Certificate No:
TAA0000074

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)
M-800-V

Issued to
Nabtesco Corporation
Kobe, Hyogo Pref, Japan

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

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

Location classes:

Temperature	**B/D - See Product description**
Humidity	**B**
Vibration	**A/B - See Product description**
EMC	**B - See Product description and Application/Limitation**
Enclosure	**Required protection according to the rules shall be applied upon installation on board.**

This Certificate is valid until **2016-06-30**.

Issued at **Høvik** on **2015-12-15**

for **DNV GL**

DNV GL local station: **Kobe**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

M-800-V Micro Computer Unit comprising the following modules:

Type	Manufacturer	Name / description	Pwr. rating	Temp.	Vibr.
NX101*	Nabtesco Corp.	Control Unit	24 Vdc	B	A
NX201	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	B	A
NX202	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	D	B
NX401	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	B	A
NX501	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	B	B
NX701	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	B	B
NX801	Nabtesco Corp.	Input/output Interface Unit	24 Vdc	B	B
NX802	Nabtesco Corp.	Backup Unit	24 Vdc	B	B
NX901	Nabtesco Corp.	Indicator and HMI	24 Vdc	B	A
V-UNIT BOX	Nabtesco Corp.	Interface Box for up to 4 SCC-series PCB cards	-	B	B
SCC-101-**	Nabtesco Corp.	CPU card for system control	-	B	A
SCC-102-**	Nabtesco Corp.	CAN communication and power supply card (5 Vdc)	24 Vdc	B	A
SCC-201-**	Nabtesco Corp.	Controller for digital interface cards	24 Vdc	B	B
SCC-202-**	Nabtesco Corp.	Digital relay output card	-	B	B
SCC-203-**	Nabtesco Corp.	Digital input, analog input and analog output card	-	B	B
SCC-204-**	Nabtesco Corp.	Analog signal isolated input card	-	B	B
SCC-205-**	Nabtesco Corp.	Digital input and digital output card	-	B	B
SCC-206-**	Nabtesco Corp.	Digital input, analog input and analog output card	-	B	A
SCC-251-**	Nabtesco Corp.	Digital input card	-	B	A
SCC-252-**	Nabtesco Corp.	Digital input and digital output card	-	B	A
SCC-253-**	Nabtesco Corp.	Digital output card	-	B	A
SCC-301-**	Nabtesco Corp.	CAN communication and power supply card (5 Vdc)	24 Vdc	B	A
SCC-302-**	Nabtesco Corp.	Operation card (by routing of CAN network, and communication for alarm monitoring system by EIA-422/485)	-	B	A
SCC-411-**	Nabtesco Corp.	Digital input, analog input and analog output card	24 Vdc	B	A
SCC-501-**	Nabtesco Corp.	Extension interface	24 Vdc	B	B
SCC-601-**	Nabtesco Corp.	Auto control and communication card	24 Vdc	B	B
SCC-602-**	Nabtesco Corp.	Manual control and digital output card	-	B	B
SCC-603-**	Nabtesco Corp.	Digital input card	-	B	B
SCC-604-**	Nabtesco Corp.	Analog input and analog output card	24 Vdc	B	B
SCC-701-**	Nabtesco Corp.	Controller card for backup unit	24 Vdc	B	B
SCC-702-**	Nabtesco Corp.	Digital signal input card	-	B	B
SCC-703-**	Nabtesco Corp.	Digital signal input and backup logic card	-	B	B
SCC-704-**	Nabtesco Corp.	Digital signal input/output and backup logic card	-	B	B
SCC-705-**	Nabtesco Corp.	Digital signal input/output and backup logic card	24 Vdc	B	B
SCC-706-**	Nabtesco Corp.	Digital signal input and backup logic card designed for Wärtsilä's UNIC system	-	B	B
SCC-707-**	Nabtesco Corp.	Digital signal input card designed for Wärtsilä's UNIC system	-	B	B
SCC-708-**	Nabtesco Corp.	Digital signal input card designed for Wärtsilä's UNIC system	24 Vdc	B	B

Type	Manufacturer	Name / description	Pwr. rating	Temp.	Vibr.
SCC-721-**	Nabtesco Corp.	Controller card for backup unit	24 Vdc	B	A
SCC-722-**	Nabtesco Corp.	Digital signal input/output card	-	B	A
SCC-723-**	Nabtesco Corp.	Analog input card	-	B	A
SCC-911-**	Nabtesco Corp.	CPU card for digital interface, digital relay output, digital input, CAN communication and RS-232C communication	24 Vdc	B	B
SCC-912-**	Nabtesco Corp.	LED and SW card	-	B	B
SCC-913-**	Nabtesco Corp.	LED indicate and terminal card	-	B	B
BDP	Nabtesco Corp.	Indicator and HMI for bridge	24 Vdc	B	A
CDP	Nabtesco Corp.	Indicator and HMI for control room	24 Vdc	B	A
BDP(P)	Nabtesco Corp.	Indicator and HMI for bridge	24 Vdc	B	A
CDP(P)	Nabtesco Corp.	Indicator and HMI for control room	24 Vdc	B	A
PDP(P)	Nabtesco Corp.	Indicator and HMI for port position	24 Vdc	B	A
SDP(P)	Nabtesco Corp.	Indicator and HMI for starboard pos.	24 Vdc	B	A
FDP(P)	Nabtesco Corp.	Indicator and HMI for fore position	24 Vdc	B	A
ADP(P)	Nabtesco Corp.	Indicator and HMI for aft position	24 Vdc	B	A
MCP	Nabtesco Corp.	Manual Control Panel	24 Vdc	B	B
CP-45H-SPI	MIDORI PRECISIONS	Potentiometer	5 Vdc	B	B
AEAT-60**	Avago Technologies	Encoder	5 Vdc	B	B
ISD-202	ISHIIHYOKI	Operation Panel	5 Vdc	B	A
NPS-SH	Nabtesco Corp.	DC/DC Power Supply Unit	24 Vdc	B	A
GPSA-360-24-NT	Nipron	AC/DC Converter	100 Vac/ 220 Vac/ 24 Vdc	B	A
ADA600F-24-FM	Cosel	AC/DC Converter	100 Vac/ 220 Vac/ 24 Vdc	B	A
EAC-**-472	Cosel	Noise filter	250 Vac/ 250 Vdc	B	A
RG-208F2	NEC/TOKIN	Noise filter	250 Vac	B	A
SUP-EL	Okaya Electric Industries	Noise filter	250 Vac	B	B
IN-11	Nippon Thermo	Breaker	250 Vac/ 65 Vdc	B	A
SS120JP7A	Origin	Diode (Schottky barrier)	(48 Vdc)	B	A
PC308	Nihon Inter Electronic	Diode (rectifier)	(48 Vdc)	B	A
TW-101-**	Nabtesco Corp.	TW-101 Card (serial communication)	24 Vdc	B	B
MCB-3604-**	Nabtesco Corp.	MCB-3604 Card (serial communication)	24 Vdc	B	A
FDR-101-**	Nabtesco Corp.	Driver card for solenoid valve	24 Vdc	B	A
SPU-101-**	Nabtesco Corp.	Power switch card	100 Vac/ 220 Vac/ 24 Vdc	B	A
NXP-24	Nabtesco Corp.	Power Source Unit	100 Vac/ 220 Vac/ 24 Vdc	B	A
NXP-28	Nabtesco Corp.	Power Source Unit	100 Vac/ 220 Vac/ 24 Vdc	B	A
PSB-24	Nabtesco Corp.	Power Source Unit	100 Vac/ 220 Vac/ 24 Vdc	B	A
PSC-28 [1])	Nabtesco Corp.	Power Source Unit	100 Vac/ 220 Vac/ 24 Vdc	B	A

Type	Manufacturer	Name / description	Pwr. rating	Temp.	Vibr.
FZ-301-**	Nabtesco Corp.	FZ-301 Card (serial communication)	24 Vdc	B	A
FZ-302-**	Nabtesco Corp.	FZ-302 Card (CAN bus switch/router)	24 Vdc	B	B
EAA-107-**	Nabtesco Corp.	EAA-107 Card (V/I signal converter)	24 Vdc	B	B
MCB-4201-**	Nabtesco Corp.	MCB-4201 Card (serial communication)	24 Vdc	B	B

[1]) PSC-28 is limited to EMC class A when powered by AC voltage. For DC voltage the EMC class B requirements are fulfilled.

Application/Limitation

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, 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 GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. 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 GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

24Vdc power supply lines shall be equipped with SUP-EL noise filter to meet class requirements for conducted emissions. The SUP-EL filter is not required when 24Vdc is supplied by NXP-24, NXP-28, or other Type Approved power supply with galvanic isolation.

Type Approval documentation

Tests carried out
Applicable tests according to Standard for Certification No. 2.4, April 2006.

Marking of product
Manufacturer, Type and Power rating as listed under Product description.
Each unit shall be marked with a unique serial number.

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