Marine & Offshore

Certificate number: 13029/C0 BV
File number: AP 3518
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

Series MELSEC-Q.

Requirements:
Bureau Veritas Rules for the Classification of Steel Ships.

EC Code: 31

This certificate is issued to attest that Bureau Veritas Marine & Offshore 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: 18 Jan 2024

For Bureau Veritas Marine & Offshore,
At BV KOBE, on 18 Jan 2019,
Shinichi Takemoto

BUREAU VERITAS SURVEYORS AT PARIS 1828 KOBE INTERNATIONAL REGISTER

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

The **MELSEC-Q series** includes the following items:

1.1 - Hardware:

Type	Reference	Description
CPU	Q00JCPU, Q00JCPU-E	Basic model with built-in 110-240 VAC power supply and a 5-slot base
	Q00CPU, Q01CPU	Basic models
	Q02CPU, Q02HCPU Q06HCPU, Q12HCPU, Q25HCPU	High performance models
	Q02PHCPU, Q06PHCPU Q12PHCPU, Q25PHCPU	Process models
	Q12PRHCPU, Q25PRHCPU	Process models, redundant
	Q00UCPU, Q01UCPU, Q02UCPU Q03UDCPU, Q03UDECPU, Q03UDVCPU Q04UDHCPU, Q04UDEHCPU, Q04UDVCPU, Q04UDPVCPU Q06UDHCPU, Q06UDEHCPU, Q06UDVCPU, Q06UDPVCPU Q10UDHCPU, Q10UDEHCPU Q13UDHCPU, Q13UDEHCPU, Q13UDVCPU, Q13UDPVCPU Q20UDHCPU, Q20UDEHCPU Q26UDHCPU, Q26UDEHCPU Q26UDVCPU, Q26UDPVCPU Q00UJCPU, Q00UJCPU-S8	Universal models
Base units Requiring power supply modules	Q32SB, Q33SB, Q35SB	Slim type main base units
	Q65WRB	Redundant type extension base, 5 Slots
	Q33B, Q35B, Q38B, Q312B	Main base units
	Q38DB, Q312DB, Q35DB	Multiple CPU high speed main base units
	Q38RB	Main base units, redundant
	Q63B, Q65B, Q68B, Q612B	Extension base units
	Q68RB	Extension base unit for redundant system
Base units	Q52B, Q55B	Extension base units, not requiring external power supply module
Large size base unit	Q35BL	5 slots main base unit
	Q38BL	8 slots main base unit
	Q55BL	5 slots extension base unit
	Q65BL	5 slots extension base unit
	Q68BL	8 slots extension base unit
Extension cable	QC05B, QC06B, QC12B, QC30B, QC40B, QC50B, QC100B	Connection between bases
Tracking cable	QC10TR, QC30TR	Tracking cables for redundant system
Power supply	Q61P, Q61SP, Q61P-A1, Q61P-A2, Q62P, Q64P	AC power supplies
	Q64RP, Q64RPN	AC power supply module for redundant system
	Q63P	DC power supply
	Q64PN	Input voltage range: 100-240VAC output voltage: 5VDC
Input module	QX10, QX28	VAC input modules
	QX40, QX40-S1, QX41, QX41-S1, QX42, QX42-S1, QX70, QX71, QX72, QX80, QX81, QX82, QX82-S1	VDC input modules
	QX40H	16 points 24VDC positive commun input module
	QX70H	16 points 5VDC positive commun input module
	QX80H	16 points 24VDC negative commun input module
	QX90H	16 points 5VDC negative commun input module
	QX50	16 points 48VDC/48VAC input module
SRAM Card	Q2MEM-1MBSN	
	Q2MEM-2MBSN	
Large size input module	QX11L	32 points 100-120VAC input module
	QX21L	32 points 200-240VAC input module

Type	Reference	Description
Output module	QY10, QY18A	Potential free contacts output modules
	QY22	AC triac output module
	QY40P, QY41P, QY42P, QY50	Transistor (sink) output modules
	QY68A	Independent transistor (sink source) output modules
	QY70, QY71	Transistor TTL CMOS (sink) output modules
	QY80, QY81P	Transistor (source) output modules
	QY82P	64 points source type transistor output module
	QY41H	Transistor high speed (sink) output modules
Large size output module	QY13L	32 points relay output module (24VDC/240VAC)
	QY23L	32 points triac output module (100-240VAC)
	QY11AL	16 points relay output module (24VDC/240VAC)
I/O Composite modules	QH42P, QX48Y57	DC input, transistor output
Interrupt module	QI60	Interrupt module, 16 points
A/D converters	Q64AD, Q68ADV, Q68ADI	Analog - Digital Converter Module
	Q66AD-DG	6 Channels Channel Isolated Analog-Digital Converter Module (with Signal Conditioning Function)
	Q68AD-G	8 Channels Channel Isolated Analog - Digital Converter Module
	Q64ADH	4 Channels Channel Isolated High speed Analog-Digital Converter Module
D/A converters	Q62DA, Q62DAN, Q64DA, Q64DAN, Q68DAV, Q68DAVN, Q68DAI,Q68DAIN	Digital - Analog Converter Module
	Q62DA-FG	Channel-Isolated Digital- Analog Converter Module
	Q66DA-G	6 Channels Channel Isolated Digital- Analog Converter Module
	Q64DAH	4 Channels Channel Isolated Digital- Analog Converter Module
Load cell input module	Q61LD	Load cell module
Analog module	Q64AD2DA	4 channel analog input / 2 channel analog output module
Thermocouple module	Q64TD,Q64TD-F10, Q64TDV-GH, Q64TDV-GH-F10	Thermocouple Input Module
	Q68TD-G-H01	8 channel thermocouple input module
	Q68TD-G-H02	8 channel thermocouple input module
Temperature module	Q64RD, Q64RD-F10, Q64RD-G, Q68RD3-G	RTD Input Module
Temperature controller	Q64TCTT, Q64TCTTBW, Q64TCRT, Q64TCRTBW, Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN	Temperature Control Module
Loop control module	Q62HLC	2 channels loop control module
Current Transformer Input module	Q68CT	8 channels input module
High speed counter	QD62, QD62E, QD62D, QD64D2, QD63P6, QD65PD2	High-Speed Counter Module
Pulse input	QD60P8-G	Channel isolated Pulse Input Module
Positioning module	QD75P1/P1N, QD75P2/P2N, QD75P4/P4N,	1-axis, 2-axes, 4-axes open collector output
	QD75D1/D1N, QD75D2/D2N, QD75D4/D4N,	1-axis, 2-axes, 4-axes differential output
	QD70D4, QD70D8,	4-axes, 8-axes differential output
	QD72P3C3	3-axes open collector output, 3 channels counter input
	QD73A1	1-axe, differential output

Type	Reference	Description
Ethernet interface	QJ71E71, QJ71E71-B2,	for 10BASE5/10BASE-T,10BASE2
	QJ71E71-100,	for 10BASE-T/100BASE-TX
	QJ71E71-B5,	for 10BASE5
FL-net (OPCN-2) module	QJ71FL71, QJ71FL71-B2,	FL-net(OPCN-2)Ver.1.00, for 10BASE5/10BASE-T, 10BASE2
	QJ71FL71-B2-F01,	FL-net(OPCN-2)Ver.2.00, for 10BASE2
	QJ71FL71-B5,	FL-net(OPCN-2)Ver.1.00, for 10BASE5
	QJ71FL71-B5-F01,	FL-net(OPCN-2)Ver.2.00, for 10BASE5
	QJ71FL71-T,	FL-net(OPCN-2)Ver.1.00, for 10BASE-T
	QJ71FL71-T-F01	FL-net(OPCN-2)Ver.2.00, for 10BASE-T
Serial communication interface	QJ71C24, QJ71C24N,	RS232 1 channel, RS 422/485 1 channel
	QJ71C24-R2,	RS232 2 channel
	QJ71C24N-R2,	RS232 2 channel
	QJ71C24N-R4	RS 422/485 2 channel
MELSECNET/H interface	QJ71LP21-25, QJ71LP21, QJ71LP21S-25, QJ71LP21G, QJ71LP21GE, QJ72LP25-25, QJ72LP25G, QJ72LP25GE	SI/QSI optical cable, duplex loop, for control, ordinary or master station
MODBUS Interface	QJ71MT91, QJ71MB91	for 10BASE-T/100BASE-TX RS-232 1 channel, RS-422/485 1 channel
CC-Link module	QJ61BT11N	master/local module
CC-Link IE module	QJ71GP21-SX	CC-Link IE controller (optical fiber)
	QJ71GP21S-SX	CC-Link IE controller (optical fiber)
	QJ71GF11-T2	CC-Link IE field (ethernet)
PROFIBUS Master	QJ71PB92V	PROFIBUS-DP master module
NeXUS Interface	QJ71E71-100-F10	for 10BASE-T/100BASE-TX
Memory	Q3MEM-4MBS	4MB SRAM memory card
	Q3MEM-4MBS-SET	4MB SRAM memory card with cover
	Q3MEM-8MBS	8MB SRAM memory card
	Q3MEM-8MBS-SET	8MB SRAM memory card with cover
Extended SRAM cassette	Q4MCA-1MBS	1MB SRAM extended SRAM cassette
	Q4MCA-2MBS	2MB SRAM extended SRAM cassette
	Q4MCA-4MBS	4MB SRAM extended SRAM cassette
	Q4MCA-8MBS	8MB SRAM extended SRAM cassette
Spring Clamp Terminal Block	Q6TE-18SN	

Notes:

1 - Modules with one of the above Reference followed by ' -E ' differ from the original modules by the attached English document only.

2 - The products provided with specialty coatings resistant to corrosive gas are designated by the suffix "(C)" following the type designation.

1.2 - Software(GXWorks2):

Version : Ver. 1.566Q

2. DOCUMENTS AND DRAWINGS:

As per manufacturer's specifications filed under N° AP 3518.

- DOCUMENT LIST OF TYPE APPROVAL APPLICATION MODULES(BCN-88000-0670), dated Dec 2013.
- Circuit diagram No. X711B01-2, dated 2013.05.31.
- Circuit diagram No. BD118A789, dated 2010.10.27.
- BCN-88000-0670(CERTIFICATION OF MATERIAL), dated 2013.04.04.
- BCN-88000-0670(PARTS LIST), dated 2013.08.22.
- BCN-88000-0670(OUTLINE) No.BD691C058, dated 2013.07.30.
- BCN-88000-0670(OUTLINE) No.BD690C685, dated 2010.10.08.
- BCN-88000-0670(MANUAL) No. SH(NA)-080483ENG-AB, dated Oct 2013.
- Mitsubishi Electric Corporation Test Specification ref. BCN-88000-0671, dated 10 Dec 2013.
- Mitsubishi Electric Corporation Test specification type MELSEQ-Q No.: BCN-88000-0827-A, dated Nov 10, 2015
- Mitsubishi Electric Corporation MELSEC-Q Series PLC No.: BCN-88000-1038, dated 22 Jun 2015
- Mitsubishi Electric Corporation MELSEC-Q Series PLC No.: BCN-88000-1300-A, dated 25 Jul 2018

3. TEST REPORTS:

- Mitsubishi Electric Corporation Test Report, ref. BCN-80038-0702.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0092.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0281.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0334.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0480.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0547.
- Mitsubishi Electric Corporation Test Report, ref. KL05120048-1.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0588-A.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0621.
- Mitsubishi Electric Corporation Test Report, ref. BCN-88000-0699, dated 09 April 2014.
- Mitsubishi Electric Corporation EMC Test report No.: BCN-88000-0898, dated 10 Nov 2015
- Mitsubishi Electric Corporation Test Specification MELSEC Q Series Programmable Controller, dated 11 May 2017

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: 31**.
4.4 - The equipment installed within a metallic cabinet fulfils the EMC requirements for installation in General power Distribution Zones.
4.5 - Sensors used in the system and required as per Rules are to be duly approved by the Society.
4.6 - Each application is to be submitted to the Society's consideration.
4.7 - Where the system is used for machinery safeguards required by the Rules, the equipment is to be duplicated by another and different system.
4.8 - 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.
4.9 - 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 - Depending on the Application, Factory Acceptance and On-board Tests are to be performed in accordance with requirements for Category II or III Equipment.

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 - For information, **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.
- The title and version of each software element included in the installed software system shall be either marked or displayed on command on the equipment.

7. OTHERS:

7.1 - It is **MITSUBISHI ELECTRIC CORPORATION Nagoya Works - JAPAN**'s responsibility too 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.
7.2 - This certificate supersedes the Type Approval Certificate No.: 13029/B5 BV issued on 29 Nov 2018 by the Society.

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