



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAE00002Y2**  
Revision No:  
**1**

## This is to certify:

**That the Frequency Converter**

with type designation(s)  
**OPTIDRIVE P2,**

Issued to

**Invertek Drives Ltd.**  
**Powys, United Kingdom**

is found to comply with

**DNV rules for classification – Ships, offshore units, and high speed and light craft**

## Application :

**Frequency Converter for Asynchronous Motors. Range: 5,5 kW to 250 kW, 200 - 480 VAC supply.**

**Products approved by this certificate are accepted for installation on all vessels classed by DNV.**

Issued at **Høvik** on **2023-03-01**

for **DNV**

This Certificate is valid until **2028-02-29**.

DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Nicolay Horn**

**Frederik Tore Elter**  
**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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

Revision: 2022-09

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Page 1 of 3

## Product description

Variable speed controller for asynchronous motor. Constant / variable torque applications.

Type designation	Frame size	Mains supply (V)	Number of phases	Output Current (A)	Motor shaft power (kW) @ 40°C	7.5% Derated Motor shaft power (kW) @ 45°C
ODP-2-42055-3KF4...	4	200 - 240	3	24	5,5	5,1
ODP-2-42075-3KF4...	4	200 - 240	3	30	7,5	7
ODP-2-42110-3KF4...	4	200 - 240	3	46	11	10,2
ODP-2-52150-3KF4...	5	200 - 240	3	61	15	13,9
ODP-2-52185-3KF4...	5	200 - 240	3	72	18,5	17,1
ODP-2-62022-3KF4...	6	200 - 240	3	90	22	20
ODP-2-62030-3KF4...	6	200 - 240	3	110	30	28
ODP-2-62037-3KF4...	6	200 - 240	3	150	37	34
ODP-2-62045-3KF4...	6	200 - 240	3	180	45	42
ODP-2-72055-3KF4...	7	200 - 240	3	202	55	51
ODP-2-72075-3KF4...	7	200 - 240	3	240	75	69
ODP-2-44110-3KF4...	4	380 - 480	3	24	11	10,2
ODP-2-44150-3KF4...	4	380 - 480	3	30	15	13,9
ODP-2-44185-3KF4...	4	380 - 480	3	39	18,5	17,1
ODP-2-44220-3KF4...	4	380 - 480	3	46	22	20
ODP-2-54300-3KF4...	5	380 - 480	3	61	30	28
ODP-2-54370-3KF4...	5	380 - 480	3	72	37	34
ODP-2-64045-3KF4...	6	380 - 480	3	90	45	42
ODP-2-64055-3KF4...	6	380 - 480	3	110	55	51
ODP-2-64075-3KF4...	6	380 - 480	3	150	75	69
ODP-2-64090-3KF4...	6	380 - 480	3	180	90	83
ODP-2-74110-3KF4...	7	380 - 480	3	202	110	102
ODP-2-74132-3KF4...	7	380 - 480	3	240	132	122
ODP-2-74160-3KF4...	7	380 - 480	3	302	160	148
ODP-2-84200-3KF4N-	8	380 - 480	3	370	200	185
ODP-2-84250-3KF4N-	8	380 - 480	3	480	250	231
ODV-3-843700-3F1N-	8	380 - 480	3	370	200	185
ODV-3-844800-3F1N-	8	380 - 480	3	480	250	231

## Application/Limitation

Supply voltage range:	200 - 480 V, 50/60 Hz
Voltage variation:	- 10 % , + 10 %
Frequency variation:	± 10 %
Output frequency:	0 - 320 Hz
Temperature range in operation:	0 - 40 °C (40 - 50 °C when derated 1,5% /°C, 50 - 55 when derated 2,5% /°C )
Temperature class:	A
Vibration class:	A
Humidity class:	A
Protection class*:	IP20, IP40, IP55 & IP66*
EMC class**:	IEC 61800-3**

The OPIDRIVE P2 must be regarded as a component. The actual installation shall be designed according to Invertek Installation & Operating instructions and according to the applicable DNV Rules for the actual application.

#### Product certification:

Frequency converters larger than 100kW serving important or essential equipment are subjected for additional case by case-based product certification. Documentation to be submitted for product certification shall be according DNV ship rules Pt.4 Ch.8 Sec.1, Table 2 or DNV offshore standard D201, including reference to this type approval certificate and confirmation that the correct marine options and power ratings are used.

\*To be installed in an enclosure with an IP degree in accordance with DNV Rules w.r.t. location.

\*\*Converters EMC classed 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.

#### Type Approval documentation

##### Technical info:

"Supporting information DNV Type Approval Application for Invertek Drives Size 8 Variable Frequency Drive", dated 2021-01-08.

"Invertek Drives OPTIDRIVE CP2 Installation & Operating Instruction dated May 2011.

##### Test reports:

UL test reports no. 4790021293 dated 2021-10-08. UL Test record file E226333 dated 2022-03-31.

I<sup>2</sup>PS test reports nos. 2022-0055201 & 2022-0055701 dated 2022-02-09, 2022-0100901 dated 2022-06-09.

Element test reports nos TRA-053817-21-CR-02A dated 2022-06-16 and TRA-053817-21-CR-02A dated 2021-04-06

Crang test report no. L8344R dated 2021-09-13.

DNV Vitnes test Version 1.4 dated 2013-11-13. TRAC Test Reports nos. TRA-016007-21-CR-01A dated 2014-04-16 & TRA-016217-35-00A dated 2014-04-28. I<sup>2</sup>PS test reports nos 2014-0052402, 2014-0053402, 2014-0053501 & 2014-0053601 all dated

2014-03-26, No.2013-00685 dated 2013-04-26, UL test report file no. 11CA37085.

#### Tests carried out

Type tests in accordance with IEC 61800 / UL508C as Visual inspection, Performance/heat run. Environmental test in accordance with DNV Sfc No. 2.4 / DNV -CG-0339 as Power supply failure, Power supply variations, Voltage/frequency variation, Vibration, Dry heat, Damp heat, Insulation resistance, High voltage.

EMC: The following tests are in accordance with IEC 61800-3: Electrical fast transient (Burst), electrical slow transient (Surge), RF-common mode Voltage, radiated RF-electromagnetic fields, electric discharge (ESD), radiated and conducted emission. (See under application limitation).

#### Marking of product

Invertek Drives – Type designation – Power – Voltage

#### 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 survey 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