ENGINEERING
TOMORROW

Product Overview

Danfoss Drives
- for your applications

Quality

application-optimized products, which target your needs

drives.danfoss.com

VLT® | VACON®

Contents

Communications functionality

This legend indicates the communication interface and fieldbus protocol functionality which is specific to each product. For details, please refer to the individual product brochures.

Integrated

BAC	BACnet
ASi	AS interface
META	Metasys N2
MOD	Modbus RTU
TCP	Modbus TCP
BIP	BACnet IP

Optional

PB	PROFIBUS DP V1
PN	PROFINET
PL	Powerlink
DN	DeviceNet
CAN	CANopen
AKD	LONworks for AKD
LON	LONworks
BAC	BACnet (MSTP)
TCP	Modbus TCP
EIP	EtherNet/IP
ECAT	EtherCAT
DCP	DCP 3/4
DSP	CANopen DSP 417
BIP	BacNet IP

Welcome

United by a passion for perfection, Danfoss and Vacon have teamed up to offer you more. Together, as Danfoss Drives, we are the world's largest independent drives provider, offering the full breadth and depth of product range needed for any application. Whatever your need, ask us – and you will always get the right drive for your application.

Most of the drive ranges listed in this overview are available with integrated harmonic mitigation and meet EMC requirements to ensure a high-quality, clean power supply. Regional variations in drive availability can arise.

For more detailed information we refer to the brochures and manuals for each product, available on drives.danfoss.com.

Proven Efficiency

Danfoss ecoSmart

Danfoss ecoSmart™

This online tool makes it easy to determine IE and IES classes according to EN 50598-2, for VLT® and VACON® drives alone and in combination with a motor.

Danfoss ecoSmart uses nameplate data to perform the efficiency calculations, and produces a pdf report for documentation.

Low power drives

System & motor independence

VLT® and VACON® drives are independent of control systems and motor technology. This freedom enables you to choose the motor technology and motor manufacturer that best suit your application to ensure its peak performance and optimized energy consumption. Making the right choice of drive and optimizing your entire system creates potential energy savings of up to 60%.

Using the automatic motor adaptation function, in less than three seconds, Danfoss AC drives can be configured to control the operation of any standard asynchronous (IM), permanent magnet (PM) or synchronous reluctance (SynRM) motor. Automatic motor adaptation (AMA) can be performed when the drive is at standstill. And, as it doesn't generate any torque on the shaft, it can be carried out on a motor that's already installed.

With all motors controlled by the same drive, operators can use the same user and system interfaces, the same extensions, and the same proven, reliable technology over the entire power range. This saves commissioning time, reduces training costs, simplifies maintenance activities and keeps spare part stock levels to a minimum.

VLT® Micro Drive FC 51

VLT® Midi Drive FC 280

VLT® Micro Drive FC 51

The smallest AC drives in the VLT® Micro Drive FC 51 series are particularly suitable for side-by-side mounting with a high integration density. The typical features of Danfoss drives are still retained.

Compact
VLT® Micro Drive is up to 40 percent smaller than other AC drives with comparable power and built-in features.

Protection for electronics
To ensure a long service life, the cooling air does not flow directly over the power electronics.

Power range
1 x 200-240 V.....0.18-2.2 kW
3 x 200-240 V.....0.25-3.7 kW
3 x 380-480 V ..... 0.37-22 kW

Fieldbus

MOD

Enclosure

IP00	IP20	IP21/Type 1
	■	■

IP54/Type 12	IP55/Type 12	IP66/Type 4X

VLT® Midi Drive FC 280

The VLT® Midi Drive FC 280 delivers flexible and efficient motor control for use in a wide variety of of automation and machine building applications.

Flexible. Communicative.
This medium power-range drive is strong on control performance, functional safety, and flexible fieldbus communication. Integrated functionality such as DC choke, RFI filter, Safe Torque Off (STO), and brake chopper saves you from finding space and budget to install extra components.

Easy retrofit
VLT Midi Drive is prepared for compatibility with the VLT® 2800. Its exterior dimensions, cable plugs, cable lengths, and set-up software tools enable easy retrofit in established plant or machinery concepts.

Easy to use
A USB port provides easy PC connectivity. The VLT® Memory Module MCM 102 option facilitates fast implementation of factory settings, and transfer of settings during retrofit.

Power range
1 x 200-240 V .....0.37-2.2 kW
3 x 200-240 V .....0.37-3.7 kW
3 x 380-480 V .....0.37-22 kW

Fieldbus

MOD			
PB	PN	CAN	EIP

Enclosure

IP00	IP20	IP21/Type 1
	■	■

IP54/Type 12	IP55/Type 12	IP66/Type 4X

Full power range drives and dedicated drives

VLT® Lift Drive LD 302

VLT® Refrigeration Drive FC 103

VLT® Lift Drive LD 302

Suitable for both traction and hydraulic elevators, the VLT® Lift Drive is operating open or closed-loop systems.

Smooth, silent and safe

Absolute safety is standard with all VLT® drive solutions, and comfort is our highest priority. With a high switching frequency, optimized-controlled internal cooling fan and no motor contactors, VLT® Lift Drive ensures a quiet run with low acoustic noise and high reliability.

Operate without motor contactors

The embedded Safe Stop function matches safety standards of the conventional two-contactor version for elevators. This patented feature opens up new opportunities, especially for machine roomless lifts.

Operation with any typical motor type or brand

Regardless of motor type or brand, static automatic motor adaptation (AMA) enables easy commissioning, without having to remove the ropes from the traction sheaves.

Power range

380-400 V.....4-55 kW

Fieldbus

DCP	DSP

Enclosure

IP00	IP20	IP21/Type 1
	■	■

IP54/Type 12	IP55/Type 12	IP66/Type 4X
	■	

VLT® Refrigeration Drive FC 103

Dedicated to control compressors, pumps and fans for significant energy savings in refrigerating plants, whilst prolonging the service life of components.

Improving COP (Coefficient of performance)

Intelligent power adjustment increases system stability and optimizes the volumetric efficiency of the evaporator, the compressor, and the total refrigeration system.

Refrigeration terminology

The use of refrigeration terminology allows quick and easy configuration.

AC drive as standard

The combination of speed-controlled and mains-operated compressors enables the design of low-wear and energy-efficient systems.

Power range

3 x 200-240 V.....1.1-45 kW
3 x 380-480 V.....1.1-710 kW
3 x 525-600 V .....1.1-7.5 kW
3 x 525-690 V.....75-630 kW

Fieldbus

MOD	META	
AKD	PB	PN

Enclosure

IP00	IP20	IP21/Type 1
	■	■

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■	■	■

VLT® AutomationDrive FC 302, VLT® AQUA Drive FC 202 and VLT® HVAC Drive FC 102

VLT® AutomationDrive FC 302

The VLT® AutomationDrive FC 302 is a modular drive designed to comply with all modern automation application requirements with easy configuration and a wide power range.

Safety where it matters

The VLT® AutomationDrive FC 302 features Safe Torque Off as standard. Easily configurable options are available: SS1, SLS, SMS and SSM.

Integrated Motion Controller

The Integrated Motion Controller software enables the VLT® AutomationDrive FC 302 to run induction and PM motors in positioning and synchronization applications, both with and without encoders.

Harmonic mitigation

Advanced active filter variants reduce harmonics to below 3% at best, and 12-pulse drives provide robust cost-effective harmonics reduction in supply applications.

Power range

3 x 200-240 V.....0.25-37 kW
3 x 380-500 V.....0.37-1100 kW
3 x 525-600 V .....0.75-75 kW
3 x 525-690 V.....1.1-1400 kW

Power range - Low harmonic drive

3 x 380-480 V .....132-710 kW

Power range - 12-pulse drive

3 x 380-500 V..... 250-1000 kW
3 x 525-690 V .....250-1400 kW

Fieldbus

MOD				
DN	CAN	PB	TCP	EIP
ECAT	PN	PL		

Enclosure

IP00	IP20	IP21/Type 1
■	■	■
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■	■	■

VLT® AQUA Drive FC 202

The VLT® AQUA Drive FC 202 drives and controls all types of pumps. In addition to the widely used centrifugal pumps (quadratic load torque), the VLT® AQUA Drive FC 202 is ideal for displacement pumps or eccentric screw pumps (constant load torque).

Focusing on water and pumps

Dedicated functions such as burst pipe monitoring, dry-running protection and flow compensation secure and empower your pumping application independent of the motor technology.

Cascade controller as standard

The cascade controller connects or disconnects pumps as necessary and according to specified limits. It also enables master/follower operation. Extended functionality is available via an option.

Power range

1 x 200-240 V.....1.1-22 kW
1 x 380-480 V.....7.5-37 kW
3 x 200-240 V.....0.25-45 kW
3 x 380-480 V .....0.37-1000 kW
3 x 525-600 V ..... 0.75-90 kW
3 x 525-690 V.....1.1-1400 kW

Power range - Low harmonic drive

3 x 380-480 V .....132-710 kW

Power range - 12-pulse drive

3 x 380-500 V.....250-1000 kW
3 x 525-690 V .....250-1400 kW

Fieldbus

MOD				
PN	DN	PB	TCP	EIP

Enclosure

IP00	IP20	IP21/Type 1
■	■	■
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■	■	■

VLT® HVAC Drive FC 102

The ideal choice for fan and pump applications in modern buildings. The drive offers maximum flexibility in installation, bus connections and control intelligence.

HVAC Inside

The VLT® HVAC Drive FC 102 is especially engineered for building automation with intelligent HVAC functions.

Optimal EMC protection

Standard integrated chokes and high-quality RFI filters ensure interference-free operation at all times.

EC+

The intelligent VVC+ control principle enables the use of permanent magnet motors or synchronous reluctance motors with efficiency equal to or better than EC technology.

Power range

3 x 200-240 V.....1.1-45 kW
3 x 380-480 V .....1.1-1000 kW
3 x 525-600 V .....1.1-90 kW
3 x 525-690 V.....1.1-1400 kW

Power range - Low harmonic drive

3 x 380-480 V .....132-710 kW

Power range - 12-pulse drive

3 x 380-500 V..... 250-1000 kW
3 x 525-690 V .....250-1400 kW

Fieldbus

MOD	META	BAC		
DN	LON	BAC	TCP	EIP
PB	PN	BIP		

Enclosure

IP00	IP20	IP21/Type 1
■	■	■
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■	■	■

Power options

VLT® Advanced Active Filter AAF

VLT® Advanced Harmonic Filter AHF 005/010

VLT® Advanced Active Filter AAF

The active filter analyses load-applied harmonics and compensates these by active counter-control. It is suitable for the compensation of AC drives and improvement of the system quality.

Easy to use
The VLT® Advanced Active Filter is configured for most applications upon leaving the factory.

Optimal filtering
Use the individually adjustable compensation modes for adaptation to suit specific requirements.

Versatile
VLT® Advanced Active Filter supporting central, individual or group compensation.

Power range
380-480 V ..... 190/250/310/400 A

Enclosure

IP00	IP20	IP21/Type 1
		■

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■		

VLT® Advanced Harmonic Filter AHF 005 and AHF 010

Harmonic filters with additional functions specially adapted for use with VLT® drives. When connected upstream of a an AC drive, the filter reduces the total current distortion fed back to the system to 5% or 10%.

Compact units
The small, compact enclosure fits perfectly in a control cabinet.

Retrofit
The filter is simple to use for retrofitting in existing installations.

Flexible
One filter module can be used for several AC drives in parallel.

Power range
3 x 380-690 V ..... 10-400 A*
3 x 400-500 V ..... 10-400 A

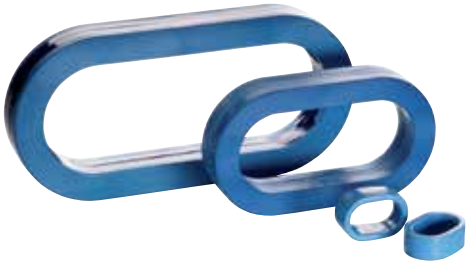
** Higher rating when connected in parallel*

Enclosure

IP00	IP20	IP21/Type 1
■	■	*

IP54/Type 12	IP55/Type 12	IP66/Type 4X

VLT® dU/dt Filters *VLT® Sine-Wave Filters*



VLT® Common Mode Filter

VLT® Sine-wave Filters

VLT® Sine-wave Filters smooth the output voltage of a VLT® drive and reduce motor insulation stress and bearing currents as well as noise development in the motor.

For critical motors
Use the filter especially for AC drive operation of older motors, low permitted voltages in terminal boxes or without phase insulation.

Long motor cables
Enable use of motor cables with a length of 500 m and more, using a sine-wave filter.

Power range
3 x 200-690 V ..... 2.5-880 A*
**(for higher power ratings a combination of several modules is possible)*

VLT® dU/dt Filters

VLT® dU/dt Filters reduce the rate of voltage rise on the motor terminals and protect old or weak motor insulation against breakdown. This is particularly important for short motor cables.

Retrofit
Retrofit is easy in older systems or motors.

Compact
These filters are smaller, lighter and more affordable, compared to sine-wave filters.

Power range
3 x 200-690 V .....15-800 A*
**(for higher power ratings a combination of several modules is possible)*

VLT® Common Mode Filter

High-frequency common mode cores reduce electromagnetic interference and protect against bearing currents.

Wide coverage
Just 5 sizes cover the range up to 480 A.

Combinable
The filters can be combined with other output filters.

Power range
3 x 380-690 V ..... 10-480 A

Enclosure

IP00	IP20	IP21/Type 1
■	■	

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■		

Enclosure

IP00	IP20	IP21/Type 1
■	■	

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■		

Decentral drives

VLT® Decentral Drive FCD 302

VLT® Decentral Drive FCD 300

VLT® Decentral Drive FCD 302

This decentral drive in a rugged design offers a high degree of flexibility and functionality. It can be mounted close to the motor and is ideal for demanding applications.

One-box concept
All required modules and available options are accommodated in the AC drive housing.

Minimizing installation costs
Fewer external components and connectors save installation, assembly and maintenance time.

Hygienic design
The VLT® Decentral Drive FCD 302 complies with all requirements for ease of cleaning and hygienic design according to EHEDG (European Hygienic Engineering & Design Group).

Power range
3 x 380-480 V ..... 0.37-3.0 kW

VLT® Decentral Drive FCD 300

This drive can be mounted close to or directly on the motor. This reduces the need for central devices and saves switchgear and space in control cabinets.

Plug-and-drive
Installation and replacement is a simple matter of plugging in or changing the electronics section.

Flexible installation
The VLT® Decentral Drive FCD 300 series facilitates power supply installation via integrated T-distributors.

Service switch
The optional, lockable service switch ensures disconnection of the AC drive and motor during servicing.

Power range
3 x 380-480 V ..... 0.37-3.3 kW

Fieldbus

MOD				
PN	EIP	PB	PL	ECAT

Fieldbus

ASi	
PB	DN

Enclosure

IP 00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
		■

Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
		■

VLT® DriveMotor FCP 106

VLT® DriveMotor FCM 106

VLT® DriveMotor FCM 300

VLT® DriveMotor FCP 106

For full flexibility in motor choice, system design and energy efficiency, choose your own PM or induction motor and attach the standalone VLT® DriveMotor FCP 106.

Easy to install
Installation is simple due to the integrated cooling system and an individually adjustable motor adapter plate.

High performance
The standalone VLT® DriveMotor FCP 106 provides you with a high level of flexibility and stable, energy-efficient operation as the drive automatically sets the optimal parameters for the attached motor.

Power range
3 x 380-480 V.....0.55-7.5 kW

VLT® DriveMotor FCM 106

A fully-integrated motor and drive solution, available with either an IE4 PM motor or IE2 induction motor.

Reduce cost and complexity
The compact design helps to reduce both installation costs and complexity significantly. By eliminating the need for cabinets, additional cooling and long motor cables, costs are reduced further.

IE3 alternative
European Regulation 640/2009 defines IE2 motors with AC drives as an alternative to IE3 motors.

Power range
3 x 380-480 V .....0.55-7.5 kW

VLT® DriveMotor FCM 300

Consisting of motor and VLT® drive, this unit is the ideal solution for simple control applications. It is no higher than the standard motor enclosure and no wider or longer than the motor.

No control cabinet necessary
Mounting the AC drive directly on the motor can eliminate the need for a control cabinet.

IE3 alternative
European Regulation 640/2009 defines IE2 motors with AC drives as an alternative to IE3 motors.

Power range
3 x 380-480 V .....0.55-7.5 kW

Fieldbus

MOD	
BAC	PB

Enclosure

IP00	IP20	IP21/Type 1
IP54/UL Type 3R	**IP55/Type 12**	**IP66/Type 4X**
		■

Fieldbus

MOD	
BAC	PB

Enclosure

IP00	IP20	IP21/Type 1
IP54/UL Type 3R	**IP55/Type 12**	**IP66/Type 4X**
	■	

Fieldbus

MOD
PB

Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
	■	■

VLT® OneGearDrive®

VLT® Integrated Servo Drive ISD 410 System

VLT® OneGearDrive®

The highly efficient combination of a permanent magnet motor and optimized bevel gearing, powered by a central or decentral VLT® drive, contributes significantly to operating and maintenance cost savings.

Long service intervals
VLT® OneGearDrive® operating under partial load does not require an oil change until after 35,000 operating hours.

Fewer variants
With only one motor type and three gear ratios available, the motor concept covers most typical conveyor drives.

Hygienic version
Use it with confidence in wet areas including aseptic areas and clean room production areas.

Power range
3 x 380-480 V ..... 0.75-3.0 kW

VLT® Integrated Servo Drive ISD 410 System

A decentral compact drive based on a synchronous servomotor that is energy-efficient, precise and easy to install. The drive is especially suited to applications that require high flexibility and dynamics.

Trajectory generator/Curve planner
Cam discs can be operated directly via the integrated motion controller in the ISD 410 local control.

Hybrid cable
Power supply and CAN bus communication take place via a single cable assembly.

Open master system
Programming is based on the standard IEC 61131-3.

Power range
300 V DC ..... nom. 1.7-2.1 Nm
/max. 8-11 Nm

Enclosure * OGD-H version; ** OGD-S version

IP00	IP20	IP21/Type 1

IP54/Type 12	IP67/IP69K	IP67
	■*	■**

Fieldbus

CAN

Enclosure

IP00	IP20	IP21/Type 1

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■		■

Soft starters

VLT® Soft Starter MCD 500

VLT® Soft Start Controller MCD 100

VLT® Compact Starter MCD 200

VLT® Soft Start Controller MCD 100

The compact soft starter series is a cost-effective alternative to traditional contactors and can also replace star/delta combinations. The ramp time and the starting torque and kick start are adjusted via controls on the front of the unit.

Almost unlimited number of motor starts

For a power rating of up to 25 A, up to 480 starts per hour are possible. This is a true "fit and forget" soft starter for DIN rail mount. The unique contactor design allows an almost unlimited number of starts per hour without derating.

Technical data

Input.....3 x 208-600 V
Control voltage ..... 24-480 V AC or DC
Power..... 0.1 kW-11 kW (25 A)

Enclosure

IP00	IP20	IP21/Type 1
	■	
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

VLT® Compact Starter MCD 200

While the basic and the starting torque VLT® Compact Starter MCD 201 version is only used for motor starting, the extended VLT® Compact Starter MCD 202 version offers additional motor protection functions. These include, for example, current limitation during motor starting.

Built-in bypass

After the motor is started, the MCD 200 automatically connects the motor to the mains supply via the built-in bypass relay. This minimizes losses during operation under full load.

Technical data

Input.....3 x 200-575 V
Control voltage .....24 V AC or DC/110-440 V AC
Power..... 7.5 kW-110 kW (200 A)

Fieldbus

PB	DN	MOD

Enclosure

IP00	IP20	IP21/Type 1
■	■	
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

VLT® Soft Starter MCD 500

The VLT® Soft Starter MCD 500 is the comprehensive solution for soft starting and stopping three-phase asynchronous motors. Integrated current transducers measure the motor current and provide important data for optimal start and stop ramps. A built-in bypass is available up to 961 A.

Fast commissioning

The four-line graphic display (choice of eight languages) and quick menu ensures easy and reliable configuration and read-out.

Load-oriented start

Adaptive Acceleration Control (AAC), adjusted to the respective load, ensure the best possible start and stop ramps in order to avoid water hammering.

Comprehensive protection

Phase error detection, thyristor monitoring and bypass contact overload are just a few integrated monitoring functions.

Technical data

Input.....3 x 200-690 V
Control voltage ..... 24 V DC or 110-240 V AC
Power..... 7.5-850 /2400* (1600A) kW
**"Inside delta connection"*

Fieldbus

PB	DN	MOD

Enclosure

IP00	IP20	IP21/Type 1
■	■	
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

VLT® Software

VLT® Motion Control Tool MCT 10

VLT® Motion Control Tool MCT 10 is a windows-based engineering tool with a clearly structured interface that provides an instant overview of all the AC drives in a system of any size. The software runs under Windows and enables data exchange over a traditional RS485 interface, fieldbus (PROFIBUS, Ethernet, or other) or via USB.

Parameter configuration is possible both online on a connected drive and offline in the tool itself. Additional documentation, such as electrical diagrams or operating manuals, can be embedded in VLT® Motion Control Tool MCT 10. This reduces the risk of incorrect configuration while offering fast access to troubleshooting.

VLT® Energy Box

Calculate the energy consumption of HVAC applications controlled by VLT® drives and compare this with alternative - and less energyefficient - methods of air flow control.

Using VLT® Energy Box it is easy to evaluate and document the savings achieved by using a VLT® HVAC Drive by comparison with other types of capacity control systems - for new installations as well as retrofit situations.

VLT® Motion Control Tool MCT 31

This software is designed to quickly assess the loads placed on the system by AC drives in the planning phase. This allows suitable measures to be taken to correct the system harmonics in advance.

VLT® Motion Control Tool MCT 31 calculates system harmonic distortion for both Danfoss and non-Danfoss AC drives, and calculates the effects of using various harmonic mitigation measures, including Danfoss harmonic filters.

Use VLT® Motion Control Tool MCT 31 in the planning phase to determine whether harmonics will be an issue in your installation, and if so, which strategy is most cost-effective in addressing the problem.

Low power drives

VACON® 20

VACON® 20 Cold Plate

VACON® 20

VACON® 20 comes with compactness and programming functionality that makes it one of the most easily-adaptable drives available for OEM applications.

Saves machine costs

The VACON® 20 has a built-in PLC functionality according to IEC 61131-1 which brings cost savings to the user. For the OEM or machine builder it is easy to change the software logic of the drive to adapt to their own control needs.

High fieldbus connectivity

The VACON® 20 supports of a wide variety of fieldbus connections. Enables effective machine integration, eliminating the need for external fieldbus gateways and parallel I/O connections.

Configure without mains power

With the optional copying module, parameter configurations can be copied into the VACON® 20 during the installation phase with no need for mains power - saving both time and effort.

Power range

1/3 x 208-240 V..... 0.25-11 kW
3 x 380-480 V..... 0.37-18.5 kW

Fieldbus

MOD				
PB	DN	CAN	ECAT	PN
EIP	TCP			

Enclosure

IP00	IP20	IP21/Type 1
	■	■
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

VACON® 20 Cold Plate

For flexibility in cooling, with focus on customer-specific cooling solutions, the VACON® 20 Cold Plate is the perfect AC drive for OEMs with special cooling requirements.

Cooling flexibility

Cold plate cooling allows the drive to be used in the best possible cooling configurations, such as passive heat sinks, liquid-based cooling or any other cold surface onto which the AC drive can be mounted.

Goes into sealed enclosures

VACON® 20 Cold Plate operates at up to 70 °C ambient temperatures without derating, and is installable at low depth due to its flat form factor. For the user, this means the greatest possible flexibility - and the ability to install the drive into sealed enclosures.

VACON 20 benefits

The VACON® 20 Cold Plate contains same user interfaces and options as in the other VACON® 20 products, including built-in support for IEC 61131-1 PLC programming.

Power range

1 x 208-240 V..... 0.75-1.5 kW
3 x 208-240 V..... 0.75-4.0 kW
3 x 380-480 V..... 0.75-7.5 kW

Fieldbus

MOD				
PB	DN	CAN	LON	TCP
EIP	PN	ECAT		

Enclosure

IP00	IP20	IP21/Type 1
■		
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

Full power range drives and dedicated drives

VACON® 100 INDUSTRIAL, VACON® 100 FLOW and VACON® 100 HVAC

VACON® 100 INDUSTRIAL

The VACON® 100 INDUSTRIAL is a workhorse for a wide range of industrial applications. It is easy to integrate into all major control systems and is easily adaptable to different needs.

Modules and enclosed drives
All power sizes are available as drive modules. The free-standing enclosed drive version for higher power sizes contains a wide range of configurable options and an innovative control compartment for safe access, without opening the cabinet door.

Cost-effective communication
Integrated Ethernet interfaces support all major industrial protocols. Save on extra interface cards - and use the same drive for all major protocols required.

Easy adaptation
For OEMs, utilizing VACON® PROGRAMMING enables the built-in PLC functionality according to IEC61131-1 to integrate their own functionality into the drive. The VACON® DRIVE CUSTOMIZER facilitates smaller logic adaptations for special needs or retrofit situations.

Power range
3 x 208-240V.....0.55-90 kW
3 x 380-500V.....1.1-630 kW
3 x 525-690V.....5.5-800 kW

Fieldbus

MOD	META	BAC	TCP	BIP
PB	DN	CAN	BAC	LON
TCP	EIP	PN	ECAT	

Enclosure *Dependent upon enclosure size

IP00	IP20	IP21/Type 1
■		■*
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■*		

VACON® 100 FLOW

Delivering all the benefits of the VACON® 100 family of drives, the VACON® 100 FLOW offers dedicated functionality. It improves flow control and saves energy in industrial pump and fan applications in power sizes up to 800 kW.

Dedicated industrial flow control
The VACON® 100 FLOW provides specific flow control functions to enhance pump and fan performance and protect pipes and equipment, ensuring reliable operation.

Runs high-efficiency motors
Select the most efficient motor for your task, with the ability to run the new high-efficiency motor technologies, such as permanent magnet and synchronous reluctance motors, for improved system efficiency.

Power range
3 x 208-240V.....0.55-90 kW
3 x 380-500V.....1.1-630 kW
3 x 525-690V.....5.5-800 kW

Fieldbus

MOD	META	BAC	TCP	BIP
PB	DN	CAN	BAC	LON
TCP	EIP	PN	ECAT	

Enclosure *Dependent upon enclosure size

IP00	IP20	IP21/Type 1
■		■*
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■*		

VACON® 100 HVAC

Improve total building performance in terms of comfort, control and energy saving.

Safe and efficient
The VACON® 100 HVAC drive gives you special benefits advantageous for building automation environments. These include enhanced safety via fire mode, motor switch ride-through, and other dedicated HVAC functionalities.

Easy to use and connect
The graphical keypad with icons and start-up wizard makes commissioning easy and intuitive. View status for up to 9 signals in a graphical trend view, to get a good overview of the running system Connect VACON® 100 HVAC to all major systems via its built-in fieldbus interfaces..

Power range
3 x 208-240 V..... 0.55-90 kW
3 x 380-480 V..... 1.1-160 kW

Fieldbus

MOD	META	BAC	TCP	BIP
LON	TCP	BAC		

Enclosure *Dependent upon enclosure size

IP00	IP20	IP21/Type 1
■		■*
IP54/Type 12	IP55/Type 12	IP66/Type 4X
■*		

VACON® NXP Air Cooled

VACON® NXC Air Cooled Enclosed Drives

VACON® NXP Common DC Bus

VACON® NXP Air Cooled

The VACON® NXP Air Cooled drive is designed for a broad range of demanding industrial applications, focusing on higher power sizes and system drives.

Top performance
VACON® NXP control flexibility delivers maximum motor control performance and dynamics, in both single-shaft machines and drive systems.

Configurable on all levels
Fully configurable I/O and fieldbuses cater for any connectivity need. Fast optical drive-to-drive communication gives you the flexibility of load sharing and paralleling of power units.

Extremely flexible
Adapt the drive to many diverse usage requirements by loading the VACON application software that best suits the needs. Built-in PLC functionality according to IEC61131-1 enables you to create new functionality in the drive to obtain cost savings and deeper machine integration.

Power range
3 x 208-240 V.....0.55-90 kW
3 x 380-500 V.....1.5-1200 kW
3 x 525-690 V.....2.0-2000 kW

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

*Dependent upon enclosure size

IP00	IP20	IP21/Type 1
■		■*

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■*		

VACON® NXC Air Cooled Enclosed Drives

The VACON® NXC combines the VACON® NXP product range with a wide range of options in a single enclosed drive format.

Reliable operation
Based on a Rittal TS8 enclosure, the VACON® NXC enclosed drive is fully pre-designed and factory tested in order to ensure reliable and trouble-free operation.

Easy to work with
Access to the control equipment is easy and safe, due to the dedicated control compartment located at the front part of the enclosed drive. It is also internally protected against unintentional touch to increase user safety.

Easy to configure
When ordering, choose between a wide range of cabinet-installed options. Both 6 and 12-pulse versions are available.

Power range
3 x 380-500 V.....132-1200 kW
3 x 525-690 V.....110-2000 kW
Power range - AFE supply
500 V.....132-1500 kW
690 V.....110-2000 kW
Power range - Low harmonic, Active Filter supplies
500 V.....132-560 kW
690 V.....110-800 kW

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
		■

IP54/Type 12	IP55/Type 12	IP66/Type 4X
■		

VACON® NXP Common DC Bus

VACON® NXP Common DC Bus components are designed to enable systems integrators, machine builders, and OEMs to design and build efficient industrial drives systems.

Comprehensive range
Build almost any kind of system imaginable, with this fully complete range of components, including inverter units (INUs), active front-end units (AFEs), non-regenerative front-end units (NFEs), and brake chopper units (BCUs).

Maximum uptime
Designed for absolutely reliable operation, the common DC bus range supports full availability with a minimum of operational interruptions.

Minimal installation width
Reduce installation cost and space requirements, with slim INU components optimized for minimal width of the complete drive line-up.

Power range
3 x 380-500 V..... 1.5-1850 kW
3 x 525-690 V..... 3-2000 kW

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
■		

IP54/Type 12	IP55/Type 12	IP66/Type 4X

VACON® NXP System Drive

VACON® NXP Liquid Cooled Drive

VACON® NXP System Drive

By combining common DC bus components the VACON® NXP System Drive provides you a drive configured and assembled to meet your needs - regardless of whether you need to control one or several motors.

Simplicity in projects
Using pre-designed enclosed drive sections for all main system parts, it enables a short engineering and configuration time for any drive system. Every project design is fully documented for the specific configuration.

Reliability is key
The verified and tested solutions that combine VACON® AC Drives, DC bus components and options result in verified and tested reliability.

Easy serviceability
A pullout system allows quick replacement of drives modules in service situations. Safety is a priority with internal touch protection and high power busbar sections in separate compartments.

Current ratings (main busbars)
3 x 380-500 V.....630-5000 A
3 x 525-690 V.....630-5000 A

VACON® NXP Liquid Cooled

This dedicated liquid-cooled drive is well-suited to applications where air quality is critical, space is limited, and efficient heat transfer is required.

Compact
No need for air ducts or large fans, combined with a more compact size, means you achieve a high power density in your installation - and virtually silent operation.

Uptime and cost savings
Save on both investment and operating costs when removing heat using the liquid medium. Achieve maximum uptime, with robust operation even in demanding conditions and with only minimal air filtering in dusty conditions.

Highest control flexibility
The drive utilizes the full VACON® NXP family control functionality to achieve modularity and scalability in a wide range of AC drive applications.

Power range
3 x 380-500 V.....132-2700 kW
3 x 525-690 V.....110-2800 kW

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
		■
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
■		
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

VACON® NXP Liquid Cooled Enclosed Drive

VACON® NXP Liquid Cooled Common DC Bus

VACON® NXP Grid Converter

VACON® NXP Liquid Cooled Enclosed Drive

The VACON® NXP Liquid Cooled Enclosed Drive offers all the benefits of VACON® NXP Liquid Cooled drives for high power applications in a compact IP54 rated enclosed drive package.

Predesigned is easy
Being predesigned and engineered, these drives are ready to go as soon as you receive them. Simply connect to the cooling system and the power and motor supplies.

Active Front End for clean supply
Drives with active front end minimize harmonic disturbance to the grid, enable regenerative braking and reduce the scale of infrastructure required, such as transformers and generators.

Fast serviceability
Fast access to the modules using pull-out rails saves time and money in service and maintenance situations.

Power range
3 x 525-690 V.....800-1550 kW

VACON® NXP Liquid Cooled Common DC Bus

This range of liquid-cooled common DC bus components brings the benefits of liquid cooling into common DC bus systems.

For demanding systems
Liquid cooling offers strong benefits in applications where cooling air supply or quality is limited, enabling creation of solutions that work even in demanding situations.

Minimum amount of spare parts
Built on a unified product platform reduces costs and increases availability of spare parts and service units, since there is a common hardware platform for all variants used.

Reliable and cost-saving
Enjoy economical installation cost, maximum uptime and full VACON® NXP control functionality.

Power range
3 x 380-500 V.....7.5-2700 kW
3 x 525-690 V.....110-2800 kW

VACON® NXP Grid Converter

This range of air and liquid-cooled drives is specifically designed for energy storage and marine energy management applications.

Reliable grid
VACON® NXP Grid Converter assures a reliable grid in applications for energy storage and energy management.

Save on fuel and emissions
In marine applications fuel savings and reduced emissions are immediate benefits of grid converters in shaft generator applications.

Power range
Air-cooled
3 x 380-500 V.....180-1100 kW
3 x 525-690 V.....200-1200 kW

Liquid-cooled
3 x 380-500 V.....160-1800 kW
3 x 525-690 V.....210-1800 kW
To achieve even higher power capacity, combine multiple VACON® NXP Grid Converter units.

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
■		

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
■		
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

Fieldbus

MOD	META			
PB	DN	CAN	BAC	LON
TCP	EIP	PN		

Enclosure

IP00	IP20	IP21/Type 1
■		
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**

Decentral drives

VACON® 20 X

VACON® 100 X

VACON® 20 X

The VACON® 20 X decentral drive offers all the benefits of decentralized solutions up to 7.5 kW.

Robust and resistant
Due to the IP 66 enclosure and the high vibration resistance the drive is suitable for tough environments. The Gore® vent membrane ensures reliability even when wet.

Easy to integrate
A one-plug I/O connection and access to all main fieldbus protocols ensures easy integration for machine builders. Built-in IEC61131-1 programmability opens up for customized software modification, to meet the needs of most applications.

Power range
1 x 208-240 V.....0.75-1.5 kW
3 x 208-240 V.....0.75-4.0 kW
3 x 380-480 V.....0.75-7.5 kW

VACON® 100 X

Robust enclosure and high functionality is provided by the VACON® 100X for indoor and outdoor applications.

No extra enclosure - even outdoors
The drive withstands high-pressure water, high vibration levels, heat and dirt. The Gore® vent membrane and IP66 enclosure give you the freedom of indoor and outdoor use.

A really cool drive
An optional space heater is available for cold environments.

Wide power range
With power range extending up to 37 kW, this drive makes the benefits of decentralized solutions available for a wide range of applications.

Power range
3 x 208-240 V..... 1.1-15 kW
3 x 380-480 V .....1.1-37 kW

Fieldbus

MOD				
PB	DN	CAN	LON	TCP
EIP	PN	ECAT		

Fieldbus

MOD	META	BAC		
PB	DN	CAN	BAC	LON
TCP	EIP	PN	ECAT	

Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
		■

Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	**IP55/Type 12**	**IP66/Type 4X**
		■

VACON® Software

VACON® Live
Commissioning, maintenance, parameterization and monitoring of multiple drives.
Supported drives: VACON® 10, VACON® 20, VACON® 20 X, VACON® 100, VACON® 100 family

VACON® Loader
Updating drive software.
Supported drives: VACON® 10, VACON® 20, VACON® 20 X, VACON® 100, VACON® 100 family

NCDrive
Commissioning, maintenance, parameterization and monitoring of drives.
Supported drives: VACON® NXL, VACON® NXS, VACON® NXP

NCLoad
Updating drive software.
Supported drives: VACON® NXL, VACON® NXS, VACON® NXP

VACON® Customizer
To freely customize the operation of an AC drive.
Supported drives: VACON® 100 or VACON® 100 INDUSTRIAL and VACON® 100 FLOW

VACON® Programming
An AC drive application programming tool to optimize drive behavior.
Supported drives: VACON® 20, VACON® 20 X, VACON® 100, VACON® 100 X, VACON® NXS, VACON® NXP

VACON® Key
Manage and handle VACON® NXP Grid Converter licenses.
Supported drives: VACON® NXP Grid Converter

VACON® Harmonics
Simulate the expected harmonics of an AC drive or group of drives.
Supported drives: VACON® NXS, VACON® NXP, VACON® 10, VACON® 20, VACON® 20 X, VACON® 100 family

VACON® Save
Calculate energy savings when using an AC drive with pumps, fans and compressors.
Supported drives: VACON® NXS, VACON® NXP, VACON® 10, VACON® 20, VACON® 20 X, VACON® 100 family

VACON® Layout
Configure and obtain documentation
Supported drives: VACON® NXP System Drive

VACON® Documentation Wizard
Diagrams and drawings
Supported drives: VACON® NXC

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®

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