



## 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.

|                            |  |
|----------------------------|--|
| <b>Manufacturer</b>        | <b>Mitsubishi Electric Corporation Nagoya Works</b>  |
| <b>Address</b>             | 1-14, Yada-minami 5-chome, Higashi-ku, Nagoya, Aichi-ken, 461-8670, Japan  |
| <b>Place of Production</b> | Mitsubishi Electric Dalian Industrial Products Co., Ltd.<br><br>Dongbei 3-5, Dalian Economic & Technical Development Zone, Dalian, 116600, China   |
| <b>Place of Production</b> | Mitsubishi Electric Corporation Nagoya Works<br><br>1-14, Yada-minami 5-chome, Higashi-ku, Nagoya, Aichi-ken, 461-8670, Japan  |
| <b>Place of Production</b> | MITSUBISHI ELECTRIC INDIA PRIVATE LIMITED<br><br>Plot No. B3, Talegaon Industrial Area, Phase II, Village Badhalwadi, Taluka Maval, Dist. Pune, Maharashtra, 410507, India   |
| <b>Type</b>                | Control Units  |
| <b>Description</b>         | Frequency converter for speed control of electric motor<br>Model FR-A840: Standard model<br>Model FR-A842: Separated converter model<br>Model FR-CC2: Converter Unit for FR-A842<br>Model FR-A846: IP55 Compatible model |
| <b>Trade Name</b>          | Inverter FR-A800 Series  |

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## Type Approval Certificate

|                         |   |
|-------------------------|---|
| <b>Application</b>      | 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. 1-2024 where the Test Specification is satisfactory for the intended operation.  |
| <b>Ratings</b>          | See Appendix  |
| <b>Additional Tests</b> | Dry heat test at 55°C during 16 hours<br>Low temperature test at -10°C during 16 hours<br>Enclosure test for IP55 Compatible model  |
| <b>Other Conditions</b> | <p>(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.</p> <p>-10°Cto +50°C (non-freezing) (LD, ND, HD ratings)<br/>-10°Cto +40°C (non-freezing) (SLD rating)</p> <p>(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.</p> <p>(3)The input voltage shall be limited to 480VAC or less for models with motor capacity of 55 kW or less.</p> |

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.

**Previous Version:** LR2002550TA-03

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## Type Approval Certificate

The Design Appraisal Document LR24129826TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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## Appendix

### **RATINGS:**

|                                |                               |                                 |
|--------------------------------|-------------------------------|---------------------------------|
| Input power supply             |                               |                                 |
| Model FR-A840<br>Model FR-A846 | 3 phase 50/60Hz, 380 - 500VAC |                                 |
| Model FR-A842                  | Converter unit                | 3 phase 50/60Hz<br>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          |

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| 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          |

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Table 3

| Separated Converter Model<br>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          |
| 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          |

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| 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-A846-75K-#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-