Certificate No: LR2002550TA-02
Issue Date: 31/01/2022
Expiry Date: 30/10/2024

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	**Mitsubishi Electric Corporation Nagoya Works**
Address	1-14, Yada-minami, 5-chome, Higashi-ku, Nagoya, 461-8670, Japan
Place of Production	Mitsubishi Electric Corporation Nagoya Works 1-14, Yada-minami, 5-chome, Higashi-ku, Nagoya, 461-8670, Japan
Place of Production	Mitsubishi Electric Dalian Industrial Products Co., Ltd. Dongbei 3-5, Dalian Economic & Technical Development Zone, Dalian, 116600, China
Type	Control Units
Description	Frequency converter for speed control of electric motor Model FR-A840: Standard model Model FR-A842: Separated converter model Model FR-CC2: Converter Unit for FR-A842 Model FR-A846: IP55 Compatible model
Trade Name	Inverter FR-A800 Series
Application	Marine and offshore applications for use in environmental category ENV2 in the “General Power Distribution Zones” as defined in LR Type Approval System Test Specification No. 1-2021 where the Test Specification is satisfactory for the intended operation.

Sachie Fujii

Senior Surveyor to Lloyd's Register Group Ltd
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Type Approval Certificate

Ratings See Appendix

Additional Tests Dry heat test at 55°C during 16 hours
Low temperature test at -10°C during 16 hours
Enclosure test for IP55 Compatible model

Other Conditions (1) The models in Table 1, 2 and 3 shall be contained in a metal box having a contrivance by which air temperature surrounding the product is maintained within the manufacturer's specification below and enough protection degree for each installation.
-10°Cto +50°C (non-freezing) (LD, ND, HD ratings)
-10°Cto +40°C (non-freezing) (SLD rating)

(2) Except the models in Table 4, an appropriate external noise filter specified by the manufacturer shall be used for equivalent measures with which the requirements of the Test Specification for radiated and conducted emissions in "General Power Distribution Zones" are fulfilled. For installations in "Special Distribution Zones" in accordance with IEC60533, external noise filters may be exempted provided such measures are taken as safe operation is assumed.

(3)The input voltage shall be limited to 480VAC or less for models with motor capacity of 55 kW or less.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Group Ltd of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: LR2002550TA

The Design Appraisal Document LR2002550TA-02 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Appendix

RATINGS:

Input power supply		
Model FR-A840 Model FR-A846	3 phase 50/60Hz, 380 - 500VAC	
Model FR-A842	Converter unit	3 phase 50/60Hz 380 - 500VAC
	Inverter unit	430 - 780VDC
Output	0.2 - 590Hz, 380 - 500VAC	
Motor capacity	(Normal duty)	
Model FR-A840	0.4 - 280 kW	
Model FR-A842	315 - 500 kW	
Model FR-A846	0.4 – 132 kW	

Details are listed in the below.

Table 1

Standard Model		Input Power Supply		Output			
Capacity Designation	Current Designation	3-ph. AC 50/60Hz Voltage(V)	Current(A)	Motor Capacity (kW)	Current(A)	Freq.(Hz)	3-ph. AC Voltage(V)
FR-A840-0.4K-#	FR-A840-00023-#	380 to 500	1.4 to 3.2	0.2 to 0.75	0.8 to 2.3	0.2 to 590	380 to 500
FR-A840-0.75K-#	FR-A840-00038-#	380 to 500	2.3 to 5.4	0.4 to 1.5	1.5 to 3.8	0.2 to 590	380 to 500
FR-A840-1.5K-#	FR-A840-00052-#	380 to 500	3.7 to 7.8	0.75 to 2.2	2.5 to 5.2	0.2 to 590	380 to 500
FR-A840-2.2K-#	FR-A840-00083-#	380 to 500	6.2 to 10.9	1.5 to 3.7	4 to 8.3	0.2 to 590	380 to 500
FR-A840-3.7K-#	FR-A840-00126-#	380 to 500	8.3 to 16.4	2.2 to 5.5	6 to 12.6	0.2 to 590	380 to 500
FR-A840-5.5K-#	FR-A840-00170-#	380 to 500	12.3 to 22.5	3.7 to 7.5	9 to 17	0.2 to 590	380 to 500
FR-A840-7.5K-#	FR-A840-00250-#	380 to 500	17.4 to 31.7	5.5 to 11	12 to 25	0.2 to 590	380 to 500
FR-A840-11K-#	FR-A840-00310-#	380 to 500	22.5 to 40.3	7.5 to 15	17 to 31	0.2 to 590	380 to 500
FR-A840-15K-#	FR-A840-00380-#	380 to 500	31 to 48.2	11 to 18.5	23 to 38	0.2 to 590	380 to 500
FR-A840-18.5K-#	FR-A840-00470-#	380 to 500	40.3 to 58.4	15 to 22	31 to 47	0.2 to 590	380 to 500
FR-A840-22K-#	FR-A840-00620-#	380 to 500	48.2 to 76.8	18.5 to 30	38 to 62	0.2 to 590	380 to 500

Standard Model		Input Power Supply		Output			
Capacity Designation	Current Designation	3-ph. AC 50/60Hz Voltage(V)	Current(A)	Motor Capacity (kW)	Current(A)	Freq.(Hz)	3-ph. AC Voltage(V)
FR-A840-30K-#	FR-A840-00770-#	380 to 500	56.5 to 97.6	22 to 37	44 to 77	0.2 to 590	380 to 500
FR-A840-37K-#	FR-A840-00930-#	380 to 500	75.1 to 115	30 to 45	57 to 93	0.2 to 590	380 to 500
FR-A840-45K-#	FR-A840-01160-#	380 to 500	91 to 141	37 to 55	71 to 116	0.2 to 590	380 to 500
FR-A840-55K-#	FR-A840-01800-#	380 to 500	108 to 180	45 to 75/90	86 to 180	0.2 to 590	380 to 500
FR-A840-75K-#	FR-A840-02160-#	380 to 500	110 to 216	55 to 110	110 to 216	0.2 to 590	380 to 500
FR-A840-90K-#	FR-A840-02600-#	380 to 500	144 to 260	75 to 132	144 to 260	0.2 to 590	380 to 500
FR-A840-110K-#	FR-A840-03250-#	380 to 500	180 to 325	90 to 160	180 to 325	0.2 to 590	380 to 500
FR-A840-132K-#	FR-A840-03610-#	380 to 500	216 to 361	110 to 185	216 to 361	0.2 to 590	380 to 500
FR-A840-160K-#	FR-A840-04320-#	380 to 500	260 to 432	132 to 220	260 to 432	0.2 to 590	380 to 500
FR-A840-185K-#	FR-A840-04810-#	380 to 500	325 to 481	160 to 250	325 to 481	0.2 to 590	380 to 500
FR-A840-220K-#	FR-A840-05470-#	380 to 500	361 to 547	185 to 280	361 to 547	0.2 to 590	380 to 500
FR-A840-250K-#	FR-A840-06100-#	380 to 500	432 to 610	220 to 315	432 to 610	0.2 to 590	380 to 500
FR-A840-280K-#	FR-A840-06830-#	380 to 500	481 to 683	250 to 355	481 to 683	0.2 to 590	380 to 500

Table 2

Separated Converter Model Inverter Unit		Input Power Supply	Output			
Capacity Designation	Current Designation	DC Voltage(V)	Motor Capacity (kW)	Current(A)	Freq.(Hz)	3-ph. AC Voltage(V)
FR-A842-315K-#	FR-A842-07700-#	430 to 780	280 to 400	547 to 770	0.2 to 590	380 to 500
FR-A842-355K-#	FR-A842-08660-#	430 to 780	315 to 450	610 to 866	0.2 to 590	380 to 500
FR-A842-400K-#	FR-A842-09620-#	430 to 780	355 to 500	683 to 962	0.2 to 590	380 to 500
FR-A842-450K-#	FR-A842-10940-#	430 to 780	400 to 500	770 to 1094	0.2 to 590	380 to 500
FR-A842-500K-#	FR-A842-12120-#	430 to 780	450 to 500	866 to 1212	0.2 to 590	380 to 500

Table 3

Separated Converter Model Converter Unit	Input Power Supply		Output
	3-ph. AC 50/60Hz Voltage(V)	Current(A)	DC Voltage(V)
FR-CC2-H315K-#	380 to 500	610	430 to 780
FR-CC2-H355K-#	380 to 500	683	430 to 780
FR-CC2-H400K-#	380 to 500	770	430 to 780
FR-CC2-H450K-#	380 to 500	866	430 to 780
FR-CC2-H500K-#	380 to 500	962	430 to 780

Table 4

IP55 Compatible Model		Input Power Supply		Output			
Capacity Designation	Current Designation	3-ph. AC 50/60Hz Voltage(V)	Current (A)	Motor Capacity (kW)	Current(A)	Freq.(Hz)	3-ph. AC Voltage(V)
FR-A846-0.4K-#2#	FR-A846-00023-#2#	380 to 500	1.5 to 2.1	0.4 to 0.75	1.5 to 2.1	0.2 to 590	380 to 500
FR-A846-0.75K-#2#	FR-A846-00038-#2#	380 to 500	2.5 to 3.5	0.75 to 1.5	2.5 to 3.5	0.2 to 590	380 to 500
FR-A846-1.5K-#2#	FR-A846-00052-#2#	380 to 500	4 to 4.8	1.5 to 2.2	4 to 4.8	0.2 to 590	380 to 500
FR-A846-2.2K-#2#	FR-A846-00083-#2#	380 to 500	6 to 7.6	2.2 to 3.7	6 to 7.6	0.2 to 590	380 to 500
FR-A846-3.7K-#2#	FR-A846-00126-#2#	380 to 500	9 to 11.5	3.7 to 5.5	9 to 11.5	0.2 to 590	380 to 500
FR-A846-5.5K-#2#	FR-A846-00170-#2#	380 to 500	12 to 16	5.5 to 7.5	12 to 16	0.2 to 590	380 to 500
FR-A846-7.5K-#2#	FR-A846-00250-#2#	380 to 500	17 to 23	7.5 to 11	17 to 23	0.2 to 590	380 to 500
FR-A846-11K-#2#	FR-A846-00310-#2#	380 to 500	23 to 29	11 to 15	23 to 29	0.2 to 590	380 to 500
FR-A846-15K-#2#	FR-A846-00380-#2#	380 to 500	31 to 35	15 to 18.5	31 to 35	0.2 to 590	380 to 500
FR-A846-18.5K-#2#	FR-A846-00470-#2#	380 to 500	38 to 43	18.5 to 22	38 to 43	0.2 to 590	380 to 500
FR-A846-22K-#2#	FR-A846-00620-#2#	380 to 500	44 to 57	22 to 30	44 to 57	0.2 to 590	380 to 500
FR-A846-30K-#2#	FR-A846-00770-#2#	380 to 500	57 to 70	30 to 37	57 to 70	0.2 to 590	380 to 500
FR-A846-37K-#2#	FR-A846-00930-#2#	380 to 500	71 to 85	37 to 45	71 to 85	0.2 to 590	380 to 500
FR-A846-45K-#2#	FR-A846-01160-#2#	380 to 500	86 to 106	45 to 55	86 to 106	0.2 to 590	380 to 500

IP55 Compatible Model		Input Power Supply		Output			
Capacity Designation	Current Designation	3-ph. AC 50/60Hz Voltage(V)	Current (A)	Motor Capacity (kW)	Current(A)	Freq.(Hz)	3-ph. AC Voltage(V)
FR-A846-55K-#2#	FR-A846-01800-#2#	380 to 500	110 to 144	55 to 75	110 to 144	0.2 to 590	380 to 500
FR-A846-75K-#2#	FR-A846-02160-#2#	380 to 500	144 to 180	75 to 90	144 to 180	0.2 to 590	380 to 500
FR-A846-90K-#2#	FR-A846-02600-#2#	380 to 500	180 to 216	90 to 110	180 to 216	0.2 to 590	380 to 500
FR-A846-110K-#2#	FR-A846-03250-#2#	380 to 500	216 to 260	110 to 132	216 to 260	0.2 to 590	380 to 500
FR-A846-132K-#2#	FR-A846-03610-#2#	380 to 500	260 to 325	132 to 160	260 to 325	0.2 to 590	380 to 500

Note:
(1) There are no differences between the models with capacity designation and current designation in the same row of Table 1, 2 and 4.
(2) For the separated converter model, the converter unit in Table 3 is used together with any of the FR-A842 inverters in Table 2.
(3) The designation “#” means an alphanumeric suffix that may be used by the manufacturer.
(4) The motor capacity in Table 1 and 2 shall be selected in accordance with its duty (*) for the intended motor following the indications of the manufacturer.
(*): SLD: Super Light Duty, LD: Light Duty, ND: Normal Duty (initial setting) and HD: Heavy Duty
The duty for motor in Table 4 shall be selected from LD: Light Duty and ND: Normal Duty (initial setting) only.

-End of Appendix-