Certificate No:
TAA00003AS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)
DeltaV Automation System

Issued to
Fisher-Rosemount Systems, Inc.
Round Rock, TX, USA

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

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

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B***
Enclosure	**A**

Issued at **Hamburg** on **2023-07-21**
This Certificate is valid until **2028-07-03**.
DNV local unit: **Certification & Inspection Services**

Approval Engineer: **Jens Dietrich**

for **DNV**

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.

Product description

Process automation modules:

KC3030X1-BA3	Fieldbus H1 Card, 4-Port, Series 2 Plus M-series
KC3030X1-BK2	Fieldbus H1 Card, 4-Port, Plus S-series
KJ2004X1-BB1	REMOTE INTERFACE UNIT 2
KJ3201X1-BA3	DI CARD, 24V DRY CONTACT, SERIES 2
KJ3221X1-BA3	ANALOG OUTPUT CARD WITH HART SERIES 2
KJ3221X1-BK2	S-SERIES ANALOG OUT WITH HART
KJ3222X1-BA3	ANALOG INPUT CARD 8 CH 4-20MA HART SERIES 2
KJ3222X1-BK2	S-SERIES ANALOG IN WITH HART
KJ3242X1-BA3	FIELDBUS H1 CARD SERIES 3
KJ3242X1-BK2	S-SERIES CARD H1 CARD
KJ4008X1-BA1	8-WIDE I/O INTERFACE CARRIER W/INDIVIDUAL FIELD POWER PER CARD
KL4211X1-DC1	IS CHARM I/O JUNCTION BOX M20

Places of manufacture

Benchmark Electronics (Thailand)
109 Moo 4, Chaimongkol,
Maung Nakornrachasima,
Nakornrachasima 30000
Thailand

Benchmark Electronics (M) Sdn Bhd
Free Industrial Zone, Phase 1
Bayan Lepas, Penang 11900
Malaysia

Jabil Circuit (Guang Zhou) Ltd.
128 Jun Cheng Road, East Section
Guangzhou Economic & Technological
Development District
Guangdong Province, PRC 510530

Approval conditions

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, by inclusion into an instrument list. Reference is made to DNV Rules for Ships, Pt.4 Ch.9 Control & Monitoring Systems.

The following project specific documentation of the actual application is to be submitted for approval in each case. (Depending on the actual configuration and the class notation of the specific vessel, 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
- Detailed test program for certification
- Functional description
- Documented compliance with DNV environmental requirements in Pt.4 Ch.9 Sec.5 for integrated components which not are covered by this TA-certificate (e.g. power supply, work-station, switch/hub etc).

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.

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.

Application/Limitation

*The DeltaV hardware shall be installed in a cabinet of type Stahl Series 8125/8126. Other cabinet types, providing a shielding of minimum 15dB reduction (between 156MHz and 165 MHz), may alternatively be considered. In such cases, the cabinets field reduction capabilities shall be documented and accepted prior to installation onboard.

*Corcom 6VS1/F7247 Line Filter (or equivalent) shall be applied to 24VDC power supply input to satisfy class requirements for Conducted Emission:

*EMC power line filter such as Tyco S series or equivalent shall be installed on all DC input leads at the Delta V system's enclosure. The filter shall be grounded at the enclosure.

Analog I/O cables shall be shielded and grounded at the DeltaV end as specified by manufacturer and DeltaV system requirements.

On board DC power supply to safeguard maximum supply variation to +/10%.

Tests carried out

Applicable tests according to DNV CG-0339, August 2021.

Marking of product

Manufacturer name and address, type designation, 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