

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Frequency Converter**with type designation(s)
Comander C200 and C300 and Pump drives F600

Issued to

**Nidec Control Techniques Ltd.
Newtown, Powys, United Kingdom**is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-12-08**for **DNV GL**This Certificate is valid until **2025-12-07**.DNV GL local station: **Manchester**Approval Engineer: **Nicolay Horn**

**Marta Alonso Pontes
Head of Section**

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.



Job Id: **262.1-033464-1**
 Certificate No: **TAE000046M**

Name and place of manufacturer

Nidec Industrial Automation Newtown, United Kingdom	Nidec Oradea SRL Str. Petre P. Carp, no. 20, Oradea Romania
Jabil Circuit (Guangzhou) Ltd Guangzhou, Guangdong, China	Leroy Somer Electro-Technique (Fuzhou) Co., Ltd Guangming District, Shenzhen China

Product description

Comander C200 and 330 drives for general purpose. IP 20

Model numbers		Frame size	Voltage [Vac]	No of phases	Power [kW] at 45 °C	Current [A] at 45 °C
C200	C300					
C200-021 00042A	C300-021 00042A	2	110	1	0.75	4.2
C200-021 00056A	C300-021 00056A	2	110	1	1.1	5.6
C200-022 00024A	C300-022 00024A	2	230	1/3	0.37	2.4
C200-022 00033A	C300-022 00033A	2	230	1/3	0.55	3.3
C200-022 00042A	C300-022 00042A	2	230	1/3	0.75	4.2
C200-022 00056A	C300-022 00056A	2	230	1/3	1.1	5.6
C200-022 00075A	C300-022 00075A	2	230	1/3	1.5	7.5
C200-024 00013A	C300-024 00013A	2	400	3	0.37	1.3
C200-024 00018A	C300-024 00018A	2	400	3	0.55	1.8
C200-024 00023A	C300-024 00023A	2	400	3	0.75	2.3
C200-024 00032A	C300-024 00032A	2	400	3	1.1	3.2
C200-024 00041A	C300-024 00041A	2	400	3	1.5	4.1
C200-032 00100A	C300-032 00100A	3	230	1/3	2.2	10
C200-034 00056A	C300-034 00056A	3	400	3	2.2	5.6
C200-034 00073A	C300-034 00073A	3	400	3	3	7.3
C200-034 00094A	C300-034 00094A	3	400	3	4	9.4
C200-042 00133A	C300-042 00133A	4	230	1/3	3	13.3
C200-042 00176A	C300-042 00176A	4	230	1/3	3.0/4.0	17.6
C200-044 00135A	C300-044 00135A	4	400	3	5.5	13.5
C200-044 00170A	C300-044 00170A	4	400	3	7.5	17
C200-052 00250A	C300-052 00250A	5	230	3	5.5	25
C200-054 00270A	C300-054 00270A	5	400	3	11	27
C200-054 00300A	C300-054 00300A	5	400	3	15	30
C200-055 00030A	C300-055 00030A	5	575	3	1.5	3
C200-055 00040A	C300-055 00040A	5	575	3	2.2	4
C200-055 00069A	C300-055 00069A	5	575	3	4	6.9
C200-062 00330A	C300-062 00330A	6	230	3	7.5	33
C200-062 00440A	C300-062 00440A	6	230	3	11	44
C200-064 00350A	C300-064 00350A	6	400	3	15	35
C200-064 00420A	C300-064 00420A	6	400	3	18.5	42
C200-064 00470A	C300-064 00470A	6	400	3	22	47
C200-065 00100A	C300-065 00100A	6	575	3	5.5	10
C200-065 00150A	C300-065 00150A	6	575	3	7.5	15
C200-065 00190A	C300-065 00190A	6	575	3	11	19
C200-065 00230A	C300-065 00230A	6	575	3	15	23
C200-065 00290A	C300-065 00290A	6	575	3	18.5	29
C200-065 00350A	C300-065 00350A	6	575	3	22	35
C200-072 00610A	C300-072 00610A	7	230	3	15	61
C200-072 00750A	C300-072 00750A	7	230	3	18.5	75
C200-072 00830A	C300-072 00830A	7	230	3	22	83

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Model numbers		Frame	Voltage	No of	Power [kW]	Current [A]
C200-074 00660A	C300-074 00660A	7	400	3	30	66
C200-074 00770A	C300-074 00770A	7	400	3	37	77
C200-074 01000A	C300-074 01000A	7	400	3	45	100
C200-075 00440A	C300-075 00440A	7	575	3	30	44
C200-075 00550A	C300-075 00550A	7	575	3	37	55
C200-076 00190A	C300-076 00190A	7	690	3	15	19
C200-076 00240A	C300-076 00240A	7	690	3	18.5	24
C200-076 00290A	C300-076 00290A	7	690	3	22	29
C200-076 00380A	C300-076 00380A	7	690	3	30	38
C200-076 00440A	C300-076 00440A	7	690	3	37	44
C200-076 00540A	C300-076 00540A	7	690	3	45	54
C200-082 01160A	C300-082 01160A	8	230	3	30	116
C200-082 01320A	C300-082 01320A	8	230	3	37	132
C200-084 01340A	C300-084 01340A	8	400	3	55	134
C200-084 01570A	C300-084 01570A	8	400	3	75	157
C200-085 00630A	C300-085 00630A	8	575	3	45	63
C200-085 00860A	C300-085 00860A	8	575	3	55	86
C200-086 00630A	C300-086 00630A	8	690	3	55	63
C200-086 00860A	C300-086 00860A	8	690	3	75	86
C200-092 01760A	C300-092 01760A	9	230	3	45	176
C200-092 01760E	C300-092 01760E	9	230	3	45	176
C200-092 02190A	C300-092 02190A	9	230	3	55	219
C200-092 02190E	C300-092 02190E	9	230	3	55	219
C200-094 02000A	C300-094 02000A	9	400	3	90	200
C200-094 02000E	C300-094 02000E	9	400	3	90	200
C200-094 02240A	C300-094 02240A	9	400	3	110	224
C200-094 02240E	C300-094 02240E	9	400	3	110	224
C200-095 01040A	C300-095 01040A	9	575	3	75	104
C200-095 01040E	C300-095 01040E	9	575	3	75	104
C200-095 01310A	C300-095 01310A	9	575	3	90	131
C200-095 01310E	C300-095 01310E	9	575	3	90	131
C200-096 01040A	C300-096 01040A	9	690	3	90	104
C200-096 01040E	C300-096 01040E	9	600	3	90	104
C200-096 01310A	C300-096 01310A	9	690	3	110	131
C200-096 01310E	C300-096 01310E	9	690	3	110	131

Pump drives F600, IP20

Model number	Frame size	Voltage [Vac]	No of phases	Power [kW] at 45 °C	Current [A] at 45 °C
F600-032 00066A	3	230	3	1.1	6.6
F600-032 00080A	3	230	3	1.5	8
F600-032 00110A	3	230	3	2.2	11
F600-032 00127A	3	230	3	3	12.7
F600-034 00034A	3	400	3	1.1	3.4
F600-034 00045A	3	400	3	1.5	4.5
F600-034 00062A	3	400	3	2.2	6.2
F600-034 00077A	3	400	3	3	7.7
F600-034 00104A	3	400	3	4	10.4
F600-034 00123A	3	400	3	5.5	12.3
F600-042 00180A	4	230	3	4	18
F600-042 00250A	4	230	3	5.5	25
F600-044 00185A	4	400	3	7.5	18.5
F600-044 00240A	4	400	3	11	24

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Model number	Frame size	Voltage [Vac]	No of phases	Power [kW] at 45 °C	Current [A] at 45 °C
F600-052 00300A	5	230	3	7.5	30
F600-054 00300A	5	400	3	15	30
F600-055 00039A	5	575	3	2.2	3.9
F600-055 00061A	5	575	3	4	6.1
F600-055 00100A	5	575	3	5.5	10
F600-062 00500A	6	230	3	11	50
F600-062 00580A	6	230	3	15	58
F600-064 00380A	6	400	3	18.5	38
F600-064 00480A	6	400	3	22	48
F600-064 00630A	6	400	3	30	63
F600-065 00120A	6	575	3	7.5	12
F600-065 00170A	6	575	3	11	17
F600-065 00220A	6	575	3	15	22
F600-065 00270A	6	575	3	18.5	27
F600-065 00340A	6	575	3	22	34
F600-065 00430A	6	575	3	30	43
F600-072 00750A	7	230	3	18.5	75
F600-072 00940A	7	230	3	22	94
F600-072 01170A	7	230	3	30	117
F600-074 00790A	7	400	3	37	79
F600-074 00940A	7	400	3	45	94
F600-074 01120A	7	400	3	55	112
F600-075 00530A	7	575	3	45	53
F600-075 00730A	7	575	3	55	73
F600-076 00230A	7	690	3	18.5	23
F600-076 00300A	7	690	3	22	30
F600-076 00360A	7	690	3	30	36
F600-076 00460A	7	690	3	37	46
F600-076 00520A	7	690	3	45	52
F600-076 00730A	7	690	3	55	73
F600-082 01490A	8	230	3	37	149
F600-082 01800A	8	230	3	45	180
F600-084 01550A	8	400	3	75	155
F600-084 01840A	8	400	3	90	184
F600-085 00860A	8	575	3	75	86
F600-085 01080A	8	575	3	90	108
F600-086 00860A	8	690	3	75	86
F600-086 01080A	8	690	3	90	108
F600-092 02160A	9	230	3	55	216
F600-092 02160E	9	230	3	55	216
F600-092 02660A	9	230	3	75	266
F600-092 02660E	9	230	3	75	266
F600-094 02210A	9	400	3	110	221
F600-094 02210E	9	400	3	110	221
F600-094 02660A	9	400	3	132	266
F600-094 02660E	9	400	3	132	266
F600-095 01250A	9	575	3	110	125
F600-095 01250E	9	575	3	110	125
F600-095 01500A	9	575	3	110	150
F600-095 01500E	9	575	3	110	150
F600-096 01250A	9	690	3	110	125
F600-096 01250E	9	690	3	110	125
F600-096 01550A	9	690	3	132	155

Model number	Frame size	Voltage [Vac]	No of phases	Power [kW] at 45 °C	Current [A] at 45 °C
F600-096 01550E	9	690	3	132	155
F600-102 03250E	10	230	3	90	325
F600-102 03600E	10	230	3	110	360
F600-104 03200E	10	400	3	160	320
F600-104 03610E	10	400	3	200	361
F600-105 02000E	10	575	3	150	200
F600-106 01720E	10	690	3	160	172
F600-106 01970E	10	690	3	185	197
F600-114 04370E	11	400	3	225	437
F600-114 04870E	11	400	3	250	487
F600-114 05070E	11	400	3	280	507
F600-115 02480E	11	575	3	185	248
F600-115 02880E	11	575	3	225	288
F600-115 03150E	11	575	3	250	315
F600-116 02250E	11	690	3	200	225
F600-116 02750E	11	690	3	250	275
F600-116 03050E	11	690	3	280	305

Application/Limitation

Frequency converters for use in marine and offshore applications

Product certification:

For drives equal or larger than 100kW a DNV GL product certificate is needed. The following documents shall be submitted for approval:

- Reference to this Type Approval Certificate
- Functional description for the intended use, configuration and interface (e.g. alarms, monitoring and auxiliary power supplies)
- Test program for routine tests and functional tests
- Single line diagram (only applicable for multi drive configuration)
- If additional components apart from the type approved frequency converter are part of the delivery, documentation in accordance with DNVGL rules Pt.4 Ch.8 Sec.1 table 2 shall be delivered for the additional components.

Converters EMC classed C2 and C3 according to IEC 61800-3 can be installed in "special distribution zone" and "general power distribution zone" in accordance with IEC 60533 provided precautions are taken to attenuate these effects on the distribution system, so the safe operation is assured. See EMC datasheet for marine application for further details.

The power range can be extended by connecting drives in parallel. See Control Techniques document: Unidrive M Modular Installation Guide, CT part number: 0478-0141-07.

Type Approval documentation

Technical info:

"Modular construction of variable speed drives", dated 2020-10-09, brochures from Control Techniques.

DNV approval for commander and pump drives – Modell numbers. Document no. 1-000-051-787 rev. 00 02

EMC Data Sheet for Marine Application, doc. no. 1-000-052-709, Revision: 00.01, dated 2020-11-27.

Test Reports:

UL Test reports for Unidrive M for sizes 3, 4, 6, 6, 7, 8, 9, 10 and 11, file E171230.

UL Test reports for sizes 2, 3, and 4 file E171230.

Nitec Environmental Test Report – Dry Heat, doc. no. 1-000-008-654 dated 2020-10-12.

Nitec Environmental Test Report – Damp Heat doc. no. 2-000-001-343, 1-000-005-019 dated 2020-06-01, 1-000-006-042 dated 2020-06-09, 1-000-005-843 dated 2020-06-09, 1-000-013-476 dated 2014-

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04-25, 1-000-009-765 dated 2020-06-09, 2-000-001-025 dated 2020-06-21 & 1-000-005-019 dated 2012-02-08.

Track Certificate of Testing doc. nos. TRA025964CC01A Issue Date: 9th July 2015, TRA025964CC02A Issue Date: 9th July 2015, TRA015160CC03A issue date 31st March 2014, TRA007820CC06B issue date 27st Februsry 2012.

NETC Test report WT136001333 issued 23 July 2014, WT146001536 issued 23 August 2013.

ETDC Test report no. TG 031 (13-14) dated 2013-07-10 and TG 12 2 A (12-13) dated 2013-01-08.

STQC Test report no. RTL(W) 2013 ENV dated 2013-07-17 and RTL(W) 2012 ENV 404 dated 2012-12-10.

Environ Test reports no. 46275-2 and 46275-3 dated 2012-03.23.

Nitec EMC Test reports nos. 1-000-050-783 dated 2020-06-04, 1-000-051-710 & 1-000-051-708 dated 2020-05-26, 1-000-051-659 dated 2020-05-18, 1-000-050-885 dated 2020-04-03, 1-000-051-661, 1-000-051-281, 1-000-051-301, 1-000-051-326 & 1-000-050-900 dated 2020-05-22, 1-000-051-744 dated 2020-05-28.

EMC Type Test Report - Voltage Dips and Interruptions Immunity for 200V, 400 V and 690 V, frame sizes 2 to 11.

Tests carried out

Tests according to DNV GL Rules for Ships Pt.4 Ch.8, Sec.1, Sec.7, table 5 and UL 508C.

Marking of product

Type designation (typecode):

C200/C300/F600 - xxy zzzzzn

xx: frame [03-11]

y: voltage [2 = 200V, 4 = 400V, 6 = 690V]

zzzzz: current rating x10

n: configuration A = ACin-ACout with internal choke, E = ACin-ACout (without internal choke)

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 assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routines (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at 2 and 3.5 year and at renewal.

END OF CERTIFICATE