



Type Approval Certificate

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

This certificate is issued to:

PRODUCER	Mitsubishi Electric Corporation Nagoya Works
PLACE OF PRODUCTION	1-14, Yada-minami 5-chome, Higashi-ku, Nagoya 461-8670, Japan
DESCRIPTION	Frequency converter for speed control of electric motor FR-A800 series
TYPE	Model FR-A840: Standard model Model FR-A842: Separated converter model Model FR-CC2: Converter Unit for FR-A842
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. 1-2013 where the Test Specification is satisfactory for the intended operation.
ADDITIONAL TEST	Dry heat test at 55°C during 16 hours Low temperature test at -10°C during 16 hours
STANDARD	Manufacturer's Technical Documents
RATINGS	Input power supply Model FR-A840 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
Certificate No.	14/10026
Issue Date	31 October 2014
Expiry Date	30 October 2019
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RATINGS(continued)

Model FR-A842

315 - 500 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
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

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Table 3

Separated Converter Model Converter Unit	Input Power Supply		Output DC Voltage(V)
	3-ph. AC 50/60Hz Voltage(V)	Current(A)	
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

Note: (1) There are no differences between the models with capacity designation and current designation in the same row of Table 1 and 2.

(2) For the separated converter model, the converter unit in Table 3 is selected by the corresponding motor capacity. This converter unit is used together with the inverter unit 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

OTHER CONDITIONS

(1) The product 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°C to +50°C (non-freezing) (LD, ND, HD ratings)

-10°C to +40°C (non-freezing) (SLD rating)

(2) 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.

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"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 Limited of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 14/10026 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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