



CERTIFICATE NUMBER  
16-YO1497484-PDA

DATE  
26 Sep 2016

ABS TECHNICAL OFFICE  
Yokohama Engineering Services

# CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of

## MITSUBISHI ELECTRIC CORPORATION

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Programmable Logic Controller**

Model: **MELSEC iQ-F series**

This Product Design Assessment (PDA) Certificate 16-YO1497484-PDA, dated 26/Sep/2016 remains valid until 25/Sep/2021 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING

Motohiro Tamura  
Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

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**Tier: 5 - Unit Certification Required**

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**Product:** Programmable Logic Controller**Model:** MELSEC iQ-F series**Intended Service:**

Programmable Logic Controllers (PLC) for controlling and monitoring of industrial processes.

**Description:**

MELSEC iQ-F series are Modular type system consisted of various types of module components such as power supply modules, CPU modules, input and output modules, and other special function modules. System can be flexibly configured by selecting the required modules in accordance with the application.

**Rating:**

100V-240V AC or 24VDC, Detailed module names listed in the attached component list

**Service Restriction:**

- 1) Unit Certification is required for this product. The tests in the presence of the Surveyor are required in accordance with 4-9-8/Table 2 of the Rules "Performance Tests" where it is used for control, monitoring and safety systems of propulsion machinery, propulsion boilers, vital auxiliary pumps and electrical generating plants. The performance tests are to be carried out at the assembled plant before installation onboard or after installation onboard.
- 2) Environmental temperature of where this equipment is installed is not to be more than 55°C.

**Comments:**

- 1) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- 2) The following is applicable to the computer-based system in accordance with 4-9-3 of the Steel Vessel Rules;
  - (a) The system is assigned as Category III
  - (b) The required evidence is to be kept by the manufacturer in accordance with 4-9-3/Table 2 of the Steel Vessel Rules
- 3) The required evidence for the application software in accordance with 4-9-3/Table 2 to be submitted by manufacturer/vendor assembling the unit.
- 4) Unless specially directed by Administration, this approval is not to be construed as a substitute for flag Administration's approval for the purpose of SOLAS 1974 (2014 Consolidated Edition).

**Notes/Drawing/Documentation:**

Drawing No. 3501048 , ISO9001 Certificate, Revision: 00  
Drawing No. B4-YS0-7503, Software evaluation report (extracted), Revision: 00  
Drawing No. BS-1624, Software development plan, Revision: 00  
Drawing No. BSE-0776, Software external specification - error codes (extracted), Revision: 00  
Drawing No. BV-YN0-0555, Software debug notes (extracted), Revision: 00  
Drawing No. BZ5630, List of Product Drawings, Revision: 00  
Drawing No. DWG01, FX5U-32MR\_ES Drawings, Revision: 00  
Drawing No. DWG02 , FX5U-32MT\_ES Drawings, Revision: 00  
Drawing No. DWG03 , FX5U-32MT\_ESS Drawings, Revision: 00  
Drawing No. DWG04 , FX5U-64MR\_ES Drawings, Revision: 00  
Drawing No. DWG05, FX5U-64MT\_ES Drawings, Revision: 00  
Drawing No. DWG06, FX5U-64MT\_ESS Drawings, Revision: 00  
Drawing No. DWG07 , FX5U-80MR\_ES Drawings, Revision: 00  
Drawing No. DWG08, FX5U-80MT\_ES Drawings, Revision: 00  
Drawing No. DWG09, FX5U-80MT\_ESS Drawings, Revision: 00  
Drawing No. DWG10, FX5UC-32MT\_D Drawings, Revision: 00  
Drawing No. DWG11, FX5UC-32MT\_DSS Drawings, Revision: 00  
Drawing No. DWG12, FX5UC-64MT\_D Drawings, Revision: 00



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Drawing No. DWG13 , FX5UC-64MT DSS Drawings, Revision: 00  
Drawing No. DWG14, FX5UC-96MT D Drawings, Revision: 00  
Drawing No. DWG15 , FX5UC-96MT DSS Drawings, Revision: 00  
Drawing No. DWG16 , FX5-232-BD Drawings, Revision: 00  
Drawing No. DWG17, FX5-485-BD Drawings, Revision: 00  
Drawing No. DWG18, FX5-422-BD-GOT Drawings, Revision: 00  
Drawing No. DWG19, FX5-232ADP Drawings, Revision: 00  
Drawing No. DWG20, FX5-485ADP Drawings, Revision: 00  
Drawing No. DWG21, FX5-4AD-ADP Drawings, Revision: 00  
Drawing No. DWG22, FX5-4DA-ADP Drawings, Revision: 00  
Drawing No. DWG23, FX5-8EX ES Drawings, Revision: 00  
Drawing No. DWG24 , FX5-8EYR ES Drawings, Revision: 00  
Drawing No. DWG25, FX5-8EYT ES Drawings, Revision: 00  
Drawing No. DWG26, FX5-8EYT ESS Drawings, Revision: 00  
Drawing No. DWG27, FX5-16EX ES Drawings, Revision: 00  
Drawing No. DWG28, FX5-16EYR ES Drawings, Revision: 00  
Drawing No. DWG29 , FX5-16EYT ES Drawings, Revision: 00  
Drawing No. DWG30 , FX5-16EYT ESS Drawings, Revision: 00  
Drawing No. DWG31 , FX5-32ER ES Drawings, Revision: 00  
Drawing No. DWG32, FX5-32ET ES Drawings., Revision: 00  
Drawing No. DWG33 , FX5-32ET ESS Drawings, Revision: 00  
Drawing No. DWG34 , FX5-C16EX D Drawings, Revision: 00  
Drawing No. DWG35, FX5-C16EX DS Drawings, Revision: 00  
Drawing No. DWG36 , FX5-C16EYT D Drawings, Revision: 00  
Drawing No. DWG37, FX5-C16EYT DSS Drawings, Revision: 00  
Drawing No. DWG38 , FX5-C32EX D Drawings, Revision: 00  
Drawing No. DWG39, FX5-C32EX DS Drawings, Revision: 00  
Drawing No. DWG40, FX5-C32EYT D Drawings, Revision: 00  
Drawing No. DWG41 , FX5-C32EYT DSS Drawings, Revision: 00  
Drawing No. DWG42 , FX5-C32ET D Drawings, Revision: 00  
Drawing No. DWG43, FX5-C32ET DSS Drawings, Revision: 00  
Drawing No. DWG44, FX5-16ET ES-H Drawings, Revision: 00  
Drawing No. DWG45 , FX5-16ET ESS-H Drawings, Revision: 00  
Drawing No. DWG46 , FX5-1PSU-5V Drawings, Revision: 00  
Drawing No. DWG47, FX5-C1PS-5V Drawings, Revision: 00  
Drawing No. DWG48, FX5-CNV-BC Drawings, Revision: 00  
Drawing No. DWG49, FX5-CNV-1F Drawings, Revision: 00  
Drawing No. DWG50, FX5-CNV-1FC Drawings, Revision: 00  
Drawing No. DWG51, FX5-CNV-BUS Drawings, Revision: 00  
Drawing No. DWG52, FX5-CNV-BUSC Drawings, Revision: 00  
Drawing No. FX5CNVIF , FX5-CNV-1F product spec, Revision: 00  
Drawing No. HIME-L081-B1502(MEE), MELSEC iQ-F Series Product Catalog, Revision: 00  
Drawing No. JY997D55301C , MELSEC iQ-F FX5U User's Manual (Hardware), Revision: 00  
Drawing No. JY997D61401C, MELSEC iQ-F FX5UC User's Manual (Hardware), Revision: 00  
Drawing No. JY997D64401A , MELSEC iQ-F FX5-16ET E -H Hardware Manual, Revision: 00  
Drawing No. JY997D65401A, MELSEC iQ-F FX5-CNV-BC Hardware Manual, Revision: 00  
Drawing No. KL05160014-1, JQA Test Report (Set1), Revision: 00, date 5 August 2016  
Drawing No. KL05160014-2, JQA Test Report (Set2), Revision: 00, date 5 August 2016  
Drawing No. KL05160014-3, JQA Test Report (Set3), Revision: 00, date 5 August 2016  
Drawing No. KL05160014-4, JQA Test Report (Set4), Revision: 00, date 5 August 2016  
Drawing No. KL05160014-5, JQA Test Report (Set5), Revision: 00, date 5 August 2016

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Drawing No. KL80160077, JQA Test Report (Set1-Set5), Revision: 00, date 26 July 2016

Drawing No. NSH-15057-07, Type Test Report, Revision: 00, date 4 August 2016

Drawing No. NSH-15057-07-A1, Appendix 1 Test Configuration, Revision: 00

Drawing No. NSH-15057-07-A2, Appendix 2 Operation and Performance Criteria, Revision: 00

Drawing No. NSH-15057-07-A3, Appendix 3 FX5-4AD-ADP Hard manual, Revision: 00

Drawing No. NSH-15057-07-A4, Appendix 4 Program comparison before and after countermeasure, Revision: 00

Drawing No. NSH-15057-07-A5, Appendix 5 Accreditation Certificate of JQA, Revision: 00

Drawing No. NSH-15058-01, Application models list, Revision: 00

Drawing No. NSH-15058-02, List of Application Documents, Revision: 00

Drawing No. NSH-15058-07, agency authorization notification, Revision: 00

Drawing No. NSH-15058-17, Answers to Computer Based Sys Table 2 and 3, Revision: 00

Drawing No. Sanki-131002D, Sequencer and display software management rule, Revision: 00

Drawing No. Sanki-131003K, Sequencer and display software version management rule, Revision: 00

Drawing No. Sanki-630107X, Software development and improvement management rule (extracted), Revision: 00

**Terms of Validity:**

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**STANDARDS****ABS Rules:**

2016 Steel Vessel Rules 1-1-4/7.7, 1-1-A3 & A4, 4-8-3/5, 4-9-3 (Cat III) and 4-9-8/13,  
2016 Mobile Offshore Drilling Units Rules 1-1-4/9.7, 1-1-A2 & A3, 4-3-3/3.13 and 4-3-4/5,  
2016 Steel Vessels Under 90 Meters in Length 1-1-4/7.7, 1-1-A3 & A4, 4-6-3/3.13 and 4-7-4/3,  
2016 Offshore Support Vessels 1-1-4/7.7, 1-1-A3 & A4, 4-8-3/5, 4-9-3 (Cat III) and 4-9-8/13,  
2016 High-Speed Craft 1-1-4/11.9, 1-1-A2 & A3, 4-6-3/13, 4-7-8 (Cat III) and 4-7-9/15

**National:**

NA

**International:**

NA

**Government:**

NA

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**EUMED:**

NA

**OTHERS:**

IACS UR E10 (2014), IACS UR E22 (2010)

**Design Assessment (DA) Certificate Attachment for Component**

**DA Certificate No.:** 16-YO1497484-PDA  
**Issue Date:** 26 September 2016  
**Expire Date:** 25 September 2021  
**Company:** Mitsubishi Electric Corporation  
**Factory or Works:** Nagoya Works  
**Product/Equipment:** Programmable Logic Controller  
**Model:** MELSEC iQ-F Series

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

**Design Assessment (DA) Certificate Attachment for Component**

**DA Certificate No.:** 16-YO1497484-PDA  
**Issue Date:** 26 September 2016  
**Expire Date:** 25 September 2021  
**Company:** Mitsubishi Electric Corporation  
**Factory or Works:** Nagoya Works  
**Product/Equipment:** Programmable Logic Controller  
**Model:** MELSEC IQ-F Series

Model	Specifications				
	Power supply	Inputs		Outputs	
Option modules					
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
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				