

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Misc. detector**with type designation(s)
T40MAR, MP60

Issued to

Hottinger Baldwin Messtechnik GmbH
Darmstadt Hessen, Germany

is found to comply with

DNV GL rules for classification – Ships**DNV GL rules for classification – High speed and light craft****DNV GL rules for classification – Naval vessels****DNV GL rules for classification – Offshore units****Application :****Location classes:****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
T40MAR	B	B	B	A*	Required protection according to DNV Rules shall be provided upon installation on board
MP60	B	B	A	A	Required protection according to DNV Rules shall be provided upon installation on board

***See Application/Limitation**This Certificate is valid until **2021-03-03**.Issued at **Hamburg** on **2016-03-04**DNV GL local station: **Essen**Approval Engineer: **Marco Rinkel**for **DNV GL**

Duy Nam Le
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.

Product description

Device	Description									
MP60	The MP60 module, from the PME product line, is a frequency measurement module intended for connecting incremental transducers, frequency generators and HBM T10F-SF1 and T10F-SU2 torque flanges. The MP60 module is set up and parameters assigned via the keyboard and display or with the aid of the PME Assistant. Input Voltage: 24VDC.									
T40MAR-ST40 T40MAR-ST70 T40MAR-ST80	The T40MAR is a torque transducer. By the use of strain gages in a Wheatstone bridge the torque will be measured. The T40MAR consists of a rotating part(rotor) and a static part(stator). The stator supplies contactless energy to the rotor. The rotor sends torque measuring signals also contactless to the stator. The stator transforms the received digital signals to a voltage($\pm 10V$) and a frequency($10kHz\pm 5kHz$) signal.	<table><tr><td>Type</td><td>Antenna Diameter (Stator)</td></tr><tr><td>T40MAR-ST40</td><td>199mm</td></tr><tr><td>T40MAR-ST70</td><td>299mm</td></tr><tr><td>T40MAR-ST80</td><td>356mm</td></tr></table>	Type	Antenna Diameter (Stator)	T40MAR-ST40	199mm	T40MAR-ST70	299mm	T40MAR-ST80	356mm
Type	Antenna Diameter (Stator)									
T40MAR-ST40	199mm									
T40MAR-ST70	299mm									
T40MAR-ST80	356mm									

Application/Limitation

NOTE: Radiated emission exceeds limit with 4.6 dB at 523kHz for T40MAR. BG3 (T40MAR-ST80) exceeds not the limit.

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.

The measuring bodies listed under product description have to be evaluated for shaft fatigue and bolted connection.

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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2015.

Marking of product

The products to be marked with model name, manufacturer name and serial number.

Job Id: **262.1-016307-2**
Certificate No: **TAA00000C1**

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE