TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001U3
Revision No:
1

This is to certify:

That the Programmable Electronic System

with type designation(s)
KEI-64S Computer system

Issued to
KEI System Co., Ltd.
Osaka-city, Osaka Pref, **Japan**

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.

Location classes:

Temperature	**B**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**Required protection according to relevant rules shall be provided upon installation on board**

Issued at **Høvik** on **2023-06-27**

This Certificate is valid until **2028-05-15**.
DNV local unit: **Japan CMC**

Approval Engineer: **Ståle Sneen**

for **DNV**

Digitally Signed By: Elter, Frederik Tore
Location: DNV Høvik, Norway

Frederik Tore Elter
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

KEI-64S Computer system comprises a host computer and local units, connected by Ethernet.

Host units:

Type	Description	Manufacturer
KEI-64S-A	Host computer, nominal voltage 100..220 VAC	KEI SYSTEM Co., Ltd.
KEI-64S-D	Host computer, nominal voltage 24 VDC	
PLA30F-12	Power supply, internal power for KEI-64S-A	COSEL Co., Ltd.
STMGFS302412	Power supply, internal power for KEI-64S-D	
ESS50-12	Power supply, internal power for KEI-64S-A	Eta Electric Industry Co., Ltd.
SVB12SC24	Power supply, internal power for KEI-64S-D	

Local units:

Type	Description	Manufacturer
ILS-DI	ILS module, 16 ch. binary input	KEI SYSTEM Co., Ltd.
ILS-DV	ILS module, 16 ch. AC voltage input, 110..220 VAC	
ILS-DO	ILS module, 16 ch. relay output	
ILS-AII	ILS module, 8 ch. current input, 4..20 mA	
ILS-AVI	ILS module, 8 ch. voltage input, 0..5V, 0..10V, -10..10V	
ILS-PT	ILS module, 8 ch. 3-wire RTD input, Pt100	
ILS-VR4	ILS module, 8 ch. rheostat input, 1 kΩ	
ILS-BIO	ILS module, 4 ch. current output, 4..20 mA	
ILS-BVO	ILS module, 4 ch. voltage output, 0..5V, 0..10V, -5..5V, -10..10V	
ILS-REP	ILS module, ILS line repeater unit	
ILS-ETH	ILS interface module	
ESS15-24	Power supply (ES series), AC/DC 16.8 W	Eta Electric Industry Co., Ltd.
ESS30-24	Power supply (ES series), AC/DC 31.2 W	
ESS50-24	Power supply (ES series), AC/DC 52.8 W	
ESS75-24	Power supply (ES series), AC/DC 76.8 W	
ESS100-24	Power supply (ES series), AC/DC 108 W	
ESS150-24	Power supply (ES series), AC/DC 156 W	
SVB24SC24	Power supply (SV series), DC/DC	
RSAN-2006	Noise filter, 6 A	TDK-Lambda Corporation
RSAN-2010	Noise filter, 10 A	
RSAN-2016	Noise filter, 16 A	

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 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 certification the clause for software control will be put into force.

Software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Application/Limitation

Local units to be mounted in a self-contained steel cabinet and protected by a properly sized noise filter.

Type Approval documentation

DNV GL-KEI-64S-502 – Specifications KEI-64S Computer system, dated 2017-12-12
ILS-ETH-701 – ILS-ETH Manual, dated 2017-12-12
KEI-64S-701 – KEI-64S Manual, dated 2017-12-12
LR-KEI-64S-505 – Test report KEI-64S Computer system, dated 2017-05-16
ILS units are covered by certificate TAA0000BE and the following two documents:
- LRS-TYP3240-532 – Specification KEI-3240 Computer system, dated 2004-02-25
- LRS-TYP3240ILS-533 – Test report KEI-3240 Computer system, dated 2004-05-07
A-405-20-A – Test report KEI-64S Computer system (EMC to 6 GHz for KEI-64S-A), dated 2021-04-16
A-010-21-A – Test report KEI-64S Computer system (EMC to 6 GHz for KEI-64S-D), dated 2021-04-16
Type approval renewal assessment report for TAA00001U3, Japan CMC 2023-05-15

Tests carried out

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

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply 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