DNV·GL

Certificate No:
TAA00000SE

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Controller

with type designation(s)
Programmable Logic Controller MELSEC iQ-F 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.

Location classes:

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

*** See Application/Limitation**

This Certificate is valid until **2021-10-03**.

Issued at **Busan** on **2016-10-04**

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.

Product description

Programmable Logic Controller MELSEC iQ-F Series.

Model	Specifications				
	Power supply	Input		Output	
CPU Modules					
FX5U–32MR/ES	100 to 240 VAC 50/60Hz	16	24 VDC sink/source	16	Relay
FX5U–32MT/ES					Transistor(sink)
FX5U–32MT/ESS					Transistor(source)
FX5U–64MR/ES		32		32	Relay
FX5U–64MT/ES					Transistor(sink)
FX5U–64MT/ESS					Transistor(source)
FX5U–80MR/ES		40		40	Relay
FX5U–80MT/ES					Transistor(sink)
FX5U–80MT/ESS					Transistor(source)
FX5UC–32MT/D	24 VDC	16	24 VDC sink	16	Transistor(sink)
FX5UC–32MT/DSS			24 VDC sink/source		Transistor(source)
FX5UC–64MT/D		32	24 VDC sink	32	Transistor(sink)
FX5UC–64MT/DSS			24 VDC sink/source		Transistor(source)
FX5UC–96MT/D		48	24 VDC sink	48	Transistor(sink)
FX5UC–96MT/DSS			24 VDC sink/source		Transistor(source)
Option modules					
FX5–8EX/ES	Power supply from CPU module	8	24 VDC sink/source	–	–
FX5–8EYR/ES		–	–	8	Relay
FX5–8EYT/ES					Transistor(sink)
FX5–8EYT/ESS					Transistor(source)
FX5–16EX/ES		16	24 VDC sink/source	–	–
FX5–16EYR/ES		–	–	16	Relay
FX5–16EYT/ES					Transistor(sink)
FX5–16EYT/ESS					Transistor(source)
FX5–16ET/ES–H		8	24 VDC sink	8	Transistor(sink)
FX5–16ET/ESS–H			24 VDC sink/source		Transistor(source)
FX5–32ER/ES	100 to 240 VAC 50/60Hz	16	24 VDC sink/source	16	Relay
FX5–32ET/ES					Transistor(sink)
FX5–32ET/ESS					Transistor(source)
FX5–C16EX/D	Power supply from CPU module	16	24 VDC sink	–	–
FX5–C16EX/DS			24 VDC sink/source		
FX5–C16EYT/D		–	–	16	Transistor(sink)
FX5–C16EYT/DSS					Transistor(source)
FX5–C32EX/D		32	24 VDC sink	–	–
FX5–C32EX/DS			24 VDC sink/source		
FX5–C32EYT/D		–	–	32	Transistor(sink)
FX5–C32EYT/DSS					Transistor(source)

FX5–C32ET/D		16	24 VDC sink	16	Transistor(sink)
FX5–C32ET/DSS			24 VDC sink/source		Transistor(source)
FX5–1PSU–5V	Expansion power supply module				
FX5–C1PS–5V	Expansion power supply module				
FX5–CNV–BC	Connector conversion for connecting an extension cable				
FX5–CNV–IF	Connector conversion FX5(terminal block) → FX5(connector)				
FX5–CNV–IFC	Connector conversion FX5(connector) → FX5(terminal block)				
FX5–CNV–BUS	Bus conversion FX5(terminal block) → FX3(terminal block)				
FX5–CNV–BUSC	Bus conversion FX5(connector) → FX3(connector)				
FX5–232–BD	For RS-232C communication board				
FX5–485–BD	For RS-485 communication board				
FX5–422–BD–GOT	For GOT RS-422 communication board				
FX5–232ADP	For RS-232C communication adapter				
FX5–485ADP	For RS-485 communication adapter				
FX5–4AD–ADP	4 ch analog input adapter				
FX5–4DA–ADP	4 ch analog output adapter				

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. 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.

Application/Limitation

Noise filter, 'HF3010C-SZA' manufactured by SOSHIN ELECTRIC Co.,Ltd or equivalent, should be connected between the power terminals and the power supply.
Clamp filters, 'E04SR401938' and 'ZCAT2035-0930A' manufactured by SEIWA ERECTRIC MFG CO.Ltd and TDK Corporation or equivalent, are to be respectively used according to manufacturer's installation manual.
Equipment shall not be installed within 5 m from a standard or steering magnetic compass.
Equipment is not intended for use with battery power supply.
* EMC Location class A for FX5-1PSU-5V only.

Type Approval documentation

Tests carried out

Applicable tests according to DNV GL Class Guideline, DNVGL-CG-0339, November 2015.

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE