DNV·GL

Certificate No:
TAA000003T

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller Micro-Computer Unit

with type designation(s)
MU

Issued to
Nabtesco Corporation
Kobe Hyogo Pref, Japan

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

Application :

Location classes:

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

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**Required protection to be provided upon installation onboard**

This Certificate is valid until **2019-06-30**.

Issued at **Busan** on **2015-09-01**

for **DNV GL**

DNV GL local station: **Kobe**

Approval Engineer: **Dong Ho Park**

Baeg Soon Choi
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.

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Product description

The following components are covered by this Type Approval Certificate.

Module / Unit Description		Type designation
CPU Card	:	MC-151
Digital I/O-card	:	MC-201, MC-202, MC-203, MC-204, MC-205, MC- 206, MC-207, MC-208
Data communication- and isolation card	:	MC-303
Analog I/O card	:	MC-401, MC-402, MC-403
Analog isolation card	:	MC-501, MC-503
F/V converter card	:	MC-502, MC-504
CPP non-follow control card	:	MC-506
Intelligent I/O card	:	MC-603, MC-604
Proportional flow valve card	:	MC-903
Box	:	MU-1xx, MU-2xx, MU-3xx, MU-4xx

Table 1: Type Approved Modules

Module and Component Codification (Refer to maker's datasheet for detailed specification)	
Module / Unit Description	**MU Micro Computer Unit**
1-8 cards and box (MU100)	: MU-1xx
1-6 cards, keyboard, digital indicator and box (MU200)	: MU-2xx
2-8 cards, keyboard, digital indicator and box (MU300)	: MU-3xx
1-8 cards and box (MU-400)	: MU-4xx
01-99	: xx
Module / Unit Description	**MC Micro Computer Card**
CPU Card	: MC–1xx–yy
Digital I/O Card	: MC–2xx–yy
Communication Card	: MC–3xx–yy
Analog I/O Card	: MC–4xx–yy
Data acquisition Card	: MC–5xx–yy
Intelligent I/O Card	: MC–6xx–yy
Complex Card	: MC–9xx–yy
Following number	: xx
Serial number	: yy

Table 2: Module and Component Codification

Application/Limitation

This Type Approval covers hardware as listed under Product Description / Table 1.

The following documentation of the actual application is to be submitted for approval in each case (depending on the application, additional documents may be required):

- Reference to this TA-Certificate
- System block diagram (covering overall- and detailed information)*
- Power supply arrangement drawing (may be a part of the system block diagram)
- Instrument- and equipment list**
- Cabinet arrangement drawing
- Detailed test program for certification
- Functional description
- Wiring diagram of the watchdog circuit.

*: The main components on the drawing/diagram are to be identifiable towards the components listed under product description.

**: Any component included in Nabtesco's project delivery, but not listed in this TA-certificate, is to be highlighted in the equipment list and on the required system block diagram.

Product certificate
Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system according to an approved test program before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation
Tests carried out

Applicable test according to Standard for Certification No. 2.4

Periodical assessment

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.

END OF CERTIFICATE