



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE00000H2
Revision No:
5

This is to certify:

that the **Frequency Converter**

with type designation(s)
Inverter FR-A800, FR-F800 Series

issued to

Mitsubishi Electric Corporation, Nagoya Works
Nagoya, AICHI, Japan

is found to comply with

DNV 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.

Issued at **Busan** on **2024-01-25**

for **DNV**

This Certificate is valid until **2028-12-31**.

DNV local unit: **Japan CMC**

Approval Engineer: **Eun Sook Kim**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Frequency converter drives FR-A800, FR-F800 Series:

FR-A840: Standard model

Model ¹⁾		Input (3phase AC)		Output (3phase AC)			
Capacity designation	Current designation	Voltage, Freq.	ND ²⁾ (A)	ND ²⁾ (kW)	ND ²⁾ (A)	Freq. (Hz)	Voltage
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-#		3.7	0.75	2.5		
FR-A840-1.5K-#	FR-A840-00052-#		6.2	1.5	4		
FR-A840-2.2K-#	FR-A840-00083-#		8.3	2.2	6		
FR-A840-3.7K-#	FR-A840-00126-#		12.3	3.7	9		
FR-A840-5.5K-#	FR-A840-00170-#		17.4	5.5	12		
FR-A840-7.5K-#	FR-A840-00250-#		22.5	7.5	17		
FR-A840-11K-#	FR-A840-00310-#		31	11	23		
FR-A840-15K-#	FR-A840-00380-#		40.3	15	31		
FR-A840-18.5K-#	FR-A840-00470-#		48.2	18.5	38		
FR-A840-22K-#	FR-A840-00620-#		56.5	22	44		
FR-A840-30K-#	FR-A840-00770-#		75.1	30	57		
FR-A840-37K-#	FR-A840-00930-#		91	37	71		
FR-A840-45K-#	FR-A840-01160-#		108	45	86		
FR-A840-55K-#	FR-A840-01800-#		134	55	110		
FR-A840-75K-#	FR-A840-02160-#		144	75	144		
FR-A840-90K-#	FR-A840-02600-#		180	90	180		
FR-A840-110K-#	FR-A840-03250-#		216	110	216		
FR-A840-132K-#	FR-A840-03610-#		260	132	260		
FR-A840-160K-#	FR-A840-04320-#		325	160	325		
FR-A840-185K-#	FR-A840-04810-#	361	185	361			
FR-A840-220K-#	FR-A840-05470-#	432	220	432			
FR-A840-250K-#	FR-A840-06100-#	481	250	481			
FR-A840-280K-#	FR-A840-06830-#	547	280	547			

FR-A842: Separated converter type

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

FR-F840: Standard model

Model ¹⁾		Input (3phase AC)	Output (3phase AC)				Freq. (Hz)	Voltage
Capacity designation	Current designation	Voltage, Freq.	Motor capacity (kW)		Rated current (A)			
			SLD	LD	SLD	LD		
FR-F840-0.75K-#	FR-F840-00023-#	380-500V, 50/60Hz	0.75	0.75	2.3	2.1	0.2-590	380-500V
FR-F840-1.5K-#	FR-F840-00038-#		1.5	1.5	3.8	3.5		
FR-F840-2.2K-#	FR-F840-00052-#		2.2	2.2	5.2	4.8		
FR-F840-3.7K-#	FR-F840-00083-#		3.7	3.7	8.3	7.6		
FR-F840-5.5K-#	FR-F840-00126-#		5.5	5.5	12.6	11.5		
FR-F840-7.5K-#	FR-F840-00170-#		7.5	7.5	17	16		
FR-F840-11K-#	FR-F840-00250-#		11	11	25	23		
FR-F840-15K-#	FR-F840-00310-#		15	15	31	29		
FR-F840-18.5K-#	FR-F840-00380-#		18.5	18.5	38	35		
FR-F840-22K-#	FR-F840-00470-#		22	22	47	43		
FR-F840-30K-#	FR-F840-00620-#		30	30	62	57		
FR-F840-37K-#	FR-F840-00770-#		37	37	77	70		
FR-F840-45K-#	FR-F840-00930-#		45	45	93	85		
FR-F840-55K-#	FR-F840-01160-#		55	55	116	106		
FR-F840-75K-#	FR-F840-01800-#		75/90	75	180	144		
FR-F840-90K-#	FR-F840-02160-#		110	90	216	180		
FR-F840-110K-#	FR-F840-02600-#		132	110	260	216		
FR-F840-132K-#	FR-F840-03250-#		160	132	325	260		
FR-F840-160K-#	FR-F840-03610-#		185	160	361	325		
FR-F840-185K-#	FR-F840-04320-#		220	185	432	361		
FR-F840-220K-#	FR-F840-04810-#	250	220	481	432			
FR-F840-250K-#	FR-F840-05470-#	280	250	547	481			
FR-F840-280K-#	FR-F840-06100-#	315	280	610	547			
FR-F840-315K-#	FR-F840-06830-#	355	315	683	610			

FR-F842: Separated converter type

Model ¹⁾		Input (DC)	Output (3phase AC)					
Capacity designation	Current designation	Voltage	Motor capacity(kW)		Rated current(A)		Freq. (Hz)	Voltage
			SLD	LD	SLD	LD		
FR-F842-355K-#	FR-F842-07700-#	430-780V	400	355	770	683	0.2-590	380-500V
FR-F842-400K-#	FR-F842-08660-#		450	400	866	770		
FR-F842-450K-#	FR-F842-09620-#		500	450	962	866		
FR-F842-500K-#	FR-F842-10940-#		560	500	1094	962		
FR-F842-560K-#	FR-F842-12120-#		630	560	1212	1094		

FR-A846: IP55 compatible model

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

FR-F846: IP55 compatible model

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

FR-CC2: Converter Units

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

- 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 rating values are listed as a representative of the four ratings SLD, LD, ND and HD. (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 / DNV-CG-0339 Aug. 2021. To be used on Class A locations.

The FR-A800 & FR-F800 must be regarded as a component. The actual installation shall be designed according to Mitsubishi Electric Instructions manuals and according to the applicable DNV 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 $\geq 100\text{KW}$ for motor drives and converters $\geq 50\text{ KW}$ 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

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)

LABOTECH test report LIC 12-21-140 dated 2021-11-10

Type approval assessment report dated 2021-11-08

Type approval assessment report dated 2022-10-10

Type approval assessment report dated 2023-11-30

Tests carried out

Applicable tests according to Class Guideline DNV-CG-0339, August 2021

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