DNV·GL

# TYPE APPROVAL CERTIFICATE

Certificate No:
**TAA0000122**
Revision No:
**3**

## This is to certify:

**That the Programmable Electronic System**

with type designation(s)
**MELSEC iQ-R Series**

Issued to
**Mitsubishi Electric Corporation, Nagoya Works**
**Nagoya, AICHI, Japan**

is found to comply with
**DNV GL 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 GL.**

| | |
|---|---|
| **Temperature** | **B** |
| **Humidity** | **B** |
| **Vibration** | **A** |
| **EMC** | **B** |
| **Enclosure** | **Required protection according to DNV rules shall be provided upon installatiion onboard** |

Issued at **Busan** on **2020-06-12**

This Certificate is valid until **2024-06-30**.
DNV GL local station: **Kobe**

Approval Engineer: **Eun Jin Lee**

for **DNV GL**
Digitally Signed By: Andreas Kristoffersen
Location: DNV GL Busan, Korea

**Andreas Kristoffersen**
**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

Mitsubishi Electric Corporatioin MELSEC-iQ-R series as listed below :

| | |
|---|---|
| CPU Module : | R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU, R12CCPU-V, R08PCPU, R16PCPU, R32PCPU, R120PCPU, R00CPU, R01CPU, R02CPU, R08PSFCPU, R16PSFCPU,R32PSFCPU,R120PSFCPU |
| Base Unit : | R312B, R38B, R35B, R612B, R68B, R65B, RQ612B, RQ68B, RQ65B, R310B-HT, R610B-HT, R310RB, R38RB-HT, R610RB, R68RB-HT |
| Power Supply Module : | R61P, R62P, R63P, R64P, R63RP, R64RP |
| Extension Cable : | RC06B, RC12B, RC30B, RC50B, RC100B |
| Input/Output Module : | RH42C4NT2P, RX40C7, RX41C4, RX42C4, RY40NT5P, RY40PT5P, RY41NT2P, RY41PT1P, RY42NT2P, RY42PT1P, RX10, RY10R2, RX41C6HS, RX61C6HS, RX40PC6H, RX40NC6H, RY41NT2H, RY41PT2H, RX40NC6B, RY40PT5B, RX28, RY20S6, RY18R2A,<br>RX10-TS, RX40C7-TS, RX41C4-TS, RX70C4, RX71C4, RX72C4, RY10R2-TS, RY40NT5P-TS, RY40PT5P-TS, RY41NT2P-TS, RY41PT1P-TS |
| Analog Unit : | R60AD4, R60ADV8, R60ADI8, R60DA4, R60DAV8, R60DAI8, R60ADH4, R60AD8-G, R60AD16-G, R60DA8-G, R60DA16-G, R60DAH4 |
| High Speed Counter Module : | RD62P2, RD62D2, RD62P2E |
| Positioning Unit : | RD75P2, RD75P4, RD75D2, RD75D4 |
| CC Link System Master/Local: | RJ61BT11 |
| CC-Link IE Controller Network : | RJ71GP21-SX, RJ71GP21S-SX |
| CC-Link IE Field Network Master/Local : | RJ71GF11-T2 |
| Serial Communication Module : | RJ71C24, RJ71C24-R2, RJ71C24-R4 |
| Ethernet Interface with CC-Link IE : | RJ71EN71 |
| CC-Link IE Field Network Remote Head : | RJ72GF15-T2 |
| Extended SRAM Unit: | NZ2MC-1MBS, NZ2MC-2MBS, NZ2MC-4MBS, NZ2MC-8MBS, NZ2MC-16MBS, NZ2MC-8MBSE, NZ2MC-2MBSE |
| SD Memory Card: | L1MEM-2GBSD, L1MEM-4GBSD |
| MES Interface Module: | RD81MES96 |
| Intelligent Communication Module: | RD55UP06-V |
| High Speed Data Logger Module: | RD81DL96 |
| Temperature Control Module: | R60TCTRT2TT2, R60TCTRT2TT2BW, R60TCRT4, R60TCRT4BW, R60TD8-G, R60RD8-G |

| | |
|---|---|
| Redundant Function Modules | R6RFM |
| SIL2 Function Module | R6PSFM |
| DeviceNet Module | RJ71DN91 |
| PROFIBUS-DP Module | RJ71PB91V |
| CANopen Module | RJ71CN91 |
| PROFINET Module | RJ71PN92 |
| EtherNet/IP Module | RJ71EIP91 |
| Battery-less option cassette | NZ1BLC |
| HART analog module | R60ADI8-HA |
| CC-Link IE TSN master/local module | RJ71GN11-T2 |

The products listed above are the ones without coating. When special coating is applied for the purpose to enhance resistance to corrosive gas(not for insulation), suffix "(C)" will be added at the end of the product type designation.

Type designaltion of specialty coatings:
- MELQUID V985-15E Liquid type
- MELQUID V985-SE Spray type

## 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 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 GL for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

## Type Approval documentation

Documents for approval :

| | | |
|---|---|---|
| BCN-88000-0708 Rev.0 | Document list of type approval application modules | |
| BCN-88000-0708 Rev.A | Dimension drawings for the products(partial revision in English) | |
| BCN-88000-0709 Rev.C | Type Approval application test specification | 2014-11-17 |
| BCN-88000-0936 Rev.B | Type Approval application test specification | 2016-07-27 |
| BCN-88000-0937 Rev.0 | Document list of type approval application modules | |

Reports:

| | | |
|---|---|---|
| BCN-88000-0736 | Test report for type approval application | 2014-11-26 |
| Type approval assessment report | | 2015-02-06 |
| BCN-88000-0997 | Test report for type approval application | 2016-11-28 |
| Type approval retention survey report | | 2016-04-21 |

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Technical documents:
Document no: BCN-88000-1023 consisting of;
- Document list of type approval application module
- Dimension drawings for the products
- Circuit diagrams
- Certification of materials

Type approval test specification, BCN-88000-1061-A dated 2018-01-15

User manuals:
MELSEC iQ-R Channel Isolated Analog-Digital Converter Module, R-AD-G-U-IN-E
MELSEC iQ-R Channel Isolated Digital-Analog Converter Module, R-DA-G-U-IN-E
MELSEC iQ-R High Speed Digital-Analog Converter Module, R60DAH4-U-IN-E
MELSEC iQ-R Channel Isolated Thermocouple Input Module/Channel Isolated RTD Input Module, R60TDG-R60RDG-U-IN-E
MELSEC iQ-R CPU Module, RCPU-U-IN-E
MELSEC iQ-R Module Configuration, R-MK-E
Safety Guidelines, R3NB-U-HW
MELSEC iQ-R I/O Module, R-IO-U-E
MELSEC iQ-R I/O Module (With Diagnostic Functions), R-DFIO-U-IN-E
MELSEC iQ-R CC-Link IE Field Network Remote Head Module, RJ72GF15-T2-U-IN-E

Reports & Others:
Test report for type approval application, BCN-88000-1239 dated 2018-03-22

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Technical documents:
Document list of type approval, BCN-88000-1360
Circuit diagram, BCN-88000-1389 dated 2018-11-15
Dimension drawing, BCN-88000-1390 dated 2018-11-15
Materials, BCN-88000-1391 dated 2018-11-15
Parts list, BCN-88000-1393 dated 2018-11-15

User manuals:
MELSEC iQ-R CPU Module, RCPU-U-IN-E
MELSEC iQ-R DeviceNet Master/Slave Module, RJ71DN91-U-IN-E
MELSEC iQ-R PROFIBUS-DP Module, RJ71PB91V-U-IN-E
MELSEC iQ-R CANopen Module, RJ71CN91-U-IN-E
MELSEC iQ-R PROFINET IO Controller Module, RJ71PN92-U-IN-E
MELSEC iQ-R EtherNet/IP Network Interface Module, RJ71EIP91-U-IN-E
MELSEC iQ-R I/O Module, R-IO-U-E

Reports & Others:
Test report, BCN-88000-1439 dated 2019-05-07

Type Approval Assessment Report dated 2019-11-04

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Technical documents:
Circuit diagram, BCN-88000-1529 dated 2019-10-29

Dimension drawing, BCN-88000-1531 dated 2019-10-29
Materials, BCN-88000-1533 dated 2019-10-29
Parts list, BCN-88000-1537 dated 2019-10-29
Type approval test specification, BCN-88000-1527-A dated 2019-10-29

User manuals:
MELSEC iQ-R HART-Enabled analog-digital converter module, R60ADI8-HA-U-IN-E
MELSEC iQ-R CC-Link IE TSN, R-CCIETSN-U-IN-E
MELSEC iQ-R Ethernet/CC-Link IE, R-ETHER CCIE-U-IN-E

Reports & Others:
Test reports, BCN-88000-1603 dated 2020-03-26

## Tests carried out

Applicable tests according to DNV GL class guideline, DNVGL-CG-0339, December 2019.

*EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.*

## Marking of product

The products to be marked with:
- Manufacturer name
- Model name
- 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE