

Danfoss VACON Drives

Range overview: VACON 100 series, VACON 20 series and VACON NX series

The three VACON ranges cover very different jobs. **VACON 20** is a compact drive for small machines, **VACON 100** is the general-purpose wall-mounted and decentral range from small motors up to 800 kW, and **VACON NX** is the high-performance range that reaches into the megawatt class with closed-loop vector control, enclosed drives and active front ends.

Series	Role	Power range	Supply voltages	Protection
VACON 20	Compact drive for small machines	0.25-18.5 kW (0.35-25 HP)	105-120 V 1-ph; 208-240 V 1/3-ph; 380-480 V; 520-600 V	IP20 (MI1-3), IP21 (MI4-5), IP00 cold plate
VACON 100	General-purpose drive: Industrial, Flow (pumps and fans), X (decentral), IP00 modules	0.55-800 kW (0.75-1000 HP)	208-240 V; 380-500 V; 525-600 V; 525-690 V	IP21, IP54, IP00; IP66 for 100 X
VACON NX	High-performance drive: NXS, NXP, NXC (enclosed)	0.55 kW to 2 MW	208-240 V; 380-500 V; 525-690 V	IP21, IP54, IP00 modules; enclosed cabinets

Figures are taken from Danfoss brochures and product pages; sub-variants have their own ranges and are listed below. The picture you supplied labels the third range "VACON NX Series VFD1"; the Danfoss documentation uses the name VACON NX (NXS / NXP / NXC), which is what this summary covers. Check the exact type code on the current Danfoss datasheet before quoting.

Series details

VACON 20

Compact AC drive for small machines

Power	105-120 V single-phase: 0.25-1.1 kW. 208-240 V single-phase and three-phase: 0.25-2.2 kW. 380-480 V three-phase: 0.37-18.5 kW (0.5-25 HP). 520-600 V three-phase: 0.75-5.5 kW.
Variants	VACON 20 standard and VACON 20 Cold Plate (CP) for mounting on a customer's heat sink.
Protection	IP20 for sizes MI1-MI3, IP21 for MI4-MI5, IP00 for cold plate models.
Control	U/f frequency control and open-loop sensorless vector control; switching frequency 1.5-16 kHz.
Overload	1.5 x rated current for 1 minute in every 10; starting current up to 2 x rated current.
Communication	RS-485 (Modbus RTU) built in; optional CANopen, DeviceNet, PROFIBUS DP, Ethernet and EtherCAT boards.
Ambient	-10 to +50 deg C; cold plate versions up to +70 deg C.

- Built-in PLC functionality (IEC 61131-3), brake chopper, dynamic flux braking and parameter copying without mains power.
- Typical use: pumps, fans, conveyors, packaging, processing, washing machines, textile machines, hoists and compressors.

VACON 100

General-purpose range: Industrial, Flow, X and IP00 modules

Variants	VACON 100 INDUSTRIAL (general purpose), VACON 100 FLOW (pump and fan control), VACON 100 X (decentral, IP66, 1.1-37 kW) and VACON 100 IP00 drive modules for cabinet building.
Power, Industrial / Flow	208-240 V: 0.55-90 kW. 380-500 V: 1.1-630 kW (1.5-1000 HP). 525-600 V: 3-250 kW. 525-690 V: 5.5-800 kW.
Power, 100 X	208-240 V: 1.1-15 kW (1.5-20 HP). 380-500 V: 1.1-37 kW (1.5-50 HP).
Protection	IP21 / UL Type 1 and IP54 / UL Type 12 wall-mounted (same footprint); IP00 open modules; IP66 / UL Type 4X for VACON 100 X.
Control	Open-loop vector control for induction, permanent-magnet and synchronous-reluctance motors; speed accuracy 0.5%.
Overload	Low load: 110% for 1 minute in every 10. High load: 150% for 1 minute in every 10.
Fieldbus	Modbus RTU / TCP, BACnet, PROFINET and EtherNet/IP built in; optional PROFIBUS, CANopen, DeviceNet and EtherCAT.
Safety	Safe Torque Off and Safe Stop 1 at SIL 3; ATEX-certified motor over-temperature protection.
Ambient	-10 to +50 deg C; -40 to +60 deg C for VACON 100 X. Up to 4,000 m without derating (standard frames).

- Integrated RFI filters, DC chokes and film capacitors (rated about 300,000 hours), plus built-in PLC functionality and conformal coating.
- VACON 100 FLOW adds multi-pump control for up to 8 pumps, PID controllers, sleep mode, soft fill, dry-pump protection and frost protection.
- Typical use: HVAC, water and wastewater, refrigeration, plastics, pulp and paper, material handling, oil and gas, mining, metals, marine and chemical processing.

VACON NX

High-performance range: NXS, NXP and NXC

Power, whole family	208-240 V: 0.55-90 kW. 380-500 V: 1.1-1,200 kW. 525-690 V: 3-2,000 kW. The brochure summarises the range as 0.55 kW to 2 MW.
NXS	208-240 V: 0.55-75 kW. 380-480 V: 0.75-355 kW. 525-690 V: 1.5-500 kW. IP21 / Type 1 or IP54 / Type 12 with identical footprints.
NXP	Wall-mounted frames FR4-FR9 in IP21 / IP54, and IP00 modules FR10-FR14 for cabinet builders.
NXC	Enclosed cabinet drives. 6- and 12-pulse: 380-500 V 132-1,200 kW; 525-690 V 110-2,000 kW. Active front end supplies: up to 1,500 kW at 380-500 V.
Control	Open-loop vector (speed accuracy 0.5%) and closed-loop vector (0.01%, torque rise about 2 ms); field weakening 8-320 Hz; bumpless transfer between modes.
Overload	High: 1.5 x rated current for 1 minute in every 10. Low: 1.1 x rated current at +40 deg C.
Fieldbus	Five built-in expansion slots: PROFIBUS DP, DeviceNet, Modbus, CANopen, PROFINET IO, EtherNet/IP, Modbus/TCP and fibre-optic SystemBus.
Safety	STO and SS1 at SIL 2 / PL d, plus options such as Safe Stop 2, Safe Brake Control and Safely-Limited Speed; ATEX thermistor certification.
Ambient	-10 to +50 deg C (high overload) or +40 deg C (low overload); full power up to 1,000 m, derate 1% per 100 m above that.

- NXC Low Harmonic versions use an active front end with total current harmonic distortion below 5% and regenerative braking.
- Boards are conformal coated from frame FR7 upward; All-in-One application package with seven selectable software configurations.
- Typical use: mining, marine, compressors, cranes, oil and gas, water treatment, pulp and paper, cement, chemicals, extruders, conveyors, lifts, winches and test benches.

Quick selection guide

Application	Suggested model
Small machines up to 18.5 kW, tight panel space	VACON 20
Drive mounted on the machine or outdoors (IP66)	VACON 100 X
General industrial duty, 1.1-800 kW, wall-mounted	VACON 100 INDUSTRIAL
Pumps and fans, multi-pump control, HVAC and water	VACON 100 FLOW
Drive modules for a customer's own cabinet	VACON 100 IP00 or VACON NXP FR10-FR14
Closed-loop vector, cranes, test benches, precise torque	VACON NXP
Enclosed megawatt drives, low harmonics, regenerative braking	VACON NXC

Sources

- Danfoss VACON 100 brochure - [files.danfoss.com \(DKDDPB906A822_VACON_100_LR.pdf\)](https://files.danfoss.com(DKDDPB906A822_VACON_100_LR.pdf))
- Danfoss VACON 100 INDUSTRIAL product page - danfoss.com
- VACON 20 selection guide / brochure - [inverterdrive.com \(Vacon-20-Brochure-Danfoss\)](https://inverterdrive.com(Vacon-20-Brochure-Danfoss))
- Danfoss VACON NXP and NXC brochure - [files.danfoss.com \(DKDDPB905A202_NXP_NXC_LR.pdf\)](https://files.danfoss.com(DKDDPB905A202_NXP_NXC_LR.pdf))
- Danfoss VACON NXS and VACON NXC product pages - danfoss.com

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