

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Frequency Converter**with type designation(s)  
**Inverter FR-A800, F800 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 :****Frequency Converter FR-A800,F800 series for use onboard ships and mobile offshore units****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2023-12-31**.Issued at **Busan** on **2020-01-10**DNV GL local station: **Kobe**for **DNV GL**Approval Engineer: **Baeg Soon Choi**

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**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.

Job Id: **262.1-017355-5**  
 Certificate No: **TAE00000H2**  
 Revision No: **2**

## Product description

Frequency converter drives FR-A800, F800 Series:

FR-A840: Standard model

Model 1)		Input Power Supply (3 phase)		Output			
		Voltage	ND 2)	ND 2)	ND 2)	Freq.	Voltage
Capacity designation	Current designation	V AC	A	kW	A	Hz	3-Phase AC
FR-A840-0.4K-#	FR-A840-00023-#	380-500V, 50/60Hz	2.3	0.4	1.5	0.2-590	380-500V max
FR-A840-0.75K-#	FR-A840-00038-#	380-500V, 50/60Hz	3.7	0.75	2.5	0.2-590	380-500V max
FR-A840-1.5K-#	FR-A840-00052-#	380-500V, 50/60Hz	6.2	1.5	4	0.2-590	380-500V max
FR-A840-2.2K-#	FR-A840-00083-#	380-500V, 50/60Hz	8.3	2.2	6	0.2-590	380-500V max
FR-A840-3.7K-#	FR-A840-00126-#	380-500V, 50/60Hz	12.3	3.7	9	0.2-590	380-500V max
FR-A840-5.5K-#	FR-A840-00170-#	380-500V, 50/60Hz	17.4	5.5	12	0.2-590	380-500V max
FR-A840-7.5K-#	FR-A840-00250-#	380-500V, 50/60Hz	22.5	7.5	17	0.2-590	380-500V max
FR-A840-11K-#	FR-A840-00310-#	380-500V, 50/60Hz	31	11	23	0.2-590	380-500V max
FR-A840-15K-#	FR-A840-00380-#	380-500V, 50/60Hz	40.3	15	31	0.2-590	380-500V max
FR-A840-18.5K-#	FR-A840-00470-#	380-500V, 50/60Hz	48.2	18.5	38	0.2-590	380-500V max
FR-A840-22K-#	FR-A840-00620-#	380-500V, 50/60Hz	56.5	22	44	0.2-590	380-500V max
FR-A840-30K-#	FR-A840-00770-#	380-500V, 50/60Hz	75.1	30	57	0.2-590	380-500V max
FR-A840-37K-#	FR-A840-00930-#	380-500V, 50/60Hz	91	37	71	0.2-590	380-500V max
FR-A840-45K-#	FR-A840-01160-#	380-500V, 50/60Hz	108	45	86	0.2-590	380-500V max
FR-A840-55K-#	FR-A840-01800-#	380-500V, 50/60Hz	134	55	110	0.2-590	380-500V max
FR-A840-75K-#	FR-A840-02160-#	380-500V, 50/60Hz	144	75	144	0.2-590	380-500V max
FR-A840-90K-#	FR-A840-02600-#	380-500V, 50/60Hz	180	90	180	0.2-590	380-500V max
FR-A840-110K-#	FR-A840-03250-#	380-500V, 50/60Hz	216	110	216	0.2-590	380-500V max
FR-A840-132K-#	FR-A840-03610-#	380-500V, 50/60Hz	260	132	260	0.2-590	380-500V max
FR-A840-160K-#	FR-A840-04320-#	380-500V, 50/60Hz	325	160	325	0.2-590	380-500V max
FR-A840-185K-#	FR-A840-04810-#	380-500V, 50/60Hz	361	185	361	0.2-590	380-500V max

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Model 1)		Input Power Supply (3 phase)		Output			
		Voltage	ND 2)	ND 2)	ND 2)	Freq.	Voltage
Capacity designation	Current designation	V AC	A	kW	A	Hz	3-Phase AC
FR-A840-220K-#	FR-A840-05470-#	380-500V, 50/60Hz	432	220	432	0.2-590	380-500V max
FR-A840-250K-#	FR-A840-06100-#	380-500V, 50/60Hz	481	250	481	0.2-590	380-500V max
FR-A840-280K-#	FR-A840-06830-#	380-500V, 50/60Hz	547	280	547	0.2-590	380-500V max

FR-A842: Separated converter type

Model 1)		Input Power Supply (3 phase)		Output			
		Voltage	ND 2)	ND 2)	ND 2)	Freq.	Voltage
Capacity designation	Current designation	V DC	A	kW	A	Hz	3-Phase AC
FR-A842-315K-#	FR-A842-07700-#	430-780V	-	315	610	0.2-590	380-500V max
FR-A842-355K-#	FR-A842-08660-#	430-780V	-	355	683	0.2-590	380-500V max
FR-A842-400K-#	FR-A842-09620-#	430-780V	-	400	770	0.2-590	380-500V max
FR-A842-450K-#	FR-A842-10940-#	430-780V	-	450	866	0.2-590	380-500V max
FR-A842-500K-#	FR-A842-12120-#	430-780V	-	500	962	0.2-590	380-500V max

FR-F840: Standard model

Model 1)		Input	Output					
		Voltage	Motor Capacity [kW]		Rated Current [A]		Freq.	Rated Voltage
Capacity Designation	Current Designation	3-Phase AC 50/60Hz	SLD	LD	SLD	LD	Hz	3-Phase AC
FR-F840-0.75K-#	FR-F840-00023-#	380-500VAC	0.75	0.75	2.3	2.1	0.2-590	380-500VAC
FR-F840-1.5K-#	FR-F840-00038-#	380-500VAC	1.5	1.5	3.8	3.5	0.2-590	380-500VAC
FR-F840-2.2K-#	FR-F840-00052-#	380-500VAC	2.2	2.2	5.2	4.8	0.2-590	380-500VAC
FR-F840-3.7K-#	FR-F840-00083-#	380-500VAC	3.7	3.7	8.3	7.6	0.2-590	380-500VAC
FR-F840-5.5K-#	FR-F840-00126-#	380-500VAC	5.5	5.5	12.6	11.5	0.2-590	380-500VAC
FR-F840-7.5K-#	FR-F840-00170-#	380-500VAC	7.5	7.5	17	16	0.2-590	380-500VAC

Job Id: **262.1-017355-5**  
 Certificate No: **TAE00000H2**  
 Revision No: **2**

FR-F840-11K-#	FR-F840-00250-#	380-500VAC	11	11	25	23	0.2-590	380-500VAC
FR-F840-15K-#	FR-F840-00310-#	380-500VAC	15	15	31	29	0.2-590	380-500VAC
FR-F840-18.5K-#	FR-F840-00380-#	380-500VAC	18.5	18.5	38	35	0.2-590	380-500VAC
FR-F840-22K-#	FR-F840-00470-#	380-500VAC	22	22	47	43	0.2-590	380-500VAC
FR-F840-30K-#	FR-F840-00620-#	380-500VAC	30	30	62	57	0.2-590	380-500VAC
FR-F840-37K-#	FR-F840-00770-#	380-500VAC	37	37	77	70	0.2-590	380-500VAC
FR-F840-45K-#	FR-F840-00930-#	380-500VAC	45	45	93	85	0.2-590	380-500VAC
FR-F840-55K-#	FR-F840-01160-#	380-500VAC	55	55	116	106	0.2-590	380-500VAC
FR-F840-75K-#	FR-F840-01800-#	380-500VAC	75/90	75	180	144	0.2-590	380-500VAC
FR-F840-90K-#	FR-F840-02160-#	380-500VAC	110	90	216	180	0.2-590	380-500VAC
FR-F840-110K-#	FR-F840-02600-#	380-500VAC	132	110	260	216	0.2-590	380-500VAC
FR-F840-132K-#	FR-F840-03250-#	380-500VAC	160	132	325	260	0.2-590	380-500VAC
FR-F840-160K-#	FR-F840-03610-#	380-500VAC	185	160	361	325	0.2-590	380-500VAC
FR-F840-185K-#	FR-F840-04320-#	380-500VAC	220	185	432	361	0.2-590	380-500VAC
FR-F840-220K-#	FR-F840-04810-#	380-500VAC	250	220	481	432	0.2-590	380-500VAC
FR-F840-250K-#	FR-F840-05470-#	380-500VAC	280	250	547	481	0.2-590	380-500VAC
FR-F840-280K-#	FR-F840-06100-#	380-500VAC	315	280	610	547	0.2-590	380-500VAC
FR-F840-315K-#	FR-F840-06830-#	380-500VAC	355	315	683	610	0.2-590	380-500VAC

FR-F842: Separated converter type

Model 1)		Input	Output					
		Voltage	Motor Capacity [kW]		Rated Current [A]		Freq.	Rated Voltage
Capacity Designation	Current Designation	1-Phase DC	SLD	LD	SLD	LD	Hz	3-Phase AC
FR-F842-355K-#	FR-F842-07700-#	430-780VDC	400	355	770	683	0.2-590	380-500VAC
FR-F842-400K-#	FR-F842-08660-#	430-780VDC	450	400	866	770	0.2-590	380-500VAC
FR-F842-450K-#	FR-F842-09620-#	430-780VDC	500	450	962	866	0.2-590	380-500VAC
FR-F842-500K-#	FR-F842-10940-#	430-780VDC	560	500	1094	962	0.2-590	380-500VAC
FR-F842-560K-#	FR-F842-12120-#	430-780VDC	630	560	1212	1094	0.2-590	380-500VAC

Job Id: **262.1-017355-5**  
 Certificate No: **TAE00000H2**  
 Revision No: **2**

FR-A846: IP55 compatible model

Model 1)		Input Power Supply (3 phase)		Output			
		Voltage	ND 2)	ND 2)	ND 2)	Freq.	Voltage
Capacity designation	Current designation	V AC 50/60Hz	A	kW	A	Hz	3-Phase AC
FR-A846-0.4K-#2#	FR-A846-00023-#2#	380-500VAC	1.5	0.4	1.5	0.2-590	380-500V max
FR-A846-0.75K-#2#	FR-A846-00038-#2#	380-500VAC	2.5	0.75	2.5	0.2-590	380-500V max
FR-A846-1.5K-#2#	FR-A846-00052-#2#	380-500VAC	4	1.5	4	0.2-590	380-500V max
FR-A846-2.2K-#2#	FR-A846-00083-#2#	380-500VAC	6	2.2	6	0.2-590	380-500V max
FR-A846-3.7K-#2#	FR-A846-00126-#2#	380-500VAC	9	3.7	9	0.2-590	380-500V max
FR-A846-5.5K-#2#	FR-A846-00170-#2#	380-500VAC	12	5.5	12	0.2-590	380-500V max
FR-A846-7.5K-#2#	FR-A846-00250-#2#	380-500VAC	17	7.5	17	0.2-590	380-500V max
FR-A846-11K-#2#	FR-A846-00310-#2#	380-500VAC	23	11	23	0.2-590	380-500V max
FR-A846-15K-#2#	FR-A846-00380-#2#	380-500VAC	31	15	31	0.2-590	380-500V max
FR-A846-18.5K-#2#	FR-A846-00470-#2#	380-500VAC	38	18.5	38	0.2-590	380-500V max
FR-A846-22K-#2#	FR-A846-00620-#2#	380-500VAC	44	22	44	0.2-590	380-500V max
FR-A846-30K-#2#	FR-A846-00770-#2#	380-500VAC	57	30	57	0.2-590	380-500V max
FR-A846-37K-#2#	FR-A846-00930-#2#	380-500VAC	71	37	71	0.2-590	380-500V max
FR-A846-45K-#2#	FR-A846-01160-#2#	380-500VAC	86	45	86	0.2-590	380-500V max
FR-A846-55K-#2#	FR-A846-01800-#2#	380-500VAC	110	55	110	0.2-590	380-500V max
FR-A846-75K-#2#	FR-A846-02160-#2#	380-500VAC	144	75	144	0.2-590	380-500V max
FR-A846-90K-#2#	FR-A846-02600-#2#	380-500VAC	180	90	180	0.2-590	380-500V max
FR-A846-110K-#2#	FR-A846-03250-#2#	380-500VAC	216	110	216	0.2-590	380-500V max
FR-A846-132K-#2#	FR-A846-03610-#2#	380-500VAC	260	132	260	0.2-590	380-500V max

Job Id: **262.1-017355-5**  
 Certificate No: **TAE00000H2**  
 Revision No: **2**

FR-F846: IP55 compatible model

Model 1)		Input	Output			
		Voltage	Motor Capacity	Rated Current	Freq.	Rated Voltage
Capacity Designation	Current Designation	3-Phase AC 50/60Hz	KW	A	Hz	3-Phase AC
FR-F846-0.75K-#2#	FR-F846-00023-#2#	380-500VAC	0.75	2.1	0.2-590	380-500VAC
FR-F846-1.5K-#2#	FR-F846-00038-#2#	380-500VAC	1.5	3.5	0.2-590	380-500VAC
FR-F846-2.2K-#2#	FR-F846-00052-#2#	380-500VAC	2.2	4.8	0.2-590	380-500VAC
FR-F846-3.7K-#2#	FR-F846-00083-#2#	380-500VAC	3.7	7.6	0.2-590	380-500VAC
FR-F846-5.5K-#2#	FR-F846-00126-#2#	380-500VAC	5.5	11.5	0.2-590	380-500VAC
FR-F846-7.5K-#2#	FR-F846-00170-#2#	380-500VAC	7.5	16	0.2-590	380-500VAC
FR-F846-11K-#2#	FR-F846-00250-#2#	380-500VAC	11	23	0.2-590	380-500VAC
FR-F846-15K-#2#	FR-F846-00310-#2#	380-500VAC	15	29	0.2-590	380-500VAC
FR-F846-18.5K-#2#	FR-F846-00380-#2#	380-500VAC	18.5	35	0.2-590	380-500VAC
FR-F846-22K-#2#	FR-F846-00470-#2#	380-500VAC	22	43	0.2-590	380-500VAC
FR-F846-30K-#2#	FR-F846-00620-#2#	380-500VAC	30	57	0.2-590	380-500VAC
FR-F846-37K-#2#	FR-F846-00770-#2#	380-500VAC	37	70	0.2-590	380-500VAC
FR-F846-45K-#2#	FR-F846-00930-#2#	380-500VAC	45	85	0.2-590	380-500VAC
FR-F846-55K-#2#	FR-F846-01160-#2#	380-500VAC	55	106	0.2-590	380-500VAC
FR-F846-75K-#2#	FR-F846-01800-#2#	380-500VAC	75	144	0.2-590	380-500VAC
FR-F846-90K-#2#	FR-F846-02160-#2#	380-500VAC	90	180	0.2-590	380-500VAC
FR-F846-110K-#2#	FR-F846-02600-#2#	380-500VAC	110	216	0.2-590	380-500VAC
FR-F846-132K-#2#	FR-F846-03250-#2#	380-500VAC	132	260	0.2-590	380-500VAC
FR-F846-160K-#2#	FR-F846-03610-#2#	380-500VAC	160	325	0.2-590	380-500VAC

Job Id: **262.1-017355-5**  
 Certificate No: **TAE00000H2**  
 Revision No: **2**

FR-CC2: Converter Units

Input Power Supply (3 phase 1)			Output
Model 1)	V AC	A	Voltage
			DC
FR-CC2-H315K-#	380-500V,50/60Hz	610	430-780V max
FR-CC2-H355K-#	380-500V,50/60Hz	683	430-780V max
FR-CC2-H400K-#	380-500V,50/60Hz	770	430-780V max
FR-CC2-H450K-#	380-500V,50/60Hz	866	430-780V max
FR-CC2-H500K-#	380-500V,50/60Hz	962	430-780V max
FR-CC2-H560K-#	380-500V,50/60Hz	1094	430-780V max
FR-CC2-H630K-#	380-500V,50/60Hz	1212	430-780V max

- 1) The # means alphanumeric suffix that may be added. In case of IP55 compatible models, the "#2#" means a built-in C2 class EMC filter.
- 2) The ND ratings values are listed as a representative of the four ratings SLD, LD, ND and HD.
- 3) SLD: Super Light Duty, LD: Light Duty, ND: Normal Duty, HD: Heavy Duty

**Application/Limitation**

Rated input AC voltage, frequency: 380 - 500 V, 50/60 Hz  
 Tolerable voltage fluctuation: 323 - 528 V\* or 323 - 550 V, 50/60 Hz  
 Tolerable frequency fluctuation: ± 5 %  
 Frequency range output: 0.2 – 590 Hz  
 Enclosure class: IP20 or IP00 or IP55\*\*  
 Humidity class: B  
 Temperature class: B  
 Vibration class: A  
 EMC class: A\*\*\*

\* Models of 55K or less.

\*\* The Inverter units except IP55 compatible models have to be installed in any of the following enclosure (IP22 for Class A, IP44 for Class B, IP56 for Class C, IP68 for Class D) depending on intended location.

\*\*\* EMC has been performed in accordance with IEC 61800-3 / DNVGL-CG-0339 Nov 2016. To be used on Class A locations.

The FR-A800 & -F800 must be regarded as a component. The actual installation shall be designed according to Mitsubishi Electric Instructions manuals and according to the applicable DNVGL Rules for the actual application. Documents for the actual application are to be submitted for approval in each case in accordance with DNV Rules Pt.4, Ch.8, Sec.1 Table 2.

A Product Certificate is required for converters ≥ 100KW for motor drives and converters ≥ 50 KW for power supplies, if applied for essential or important functions:

**Locations of production:**

Mitsubishi Electric Corporation Nagoya Works:  
 1-14, Yada-minami 5-chome, Higashi-ku, Nagoya 461-8670, Japan

Mitsubishi Electric Dalian Industrial Products Co., Ltd.:  
 Dongbei 3-5, Dalian Economic & Technical Development Zone, Dalian China 116600

Job Id: **262.1-017355-5**  
Certificate No: **TAE00000H2**  
Revision No: **2**

## Type Approval documentation

As listed in approval letter MCANO381/NHORN/262.-017355-J-31 dated 2014-10-31.

For revision October 2015;

Application model list for addition in the revision, NSH-14062-15 (2015-02-13)

Test specification for environmental test, NSH-14062-18 (2015-03-15)

EMC test report, BQN-P1E420087-A for 0.4K & 5.5K (2014-05-08)

EMC test report, BQN-P1E420073-\* for 7.5K & 18.5K (2013-12-02)

EMC test report, BQN-P1E420101-A for 22K & 132K (2014-10-10)

Type approval assessment report for China factory (2015-06-08)

KEC Test report, A-071-14-B (2015-04-13)

JQA Test report, KL80150008 (2015-05-11)

JQA Test report, KL80150009 (2015-05-11)

Inverter FR-A800 Series Type Test Report NSH-14061-01 (2015-05-19)

Type Approval Assessment Report (2018-12-19)

Type approval assessment report for China factory (2018-12-26)

## Tests carried out

Visual inspection, Performance test, Humidity test, Dry heat test, Insulation test, High voltage test, Full load test, Overload test, Low temperature test, Vibration test, Power supply variation test, Power supply failure test, Radiated emission test, Conducted emission test, Conducted low frequency interference test, Electrical fast transient test, Surge voltage test, Conducted radio frequency interference test, Electrostatic discharge test and Electromagnetic field test.

## Marking of product

Mitsubishi Electric – Type designation – Voltage

Note: Each inverter may have its model name according to capacity designation or current designation.

## Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring tractability between manufacturer's product type marking and 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 this certificate.

END OF CERTIFICATE