



# NIPPON KAIJI KYOKAI

## TYPE APPROVAL CERTIFICATE FOR AUTOMATIC DEVICES AND EQUIPMENT

Certificate No. TA15062M

**This is to certify** that the undernoted product(s) has/have been approved in accordance with the requirements specified in Chapter 1, Part 7 of "Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use" and the relevant Society's Rules.

This certificate is issued to

Manufacturer: **Danfoss Power Electronics A/S**  
Place of Manufacturing: **4401 N. Bell School Rd Loves park, IL 61111, USA**  
**Ulsnaes 1, DK-6300 Graasten, Denmark**  
Product description: **Frequency Converters and Filter**  
Model: **FC-102, FC-202, FC-302, FC-322 Frequency Converters;**  
**AAF006 Active Filter**

Approval No.: **15A003**  
Valid until: **12 January 2020**

This certificate is subject to the conditions specified in the attached sheet(s).

Issued at Tokyo on 13 January 2015.

Y. Shibata  
General Manager  
Machinery Department

Note: The manufacturer, if desired, is requested to apply to the Society for renewal prior to the expiration date.

## NIPPON KAIJI KYOKAI

Attached sheet -1/6 to the Certificate No. TA15062M

### Specification & documents:

1. Particulars: Power supply: 200-240V, 380-480/500V, 525-690V

2. Components and reference drawings:

VLT®HVAC Drive series FC-102;

- 200-240V (T2): Power rating 1.1~45kW
- 380-480V (T4): Power rating 1.1~90kW
- 525-690V (T7): Power rating 1.1~90kW
- 380-480V (T4): Power rating 110~1,000kW
- 525-690V (T7): Power rating 55~1,400kW
- 380-480V (T4): Power rating 315~1,000kW
- 525-690V (T7): Power rating 450~1,400kW
- 380-480V (T4): Power rating 160~450kW
- 380-480V (T4): Power rating 160~710kW

VLT®AQUA Drive series FC-202;

- 200-240V (T2): Power rating 0.25~45kW
- 380-480V (T4): Power rating 0.37~90kW
- 525-690V (T7): Power rating 1.1~90kW
- 380-480V (T4): Power rating 110~1,000kW
- 380-480V (T4): Power rating 75~1,400kW
- 380-480V (T4): Power rating 315~1,000kW
- 525-690V (T7): Power rating 450~1,400kW
- 380-480V (T4): Power rating 160~450kW
- 380-480V (T4): Power rating 160~710kW

VLT®Automation Drive FC-300 series FC-301/302;

- 200-240V (T2): Power rating 0.25~37kW
- 380-480/500V (T4/T5): Power rating 0.37~75kW
- 525-690V (T7): Power rating 1.1~75kW
- 380-500V (T5): Power rating 90~800kW
- 525-690V (T7): Power rating 55~1,200kW
- 380-500V (T5): Power rating 250~800kW
- 525-690V (T7): Power rating 355~1,200kW
- 380-500V (T5): Power rating 132~630kW
- 380-500V (T5): Power rating 132~630kW

VLT®Active Filter AAF006

- 380-480V (T4): Current rating 190~400 Amps

- To be continued -

# NIPPON KAIJI KYOKAI

Attached sheet -2/6 to the Certificate No. TA15062M

Selection types for Type Codes for FC102, 202, 300 Series and AAF006 Active Filters

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1 4 7 10 11 23

Basic string definitions:

Product Group (character 1-3)

FC- : Adjustable Frequency Converters

AAF: Active Filters

VLT series (character 4-6)

102 : VLT HVAC Drive – Advanced version

202 : VLT AQUA Drive – Advanced version

301 : VLT Automation Drive – Standard version

302 : VLT Automation Drive – Advanced version

006: VLT Active Filter

Power size (character 7-10; representative examples – complete range not listed here)

PK25 : 0.25kW / 0.33HP,

P75K : 75kW / 100HP

P90K : 90kW / 125HP

N75K : 75kW / 100HP D3h

N90K : 90kW / 125HP D3h

P110 : 110kW / 150HP

N110 : 110kW / 150HP

Current Rating (character 7-10)

A190: 190 Amp

Voltage (character 11-12)

T2: Three phase 200-240V AC

T4: Three phase 380-480V AC

T5: Three phase 380-500V AC

T7: Three phase 525-690V AC

- To be continued -

## NIPPON KAIJI KYOKAI

Attached sheet -3/6 to the Certificate No. TA15062M

Enclosure (character 13-15)

E00: IP00 / Chassis

E20: IP20 / Chassis

E2S: IP20 / Chassis (medium power D-Frame)

E21: IP21 / Type 1

E2D: IP21 / Type 1 with heater

H21: IP21 / Type 1 with heater

E54: IP54 / Type 12

H54: IP54 / Type 12

E5H: Hybrid IP54

E2M: IP20 / Type 1 with mains shield

E5M: IP54 / Type 12 with mains shield

E5D: IP54 / Type 12 (medium power D-Frame)

E55: IP55 / Type 12

E66: IP66 / Type 4X

Hardware (character 16-23)

Hardware, RFI filter (character 16-17)

H1; H2; H3; H4; H5; B2; B4; N2; N4; HX

Hardware, Brake & Stop (character 18)

Hardware, Display (character 19)

Hardware, Coating (Character 20) C: Coated PCB; R: Coated PCB 3C3 + Ruggedized

Hardware, Mains options (character 21)

Hardware, adaptation A (character 22)

Hardware, adaptation B (character 23)

Software (character 24-28)

Options – A (character 29-30)

Options – B (character 31-32)

Options – C (character 33-37)

Options – D (character 38-39)

- To be continued -

# NIPPON KAIJI KYOKAI

Attached sheet -4/6 to the Certificate No. TA15062M

Basic string definitions for brand labeling and customer specific drives:

Product Group and VLT series (character 1-6)

AF-600	Equals to FC-102
KAD102	Equals to FC-102
FC-103	Equals to FC-102
ADS102	Equals to FC-102
IVS102	Equals to FC-102
TR-200	Equals to FC-102
ITT102	Equals to FC-102
AF-600	Equals to FC-102
AKD102	Equals to FC-102
FC-103	Equals to FC-102
ADS102	Equals to FC-102
IVS102	Equals to FC-102
TR-200	Equals to FC-102
ITT102	Equals to FC-102
FC-103	Equals to FC-102
CUE202	Equals to FC-202
FC-322	Equals to FC-202
LD-302	Equals to FC-302
IR-302	Equals to FC-302
IRV302	Equals to FC-302
CD-302	Equals to FC-302
MWU302	Equals to FC-302
CDS302	Equals to FC-302
DV-302	Equals to FC-302
3G3DV	Equals to FC-302
LB-302	Equals to FC-302
AFE302	Equals to FC-302
AF-650	Equals to FC-302
FCK302	Equals to FC-302
FC-312	Equals to FC-302
FC-311	Equals to FC-301

- To be continued -

3. Documentation and Test Reports:

VLT® Low Harmonic Drive for AAF006 Operating Instructions

TR424\_PTP\_THD\_LHD120\_P200\_Series\_6 Test Report

VLT® Laboratory test report

CTR-11-0205, REVISION RELEASED

P424, PTP, EMC results, AAF006A190T4 Test Report

CTR-11-0155, REVISION RELEASED

P424, PTP, EMC results, LHD330 series 006 Test Report

P424, PTP, EMC results, AAF006A190T4 Test Report

CTR-11-0125, REVISION B

P424, PTP, EMC results, LHD120 series 006 Test Report

CTR-11-0127, REVISION RELEASED

CTR-11-0145, REVISION DRAFT 2

P424, PTP, EMC results, LHD210 series 006 Test Report

CTR-11-0185, REVISION DRAFT 4

177R0339, 177R0340, 177R0349, 177R0350, 177R0351, 177R0352, 177R0354, 177R0374,

177R0375, 177R0490, 177R0491, 177R0492, 177R0493,

DATASYST PROJECT: D15-14976, D15-14845

Operating Instructions, 90kW-315kW D-frame VLT® AutomationDrive FC 300

Operating Instructions, 110kW-400kW D-frame VLT® AQUA Drive FC 200

Operating Instructions, 110kW-400kW D-frame VLT® AQUA Drive FC 100

ENGINEERING TEST REPORT #: 312204, 312202,312171 and 312172,312169 and 312170,

312081B, 312081A, 312080B, 312080A,

Radiometric Document RP-7154, RP-7120,

EMC test results: 00708507, 00705781, 00708506, 00705683, 00702489

P424, vibration testing – Danfoss Specs, Document ID: 00706801, 00596396, 00596396, 00702667

NTS Report: Danfoss Drives A10116 Report, A8366-500B0432, Danfoss Drives A11198 Report,

**Test items & approval conditions:**

## 1. Test items:

(Applied testing items are marked with X.)

ENVIRONMENTAL TESTS		Mark
External examination		X
Operation test and performance test		X
Electric power supply failure test		X
Power supply fluctuation test	Electric	X
	Pneumatic and Hydraulic	--
Insulation resistance test		X
High voltage test		X
Pressure test (Pneumatic and Hydraulic)		--
Dry heat test (Temperature 40°C × 1.5 h & 50°C × 1.5 h & 55°C × 0.5 h)		X
Damp heat test		X
Vibration test (Acceleration ±0.7g)		X
Inclination test		--
Cold test (Temperature 5°C × 2 hours)		X
Salt mist test		--
Electrostatic discharge immunity test		X
Radiated radio frequency immunity test		X
Conducted low frequency immunity test		X
Conducted high frequency immunity test		X
Burst / Fast transient immunity test		X
Surge immunity test		X
Radiated emission test (Note)		--
Conducted emission test (Note)		--
Flame retardant test		--

Note: Prior to the onboard installation, the electromagnetic compatibility (EMC) measures shall be proposed and submitted for approval.

## 2. Approval condition:

The product is not allowed to be installed in the bridge and on open deck.

- The End -