/400A/400R:	123943 10	dated 2022-03-17	(User- and Reference Manual)
PTC-125 A/B/C	128206 07	dated 2021-11-19	
RTC-159 A/B/C	128206 07	dated 2021-11-19	
CTC-155/350/660 A/C	129591 04	dated 2019-12-16	
MTC-650 A MKII	130068 00	dated 2019-03-26	

### Service Manuals:

mAcal:	105321 00	dated 1999-02-12
ETC-125A/400A/400R	124151 00	dated 2003-03-18
PTC-125 A/B/C	127417 05	dated 2021-11-18
RTC-159 A/B/C	127417 05	dated 2021-11-18
CTC-155/350/660 A/C	129586 03	dated 2020-01-06
MTC-650 A MKII	129586 03	dated 2020-01-06

### Reference manuals:

ETC-125A/400A/400R	123943 10	dated 2022-03-17
RTC-159 A/B/C	127139 20	dated 2021-02-17
PTC-125 A/B/C	127915 11	dated 2021-11-12
CTC-155/350/660 A/C	129375 07	dated 2021-11-12
MTC-650 A MKII	130067 02	dated 2021-11-15

DNV survey report dated 1999-05-11

Test report for accuracy mAcal dated 2005-03-23

Ametek test report RTC-159-100C dated 2012-12-21

Ametek test report CTC-MTC-RTC dated 2018-12-21

EMC test report B2015138 dated 2015-11-10 – CTC-350 EN 61326-1:2013  
EMC test report B2019031-3 dated 2019-02-27 – CTC-155 EN 61326-1:2013

Type approval renewal assessment report for TAA00001JX, DNV Denmark CMC 2022-06-27

### Tests carried out

24 hours endurance test of temp.calibrators at max. setpoint, and at min. setpoint with active cooling.  
Pressure test of pressure calibrators to 1.5 times max. pressure.  
Drop test of hand held devices.  
EMC tests according to EN 61326-1:2013.

### Marking of product

The products to be marked with:

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

### 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