DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-13398**

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
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
Frequency Converter for Asynchronous Motors. Range: 5,5 kW to 160 kW, 200 - 480 VAC supply.

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2014-06-18**

DNV local station: **London**

Approval Engineer: **Nicolay Horn**

for **Det Norske Veritas AS**
Digitally Signed By: Laumann, Marit
Location: DNV Høvik, Norway
Signing Date: 2014-06-19

Marit Laumann
Head of Section

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

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 derated1,5% /°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.Documents for the actual application are to be submitted for approval in each case in accordance with DNV Rules Pt.4, Ch.8, Sec.1 Table B2. A Product Certificate is required for converters ≥ 100 kW.

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

Test reports:
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 dated2014-04-28.I2PS test reports nos 2014-0052402, 2014-0053402, 2014-0053501 & 2014-0053601all 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 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 Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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.

Survey to be performed at least every second year.

END OF CERTIFICATE