



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-12066**

This is to certify that the
Test and Calibration Equipment

with type designation(s)
Temperature Calibrators ETC600, MTC 350/650, 350H/650H
Pressure Calibrators MPCE Series, MPC Series, PPC Series

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

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

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

Høvik, 2010-11-11
for **Det Norske Veritas AS**

This Certificate is valid until
2014-12-31

Odd Magne Nesvåg
Head of Section

DNV local office:
Chennai

Aleksandra Górowska
Surveyor

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.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

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
Temperature calibrators		
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 and 115 VAC / 60 Hz
650H	20°C above ambient to 650°C	230 VAC / 50 Hz and 115 VAC / 60 Hz
Pressure calibrators		
MPC-E Series	Ultra Low Pressure: +/- 2000/5000/8000 mmWC Pneumatic: -0.85 to 2/10/20/35/40 Bar Hydraulic: 0 to 70/100/200/350/600/700 Bar	9 VDC Battery
MPC Series	Pneumatic: -0.85 to 2/10/25/40 Bar 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) PPC-H: 0 to 200/400 Bar (Hydraulic) PPC-D: -0.85 to 20 Bar (Pneumatic) 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

Tests carried out

Environmental tests according to DNV Standard for Certification No. 2.4, April 2006.
 24h Temperature Endurance Test at maximum temperature for Temperature Calibrators.
 Pressure test at 150% of design pressure (pressure gauges/pumps/hoses).

Marking of product

Each model is marked with manufacturer name, model name and serial number.

Certificate Retention Survey

The scope of the retention/renewal survey 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 survey 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

Retention survey is to be performed at least every second year and at renewal of this certificate.

Certificate No.: A-12066
File No.: 890.90
Job Id.: 262.1-010655-1

END OF CERTIFICATE