

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Test and Calibration Equipment**

with type designation(s)

**Temperature calibrators ETC 600 Series, 350H/650H Series, MTC 350/650 Series, Pressure calibrators MPCE Series, MPC series, PPC Series**

Issued to

**Nagman Instruments & Electronics (P) Ltd  
Chennai, Tamil Nadu, India**

is found to comply with

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

## Application :

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

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

**Class Location see limitation on page 2**

This Certificate is valid until **2024-03-11**.

Issued at **Hamburg** on **2019-03-12**

DNV GL local station: **Chennai**

for **DNV GL**

Approval Engineer: **Didier Girardin**

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**Joannis Papanuskas**  
**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.

Certificate No: **TAA0000291**  
File No: **890.90**  
Job Id: **262.1-010655-3**

## Product description

The ETC600 is an Economy Medium Temperature Dry Block Calibrator with an accuracy of  $\pm 0.15\%$  FS.  
The MTC350/650 is a Microprocessor based Low Temperature Calibrator with accuracy  $\pm 0.4^{\circ}\text{C}/\pm 0.6^{\circ}\text{C}$  with serial interface and software included.

The 350H/650H is a Low/Medium Temperature Dry Block Calibrator with an accuracy of  $\pm 1^{\circ}\text{C}/\pm 1.5^{\circ}\text{C}$ .

The MPC-E Series are Pneumatic / Hydraulic Pressure Calibrators Microprocessor with an accuracy of  $\pm 0.1\%$  FS.

The MPC Series are Microprocessor based High Accuracy ( $\pm 0.05\%$  FS) & Very High Accuracy ( $\pm 0.025\%$  FS) Pressure Calibrators

The PPC Series are Pneumatic/Hydraulic Portable Pressure Calibrators with In-built / Integrated Pump & Vernier assembly with an accuracy of  $\pm 0.05\%$  FS (PPC Series) &  $\pm 0.025\%$  FS (PPC+ Series).

| Model                          | Range                                                                                                                                            | Power Supply                      |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <b>Temperature calibrators</b> |                                                                                                                                                  |                                   |
| ETC600                         | 50°C to 600°C                                                                                                                                    | 230 VAC / 50 Hz / 1200 W          |
| MTC350/650                     | 50°C to 350°C and 650°C                                                                                                                          | 220 VAC / 50 Hz / 1200 W          |
| 350H                           | 10°C above ambient to 350°C                                                                                                                      | 230 VAC / 50 Hz & 115 VAC / 60 Hz |
| 650H                           | 20°C above ambient to 650°C                                                                                                                      | 230 VAC / 50 Hz & 115 VAC / 60 Hz |
| <b>Pressure calibrators</b>    |                                                                                                                                                  |                                   |
| MPC-E Series                   | Ultra Low Pressure: +/- 2000/5000/8000 mmWC<br>Pneumatic: -0.85 to 2/10/20/35/40 Bar<br>Hydraulic: 0 to 70/100/200/350/600/700 Bar               | 9 VDC Battery                     |
| MPC Series                     | Pneumatic: -0.85 to 2/10/25/40 Bar<br>Hydraulic: 0 to 70/100/200/350/700 Bar                                                                     | Rechargeable Battery and Charger  |
| PPC Series                     | PPC-P: -0.85 to 2/10/20 Bar (Pneumatic)<br>PPC-H: 0 to 200/400 Bar (Hydraulic)<br>PPC-D: -0.85 to 20 Bar (Pneumatic)<br>0 to 400 Bar (Hydraulic) | Rechargeable Battery and Charger  |

## Application/Limitation

The Type Approval covers hardware listed under product description.

The instruments are only approved for use as portable test instruments.

The Type Approval of temperature and pressure calibrators are only valid for units with a valid calibration certificate.

## Type Approval documentation

Hidden

## Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016

24h Temperature Endurance Test at maximum temperature for Temperature Calibrators.

Pressure test at 150% of design pressure (pressure gauges/pumps/hoses).

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## 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