

# Quality Compliance

## Certificate of Conformity

*The designs of Variable Frequency Drive, VFD C, CH series, of Delta Electronics were in accordance with following European Directives and International standards and met the high quality requirements on Safety and Environment.*

Directive/Standard	Description
2006/95/EC	Low Voltage Directive(LVD)
EN 61800-5-1 Part 5-1:	Adjustable speed electrical power drive systems – Part 5-1: Safety requirements – Electrical, thermal and energy
4.2	Protection against electric shock, thermal, and energy hazards – Fault conditions
4.3.1	Decisive voltage classification
4.3.2	Protective separation
4.3.3	Protection against direct contact
4.3.4	Protection in case of direct contact
4.3.5.1	Protection against indirect contact - General
4.3.5.2	Insulation between live parts and accessible conductive parts
4.3.5.3	Protective bonding circuit
4.3.5.4	Protective earthing conductor
4.3.5.5	Means of connection for the protective earthing conductor
4.3.5.6	Special features in equipment for protective class II
4.3.6	Insulation
4.3.7	Enclosures
4.3.8	Wiring and connections
4.3.9	Output short-circuit requirements
4.3.10	Residual Current-operated protective (RCD) or monitoring (RCM) device compatibility
4.3.11	Capacitor discharge
4.4	Protection against thermal hazards
4.5.1	Electrical energy hazards
4.5.2	Mechanical energy hazards
4.6	Protection against environmental stresses
5.2.1	Visual inspection
5.2.2	Mechanical tests
5.2.3	Electrical tests
5.2.4	Abnormal operation tests
5.2.5	Material tests
5.2.6	Environmental tests
6.1	Information and marking requirements - General

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Directive/Standard	Description
<b>2004/108/EC</b>	<b>Electromagnetic Compatibility (EMC)</b>
<b>EN 61800-3 Part 3:</b>	<b>Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods</b>
<b>EN 61000-6-3 EN 61000-6-4</b>	<b>Emission – Industrial environments Emission – Industrial environments</b>
<b>EN 61800-3 EN 61800-3</b>	<b>Conducted Emission : Category C3 Radiated Emission : Category C3</b>
<b>EN 61000-6-1 EN 61000-6-2</b>	<b>Immunity – Industrial environments Immunity – industrial environments</b>
<b>EN 61800-3 EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6</b>	<b>Immunity</b> ESD: Electrostatic Discharge RS: Electromagnetic radiated susceptibility EFT: Electric Fast Transient Surge transient CS: Conducted emission susceptibility
<b>EN 61800-3 IEC 61000-2-4 IEC 60146-1-1 IEC 61000-2-4 EN 61000-4-11 IEC 61000-2-4 IEC 61000-2-4</b>	<b>Low frequency immunity</b> Harmonics Commutation notches Voltage variations and fluctuation Voltage dips and short interruption Voltage unbalance Frequency variations
<b>EN 61800-3 EN 61000-3-2 EN 61000-3-12</b>	<b>Low frequency emission</b> Harmonics( $I \leq 16A$ ) Harmonics( $I > 16A$ )

# Quality Compliance

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<b>Directive/Standard</b>	<b>Description</b>
<b>UL508C</b> CAN/CSA-C22.2 No. 14-2005	<b>Power Conversion Equipment</b> <b>Industrial Control Equipment</b> <b>cULus marking (Approved by UL)</b>
<b>Enclosure Construction</b> Section 6 (UL 50)	Frames and Enclosure
<b>Environmental Rating Related Enclosure Construction</b> Section 7 (UL 50) Section 8 (UL 50)	General Protection against corrosion
<b>Environmental Rating Related Enclosure Performance</b> section 9 (UL 50)	General
<b>Non-Environmental Rating Related Enclosure Performance</b> section 10 section 11	General Securement of snap-on cover test
<b>Instructions and Marking Pertaining to Enclosures</b> section 12 section 13	Permanence of marking Details
<b>Device Construction</b> Section 14 Section 15 Section 16 Section 17 Section 18 Section 19 Section 20 Section 21 Section 23 Section 24 Section 25 Section 26 Section 27 Section 29 Section 30 Section 32 Section 35 Section 36 Section 37 Section 38	General Protection against corrosion Provisions for Mounting Insulation Material Means for switching Live Parts Drive Protection Capacitors Internal Wiring External interconnections Transformers Blower Motors Supply Connections Risk of Electric Shock Risk of Fire Secondary Circuits Isolation Devices Spacings Grounding Accessories
<b>Device Performance</b> Section 39 Section 40 Section 41 Section 41.1	General Temperature Abnormal operation test General

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Directive/Standard	Description
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Section 41.2 Section 41.3 Section 41.4 Section 41.5 Section 41.6 Section 42 Section 43 Section 44 Section 45 Section 48 Section 50 Section 51 Section 53 Section 54	Contactor overload Single phasing Inoperative blower motor Clogged filter Current limiting control Full-load motor-running current tables Solid state motor overload protection test Dielectric voltage withstand test Short circuit test – standard fault currents Transient voltage surge suppression Test Breakdown of component Terminal torque test Secondary circuits test Rating
<b>Device Marking</b> Section 55 Section 56 Section 57 Section 60 Section 61 Section 62 Section 63	General Overload, over-current, and over-speed protection Branch circuit short circuit protection Wiring terminal markings Cautionary Markings Instructions and markings pertaining to accessories Marking location
<b>Manufacturing and production line test</b> Section 64 Section 64A	Circuit functionality evaluation Production-line dielectric voltage withstand test

# Quality Compliance

## Regional Certification

### Australia(\*)

EN 61800-3

### Russia

TP TC 004/2011

TP TC 020/2011

## Miscellaneous standards

ISTA Procedure 1A

ISTA Procedure 2B

EN 50178

IEC 60068-2-6

IEC 60068-2-27

IEC 60068-2-31(\*)

IEC 60529

## Description

### RCM

Section 182 of the Australian Radio communications Act 1992

EMI: Conducted and Radiated emission

### Gost/EAC

Safety of low voltage equipment

Electromagnetic compatibility of technical means

Package Drop test and package vibration test  
Packaged-Products weighing 150 lb (68 kg) or Less

Package Drop test and package vibration test  
Packaged-Products weighing over 150 lb (68 kg)

Operation and non-operation vibration test  
Overvoltage Category I

Vibration (sinusoidal)

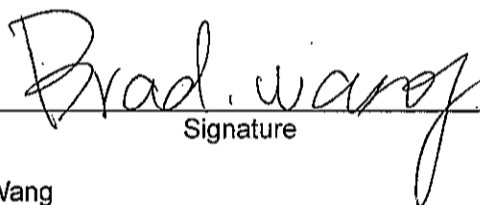
Shock

Rough handling shocks, primarily for equipment-type specimens

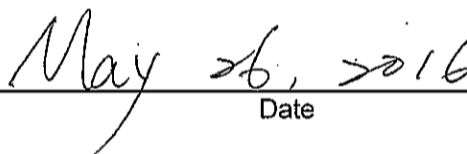
Degrees of protection provided by enclosures (IP Code)

(\*) – for VFD-C & CH series, up to 355KW.

**Performance upon above Directives/Standards might be discrete based on different installation and operation, reading user manual and quick start is advised.**



Signature



Date

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Industrial Automation Business Group