ENGINEERING TOMORROW

Selection Guide l VACON® NXP and VACON® NXC AC drives l 0.55 kW – 2 MW

# **Precision** and **clean power** in a **compact** package

**0.55 kW to 2 MW**

full power and voltage range for both induction and permanent magnet motors


drives.danfoss.com | VACON®

# Continuous control. Pure power.

VACON® NXP is a premium air-cooled AC drive for use in all applications where reliability, robust performance, precision and power are required. These drives are available in the power range from 0.55 kW to 2,000 kW.

## Ideal for demanding applications

VACON® NXP range offers the ultimate in motor control, for both induction and permanent magnet (PM) motors, gearless drive applications and paralleling solutions for high power motors.

VACON NXP is the smart drive of choice. With fast fieldbus options and exceptional programming flexibility, your VACON NXP is easily integrated into any plant's automation system. Satisfied customers also rely on our enclosed cabinet drive solution, VACON® NXC, to perform in the most challenging industrial environments such as oil and gas, extrusion, mining, pulp and paper, water and wastewater applications.

With improved functional safety, extensive approvals in place and comprehensive maintenance tools, you can be sure that your VACON® AC drives will give you the best possible control and ensure high operational quality and availability over the entire lifetime of your system.

Our VACON NXP portfolio fulfills key international standards and global requirements, including safety and EMC and Harmonics approvals.

## In harmony with the environment

We are committed to being an environmentally responsible company and our energy saving products and solutions are a good example of that. We have developed our manufacturing process in order to minimize the impact on the environment. All excess materials in the production and service processes are carefully sorted and recycled. Likewise, we continue to develop innovative solutions utilizing ie. regenerative energy and smart grid technology to help customers effectively monitor and control energy use and costs.

## At your service

Whether you are an original equipment manufacturer (OEM), system integrator, brand label customer, distributor or end user, Danfoss Drives provides services to help you meet your business targets. Our global service solutions are available 24/7 throughout the product lifecycle with the intent to minimize the total cost of ownership and environmental load.

*VACON® NXP wall-mounted range*

*VACON® NXP drive modules*

*VACON® NXC drive cabinets*

## VACON® NXP/NXC

| Typical segments | Key features | Benefits |
|---|---|---|
| ■ Mining and Minerals<br>■ Compressors<br>■ Marine and Offshore<br>■ Cranes and Hoists<br>■ Metals<br>■ Chemical and Refining<br>■ Water and Wastewater<br>■ Oil and Gas<br>■ Pulp and Paper<br>■ Cement and Gass<br>■ General process industry | Full power and voltage range from 0.55 kW to 2.0 MW for both induction and permanent magnet motors. | Same software tools, same control and option boards allowing the maximum utilisation of VACON NXP features over a wide power range. |
| | Extensive range of ready-to-use applications for basic to demanding needs. | No additional software engineering required, saving time and money. |
| | Create your own applications with VACON® Programming tool (licensed software tool). | Customized applications provide added flexibility to meet process requirements. |
| | Five built-in expansion slots for additional I/O, fieldbus and functional safety boards. | No additional external modules required. Options boards are compact and easy to install at any time. |

# Multiple options

## VACON® NXP Control

VACON® NXP offers a high-performance control platform for all demanding drive applications. The micro controller provides both exceptional prosessing and calculation power. The VACON NXP supports both induction and permanent magnet motors in open and closed loop control modes. VACON® Programming tool can be used to improve performance and create cost savings by integrating customer-specific functionality into the drive. The same control board is used in all VACON NXP drives, allowing the maximum utilization of VACON NXP control features over a wide power and voltage range.

## Option boards

Our VACON® NXP Control provides exceptional modularity by offering five (A, B, C, D and E) plug-in extension slots. Fieldbus boards, encoder boards as well as wide range of IO boards can simply be plugged-in at any time without the need to remove any other components.

*A listing of all options boards is provided on page 21.*

## Fieldbus options

Your VACON NXP is easily integrated within a plant's automation system by using plug-in fieldbus option boards including PROFIBUS DP, Modbus RTU, DeviceNet and CANopen. Fieldbus technology ensures increased control and monitoring of the process equipment with reduced cabling – ideal for industries where the need to ensure that products are produced under the right conditions is of paramount importance. An external +24 V supply option enables communication with the control unit even if the main supply is switched off. Fast drive-to-drive communication is possible using our fast SystemBus fiber optic communication.

**Profibus DP | DeviceNet | Modbus RTU | CANopen**

## Ethernet connectivity

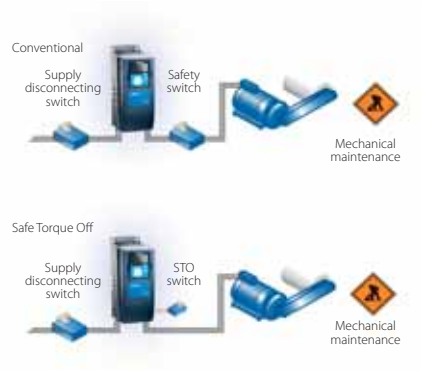
VACON NXP is the smart drive of choice, as there is no need to purchase additional communication tools. Ethernet connectivity allows remote drive access for monitoring, configuring and troubleshooting. Our Ethernet protocols such as PROFINET IO, EtherNet/IP and Modbus/TCP are available for all VACON NXP drives. New Ethernet protocols are being continuously developed.

**Modbus/TCP | PROFINET IO | EtherNet/IP**

# Functional safety

## Safe Torque Off, Safe Stop 1

**Safe Torque Off (STO)** is available for all VACON® NXP drives. It prevents the drive from generating torque on the motor shaft and prevents unintentional start-ups. The function also corresponds to an uncontrolled stop in accordance with stop category 0, EN60204-1.
**Safe Stop 1 (SS1)** initiates the motor deceleration and initiates the STO function after an application specific time delay. The function also corresponds to a controlled stop in accordance with stop category 1, EN 60204-1.
The advantage of the integrated STO and SS1 safety options compared to standard safety technology using electromechanical switchgear is the elimination of separate components and the effort required to wire and service them, while still maintaining the required level of safety at work.




## ATEX certified thermistor input

An ATEX approved thermistor input is available as an integrated option. Certified and compliant with the European ATEX directive 94/9/EC, the integrated thermistor input is specially designed for the temperature supervision of motors that are placed in areas in which potentially explosive gas, vapor, mist or air mixtures are present and areas with combustible dust. Typical industries requiring such supervision include chemical, petrochemical, marine, metal, mechanical, mining, and oil drilling.

If over-heating is detected, the drive immediately stops feeding energy to the motor. As no external components are needed, the cabling is minimized, improving reliability and saving on both space and costs.


## DC cooling fans

VACON NXP high-performance air-cooled products are equipped with DC fans. This significantly increases the reliability and lifetime of the fan also fulfilling the ERP2015 directive on decreasing fan losses. Likewise, the DC-DC supply board component ratings fulfill industrial requirement levels.

## Conformal coating

To increase performance and durability, conformally coated circuit boards (also known as varnished boards) are provided as standard for power modules (FR7 - FR14).

The upgraded boards offer reliable protection against dust and moisture and extend the lifetime of the drive and critical components.

# Commissioning made easy

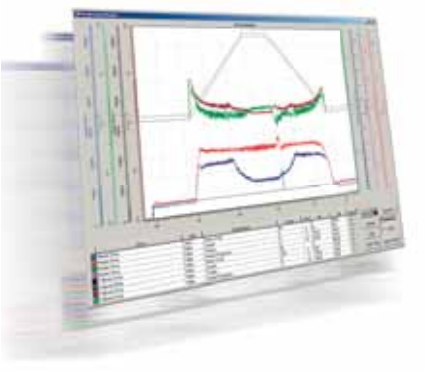

## User-friendly keypad

The user interface is intuitive to use. You will enjoy the keypad's well-structured menu system that allows for fast commissioning and trouble-free operation.

- Removable panel with plug-in connection
- Graphical and text keypad with multiple language support
- Text display multi-monitoring function
- Parameter backup and copy function with the panel's internal memory
- The startup wizard ensures a hassle-free set up. Choose the language, application type and main parameters during the first power-up.

## Documentation wizard

Make use of our VACON® Documentation Wizard and achieve dramatic savings in engineering time. The Documentation Wizard is a technical documentation tool, which creates a complete set of drawings for each VACON® NXC configuration. Just enter the product information, i.e. a type code, required variations and extra equipment (plus codes) into the user interface field, and the tool will automatically generate the documentation in any of the following formats: DWG (AutoCAD) drawings, DXF (AutoCAD) drawings, PDF (Adobe reader), and E-plan project (prj).

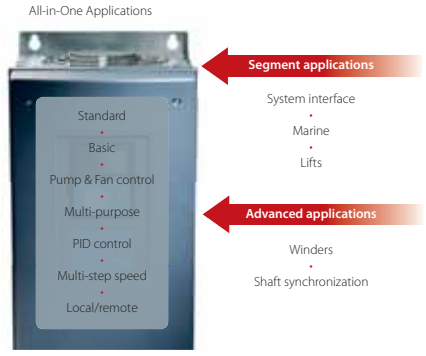


## VACON® NCDrive

VACON® NCDrive is used for setting, copying, storing, printing, monitoring and controlling parameters. The VACON NCDrive communicates with the drive via the following interfaces: RS-232, Ethernet TCP/IP, CAN (fast multiple drive monitoring), CAN@Net (remote monitoring).

VACON NCDrive also includes a handy Datalogger function, which offers you the possibilty to track failure modes and perform root cause analysis.

**PC-tools can be downloaded from http://drives.danfoss.com**




## All-in-one application package

The All-in-One application package has seven built-in software applications, which can be selected with one parameter.

In addition to the All-in-One package, we offer several segment specific and advanced applications such as System Interface application, Marine application, Lift application and Shaft Synchronisation application for more demanding uses.

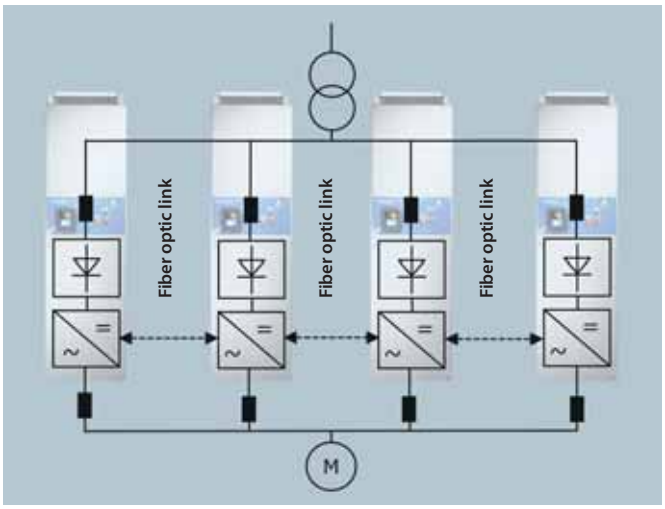
**VACON NXP applications can be downloaded from http://drives.danfoss.com**

# High power and improved redundancy

VACON® DriveSync is our innovative control concept for running standard drives in parallel to control high-power AC motors or increase the redundancy of a system. This concept suits single or multiple winding motors typically above 1 MW.

AC drives up to 5 MW can be built using standard drive components and have the following benefits:

- The system is modular and easy to extend
- High total power can be obtained by combining smaller drives
- System redundancy is higher than in a conventional drive because each unit can run independently
- Individual drive is easy to maintain and service
- Identical units reduce the required amount of spare parts thus reducing overall costs
- No special skills are required for the engineering, installation, commissioning and maintenance of drives as they are comprised of standard modules
- It is possible to run multiple winding motors with a phase shift between the windings




*Example of the VACON DriveSynch configuration.*

## Typical VACON DriveSynch examples using VACON® NXP/NXC drives

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 400 V supply | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 380-500 V 50/60 Hz | 2 x NXC 1150 5 A 2 L 0 SSF | 2150 | 2365 | 1940 | 2910 | 3492 | 1200 | 1100 | 2 x FR13 | 1606 x 2275 x 605/1350 |
| | 2 x NXC 1300 5 A 2 L 0 SSF | 2470 | 2717 | 2185 | 3278 | 3933 | 1350 | 1100 | | |
| | 2 x NXC 1450 5 A 2 L 0 SSF | 2755 | 3031 | 2470 | 3705 | 4446 | 1500 | 1350 | | |
| | 3 x NXC 1150 5 A 2 L 0 SSF | 3278 | 3605 | 2936 | 4403 | 5284 | 1800 | 1500 | 3 x FR13 | 1606 x 2275 x 605/1350 |
| | 3 x NXC 1300 5 A 2 L 0 SSF | 3705 | 4076 | 3278 | 4916 | 5900 | 2000 | 1800 | | |
| | 3 x NXC 1450 5 A 2 L 0 SSF | 4133 | 4546 | 3705 | 5558 | 6669 | 2250 | 2000 | | |

*Values are given at switching frequency 2.0 kHz.*

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 690 V supply | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 525-690 V 50/60 Hz | 2 x NXC 0920 6 A 2 L 0 SSF | 1748 | 1920 | 1500 | 2337 | 2679 | 1710 | 1520 | 2 x FR13 | 1406 x 2275 x 605/1250 |
| | 2 x NXC 1030 6 A 2 L 0 SSF | 1810 | 2000 | 1500 | 2337 | 2679 | 1710 | 1520 | | |
| | 2 x NXC 1180 6 A 2 L 0 SSF* | 1950 | 2140 | 1630 | 2500 | 3335 | 1900 | 1610 | | |
| | 3 x NXC 0920 6 A 2 L 0 SSF | 2622 | 2884 | 2337 | 3490 | 4019 | 2500 | 2200 | 3 x FR13 | 1406 x 2275 x 605/1250 |
| | 3 x NXC 1030 6 A 2 L 0 SSF | 2706 | 3000 | 2337 | 3490 | 4019 | 2500 | 2200 | | |
| | 3 x NXC 1180 6 A 2 L 0 SSF* | 2910 | 3210 | 2500 | 3735 | 5002 | 2800 | 2410 | | |

**Max. ambient temperature of +35°C.*
*Values are given at switching frequency 2.0 kHz.*

# VACON® NXP wall-mounted

The VACON® NXP wall-mounted is one of the most compact and comprehensive drive packages on the market, with all the necessary components integrated in a single frame. For the lower power range, VACON NXP drives are available in a compact IP21 or IP54 frame.

## Fully equipped

VACON NXP wall-mounted units are equipped with internal EMC filtering, and the power electronics are integrated into an all-metal frame. The smaller frame sizes (FR4-FR6) have an integrated brake chopper as standard, and the 380-500 V units can be equipped with an integrated brake resistor. The larger frames (FR7-FR12) can be equipped with an integrated brake chopper as an option.

## Typical applications

- Elevators and escalators
- Cranes and hoists
- Winches and cargo pumps
- Pumps and fans
- Conveyors
- Machine tools
- Yaw and pitch control
- Oil pumps
- Winders and unwinders
- Pulp dryers
- Tissue machinery
- Extruders

## Features

- Complete voltage range 230...690 V AC
- Removable panel with parameter back-up function
- Common control board
- Built-in I/0 expandability, 5 slots available and option boards in all frame sizes
- Marine type approvals and functional safety features
- Integrated brake chopper as standard in FR4-6, 380-500 V units.

## Benefits

- One type of drive for wide power and voltage range reduces the complexity and the need for additional training
- Easier commissioning – saves time
- Same software tools and applications for the entire range
- Compact and and easy to install – saves time and money
- System complexity can be reduced saving engineering time and costs

*VACON® NXP (FR8)*

*VACON® NXP (FR7)*

# Ratings and dimensions

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 230 V / 400 V / 690 V | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 208-240 V 50/60 Hz 3~ | NXP 0003 2 A 2 H 1 S S S | 3.7 | 4.1 | 2.4 | 3.6 | 4.8 | 0.55 | 0.37 | FR4 | 128 x 292 x 190/ 5 |
| | NXP 0004 2 A 2 H 1 S S S | 4.8 | 5.3 | 3.7 | 5.6 | 7.4 | 0.75 | 0.55 | | 144 x 391 x 214/ 8.1 |
| | NXP 0007 2 A 2 H 1 S S S | 6.6 | 7.3 | 4.8 | 7.2 | 9.6 | 1.1 | 0.75 | | 195 x 519 x 237/ 18.5 |
| | NXP 0008 2 A 2 H 1 S S S | 7.8 | 8.6 | 6.6 | 9.9 | 13.2 | 1.5 | 1.1 | | 237 x 591 x 257/ 35 |
| | NXP 0011 2 A 2 H 1 S S S | 11 | 12.1 | 7.8 | 11.7 | 15.6 | 2.2 | 1.5 | | 291 x 758 x 344/ 58 |
| | NXP 0012 2 A 2 H 1 S S S | 12.5 | 13.8 | 11 | 16.5 | 22 | 3 | 2.2 | | 480 x 1150 x 362/ 146 |
| | NXP 0017 2 A 2 H 1 S S S | 17.5 | 19.3 | 12.5 | 18.8 | 25 | 4 | 3 | FR5 | 144 x 391 x 214/ 8.1 |
| | NXP 0025 2 A 2 H 1 S S S | 25 | 27.5 | 17.5 | 26.3 | 35 | 5.5 | 4 | | |
| | NXP 0031 2 A 2 H 1 S S S | 31 | 34.1 | 25 | 37.5 | 50 | 7.5 | 5.5 | | |
| | NXP 0048 2 A 2 H 1 S S S | 48 | 52.8 | 31 | 46.5 | 62 | 11 | 7.5 | FR6 | 195 x 519 x 237/ 18.5 |
| | NXP 0061 2 A 2 H 1 S S S | 61 | 67.1 | 48 | 72 | 96 | 15 | 11 | | |
| | NXP 0075 2 A 2 H 0 S S S | 75 | 83 | 61 | 92 | 122 | 22 | 15 | FR7 | 237 x 591 x 257/ 35 |
| | NXP 0088 2 A 2 H 0 S S S | 88 | 97 | 75 | 113 | 150 | 22 | 22 | | |
| | NXP 0114 2 A 2 H 0 S S S | 114 | 125 | 88 | 132 | 176 | 30 | 22 | | |
| | NXP 0140 2 A 2 H 0 S S S | 140 | 154 | 105 | 158 | 210 | 37 | 30 | FR8 | 291 x 758 x 344/ 58 |
| | NXP 0170 2 A 2 H 0 S S S | 170 | 187 | 140 | 210 | 280 | 45 | 37 | | |
| | NXP 0205 2 A 2 H 0 S S S | 205 | 226 | 170 | 255 | 336 | 55 | 45 | | |
| | NXP 0261 2 A 2 H 0 S S F | 261 | 287 | 205 | 308 | 349 | 75 | 55 | FR9 | 480 x 1150 x 362/ 146 |
| | NXP 0300 2 A 2 H 0 S S F | 300 | 330 | 245 | 368 | 444 | 90 | 75 | | |
| 380-500 V 50/60 Hz 3~ | NXP 0003 5 A 2 H 1 S S S | 3.3 | 3,6 | 2,2 | 3,3 | 4,4 | 1,1 | 0,75 | FR4 | 128 x 292 x 190/ 5 |
| | NXP 0004 5 A 2 H 1 S S S | 4,3 | 4,7 | 3,3 | 5 | 6,2 | 1,5 | 1,1 | | |
| | NXP 0005 5 A 2 H 1 S S S | 5,6 | 6,2 | 4,3 | 6,5 | 8,6 | 2,2 | 1,5 | | |
| | NXP 0007 5 A 2 H 1 S S S | 7,6 | 8,4 | 5,6 | 8,4 | 10,8 | 3 | 2,2 | | |
| | NXP 0009 5 A 2 H 1 S S S | 9 | 9,9 | 7,6 | 11,4 | 14 | 4 | 3 | | |
| | NXP 0012 5 A 2 H 1 S S S | 12 | 13,2 | 9 | 13,5 | 18 | 5,5 | 4 | | |
| | NXP 0016 5 A 2 H 1 S S S | 16 | 17,6 | 12 | 18 | 24 | 7,5 | 5,5 | FR5 | 144 x 391 x 214/8.1 |
| | NXP 0022 5 A 2 H 1 S S S | 23 | 25,3 | 16 | 24 | 32 | 11 | 7,5 | | |
| | NXP 0031 5 A 2 H 1 S S S | 31 | 34 | 23 | 35 | 46 | 15 | 11 | | |
| | NXP 0038 5 A 2 H 1 S S S | 38 | 42 | 31 | 47 | 62 | 18,5 | 15 | FR4 | 195 x 519 x 237/18.5 |
| | NXP 0045 5 A 2 H 1 S S S | 46 | 51 | 38 | 57 | 76 | 22 | 18,5 | | |
| | NXP 0061 5 A 2 H 1 S S S | 61 | 67 | 46 | 69 | 92 | 30 | 22 | | |
| | NXP 0072 5 A 2 H 0 S S S | 72 | 79 | 61 | 92 | 122 | 37 | 30 | FR7 | 37 x 591 x 257/35 |
| | NXP 0087 5 A 2 H 0 S S S | 87 | 96 | 72 | 108 | 144 | 45 | 37 | | |
| | NXP 0105 5 A 2 H 0 S S S | 105 | 116 | 87 | 131 | 174 | 55 | 45 | | |
| | NXP 0140 5 A 2 H 0 S S S | 140 | 154 | 105 | 158 | 210 | 75 | 55 | FR8 | 291 x 758 x 344/58 |
| | NXP 0168 5 A 2 H 0 S S S | 170 | 187 | 140 | 210 | 280 | 90 | 75 | | |
| | NXP 0205 5 A 2 H 0 S S S | 205 | 226 | 170 | 255 | 336 | 110 | 90 | | |
| | NXP 0261 5 A 2 H 0 S S F | 261 | 287 | 205 | 308 | 349 | 132 | 110 | FR9 | 480 x 1150 x 362/146 |
| | NXP 0300 5 A 2 H 0 S S F | 300 | 330 | 245 | 368 | 444 | 160 | 132 | | |
| 525-690 V 50/60 Hz 3~ | NXP 0004 6 A 2 L 0 S S S | 4,5 | 5 | 3,2 | 4,8 | 6,4 | 3 | 2,2 | FR6 | 195 x 519 x 237/18.5 |
| | NXP 0005 6 A 2 L 0 S S S | 5,5 | 6,1 | 4,5 | 6,8 | 9 | 4 | 3 | | |
| | NXP 0007 6 A 2 L 0 S S S | 7,5 | 8,3 | 5,5 | 8,3 | 11 | 5,5 | 4 | | |
| | NXP 0010 6 A 2 L 0 S S S | 10 | 11 | 7,5 | 11,3 | 15 | 7,5 | 5,5 | | |
| | NXP 0013 6 A 2 L 0 S S S | 13,5 | 14,9 | 10 | 15 | 20 | 11 | 7,5 | | |
| | NXP 0018 6 A 2 L 0 S S S | 18 | 19,8 | 13,5 | 20,3 | 27 | 15 | 11 | | |
| | NXP 0022 6 A 2 L 0 S S S | 22 | 24,2 | 18 | 27 | 36 | 18,5 | 15 | | |
| | NXP 0027 6 A 2 L 0 S S S | 27 | 29,7 | 22 | 33 | 44 | 22 | 18,5 | | |
| | NXP 0034 6 A 2 L 0 S S S | 34 | 37 | 27 | 41 | 54 | 30 | 22 | | |
| | NXP 0041 6 A 2 L 0 S S S | 41 | 45 | 34 | 51 | 68 | 37,5 | 30 | FR7 | 237 x 591 x 257/35 |
| | NXP 0052 6 A 2 L 0 S S S | 52 | 57 | 41 | 62 | 82 | 45 | 37,5 | | |
| | NXP 0062 6 A 2 L 0 S S S | 62 | 68 | 52 | 78 | 104 | 55 | 45 | FR8 | 291 x 758 x 344/58 |
| | NXP 0080 6 A 2 L 0 S S S | 80 | 88 | 62 | 93 | 124 | 75 | 55 | | |
| | NXP 0100 6 A 2 L 0 S S S | 100 | 110 | 80 | 120 | 160 | 90 | 75 | | |
| | NXP 0125 6 A 2 L 0 S S F | 125 | 138 | 100 | 150 | 200 | 110 | 90 | FR9 | 480 x 1150 x 362/146 |
| | NXP 0144 6 A 2 L 0 S S F | 144 | 158 | 125 | 188 | 213 | 132 | 110 | | |
| | NXP 0170 6 A 2 L 0 S S F | 170 | 187 | 144 | 216 | 245 | 160 | 132 | | |
| | NXP 0208 6 A 2 L 0 S S F | 208 | 229 | 170 | 255 | 289 | 200 | 160 | | |

# VACON® NXP drive module

VACON® NXP high-power IP00 drive modules are intended for installation into a cabinet, switchgear or any separate enclosure. Module installation in standard enclosures is easy given the compact design.

## Designed to fit

VACON NXP drive modules of frame size FR10 – FR12 embody one (FR10 and FR11) or two (FR12) power modules. VACON NXP frame sizes FR13 – FR14 comprise two to four non-regenerative front-end (NFE) units and one (FR13) or two (FR14) inverter units. External AC chokes are also included in the delivery. The VACON NXP modules are available as both 6-pulse and 12-pulse supply versions.

## Typical applications

- Conveyors
- Cranes and lifts
- High-speed compressors
- Ski lifts
- Main propulsion and bow thrusters
- Extruders
- Winches & cargo pumps
- Oil pumps
- Test benches
- Static power supply
- Grinders and mixers
- Winders and unwinders
- Chippers
- Tunneling Machines

## Features

- Easy cabinet integration with additional assembly kits
- One of the smallest on the market
- Extensive marine type approvals
- VACON® DriveSynch features for high power or/and redundancy

## Benefits

- With optimized module design, less engineering is needed saving time and money
- Compact module size require less cabinet space, while reducing the overall costs
- Improved redundancy and higher powers up to 5 MW

*VACON® NXP drive module (FR10)*

## Hardware configurations

| Function | Availability |
|---|---|
| Integrated control | Standard |
| External control | Optional |
| Integrated brake chopper | Optional (FR 10-12) |
| 6-Pulse Supply | Standard |
| 12-Pulse Supply | Optional |
| EMC filtering N | Standard |
| EMC filtering T (for IT -networks) | Optional |
| AC choke | Standard |
| Output filters dU/dt, Sine and common mode | Optional |

# Ratings and dimensions

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Module W x H x D (mm)/ kg | Chokes W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 400 V / 690 V | | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | | |
| 380-500 V 50/60 Hz 3~ | NXP 0385 5 A 0 N 0 SSA | 385 | 424 | 300 | 450 | 540 | 200 | 160 | FR10 | 500 x 1165 x 506/120 | 350 x 383 x 262/84 [1] |
| | NXP 0460 5 A 0 N 0 SSA | 460 | 506 | 385 | 578 | 693 | 250 | 200 | | | 497 x 399 x 244/115 [1] |
| | NXP 0520 5 A 0 N 0 SSA | 520 | 572 | 460 | 690 | 828 | 250 | 250 | | | 497 x 399 x 244/115 [1] |
| | NXP 0590 5 A 0 N 0 SSA | 590 | 649 | 520 | 780 | 936 | 315 | 250 | FR11 | 709 x 1206 x 506/210 | 2 x (350 x 383 x 262/84) |
| | NXP 0650 5 A 0 N 0 SSA | 650 | 715 | 590 | 885 | 1062 | 355 | 315 | | | |
| | NXP 0730 5 A 0 N 0 SSA | 730 | 803 | 650 | 975 | 1170 | 400 | 355 | | | |
| | NXP 0820 5 A 0 N 0 SSA | 820 | 902 | 730 | 1095 | 1314 | 450 | 400 | FR12 | 2 x (500 x 1165 x 506/120) | 2 x (497 x 399 x 244/115) |
| | NXP 0920 5 A 0 N 0 SSA | 920 | 1012 | 820 | 1230 | 1476 | 500 | 450 | | | |
| | NXP 1030 5 A 0 N 0 SSA | 1030 | 1133 | 920 | 1380 | 1656 | 560 | 500 | | | |
| | NXP 1150 5 A 0 N 0 SSF | 1150 | 1265 | 1030 | 1545 | 1854 | 630 | 560 | FR13 | 2 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) | 2 x (497 x 449 x 249/130) |
| | NXP 1300 5 A 0 N 0 SSF | 1300 | 1430 | 1150 | 1725 | 2070 | 710 | 630 | | 3 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) [2] | 3 x (497 x 449 x 249/130) [2] |
| | NXP 1450 5 A 0 N 0 SSF | 1450 | 1595 | 1300 | 1950 | 2340 | 800 | 710 | | 3 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) [2] | 3 x (497 x 449 x 249/130) [2] |
| | NXP 1770 5 A 0 N 0 SSF | 1770 | 1947 | 1600 | 2400 | 2880 | 1000 | 900 | FR14 | 4 x (239 x 1030 x 372/67) + 2 x (708 x 1032 x 553/302) | 4 x (497 x 449 x 249/130) |
| | NXP 2150 5 A 0 N 0 SSF | 2150 | 2365 | 1940 | 2910 | 3492 | 1200 | 1100 | | 4 x (239 x 1030 x 372/67) + 2 x (708 x 1032 x 553/302) | 4 x (497 x 449 x 249/130) |
| 525-690 V 50/60 Hz 3~ | NXP 0261 6 A 0 N 0 SSA | 261 | 287 | 208 | 312 | 375 | 250 | 200 | FR10 | 500 x 1165 x 506/120 | 354 x 319 x 230/53 [3] |
| | NXP 0325 6 A 0 N 0 SSA | 325 | 358 | 261 | 392 | 470 | 315 | 250 | | 500 x 1165 x 506/120 | 350 x 383 x 262/84 [3] |
| | NXP 0385 6 A 0 N 0 SSA | 385 | 424 | 325 | 488 | 585 | 355 | 315 | | 500 x 1165 x 506/120 | 350 x 383 x 262/84 [3] |
| | NXP 0416 6 A 0 N 0 SSA* | 416 | 458 | 325 | 488 | 585 | 400 | 315 | | 500 x 1165 x 506/120 | 350 x 383 x 262/84 [3] |
| | NXP 0460 6 A 0 N 0 SSA | 460 | 506 | 385 | 578 | 693 | 450 | 355 | FR11 | 709 x 1206 x 506/210 | 497 x 399 x 244/115 [4] |
| | NXP 0502 6 A 0 N 0 SSA | 502 | 552 | 460 | 690 | 828 | 500 | 450 | | 709 x 1206 x 506/210 | 497 x 399 x 244/115 [4] |
| | NXP 0590 6 A 0 N 0 SSA* | 590 | 649 | 502 | 753 | 904 | 560 | 500 | | 709 x 1206 x 506/210 | 2 x (350 x 383 x 262/84) |
| | NXP 0650 6 A 0 N 0 SSA | 650 | 715 | 590 | 885 | 1062 | 630 | 560 | FR12 | 2 x (500 x 1165 x 506/120) | 2 x (350 x 383 x 262/84) |
| | NXP 0750 6 A 0 N 0 SSA | 750 | 825 | 650 | 975 | 1170 | 710 | 630 | | 2 x (500 x 1165 x 506/120) | 2 x (350 x 383 x 262/84) |
| | NXP 0820 6 A 0 N 0 SSA* | 820 | 902 | 650 | 975 | 1170 | 800 | 630 | | 2 x (500 x 1165 x 506/120) | 2 x (350 x 383 x 262/84) |
| | NXP 0920 6 A 0 N 0 SSF | 920 | 1012 | 820 | 1230 | 1410 | 900 | 800 | FR13 | 2 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) | 2 x (497 x 449 x 249/130) |
| | NXP 1030 6 A 0 N 0 SSF | 1030 | 1133 | 920 | 1380 | 1755 | 1000 | 900 | | 2 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) | 2 x (497 x 449 x 249/130) |
| | NXP 1180 6 A 0 N 0 SSF* | 1180 | 1298 | 1030 | 1463 | 1755 | 1150 | 1000 | | 2 x (239 x 1030 x 372/67) + 1 x (708 x 1030 x 553/302) | 2 x (497 x 449 x 249/130) |
| | NXP 1500 6 A 0 N 0 SSF | 1500 | 1650 | 1300 | 1950 | 2340 | 1500 | 1300 | FR14 | 3 x (239 x 1030 x 372/67) + 2 x (708 x 103 x 553/302) [3] | 3 x (497 x 449 x 249/130) [5] |
| | NXP 1900 6 A 0 N 0 SSF | 1900 | 2090 | 1500 | 2250 | 2700 | 1800 | 1500 | | 4 x(239 x 1030 x 372/67) + 2 x (708 x 1030 x 553/302) | 4 x (497 x 449 x 249/130) |
| | NXP 2250 6 A 0 N 0 SSF* | 2250 | 2475 | 1900 | 2782 | 3335 | 2000 | 1800 | | 4 x (239 x 1030 x 372/67) + 2 x (708 x 1030 x 553/302) | 4 x (497 x 449 x 249/130) |

**Max. ambient temperature of +35°C.*

[1] *12-pulse units, 2 x (354 x 319 x 230/53 kg)*
[2] *12-pulse units, 4 x (497 x 449 x 249/130 kg)*
[3] *12-pulse units, 2 x (354 x 319 x 230/53 kg)*
[4] *12-pulse units, 4 x (239 x 1030 x 372/67) + 2 x (708 x 1030 x 372/302 kg)*
[5] *12-pulse units, 4 x (497 x 449 x 249/130 kg)*

# VACON® NXP standalone

Premium VACON® NXP drives are also available in standalone IP21 or IP54 enclosures. These units are delivered in a compact enclosure, making them perfect for areas with limited space, while still providing full VACON NXP control flexibility.

## Robust and reliable

VACON NXP standalone drives are fully enclosed at the factory and ready for immediate installation. The drive is ideal for pumps, fans and other single drive applications. The drive has integrated fuses as standard and no extra protection components are required. It is also possible to equip the drive with an optional integrated load switch, which further simplifies handling in the field.

## Typical applications

- Auxiliary equipment
- Pump and fans
- Main propulsion and bow thrusters
- Compressors
- Cranes and lifts

## Features

- Extremely compact cabinet enclosure
- Delivered with ultra rapid AC fuses
- Optional built-in brake chopper and
- DC-link connectors

## Benefits

- Maximize the utilization of available space while reducing the overall costs
- No need to consider any additional protection components

*VACON® NXP standalone (FR11)*

## Hardware configurations

| Function | Availability |
|---|---|
| IP21 | Standard |
| IP54 (FR10 only) | Optional (H: +20mm) |
| Integrated ultra rapid fuses | Standard |
| Load switch (IEC or UL version) | Optional |
| EMC filtering L (EN 61800-3, category C3) | Standard |
| EMC filtering T (for IT -networks) | Optional |
| Brake chopper (cabling top entry) | Optional (H: +122 mm) |

# Ratings and dimensions

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 400 V / 690 V | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 380-500 V 50/60 Hz 3~ | NXP 0385 5 A 2 L 0 SSA | 385 | 424 | 300 | 450 | 540 | 200 | 160 | FR10 | 595 x 2020 x 602/340 |
| | NXP 0460 5 A 2 L 0 SSA | 460 | 506 | 385 | 578 | 693 | 250 | 200 | | |
| | NXP 0520 5 A 2 L 0 SSA | 520 | 572 | 460 | 690 | 828 | 250 | 250 | | |
| | NXP 0590 5 A 2 L 0 SSA | 590 | 649 | 520 | 780 | 936 | 315 | 250 | FR11 | 794 x 2020 x 602/470 |
| | NXP 0650 5 A 2 L 0 SSA | 650 | 715 | 590 | 885 | 1062 | 355 | 315 | | |
| | NXP 0730 5 A 2 L 0 SSA | 730 | 803 | 650 | 975 | 1170 | 400 | 355 | | |
| 525-690 V 50/60 Hz 3~ | NXP 0261 6 A 2 L 0 SSA | 261 | 287 | 208 | 312 | 375 | 250 | 200 | FR10 | 595 x 2020 x 602/340 |
| | NXP 0325 6 A 2 L 0 SSA | 325 | 358 | 261 | 392 | 470 | 315 | 250 | | |
| | NXP 0385 6 A 2 L 0 SSA | 385 | 424 | 325 | 488 | 585 | 355 | 315 | | |
| | NXP 0416 6 A 2 L 0 SSA* | 416 | 458 | 325 | 488 | 585 | 400 | 315 | | |
| | NXP 0460 6 A 2 L 0 SSA | 460 | 506 | 385 | 578 | 693 | 450 | 355 | FR11 | 794 x 2020 x 602/400 |
| | NXP 0502 6 A 2 L 0 SSA | 502 | 552 | 460 | 690 | 828 | 500 | 450 | | 794 x 2020 x 602/400 |
| | NXP 0590 6 A 2 L 0 SSA* | 590 | 649 | 502 | 753 | 904 | 560 | 500 | | 794 x 2020 x 602/470 |

**Max. ambient temperature of +35°C.*

# VACON® NXC

Our VACON® NXC is designed to meet the most demanding requirements for flexibility, robustness, compactness and service-friendliness. It is a safe choice for any application and available in the 160 to 2000 kW power range and 380-500 V, 525-690 V voltage range.

## Exceptional performance

Our enclosed Vacon NXC variable speed AC drives are compact and well tested to meet harsh operating conditions. They are typically put to work in segments, such as mining, oil and gas, water and wastewater. The reliable thermal handling of the enclosure guarantees extended lifetime of the frequency converter and trouble-free operation in tough environments. Approved EMC solutions ensure reliable operation of the converter without disturbing other electrical equipment.

*VACON® NXC (FR10)*

## User-friendly

VACON NXC features an easily accessible control compartment for relays, auxiliary terminals and other equipment and ample space around the power terminals allows for easy installation and connection of power cables. Our handy keypad is located on the door with additional door options including indicators, meters and switches. Bottom plates and earthing claps for 360 degree earthing of motor cables are provided as standard.

## Service-friendly

VACON NXC enclosures are easy to install with lifting lugs for easy handling and can be wall-mounted or free-standing. VACON® NXP power units are rail-mounted for easy pull-out, and the optional pull-out jig enables hassle-free servicing of the power unit. No additional cooling fans are required in the enclosure IP21/IP54 and the fans can be easily replaced without having to remove the power unit.

## Typical applications

- Pumps and fans
- Extruders
- Main propulsion and bow thrusters
- Wood handling machines
- Conveyors and crushers
- Feeders and mixers
- Test benches
- Water treatment
- Winches
- Compressors
- Static power supply
- Industrial elevators

## Features

- Robust and type-tested design
- Wide range of standard options
- One of the most compact on the market
- Welded Rittal TS8 frame
- EMC approved (EN61800-3, 2nd env.)
- Service concept with pullout jig
- No additional fans in IP54 enclosure

## Benefits

- Trouble free installation and operation
- Adapts to your needs w/o engineering
- Easy to fit into small spaces
- Global enclosure availability, easy to extend
- Fast service, easy maintenance

# Ratings and dimensions

## VACON® NXC, 6-pulse supply

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 400 V / 690 V | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 380-500 V 50/60 Hz 3~ | NXC 0261 5 A 2 H 0 SSF | 261 | 287 | 205 | 308 | 349 | 132 | 110 | FR9 | 606 x 2275 x 605/371 |
| | NXC 0300 5 A 2 H 0 SSF | 300 | 330 | 245 | 368 | 444 | 160 | 132 | | |
| | NXC 0385 5 A 2 L 0 SSF | 385 | 424 | 300 | 450 | 540 | 200 | 160 | FR10 | 606 x 2275 x 605/403 |
| | NXC 0460 5 A 2 L 0 SSF | 460 | 506 | 385 | 578 | 693 | 250 | 200 | | |
| | NXC 0520 5 A 2 L 0 SSF | 520 | 572 | 460 | 690 | 828 | 250 | 250 | | |
| | NXC 0590 5 A 2 L 0 SSF | 590 | 649 | 520 | 780 | 936 | 315 | 250 | FR11 | 806 x 2275 x 605/577 |
| | NXC 0650 5 A 2 L 0 SSF | 650 | 715 | 590 | 885 | 1062 | 355 | 315 | | |
| | NXC 0730 5 A 2 L 0 SSF | 730 | 803 | 650 | 975 | 1170 | 400 | 355 | | |
| | NXC 0820 5 A 2 L 0 SSF | 820 | 902 | 730 | 1095 | 1314 | 450 | 400 | FR12 | 1206 x 2275 x 605/810 |
| | NXC 0920 5 A 2 L 0 SSF | 920 | 1012 | 820 | 1230 | 1476 | 500 | 450 | | |
| | NXC 1030 5 A 2 L 0 SSF | 1030 | 1133 | 920 | 1380 | 1656 | 560 | 500 | | |
| | NXC 1150 5 A 2 L 0 SSF | 1150 | 1265 | 1030 | 1545 | 1854 | 630 | 560 | FR13 | 1406 x 2275 x 605/1000 |
| | NXC 1300 5 A 2 L 0 SSF | 1300 | 1430 | 1150 | 1725 | 2070 | 710 | 630 | | 1606 x 2275 x 605/1150 |
| | NXC 1450 5 A 2 L 0 SSF | 1450 | 1595 | 1300 | 1950 | 2340 | 800 | 710 | | 1606 x 2275 x 605/1150 |
| | NXC 1770 5 A 2 L 0 SSF | 1770 | 1947 | 1600 | 2400 | 2880 | 1000 | 900 | FR14 | 2806 x 2275 x 605/2440 |
| | NXC 2150 5 A 2 L 0 SSF | 2150 | 2365 | 1940 | 2910 | 3492 | 1200 | 1100 | | |
| 525-690 V 50/60 Hz 3~ | NXC 0125 6 A 2 L 0 SSF | 125 | 138 | 100 | 150 | 200 | 110 | 90 | FR9 | 606 x 2275 x 605/371 |
| | NXC 0144 6 A 2 L 0 SSF | 144 | 158 | 125 | 188 | 213 | 132 | 110 | | |
| | NXC 0170 6 A 2 L 0 SSF | 170 | 187 | 144 | 216 | 245 | 160 | 132 | | |
| | NXC 0208 6 A 2 L 0 SSF | 208 | 229 | 170 | 255 | 289 | 200 | 160 | | |
| | NXC 0261 6 A 2 L 0 SSF | 261 | 287 | 208 | 312 | 375 | 250 | 200 | FR10 | 606 x 2275 x 605/371 |
| | NXC 0325 6 A 2 L 0 SSF | 325 | 358 | 261 | 392 | 470 | 315 | 250 | | |
| | NXC 0385 6 A 2 L 0 SSF | 385 | 424 | 325 | 488 | 585 | 355 | 315 | | |
| | NXC 0416 6 A 2 L 0 SSF* | 416 | 458 | 325 | 488 | 585 | 400 | 315 | | |
| | NXC 0460 6 A 2 L 0 SSF | 460 | 506 | 385 | 578 | 693 | 450 | 355 | FR11 | 806 x 2275 x 605/524 |
| | NXC 0502 6 A 2 L 0 SSF | 502 | 552 | 460 | 690 | 828 | 500 | 450 | | |
| | NXC 0590 6 A 2 L 0 SSF* | 590 | 649 | 502 | 753 | 904 | 560 | 500 | | 806 x 2275 x 605/577 |
| | NXC 0650 6 A 2 L 0 SSF | 650 | 715 | 590 | 885 | 1062 | 630 | 560 | FR12 | 1206 x 2275 x 605/745 |
| | NXC 0750 6 A 2 L 0 SSF | 750 | 825 | 650 | 975 | 1170 | 710 | 630 | | |
| | NXC 0820 6 A 2 L 0 SSF* | 820 | 902 | 650 | 975 | 1170 | 800 | 630 | | |
| | NXC 0920 6 A 2 L 0 SSF | 920 | 1012 | 820 | 1230 | 1410 | 900 | 800 | FR13 | 1406 x 2275 x 605/1000 |
| | NXC 1030 6 A 2 L 0 SSF | 1030 | 1133 | 920 | 1380 | 1755 | 1000 | 900 | | |
| | NXC 1180 6 A 2 L 0 SSF* | 1180 | 1298 | 1030 | 1463 | 1755 | 1150 | 1000 | | |
| | NXC 1500 6 A 2 L 0 SSF | 1500 | 1650 | 1300 | 1950 | 2340 | 1500 | 1300 | FR14 | 2406 x 2275 x 605/2350 |
| | NXC 1900 6 A 2 L 0 SSF | 1900 | 2090 | 1500 | 2250 | 2700 | 1800 | 1500 | | 2806 x 2275 x 605/2440 |
| | NXC 2250 6 A 2 L 0 SSF* | 2250 | 2475 | 1900 | 2782 | 3335 | 2000 | 1800 | | 2806 x 2275 x 605/2500 |

**Max. ambient temperature of +35°C.*

# Ratings and dimensions

## VACON® NXC, 12 -pulse supply

| Mains voltage | AC drive type | Loadability | | | | | Motor shaft power | | Frame size | Dimensions and weight W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 400 V / 690 V | | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | 10% overload P [kW] | 50% overload P [kW] | | |
| 380-500 V 50/60 Hz 3~ | NXC 0385 5 A 2 L 0 TSF | 385 | 424 | 300 | 450 | 540 | 200 | 160 | FR10 | 606 x 2275 x 605/371 |
| | NXC 0460 5 A 2 L 0 TSF | 460 | 506 | 385 | 578 | 693 | 250 | 200 | | 606 x 2275 x 605/403 |
| | NXC 0520 5 A 2 L 0 TSF | 520 | 572 | 460 | 690 | 828 | 250 | 250 | | 606 x 2275 x 605/403 |
| | NXC 0590 5 A 2 L 0 TSF | 590 | 649 | 520 | 780 | 936 | 315 | 250 | FR11 | 806 x 2275 x 605/ 577 |
| | NXC 0650 5 A 2 L 0 TSF | 650 | 715 | 590 | 885 | 1062 | 355 | 315 | | 806 x 2275 x 605/577 |
| | NXC 0730 5 A 2 L 0 TSF | 730 | 803 | 650 | 975 | 1170 | 400 | 355 | | 806 x 2275 x 605/577 |
| | NXC 0820 5 A 2 L 0 TSF | 820 | 902 | 730 | 1095 | 1314 | 450 | 400 | FR12 | 1206 x 2275 x 605/810 |
| | NXC 0920 5 A 2 L 0 TSF | 920 | 1012 | 820 | 1230 | 1476 | 500 | 450 | | 1206 x 2275 x 605/810 |
| | NXC 1030 5 A 2 L 0 TSF | 1030 | 1133 | 920 | 1380 | 1656 | 560 | 500 | | 1206 x 2275 x 605/810 |
| | NXC 1150 5 A 2 L 0 TSF | 1150 | 1265 | 1030 | 1545 | 1854 | 630 | 560 | FR13 | 1406 x 2275 x 605/1000 |
| | NXC 1300 5 A 2 L 0 TSF | 1300 | 1430 | 1150 | 1725 | 2070 | 710 | 630 | | 2006 x 2275 x 605/1150 |
| | NXC 1450 5 A 2 L 0 TSF | 1450 | 1595 | 1300 | 1950 | 2340 | 800 | 710 | | 2006 x 2275 x 605/1150 |
| | NXC 1770 5 A 2 L 0 TSF | 1770 | 1947 | 1600 | 2400 | 2880 | 1000 | 900 | FR14 | 2806 x 2275 x 605/2440 |
| | NXC 2150 5 A 2 L 0 TSF | 2150 | 2365 | 1940 | 2910 | 3492 | 1200 | 1100 | | 2806 x 2275 x 605/2500 |
| 525-690 V 50/60 Hz 3~ | NXC 0261 6 A 2 L 0 TSF | 261 | 287 | 208 | 312 | 375 | 250 | 200 | FR10 | 606 x 2275 x 605/341 |
| | NXC 0325 6 A 2 L 0 TSF | 325 | 358 | 261 | 392 | 470 | 315 | 250 | | 606 x 2275 x 605/371 |
| | NXC 0385 6 A 2 L 0 TSF | 385 | 424 | 325 | 488 | 585 | 355 | 315 | | 606 x 2275 x 605/371 |
| | NXC 0416 6 A 2 L 0 TSF* | 416 | 458 | 325 | 488 | 585 | 400 | 315 | | 606 x 2275 x 605/403 |
| | NXC 0460 6 A 2 L 0 TSF | 460 | 506 | 385 | 578 | 693 | 450 | 355 | FR11 | 806 x 2275 x 605/524 |
| | NXC 0502 6 A 2 L 0 TSF | 502 | 552 | 460 | 690 | 828 | 500 | 450 | | 806 x 2275 x 605/524 |
| | NXC 0590 6 A 2 L 0 TSF* | 590 | 649 | 502 | 753 | 904 | 560 | 500 | | 806 x 2275 x 605/577 |
| | NXC 0650 6 A 2 L 0 TSF | 650 | 715 | 590 | 885 | 1062 | 630 | 560 | FR12 | 1206 x 2275 x 605/745 |
| | NXC 0750 6 A 2 L 0 TSF | 750 | 825 | 650 | 975 | 1170 | 710 | 630 | | 1206 x 2275 x 605/745 |
| | NXC 0820 6 A 2 L 0 TSF* | 820 | 902 | 650 | 975 | 1170 | 800 | 630 | | 1206 x 2275 x 605/745 |
| | NXC 0920 6 A 2 L 0 TSF | 920 | 1012 | 820 | 1230 | 1410 | 900 | 800 | FR13 | 1406 x 2275 x 605/1000 |
| | NXC 1030 6 A 2 L 0 TSF | 1030 | 1133 | 920 | 1380 | 1755 | 1000 | 900 | | 1406 x 2275 x 605/1000 |
| | NXC 1180 6 A 2 L 0 TSF* | 1180 | 1298 | 1030 | 1463 | 1755 | 1150 | 1000 | | 1406 x 2275 x 605/1000 |
| | NXC 1500 6 A 2 L 0 TSF | 1500 | 1650 | 1300 | 1950 | 2340 | 1500 | 1300 | FR14 | 2806 x 2275 x 605/2440 |
| | NXC 1900 6 A 2 L 0 TSF | 1900 | 2090 | 1500 | 2250 | 2700 | 1800 | 1500 | | 2806 x 2275 x 605/2440 |
| | NXC 2250 6 A 2 L 0 TSF* | 2250 | 2475 | 1900 | 2782 | 3335 | 2000 | 1800 | | 2806 x 2275 x 605/2500 |

*Max. ambient temperature of +35°C.

## Hardware configurations, 6-pulse supply

| 6-pulse | Enclosure | | EMC | | | Brake chopper | Cabling | | Input device | | | | | Output filters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 380-500 V | IP21 | IP54 | L | T | H | | Bottom | Top +CIT/+COT | +IFU | +ILS | +IFD | +ICO | +ICB | +OCM/ +OCH | +ODU | +OSI |
| FR9 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O | O (W: +600) |
| FR10 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600) |
| FR11 | S | O (H: +130)* | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600-800) |
| FR12 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +1200) |
| FR13 | S | O (H: +170) | S | O | – | 1 | S | O (W: +400) | – | – | S | – | O | O | O | O (W: +800) |
| FR14 | S | O (H: +170) | S | O | – | 1 | S | O (W: +600) | – | – | – | – | S | O | S | O (W: +1600) |
| **500-690 V** | | | | | | | | | | | | | | | | |
| FR9 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O | O (W: +600) |
| FR10 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600) |
| FR11 | S | O (H: +130)* | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600-800) |
| FR12 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +1200) |
| FR13 | S | O (H: +170) | S | O | – | 1 | S | O (W: +400) | – | – | S | – | O | O | O | O (W: +800) |
| FR14 | S | O (H: +170) | S | O | – | 1 | S | O (W: +600) | – | – | – | – | S | O | S | O (W: +1600) |

S = Standard O = Optional
1)(W: +400) = Contact factory*NXC07305 and NXC05906, H: +170 mm

## Hardware configurations, 12-pulse supply

| 12-pulse | Enclosure | | EMC | | | Brake chopper | Cabling | | Input device | | | | | Output filters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 380-500 V | IP21 | IP54 | L | T | H | | Bottom | Top +CIT/+COT | +IFU | +ILS | +IFD | +ICO | +ICB | +OCM/ +OCH | +ODU | +OSI |
| FR10 | S | O (H: +130) | S | O | – | – | S | O (W: +400) | O | – | – | – | O | O | O (W: +400) | O (W: +600) |
| FR11 | S | O (H: +130)* | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600) |
| FR12 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +1200) |
| FR13 | S | O (H: +170) | S | O | – | 1 | S | O (W: +400) | – | – | – | – | S | O | O | O (W: +800) |
| FR14 | S | O (H: +170) | S | O | – | 1 | S | O (W: +800) | – | – | – | – | S | O | S | O (W: +1600) |
| **500-690 V** | | | | | | | | | | | | | | | | |
| FR10 | S | O (H: +130) | S | O | – | – | S | O (W: +400) | O | – | – | – | O | O | O (W: +400) | O (W: +600) |
| FR11 | S | O (H: +130)* | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +600-800) |
| FR12 | S | O (H: +130) | S | O | – | O | S | O (W: +400) | O | O | O | O | O | O | O (W: +400) | O (W: +1200) |
| FR13 | S | O (H: +170) | S | O | – | 1 | S | O (W: +400) | – | – | – | – | S | O | O | O (W: +800) |

S = Standard O = Optional
1)(W: +400) = Contact factory
*NXC07305 and NXC05906, H: +170 mm

## Pure performance

Rising energy prices, environmental legislation and process improvement are key issues when designing water handling systems. Use of VACON® AC drives for flow and pressure control instead of dampers or valves gives substantial energy savings resulting in short payback time of the initial investment.

# VACON® NXC Low Harmonic

The VACON® NXC Low Harmonic drive is the perfect choice for applications where low harmonics are required. This drive not only meets the most demanding requirements for clean power but also provides other important benefits such as regenerative braking and voltage boost for maximum output power.

## Clean power saves money

The low harmonic cabinet drive offers an excellent total solution to meet even the most demanding power quality requirements. The drive also complies with the IEEE-519, G5/4 harmonic standards.

The low THDi reduces supply currents and allows supply transformers, protection devices and power cables to be dimensioned according to the actual active power. It creates savings for both new and retrofit projects as there's no need to invest in expensive 12- or 18-pulse transformers.

## Typical applications

- Pumps and fans
- Water treatment
- Thrusters and main propulsion
- Crushers and conveyors and mills
- Industrial elevators
- Test benches
- Sugar refineries

## Features

- Clean power with total current harmonics THDi < 5 %
- Over-dimensioning of power transformer or input cables is not required
- Regenerative function available
- Reducing system complexity
- No need for special 12-pulse transformers
- Well-suited for retrofit projects
- Increased flexibility with a wide range of standard options

## Benefits

- Over-dimensioning of input components is not needed, reducing the total costs
- Voltage boost function for maximum output power
- Braking energy can be fed back to network saving energy costs
- Reduces overall investment costs and optimizes the use of available space

*VACON® NXC Low Harmonic (AF10)*

# Ratings and dimensions

| Mains voltage | Low harmonic drive type | Loadability | | | | | Motor shaft power 400 V / 690 V | | Frame size | Dimensions and weight W x H x D (mm)/ kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low (+40°C) | | High (+40°C) | | Maximum current $I_S$ [A] | 10% overload P [kW] | 50% overload P [kW] | | |
| | | Rated continuous current $I_L$ [A] | 10% overload current [A] | Rated continuous current $I_H$ [A] | 50% overload current [A] | | | | | |
| 380-500 V 50/60 Hz | NXC 0261 5 A 2 L 0 RSF | 261 | 287 | 205 | 308 | 349 | 132 | 110 | AF9 | 1006 x 2275 x 605/680 |
| | NXC 0300 5 A 2 L 0 RSF | 300 | 330 | 245 | 368 | 444 | 160 | 132 | | |
| | NXC 0385 5 A 2 L 0 RSF | 385 | 424 | 300 | 450 | 540 | 200 | 160 | AF10 | 1006 x 2275 x 605/700 |
| | NXC 0460 5 A 2 L 0 RSF | 460 | 506 | 385 | 578 | 693 | 250 | 200 | | |
| | NXC 0520 5 A 2 L 0 RSF | 520 | 572 | 460 | 690 | 828 | 250 | 250 | | |
| | NXC 0650 5 A 2 L 0 RSF | 650 | 715 | 590 | 885 | 1062 | 355 | 315 | AF12 | 2006 x 2275 x 605/1400 |
| | NXC 0730 5 A 2 L 0 RSF | 730 | 803 | 650 | 975 | 1170 | 400 | 355 | | |
| | NXC 0820 5 A 2 L 0 RSF | 820 | 902 | 730 | 1095 | 1314 | 450 | 400 | | |
| | NXC 0920 5 A 2 L 0 RSF | 920 | 1012 | 820 | 1230 | 1476 | 500 | 450 | | |
| | NXC 1030 5 A 2 L 0 RSF | 1030 | 1133 | 920 | 1380 | 1656 | 560 | 500 | | |
| | NXC 1150 5 A 2 L 0 RSF | 1150 | 1265 | 1030 | 1545 | 1854 | 630 | 560 | AF13 | 2206 x 2275 x 605/1950 |
| | NXC 1300 5 A 2 L 0 RSF | 1300 | 1430 | 1150 | 1725 | 2070 | 710 | 630 | | |
| | NXC 1450 5 A 2 L 0 RSF | 1450 | 1595 | 1300 | 1950 | 2340 | 800 | 710 | | |
| | NXC 1770 5 A 2 L 0 RSF | 1770 | 1947 | 1600 | 2400 | 2880 | 1000 | 900 | AF14 | 4406 x 2275 x 605/3900 |
| | NXC 2150 5 A 2 L 0 RSF | 2150 | 2365 | 1940 | 2910 | 3492 | 1200 | 1100 | | |
| | NXC 2700 5 A 2 L 0 RSF | 2700 | 2970 | 2300 | 3278 | 3933 | 1500 | 1200 | | |
| 525-690 V 50/60 Hz | NXC 0125 6 A 2 L 0 RSF | 125 | 138 | 100 | 150 | 200 | 110 | 90 | AF9 | 1006 x 2275 x 605/680 |
| | NXC 0144 6 A 2 L 0 RSF | 144 | 158 | 125 | 188 | 213 | 132 | 110 | | |
| | NXC 0170 6 A 2 L 0 RSF | 170 | 187 | 144 | 216 | 245 | 160 | 132 | | |
| | NXC 0208 6 A 2 L 0 RSF* | 208 | 229 | 170 | 255 | 289 | 200 | 160 | AF10 | 1006 x 2275 x 605/700 |
| | NXC 0261 6 A 2 L 0 RSF | 261 | 287 | 208 | 312 | 375 | 250 | 200 | | |
| | NXC 0325 6 A 2 L 0 RSF | 325 | 358 | 261 | 392 | 470 | 315 | 250 | | |
| | NXC 0385 6 A 2 L 0 RSF | 385 | 424 | 325 | 488 | 585 | 355 | 315 | | |
| | NXC 0416 6 A 2 L 0 RSF* | 416 | 416 | 325 | 488 | 585 | 400 | 315 | | |
| | NXC 0460 6 A 2 L 0 RSF | 460 | 506 | 385 | 578 | 693 | 450 | 355 | AF12 | 2006 x 2275 x 605/1400 |
| | NXC 0502 6 A 2 L 0 RSF | 502 | 552 | 460 | 690 | 828 | 500 | 450 | | |
| | NXC 0590 6 A 2 L 0 RSF | 590 | 649 | 502 | 753 | 904 | 560 | 500 | | |
| | NXC 0650 6 A 2 L 0 RSF | 650 | 715 | 590 | 885 | 1062 | 630 | 560 | | |
| | NXC 0750 6 A 2 L 0 RSF | 750 | 825 | 650 | 975 | 1170 | 710 | 630 | | |
| | NXC 0820 6 A 2 L 0 RSF* | 820 | 902 | 650 | 975 | 1170 | 750 | 650 | | |
| | NXC 0920 6 A 2 L 0 RSF | 920 | 1012 | 820 | 1230 | 1476 | 900 | 800 | AF13 | 2206 x 2275 x 605/1950 |
| | NXC 1030 6 A 2 L 0 RSF | 1030 | 1133 | 920 | 1380 | 1656 | 1000 | 900 | | |
| | NXC 1180 6 A 2 L 0 RSF* | 1180 | 1298 | 1030 | 1463 | 1755 | 1150 | 1000 | | |
| | NXC 1500 6 A 2 L 0 RSF | 1500 | 1650 | 1300 | 1950 | 2340 | 1500 | 1300 | AF14 | 4406 x 2275 x 605/3900 |
| | NXC 1900 6 A 2 L 0 RSF | 1900 | 2090 | 1500 | 2250 | 2700 | 1800 | 1500 | | |
| | NXC 2250 6 A 2 L 0 RSF* | 2250 | 2475 | 1900 | 2782 | 3335 | 2000 | 1800 | | |

**Max. ambient temperature of +35°C.*

## Hardware configurations

| Active front-end | Enclosure | | EMC | | Brake chopper | Cabling | | Input device | Output filters | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 380-500 V | IP21 | IP54 | L | T | | Bottom | Top +CIT/+COT | +ILS & +ICB | +OCM/ +OCH | +ODU | +OSI |
| AF9 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +600) |
| AF10 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +600) |
| AF12 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +1200) |
| AF13 | S | O (H: +170) | S | O | * (W: +400) | S | O (W: +400) | S | O | O | O (W: +800) |
| AF14 | S | O (H: +170) | S | O | * (W: +400) | S | O (W: +600) | S | O | S | O (W: +1600) |
| 525-690 V | | | | | | | | | | | |
| AF9 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +600) |
| AF10 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +600) |
| AF12 | S | O (H: +130) | S | O | * (W: +400) | S | O (W: +400) | S | O | O (W:+400) | O (W: +1200) |
| AF13 | S | O (H: +170) | S | O | * z(W: +400) | S | O (W: +400) | S | O | O | O (W: +800) |
| AF14 | S | O (H: +170) | S | O | * (W: +400) | S | O (W: +600) | S | O | S | O (W: +1600) |

*S = Standard O = Optional*
**Contact factory*

# Technical data

| | | |
|---|---|---|
| **Mains connection** | Input voltage $U_{in}$ | 208…240 V; 380…500 V; 525...690 V; –10%…+10% |
| | Input frequency | 45…66 Hz |
| | Connection to mains | Once per minute or less (normal case) |
| **Motor connection** | Output voltage | 0 – $U_{in}$ |
| | Continuous output current | High overloadability: IH, ambient temperature max. +50 °C (≥FR10 + 40 °C)<br>Low overloadability: IL, ambient temperature max. +40 °C |
| | Overloadability | High: 1.5 x IH (1 min/10 min), Low: 1.1 x IL (1 min/10 min) |
| | Max. starting current | Is for 2 s every 20 s |
| | Output frequency | 0…320 Hz |
| **Control characteristics** | Control performance | Open loop vector control (5-150% of base speed):<br>speed control 0.5%, dynamic 0.3%sec, torque lin. <2%, torque rise time ~5 ms<br>Closed loop vector control (entire speed range):<br>speed control 0.01%, dynamic 0.2% sec, torque lin. <2%, torque rise time ~2 ms |
| | Switching frequency | NX_2/ NX_5: Up to and including NX_0061: 1…16 kHz; Factory default 10 kHz<br>NX_6: From NX_0072: 1…6 kHz; Factory default 3.6 kHz<br>1…6 kHz; Factory default 1.5 kHz |
| | Field weakening point | 8…320 Hz |
| | Acceleration time | 0…3000 sec |
| | Deceleration time | 0…3000 sec |
| | Braking | DC brake: 30% of TN (without brake resistor), flux braking |
| **Ambient conditions** | Ambient operating temperature | –10 °C (no frost)…+50 °C: IH (≥FR10 + 40 °C)<br>–10 °C (no frost)…+40 °C: IL |
| | Storage temperature | –40 °C…+70 °C |
| | Relative humidity | 0 to 95% RH, non-condensing, non-corrosive, no dripping water |
| | Air quality:<br>– chemical vapours<br>– mechanical particles | IEC 60721-3-3, unit in operation, class 3C2<br>(tested in accordance with IEC60068-2-60, Method I C $CH_2$ and $SO_2$)<br>IEC 60721-3-3, unit in operation, class 3S2 |
| | Altitude | 100% load capacity (no derating) up to 1000 m<br>1% derating for each 100 m above 1000 m; max. 4866 m (690 V max. 2000 m) |
| | Vibration<br>EN 50178/EN 60068-2-6 | 5...150 Hz: Displacement amplitude 1 mm (peak) at 5…15.8 Hz<br>(≥FR10: 0.25 mm (peak) at 5…31 Hz)<br>Max acceleration amplitude 1 G at 15.8…150 Hz (≥FR10: 1 G at 31…150 Hz) |
| | Shock<br>EN 50178, EN 60068-2-27 | UPS Drop Test (for applicable UPS weights)<br>Storage and shipping: max 15 G, 11 ms (in package) |
| **EMC** | Immunity | Fulfils all EMC immunity requirements |
| | Emissions | EMC level C: EN 61800-3, category C1<br>EMC level H: EN 61800-3, category C2<br>EMC level L: EN 61800-3, category C3<br>EMC level T: Low earth-current solution is suitable for IT networks,<br>(can be modified from L/H-level units) |
| **Safety** | | EN 50178, EN 60204-1,<br>IEC 61800-5-1, CE, UL, CUL; (see unit nameplate for more details) |
| **Functional safety *** | STO | EN/IEC 61800-5-2 Safe Torque Off (STO) SIL2,<br>EN ISO 13849-1 PL"d" Category 3, EN 62061: SILCL2, IEC 61508: SIL2 |
| | SS1 | EN /IEC 61800-5-2 Safe Stop 1 (SS1) SIL2,<br>EN ISO 13849-1 PL"d" Category 3, EN /IEC62061: SILCL2, IEC 61508: SIL2. |
| | ATEX Thermistor input | 94/9/EC, CE 0537 Ex 11 (2) GD |
| **Control connections (OPT-A1, -A2 or OPT-A1, -A3)** | Analogue input voltage | 0…+10 V (–10 V…+10 V joystick control), Ri = 200 kΩ, resolution 0.1%, accuracy ±1% |
| | Analogue input current | 0(4)…20 mA, Ri = 250 Ω differential, resolution 0.1%, accuracy ±1% |
| | Digital inputs | 6, positive or negative logic; 18…30 VDC |
| | Auxiliary voltage | +24 V, ±15%, max. 250 mA |
| | Output reference voltage | +10 V, +3%, max. load 10 mA |
| | Analogue output | 0 (4)…20 mA; RL max. 500 Ω, resolution 10 bit, accuracy ±2% |
| | Digital output | Open collector output, 50 mA/48 V |
| | Relay outputs | 2 programmable change-over (NO/NC) relay outputs (OPT-A3: NO/NC+NO)<br>Switching capacity: 24 VDC/8 A, 250 VAC/8 A, 125 VDC/0.4 A. Min. switching load: 5 V/10 mA |
| | Thermistor input (OPT-A3) | Galvanically isolated, Rtrip = 4.7 kΩ |
| **Protections** | | Overvoltage, undervoltage, earth fault, mains supervision, motor phase supervision, overcurrent, unit overtemperature, motor overload, motor stall, motor underload, short-circuit of +24 V and +10 V reference voltages |

**With OPT-AF board*

# Option boards

| Type | Card slot | | | | | I / O signal | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | DI | DO | DI DO | AI (mA/V/±V) | AI (mA) isolated | AO (mA/V) | AO (mA) isolated | RO (NO/NC) | RO (NO) | +10Vref | Therm | +24V/ EXT +24 V | pt100 | KTY84 | 42-240 VAC input | DI/DO (10...24 V) | DI/DO (RS422) | DI ~ 1Vp-p | Resolver | Out +5 V/+15 V/+24 V | Out +15 V/+24 V | Out +5 V/+12 V/+15 V | Note |
| **Basic I/O cards (OPT-A)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPT-A1 | ■ | | | | | 6 | 1 | | 2 | | 1 | | | | 1 | | 2 | | | | | | | | | | |
| OPT-A2 | | ■ | | | | | | | | | | | 2 | | | | | | | | | | | | | | |
| OPT-A3 | | ■ | | | | | | | | | | | 1 | 1 | | 1 | | | | | | | | | | | |
| OPT-A4 | | | ■ | | | 2 | | | | | | | | | | | | | | | | 3/0 | | | 1 | | |
| OPT-A5 | | | ■ | | | 2 | | | | | | | | | | | | | | | 3/0 | | | | | 1 | |
| OPT-A7 | | | ■ | | | | | | | | | | | | | | | | | | 6/2 | | | | | 1 | 2 enc. input + 1 enc. output |
| OPT-A8 | ■ | | | | | 6 | 1 | | 2 | | 1 | | | | 1 | | 2 | | | | | | | | | | 1) |
| OPT-A9 | ■ | | | | | 6 | 1 | | 2 | | 1 | | | | 1 | | 2 | | | | | | | | | | 2.5 mm² terminals |
| OPT-AE | | | ■ | | | | 2 | | | | | | | | | | | | | | 3/0 | | | | | 1 | DO = Divider+Direction |
| OPT-AF | | ■ | | | | 2 | | | | | | | 1 | 1 | | 1 | | | | | | | | | | | |
| OPT-AK | | | ■ | | | | | | | | | | | | | | | | | | | | 3 | | | 1 | Sin/Cos/ Marker |
| OPT-AN | ■ | | | | | 6 | | | 2 | | 2 | | | | | | | | | | | | | | | | |
| **I/O expander cards (OPT-B)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPT-B1 | | ■ | ■ | ■ | ■ | | | 6 | | | | | | | | | 1 | | | | | | | | | | Selectable DI/DO |
| OPT-B2 | | ■ | ■ | ■ | ■ | | | | | | | | 1 | 1 | | 1 | | | | | | | | | | | |
| OPT-B4 | | ■ | ■ | ■ | ■ | | | | | 1 | | 2 | | | | | 1 | | | | | | | | | | 2) |
| OPT-B5 | | ■ | ■ | ■ | ■ | | | | | | | | | 3 | | | | | | | | | | | | | |
| OPT-B8 | | ■ | ■ | ■ | ■ | | | | | | | | | | | | 1 | 3 | | | | | | | | | |
| OPT-B9 | | ■ | ■ | ■ | ■ | 2 | | | | | | | | 1 | | | | | 5 | | | | | | | | |
| OPT-BH | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | 3 | 3 | | | | | | | | 3 x pt1000; 3 x Ni1000 |
| OPT-BB | | | ■ | | | 2 | | | | | | | | | | | | | | | | 0/2 | 2 | | | 1 | Sin/Cos + EnDat |
| OPT-BC | | | | | | | | | | | | | | | | | | | | | 3/3 | | | 1 | | | Encoder out = Resolver simulation |
| OPT-BE | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | EnDat/SSI |
| **Fieldbus cards (OPT-C)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPT-C2 | | | | ■ | ■ | RS-485 (Multiprotocol) | | | | | | | | | | | | | | | | | | | | | Modbus, N2 |
| OPT-C3 | | | | ■ | ■ | PROFIBUS DP | | | | | | | | | | | | | | | | | | | | | |
| OPT-C4 | | | | ■ | ■ | LonWorks | | | | | | | | | | | | | | | | | | | | | |
| OPT-C5 | | | | | ■ | PROFIBUS DP (D9-type connector) | | | | | | | | | | | | | | | | | | | | | |
| OPT-C6 | | | | ■ | ■ | CANopen (slave) | | | | | | | | | | | | | | | | | | | | | |
| OPT-C7 | | | | ■ | ■ | DeviceNet | | | | | | | | | | | | | | | | | | | | | |
| OPT-C8 | | | | ■ | ■ | RS-485 (Multiprotocol, D9-type connector) | | | | | | | | | | | | | | | | | | | | | Modbus, N2 |
| OPT-CG | | | | ■ | ■ | SELMA 2 protocol | | | | | | | | | | | | | | | | | | | | | |
| OPT-CI | | | | ■ | ■ | Modbus/TCP (Ethernet) | | | | | | | | | | | | | | | | | | | | | |
| OPT-CJ | | | | ■ | ■ | BACNet, RS485 | | | | | | | | | | | | | | | | | | | | | |
| OPT-CP | | | | ■ | ■ | PROFINET I/O (Ethernet) | | | | | | | | | | | | | | | | | | | | | |
| OPT-CQ | | | | ■ | ■ | EtherNet/IP (Ethernet) | | | | | | | | | | | | | | | | | | | | | |
| **Communication cards (OPT-D)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OPT-D1 | | | | ■ | ■ | System Bus adapter (2 x fiber optic pairs) | | | | | | | | | | | | | | | | | | | | | |
| OPT-D2 | | | | ■ | ■ | System Bus adapter (1 x fiber optic pair) & CAN-bus adapter (galvanically decoupled) | | | | | | | | | | | | | | | | | | | | | |
| OPT-D3 | | | | ■ | ■ | RS232 adapter card (galvanically decoupled), used mainly for application engineering to connect another keypad | | | | | | | | | | | | | | | | | | | | | |
| OPT-D6 | | ■ | | ■ | ■ | CAN-bus adapter (galvanically decoupled) | | | | | | | | | | | | | | | | | | | | | |
| OPT-D7 | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |

*The VACON® NXP/NXC product range*

# VACON® NXC options

| Control terminal options (T group) | |
|---|---|
| +TIO | Basic I/O wired to external single-tier terminals |
| +TID | Basic I/O wired to external two-tier terminals + additional terminals |
| +TUP* | Terminals for 230 VAC control voltage |
| **Input device options (I group)** | |
| +ILS* | Load switch |
| +IFD | Switch fuse and fuses |
| +ICB* | Circuit breaker |
| +ICO | Input contactor |
| +IFU | Input fuses |
| **Main circuit options (M group)** | |
| +MDC | Terminals in cabinet for DC / brake chopper |
| **Output filter options (O group)** | |
| +OCM | Common mode filters |
| +OCH | Common mode filters with output terminals |
| +ODU | du/dt filter |
| +OSI | Sine wave filter |
| **Protection devices (P group)** | |
| +PTR | External thermistor relay |
| +PES | Emergency stop (cat 0) |
| +PED | Emergency stop (cat 1) |
| +PAP | Arc protection |
| +PIF | Insulation fault sensor |
| **General options** | |
| +G40 | 400 mm empty cabinet |
| +G60 | 600 mm empty cabinet |
| +G80 | 800 mm empty cabinet |
| +GPL | 100 mm base |
| +GPH | 200 mm base |
| +FAT | Factory acceptance tests |
| +MAR | Marine construction |
| +SWP | Seaworthy packing |

*Included as standard in low harmonic drives*

| Cabling options (C group) | |
|---|---|
| +CIT | Input (mains) cabling from top |
| +COT | Output (motor) cabling from top |
| **Auxiliary equipment (A group)** | |
| +AMF | Motor fan control |
| +AMH | Motor heater feeder |
| +AMB | Mechanical brake control |
| +AMO* | Motor operator for +ICB |
| +ACH | Cabinet heater |
| +ACL | Cabinet light |
| +ACR | Control relay |
| +AAI | Analogue signal isolator |
| +AAA | Auxiliary contact (control voltage devices) |
| +AAC | Auxiliary contact (input device) |
| +AT1 | Auxiliary voltage transformer 200 VA |
| +AT2* | Auxiliary voltage transformer 750 VA |
| +AT3 | Auxiliary voltage transformer 2500 VA |
| +AT4 | Auxiliary voltage transformer 4000 VA |
| +ADC* | Power supply 24 VDC 2.5 A |
| +ACS | 230 VAC customer socket |
| **Door-mounted options (D group)** | |
| +DLV | Pilot light (Control voltage on) |
| +DLD | Pilot light (DO1) |
| +DLF | Pilot light (FLT) |
| +DLR | Pilot light (RUN) |
| +DCO* | Main contactor operation switch |
| +DRO* | Local / Remote operation switch |
| +DEP | Emergency stop push-button |
| +DRP | Reset push-button |
| +DAM | Analogue meter (AO1) |
| +DAR | Potentiometer for reference |
| +DCM | Analogue meter & current transformer |
| +DVM | Analogue voltage meter with selection switch |

# EMC selection table

| VACON® NXP EMC | Hospital | Residential Area | Commercial | Light Industry Area | Heavy Industry | Marine |
|---|---|---|---|---|---|---|
| C (Category C1) | O | | | | | |
| H (Category C2) | R | R | R | O | O | |
| L (Category C3) | | | | R | R | |
| T (Category C4) | | | | | R (IT) | R (IT) |

The product family standard EN 61800-3 sets limits for both emissions and immunity to radio frequency disturbances. The environment has been divided into the first and second environments; in practice, public and industrial networks, respectively.

Radio Frequency Interference (RFI) filters are typically required to meet the EN 61800-3 standard. These filters are integrated in the VACON® NXP as standard.

The 208-240 V and 380 500 V ranges of the VACON NXP (FR4-FR9) meet the requirements of the first and second environments (H level: EN 61800-3 (2004), category C2). No additional RFI filters or cabinets are required. The FR10-FR14 and the 500-690 V ranges of the VACON NXP meet the requirements of the second environment (L-level: EN 61800-3(2004), category C3).

The units in the frame sizes FR4, FR5 and FR6 (with a voltage range from 380 to 500 V) are also available with extremely low-emission integrated EMC filters (C level: EN 61800-3 (2004), category C1). This is sometimes required in very sensitive locations, such as hospitals.

# Type code key

| NXC | 0520 | 5 | A | 2 | L | O | S | S | F | A1 A2 00 00 00 | + | IFD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**NXC** — **Product Range**
**NXP** = Wall-mounted / standalone / module
**NXC** = Cabinet

**0520** — **Nominal current voltage**
0520 = 520 A

**5** — **Nominal mains voltage**
**2** = 208-240 V
**5** = 380-500 V
**6** = 525-690 V

**A** — **Control keypad**
**A** = Standard alphanumeric
**B** = No local keypad
**F** = Dummy keypad
**G** = Graphic display

**2** — **Enclosure class**
**5** = IP54, FR4-10; NXC FR9-FR14; AF9-14
**2** = IP21, FR4-11; NXC FR9-FR14; AF9-14
**0** = IP00, NXP FR10-14

**L** — **EMC emission levels**
**C** = Category C1, EN 61800-3
**H** = Category C2, EN 61800-3
**L** = Category C3, EN 61800-3
**T** = For IT networks
**N** = Enclosure required (FR10-FR14)

**0** — **Brake chopper**
**0** = No brake chopper
**1** = Integrated brake chopper

**S** — **Supply**
**S** = 6-pulse
**T** = 12-pulse
**O** = 6-pulse + load switch (standalone)
**R** = Low Harmonic

**S** — **Cooling**
**S** = standard air-cooled
**T** = through-hole mounting FR4-FR9

**F** — **Control**
**S** = Standard FR4-FR8
**F** = Standard FR9 and NXC
**A** = Standard NXP FR10-FR12
**N** = Standard IP00 ≥ FR10 & NXC with IP54 control unit enclosure
**V** = As S, but varnished
**G** = As F, but varnished boards
**O** = As N, but varnished boards
**B** = As A, but varnished boards

**A1 A2 00 00 00** — **Option boards; each slot is represented by two characters:**
**Ax** = Basic I/O boards,
**Bx** = Expander I/O boards
**Cx** = Fieldbus boards,
**Dx** = Special boards

**+**

**IFD** — **NXC options, see tables page 22**

ENGINEERING
TOMORROW

# Danfoss Drives

Danfoss Drives is a world leader in variable speed control of electric motors. We aim to prove to you that a better tomorrow is driven by drives. It is as simple and as ambitious as that.

We offer you unparalleled competitive edge through quality, application-optimized products targeting your needs – and a comprehensive range of product lifecycle services.

You can rely on us to share your goals. Striving for the best possible performance in your applications is our focus. We achieve this by providing the innovative products and application know-how required to optimize efficiency, enhance usability, and reduce complexity.

From supplying individual drive components to planning and delivering complete drive systems; our experts are ready to support you all the way.

We draw on decades of experience within industries that include:

- Chemical
- Cranes and Hoists
- Food and Beverage
- HVAC
- Lifts and Escalators
- Marine and Offshore
- Material Handling
- Mining and Minerals
- Oil and Gas
- Packaging
- Pulp and Paper
- Refrigeration
- Water and Wastewater
- Wind

You will find it easy to do business with us. Online, and locally in more than 50 countries, our experts are never far away, reacting fast when you need them.

Since 1968, we have been pioneers in the drives business. In 2014, Vacon and Danfoss merged, forming one of the largest companies in the industry. Our AC drives can adapt to any motor technology and we supply products in a power range from 0.18 kW to 5.3 MW.

VLT® | VACON®