



Marine & Offshore  
Division

Certificate number: 44830/A0 BV

File number: AP 4703

Product code: 4501H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**MITSUBISHI ELECTRIC CORPORATION Nagoya Works**

Nagoya - JAPAN

*for the type of product*

**PROGRAMMABLE LOGIC CONTROL UNITS**

MELSEC iQ-F series

**Requirements:**

Bureau Veritas Rules for the Classification of Steel Ships.

EC Code: 31B

*This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 21 Oct 2021**

**For BUREAU VERITAS,**

At BV KOBE, on 21 Oct 2016,

Shinichi Takemoto



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 4 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION:

Product model or type designation:

- MELSEC iQ-F series

Product description:

- Programmable Logic Control Unit includes the following items:

Model	Specifications				
	Power supply	Inputs		Outputs	
CPU modules					
FX5U-32MR/ES	100 to 240 VAC 50/60Hz	16 points	24 VDC Sink/source	16 points	Relay
FX5U-32MT/ES					Transistor/sink
FX5U-32MT/ESS					Transistor/source
FX5U-64MR/ES		32 points		32 points	Relay
FX5U-64MT/ES					Transistor/sink
FX5U-64MT/ESS					Transistor/source
FX5U-80MR/ES		40 points		40 points	Relay
FX5U-80MT/ES					Transistor/sink
FX5U-80MT/ESS					Transistor/source
FX5UC-32MT/D	24 VDC	16 points	24 VDC Sink	16 points	Transistor/sink
FX5UC-32MT/DSS			24 VDC Sink/source		Transistor/source
FX5UC-64MT/D		32 points	24 VDC Sink	32 points	Transistor/sink
FX5UC-64MT/DSS			24 VDC Sink/source		Transistor/source
FX5UC-96MT/D		48 points	24 VDC Sink	48 points	Transistor/sink
FX5UC-96MT/DSS			24 VDC Sink/source		Transistor/source
Option modules					
FX5-8EX/ES	Power supply from CPU module	8 points	24 VDC Sink/source	-	-
FX5-8EYR/ES		-	-	8 points	Relay
FX5-8EYT/ES					Transistor/sink
FX5-8EYT/ESS					Transistor/source
FX5-16EX/ES		16 points	24 VDC Sink/source	-	-
FX5-16EYR/ES		-	-	16 points	Relay
FX5-16EYT/ES					Transistor/sink
FX5-16EYT/ESS					Transistor/source
FX5-16ET/ES-H		8 points	24 VDC Sink	8 points	Transistor/sink
FX5-16ET/ESS-H	24 VDC Sink/source		Transistor/source		
FX5-32ER/ES	100 to 240 VAC 50/60Hz	16 points	24 VDC Sink/source	16 points	Relay
FX5-32ET/ES					Transistor/sink
FX5-32ET/ESS					Transistor/source
FX5-C16EX/D	Power supply from CPU module	16 points	24 VDC Sink	-	-
FX5-C16EX/DS			24 VDC Sink/source		
FX5-C16EYT/D		-	-	16 points	Transistor/sink
FX5-C16EYT/DSS					Transistor/source
FX5-C32EX/D		32 points	24 VDC Sink	-	-
FX5-C32EX/DS			24 VDC Sink/source		
FX5-C32EYT/D		-	-	32 points	Transistor/sink
FX5-C32EYT/DSS					Transistor/source
FX5-C32ET/D		16 points	24 VDC Sink	16 points	Transistor/sink
FX5-C32ET/DSS	24 VDC Sink/source		Transistor/source		

**1. PRODUCT DESCRIPTION (to be continued):**

Option modules	
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

**2. DOCUMENTS AND DRAWINGS:****Mitsubishi Electric Corporation:**

- NSH-15057-05\_Test\_Schedule, dated Apr 18, 2016
- NSH-15057-04\_Operation\_and\_Performance\_Criteria Appendix 2, dated Jun 22, 2016
- EMC Accreditation\_Certificate\_of\_JQA No. VLAC-001-5, dated Mar 31, 2016
- Program\_comparison\_before\_and\_after\_countermeasure Appendix 4, dated Jul 2016
- NSH-15057-03\_Test\_Configuration Appendix 1, dated Jul 25, 2016
- FX5-4AD-ADP\_Hard\_Manual Appendix 3, dated May 2016
- Application Model List No. NSH-15058-01, dated Sep 15, 2016

**3. TEST REPORTS:****Mitsubishi Electric Corporation:**

- Test Report Ref. NSH-15057-07, dated Aug 4, 2016.

**JQA:**

- Test Report Ref. KL05160014-1, dated Aug 5, 2016
- Test Report Ref. KL05160014-2, dated Aug 5, 2016
- Test Report Ref. KL05160014-3, dated Aug 5, 2016
- Test Report Ref. KL05160014-4, dated Aug 5, 2016
- Test Report Ref. KL05160014-5, dated Aug 5, 2016
- Test Report UR E10 Ref. KL80160077, dated Jul 26, 2016

**4. APPLICATION / LIMITATION:**

- 4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS Environmental Category, **EC Code: 31B.**
- 4.4 - The equipment installed within a metallic cabinet fulfils the EMC requirements for installation in Bridge and Deck Zone except for Open Deck. Only FX5-1PSU-5V can be installed in General Power Distribution Zone.
- 4.5 - Each application is to be submitted to the Society's consideration.
- 4.6 - Where the system is used for machinery safeguards required by the Rules, the equipment is to be duplicated by another and different system.
- 4.7 - Only Hardware and Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer are covered by this certificate.
- 4.8 - Automation systems associated with essential services based on PLC's, once installed onboard ships, are to be tested in accordance with the above referred Regulations under the supervision of a Society's Surveyor.
- 4.10 - A power supply line filter, conductive control boxes, clamp ferrite, and shielded cable shall be used together with the product. The details will be reported in a test report that will be submitted after completing the type test.



**5. PRODUCTION SURVEY REQUIREMENTS:**

5.1 - The above products are to be supplied by **mitsubishi electric corporation Nagoya Works** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **mitsubishi electric corporation Nagoya Works** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - **mitsubishi electric corporation Nagoya Works** has declared to Bureau Veritas the following production site(s):

**mitsubishi electric corporation  
Nagoya Works  
5-1-14, Yada-Minami, Higashi-ku  
Nagoya, 461-8670  
JAPAN**

**6. MARKING OF PRODUCT:**

- Maker's name or trade mark.
- Serial number of the units.
- Equipment type number or model identification under which it was type-tested.

**7. OTHERS:**

It is **mitsubishi electric corporation Nagoya Works - JAPAN**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

\*\*\* END OF CERTIFICATE \*\*\*