

ENGINEERING
TOMORROW



Product Overview

Danfoss Drives

- for your applications

Quality,

application-
optimized
products, which
target your needs



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VLT® | VACON®

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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 (MSTP)
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
ASi	AS interface

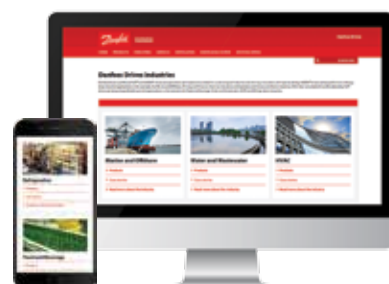


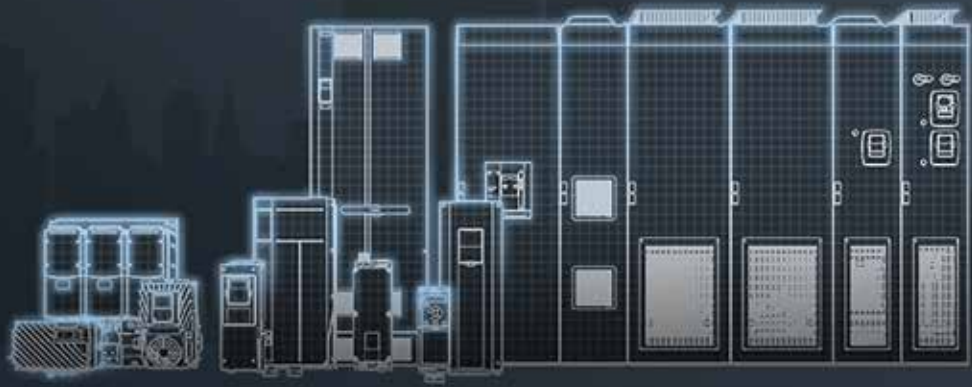
Welcome

Danfoss Drives is 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**





Do It **Differently**

At Danfoss Drives, we focus on AC drives. It's what we do best, and it helps you to focus on what you do best.

To ensure you engineer the best possible AC-drive solutions without compromises, and find the optimum outcome for your challenges, we give you the freedom to optimize your systems, the power to equip your drives and the choice to collaborate with your drives partner differently.

You decide the best equipment for your application, we'll make sure the AC drive fits that choice and support you every step along the way.



Optimize differently

You have the freedom to optimize and create the system that suits your application best. Whether off the shelf or purpose built, we provide all the support and software necessary so that you can tailor your drive so that its form, fit and function meet your needs exactly.

We offer:

- The widest portfolio of AC drives
- Fast, simple tools for customization
- Programmable drives and special software
- DrivePro® service and maintenance support



Equip differently

Choosing a Danfoss AC drive gives you the power to configure, modify and combine it with any motor type PLC and fieldbus. This allows you to match the drive to your specific application and to ensure you get the best mix of efficiency, speed and torque.

We offer:

- Compliance with the motor you need
- Compliance with the fieldbus you need
- Outstanding harmonic solutions expertise
- Innovation in energy storage projects



Collaborate differently

Choosing a Danfoss AC drive means selecting a vendor who goes the extra mile, who truly values your success and who works with you on your terms. To give you the power to engineer the optimal solution, we place a high emphasis on speed and agility in all areas of our operation.

We offer:

- Independence and 100% drives expertise
- A non-competitive relationship with you on system solutions
- Global presence and local support



Danfoss ecoSmart™



MyDrive® Portfolio



DrivePro®

Everything at your fingertips

Danfoss ecoSmart™

Now it's 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.

Download Danfoss ecoSmart™:



Danfoss ecoSmart™ online tool:
<http://ecosmart.danfoss.com>

MyDrive® Portfolio

MyDrive® Portfolio provides an overview of the entire Danfoss AC-drives portfolio. You can use it to search for information on a particular product or to find comprehensive material related to a specific industry and its applications and products. There are also links to case studies, videos, brochures and manuals. You can browse through the information online and also download the PDFs to your mobile device. Everything you find can also be added to an e-mail for sharing.

Download MyDrive® Portfolio:



DrivePro®

Use the DrivePro® app for fast access to the DrivePro® services, for improved productivity, performance and uptime of your systems. Find your closest service partner, place a service request, and register your VLT® and VACON® drives. You can also look up product information, specifications and manuals for your specific VLT® or VACON® drive based on the nameplate product code, or the product name.

Download DrivePro® app:





VLT® drives position you at the forefront of the energy-efficiency race. Outmaneuvering other precision drives, they excel, with remarkable fit, functionality and diverse connectivity.

VLT® drives play a key role in the rapid urbanization through an uninterrupted cold chain, fresh food supply, building comfort, clean water and environmental protection. Benefit from the universally-compatible VLT® effectiveness where ease of use unites seamlessly with high precision, synchronization and speed. You achieve servo-like performance with rationalized elegance, free of complexity.

Secure long-term economic benefits with documented low system-lifetime cost. VLT® drives consistently deliver, whether in Food and Beverage, Water and Wastewater, HVAC, Refrigeration, Material Handling, or Textile applications.

The steadfast longevity of VLT® drives is directly attributable to world-class quality assurance placing VLT® drives right at the sharp end. The sharp end of global resource management and factory automation.

Low-voltage drives



VLT® Micro Drive FC 51



VLT® Midi Drive FC 280

VLT® Micro Drive FC 51

Despite the compact design and the easy commissioning, the VLT® Micro Drive can be set up to perform perfectly, even in complex application set-ups.

Save panel space

VLT® Micro Drive allows a high integration density due to its book-style designs, side by side mounting and the comprehensive list of built in features.

Built to last

An intelligent cooling management and coated circuit boards ensures reliable operation also in demanding environments.

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 automation and machine building applications.

Flexible. Communicative.

The VLT® Midi Drive FC 280 is strong on control performance, functional safety, and flexible fieldbus communication. Integrated harmonics mitigation, RFI filter, dual-channel STO functional safety, and brake chopper save you from finding space and budget to install extra components.

Easy to use

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

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.

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	PL

Enclosure

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



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 refrigeration 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. Compressor lifetime is extended by reducing the number of starts and stops, and constantly adapting cooling capacity to the need, thereby maintaining stable temperature.

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.....1.1-560 kW
 3 x 525-600 V 1.1-7,5 kW
 3 x 525-690 V.....75-800 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 broad 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.....	132-450 kW
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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.....	132-450 kW
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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

Enhanced intelligent fan and pump control for modern buildings. This drive solves extreme climate challenges, and gives you flexibility in installation, motor choice, and bus connectivity.

HVAC Inside

The VLT® HVAC Drive FC 102 delivers smart control for building automation, with abilities like reliable -25°C operability and remote control from outside the AHU.

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.....	160-710 kW
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Power range - 12-pulse drive

3 x 380-500 V.....	315-1000 kW
3 x 525-690 V.....	450-1400 kW

Fieldbus

MOD	META	BAC
DN	LON	BAC
PB	PN	BIP
	TCP	EIP

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 and AHF 010

VLT® Advanced Active Filter AAF

Active filter technology is the most advanced approach for mitigating harmonics. Fast current detection and micro-controlled inverse current injection reduce total harmonics to less than 3% THDi.

Highly efficient

Active filters operate on much lower currents than comparable serial methods and are much more efficient. Dimensioning to the individual harmonics spectrum requirements saves further costs.

Flexible

Active filters support central, individual or group compensation set-ups.

Line voltage and filter current*
380-480 V 190/250/310/400 A

* Additional voltage ranges and filter currents are available on request.

Enclosure

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

VLT® Advanced Harmonic Filter AHF 005 and AHF 010

These passive harmonic filters are robust and easy to use. They reduce harmonics while maintaining good system energy efficiency.

Strong performance

The AHF 005 and AHF 010 filters deliver superior system performance, and reduce THDi to less than 5% or 10% respectively, at nominal conditions.

Optimized design

The filters offer superior cooling, very low heat losses and a compact footprint. The integrated capacitors can be switched off to reduce the reactive current at low loads.

Line voltage and filter current
3 x 380/400/500/600/690 V...10-480 A*

* Achieve higher ratings by connecting in parallel. See AHF 005 or AHF 010 Design Guide for details.

Enclosure

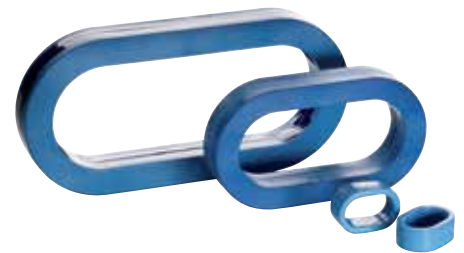
IP00	IP20	IP21/Type 1
	■	
IP54/Type 12	IP55/Type 12	IP66/Type 4X



VLT® Sine-Wave Filters



VLT® dU/dt 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.

Line voltage and filter current

3 x 200-690 V 2.5-800 A*

*For higher power ratings, combine multiple modules.

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.

Line voltage and filter current

3 x 200-690 V 15-880 A*

*For higher power ratings, combine multiple modules.

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.

Line voltage and filter current

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® DriveMotor FCP 106

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

Fieldbus

MOD				
PN	EIP	PB	PL	ECAT

Enclosure

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

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

Fieldbus

MOD	
BAC	PB

Enclosure

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

Gear motors



VLT® OneGearDrive®

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 0.75-2.2 kW

Enclosure

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

IP00	IP20	IP21/Type 1
IP54/Type 12	IP67/IP69K	IP67
	■*	■**

Servo drives



VLT® Integrated Servo Drive ISD® 510



VLT® Decentral Servo Drive DSD 510

VLT® Integrated Servo Drive ISD® 510

This servo drive system is ideal for demanding applications in the food, beverage, pharmaceutical and packaging industries.

Simple and fast

Installation is simple and fast, with pre-configured hybrid cables in a daisy-chain concept. The servo system comprises VLT® Servo Access Box (SAB®), central power supply, decentral drive modules and cabling infrastructure. Depending on the application, the SAB® can power up to 64 drives in a servo drive system.

Highly flexible

Decentral motion sequences enable scaling of the system size independently of the controller. Program the master via IEC 61131-3.

Torque range

565–680 V DC $\pm 10\%$nom. 1.5-13 Nm
/max 6.1-50 Nm

VLT® Decentral Servo Drive DSD 510

VLT® Decentral Servo Drive DSD 510 extends the selection of a decentral servo drive concept for food, beverage, and packaging industries.

PM servo-motor-compatible

The DSD 510 can be used with a wide range of PM servo motors, and for optimal control of speed and position, it is equipped with a wide range of feedback encoders.

Vibration resistant

It also has excellent vibration resistance, making it ideal for rotating machine parts.

Power range

565–680 V DC $\pm 10\%$4.5 kW

Fieldbus

ECAT	PL	PN
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Enclosure

*shaft IP65

IP00	IP20	IP21/Type 1
IP54/Type 12	IP55/Type 12	IP67*

Fieldbus

ECAT	PL	PN
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Enclosure

IP00	IP20	IP21/Type 1
IP54/Type 12	IP55/Type 12	IP67

Soft starters



VLT® Soft Start Controller MCD 100



VLT® Compact Starter MCD 201 and 202



VLT® Soft Starter MCD 500

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)

VLT® Compact Starter MCD 201 and 202

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 201 and MCD 202 automatically connect 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)

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"

Enclosure

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

Fieldbus

PB	DN	MOD	EIP
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Enclosure

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

Fieldbus

PB	DN	MOD	EIP
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Enclosure

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



VACON® 20



VACON® 20 Cold Plate

Combine innovation and high durability for the sustainable industries of tomorrow.

For long lifetime, top performance, and full-throttle process throughput, equip your demanding process industries and marine applications with VACON® single or system drives. Reduce emissions and increase fuel efficiency through trailblazing innovation in hybridization trends. Manage heat intelligently, and win focus, with functionalities dedicated to your industry alone. Connect rapidly and program with exceptional flexibility.

All these abilities mean VACON® drives form the robust foundation for optimization in harsh environments.

Whether in Marine and Offshore, Oil and Gas, Metals, Mining and Minerals, Pulp and Paper, Renewable Energy, or other heavy-duty industries, the VACON® drives meet the challenge.

Tune total operational cost and cut capital expenditure thanks to compact size and lower air-conditioning load. Of course uncompromising reliability is a constant.

The exceptional VACON® range is continuously advancing, with rigorous application-optimized innovation, ready to be put to work. Hard work.

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 x 115 V.....	0.25-1.1 kW
1 x 208-240 V.....	0.25-2.2 kW
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 individual 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 individual and customized 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	ASI	

Enclosure

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



VACON® 100 INDUSTRIAL and VACON® 100 FLOW

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

Fieldbus

MOD	META	BAC	TCP	BIP
PB	DN	CAN	LON	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.

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.

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

Fieldbus

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

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 Liquid Cooled Drive

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
with DriveSynch 1.5-4000 kW
3 x 525-690 V 2.0-2000 kW
with DriveSynch 2.0-4500 kW

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

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

Choose from a wide range of cabinet-installed options; and 6 or 12 pulse rectifiers or Active Front End (AFE).

Power range

3 x 380-500 V.....132-1200 kW
3 x 525-690 V.....110-2000 kW

Power range - AFE supply

3 x 380-500 V.....132-1500 kW
3 x 525-690 V.....110-2000 kW

Power range - Low harmonic,

Active Filter supplies

400 V132-560 kW
500 V*.....132-560 kW
690 V110-800 kW

*requires 690 V active filter

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

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

VACON® NXP Liquid Cooled Drive

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 400-500 V.....132-4100 kW
3 x 525-690 V.....110-5300 kW

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

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



VACON® NXP Liquid Cooled Enclosed Drive



VACON® NXP System Drive

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 400-500 V700-1100 kW
3 x 525-690 V.....800-1550 kW

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

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

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

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

IP00	IP21/Type 1	IP31
	■	■
IP54/Type 12	IP55/Type 12	IP66/Type 4X



VACON® NXP Common DC Bus



VACON® NXP Liquid Cooled Common DC Bus



VACON® NXP Grid Converter

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

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

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

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 400-500 V.....7.5-4100 kW
3 x 525-690 V.....110-5300 kW

Fieldbus

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

Enclosure

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

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 400-500 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

PB	DN	CAN	BAC	LON
TCP	EIP	PN	MOD	META
ECAT				

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

Get the benefits from extended flexibility wherever a decentralized drive solution plays a vital role.

Keep things on the move

VACON® 20 X offers great flexibility in any kind of material handling applications. Industry specific fieldbus support and hardware variants as well as customizable application software makes it the perfect match for machine builders.

Everything in one place

In decentralized solutions space is always at a premium. With its robust and compact design, the VACON® 20 X allows a straight and easy integration into new and existing machinery concepts and eliminates the need of long shielded motor cable, EMC countermeasures and output filters.

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	ASI	

Enclosure

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

VACON® 100 X

Achieve maximum performance in extreme environments.

The harsher - the better

The drive withstands high-pressure water, high vibration levels, heat and dirt. A Gore® vent membrane, IP66 / Type 4X outdoor enclosure and a temperature range from -40°C to +60°C give you the freedom for unlimited outdoor installations.

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 380-500 V	1.1-37 kW

Fieldbus

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

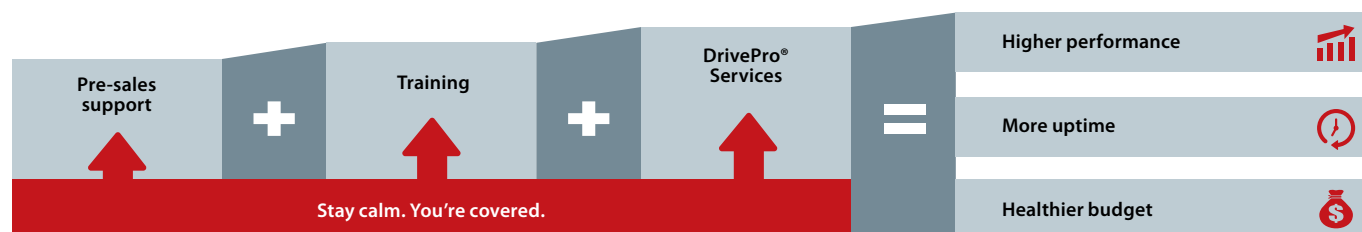
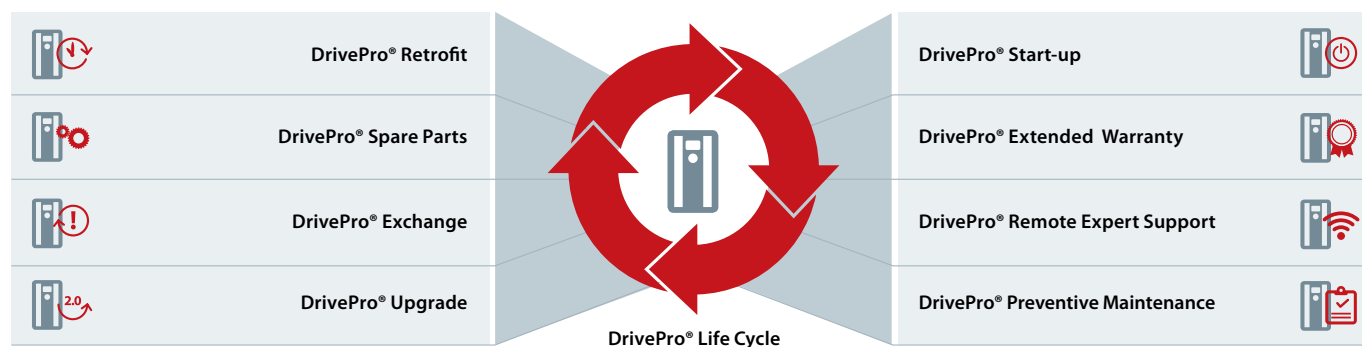
Enclosure

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



You're covered with DrivePro® Life Cycle service products

Get the most out of your systems, with the help of DrivePro® services for Danfoss VLT® and VACON® drives. You get services that go beyond simple troubleshooting, maintenance, repairs and replacements. They also proactively improve productivity, performance and uptime.



Danfoss Drives' comprehensive portfolio of services spans the entire life cycle of your drives, and is delivered by experts. The services are customized to your requirements, whenever and wherever you need them.

What DrivePro® services can do for your operations:

Add value: DrivePro® services add value to your processes and business. You win efficiency, predictability and peace of mind.

Deliver know-how: DrivePro® experts understand the special characteristics, needs and requirements of your AC drives applications, your industry, and your business.

Keep you at the forefront: DrivePro® services ensure you have access to all the latest innovations in the form of upgrades or exchanges. Because we understand your application needs, we are confident in making recommendations for the future. Discover more at drivepro.danfoss.com



DrivePro® app

Use the DrivePro app for fast access to the DrivePro® services, for improved productivity, performance and uptime of your systems. Find your closest service partner, place a service request, and register your VLT® and VACON® drives. You can also look up product information, specifications and manuals for your specific VLT® or VACON® drive based on the nameplate product code, or the product name.



Software

Danfoss ecoSmart™

Now it's 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.

Danfoss ecoSmart™ online tool:
<http://ecosmart.danfoss.com>

Danfoss HCS

Danfoss HCS is a professional harmonics simulation tool which is web-based. It provides harmonic analysis of systems using VLT® and VACON® products. This tool uses a scientific simulation platform with an advanced simulation model. It uses more system parameters than the other harmonics simulation tools offered by Danfoss Drives, and therefore delivers more accurate results. Danfoss HCS presents the results of the simulation in table or graphical form.

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

The MCT 31 harmonic simulation tool is a stand-alone program for Windows and useful in the planning phase. It is easy to use, includes a database of VLT® drives products, and provides a fast overview of the expected general system performance. It can also propose a cost-effective harmonics mitigation strategy based on the Danfoss product range.



VACON® Software

VACON® Live

Commissioning, maintenance, parameterization and monitoring of multiple drives.

Supported drives: VACON® 10, VACON® 20, VACON® 20 X, VACON® 100 X, VACON® 100 family

VACON® Loader

Updating AC drive firmware and installing application software.

Supported drives: VACON® 10, VACON® 20, VACON® 20 X, VACON® 100 X, VACON® 100 family

VACON® NCDrive

Commissioning, maintenance, parameterization and monitoring of drives.

Supported drives: VACON® NXP, VACON® NXS, VACON® NXL

VACON® NCLoad

Updating AC drive firmware and installing application software.

Supported drives: VACON® NXL, VACON® NXS, VACON® NXP

VACON® Drive Customizer

This 10-block PLC programmer includes VACON® Live

Supported drives: VACON® 100 INDUSTRIAL, VACON® 100 FLOW, VACON® 100 X

VACON® Programming

An AC drive application programming tool to optimize drive behavior.

Supported drives: VACON® 20, VACON® 20 X, VACON® 100 family, VACON® 100 X, VACON® NXS, VACON® NXP

VACON® Key

Manage and handle VACON® NXP Grid Converter licenses.

Supported drives: VACON® NXP Grid Converter

VACON® Layout

Configure and obtain documentation

Supported drives: VACON® NXP System Drive

VACON® Documentation Wizard

Diagrams and drawings

Supported drives: VACON® NXC

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.

Application focus to boost your business

■ Danfoss VLT® and VACON® drives are optimized to create value for you. They enable maximum performance in all major applications irrespective of industry. Contact Danfoss Drives to learn how your own applications can benefit from using a VLT® or VACON® drive.

		INDUSTRIES			
APPLICATIONS		HVAC	Food and Beverage, Packaging	Water and Wastewater	Refrigeration
					
	Pumps	■	■	■	■
	Fans	■	■	■	■
	Compressors	■	■	■	■
	Conveyors		■		
	Process, Material Treatment		■	■	
	Mills, Drums, Kilns				
	Winding, Unwinding				
	Drilling				
	Propulsion, thrusters				
	Winches				
	Vertical & horizontal movement		■	■	
	Power conversion & power generation				
	Positioning, Synchronization		■		

Marine and Offshore	Mining and Minerals	Metals	Chemical	Cranes and Hoists	Energy	Elevators and Escalators	Material handling	Oil and Gas	Pulp and Paper	Textile
										
■	■	■	■		■			■	■	■
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ENGINEERING
TOMORROW

Danfoss



A better tomorrow is driven by drives

Danfoss Drives is a world leader in variable speed control of electric motors. We offer you unparalleled competitive edge through quality, application-optimized products 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.

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.

You gain the benefit of decades of experience, since 1968. Our low voltage and medium voltage AC drives are compatible with all major motor brands and technologies.

VACON® drives combine innovation and high durability for the sustainable industries of tomorrow.

For long lifetime, top performance, and full-throttle process throughput, equip your demanding process industries and marine applications with VACON® single or system drives.

- Marine and Offshore
- Oil and Gas
- Metals
- Mining and Minerals
- Pulp and Paper
- Energy
- Elevators and Escalators
- Chemical
- Other heavy-duty industries

VLT® drives play a key role in rapid urbanization through an uninterrupted cold chain, fresh food supply, building comfort, clean water and environmental protection.

Outmaneuvering other precision drives, they excel, with remarkable fit, functionality and diverse connectivity.

- Food and Beverage
- Water and Wastewater
- HVAC
- Refrigeration
- Material Handling
- Textile

VLT® | VACON®

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