

ENGINEERING  
TOMORROW

*Danfoss*

VACON® 3000

## This is major league

The new era of modular medium-voltage drives begins now

For  
serious  
players  
only

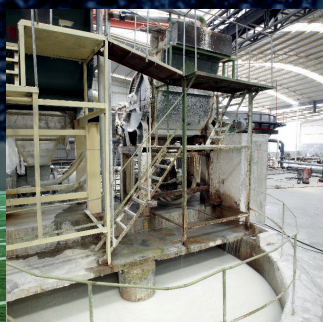
[drives.danfoss.com](http://drives.danfoss.com)

**VACON®**



# You are a **serious player** in **your industry**

You are an expert in your field in some of the toughest applications imaginable: A specialist who is used to working in the major league of heavy duty engineering, facing some of the most complex challenges on the planet. You know how vital AC drives are to your business; where reliability, robustness, space and weight are crucial – and downtime is a disaster.





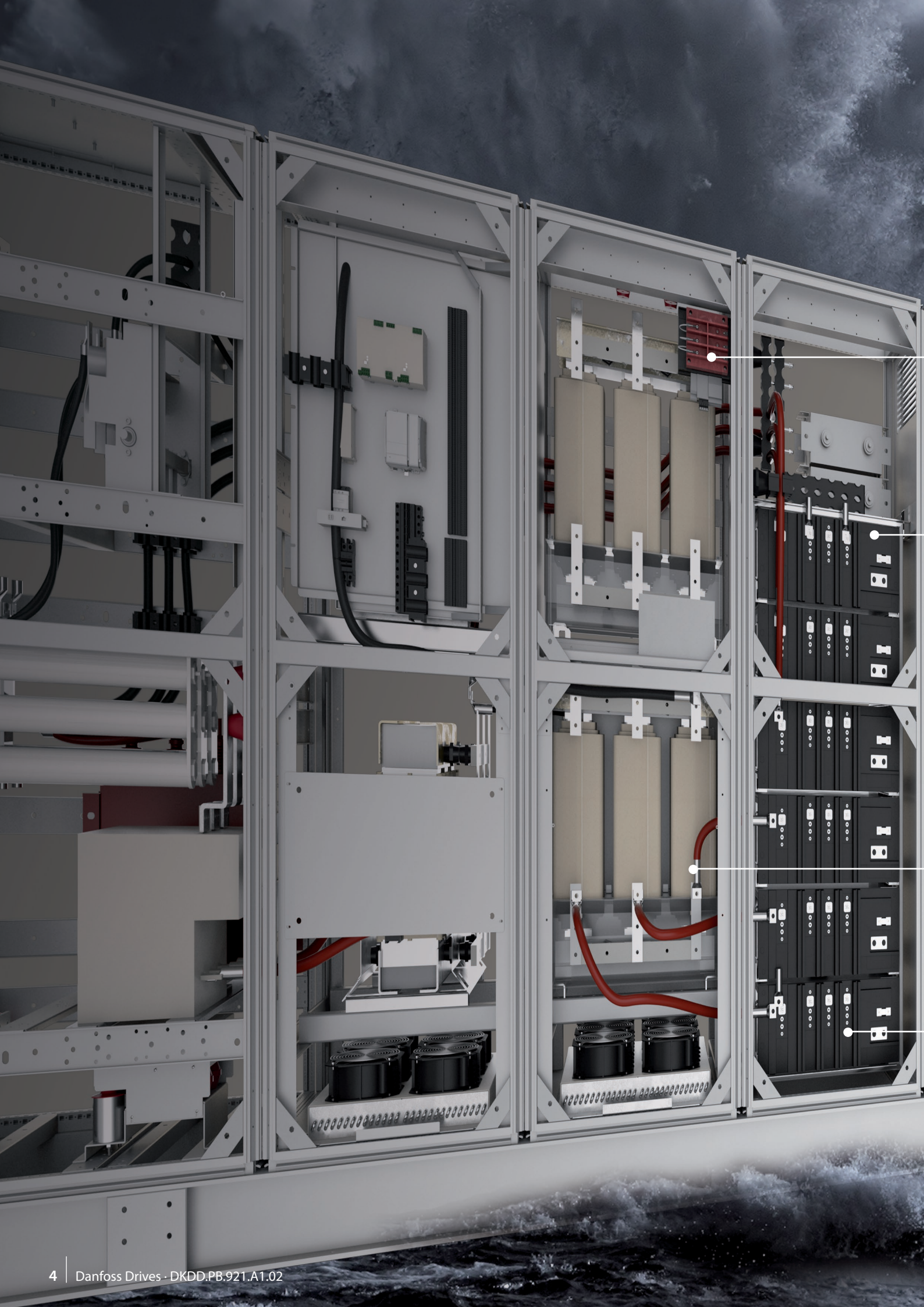
# Danfoss is the **drives expert**

Danfoss Drives, on the other hand, is the expert in drives. We know drives like nobody else and we've always pushed innovation to the limit in our quest to deliver the best drives in the world. And now we're about to revolutionize the way medium-voltage drives are designed and delivered.

## The **partner** completes the **dream team**

Danfoss Drives is working with selected qualified partners to push the boundaries of the medium-voltage drives market to deliver something never seen before – a unique modular approach, which gives you the ultimate solution for your project with the flexibility and choice to take your business to the next level.







# A winning combination of modular components

Designed to keep your business at the top of the league

In addition to conventional solutions in standardised cabinets, the new modular solution allows for addressing unique industry requirements regarding construction shapes and sizes – and even protection classes. With our new medium-voltage drives program, we're not just playing to win. We're reinventing the entire game.

## **Simplified pre-charge unit design**

- A compact solution for space sensitive applications
- Needs no pre-charging resistors and limits the inrush current
- A fast, safe power up – over and over again

## **Flexible front end configuration options**

- Diode Front End based 12-pulse configuration
- Other variants available on request including dynamic brake chopper unit
- Active Front End option for regenerative braking and low harmonics

## **A familiar interface for faster set-up and use**

- Latest technology built-in, including Ethernet interface
- Fully graphical user interface and a wide choice of control options

## **Passive components for the drive system**

- LC filters and common mode filters for Active Front End variants
- DC chokes for 12-pulse variants
- Output dU/dt filters

## **Simple to build in, easy to handle inverter units**

- Compact, robust and liquid cooled inverters
- Square form fits into any cabinet
- Single phase modules with grounded heatsink simplify service



# Technical data

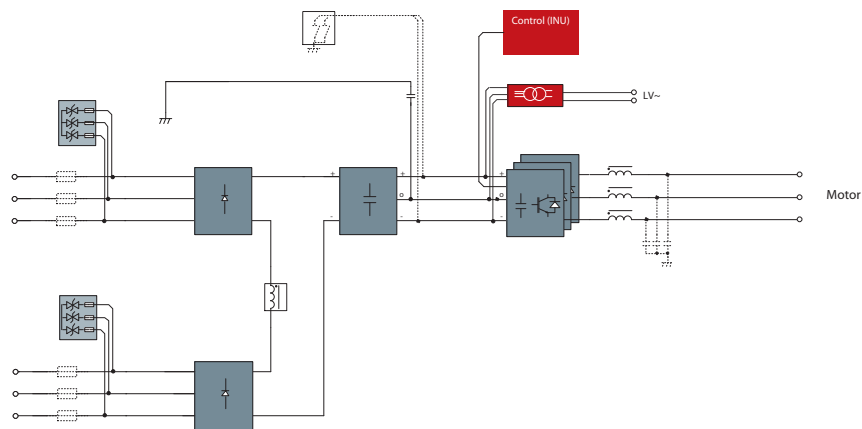
Topology	3-level neutral point clamped (NPC) with grounded heatsink	HV-IGBT
Inverter capacity	L30-HL x3	425 A, 3300 V, 2.4 MVA* 340 A, 4160 V, 2.4 MVA*
	L30-HL x3	640 A, 3300 V, 3.7 MVA* 510 A, 4160 V, 3.7 MVA* * Higher power capacities achieved by paralleling inverters
Input voltage		3300 V, 3 phases $\pm 10\%$ 4160 V, 3 phases $\pm 10\%$
Input frequency		50 Hz $\pm 5\%$ (3300 V) or 60 Hz $\pm 5\%$ (4160 V)
Rectifier	Active Front End	AFE
Rectifier	Diode Front End	12-pulse DFE
Input current THD	AFE	< 5 %
	12-pulse DFE	< 11 %
Power factor		>0.95
Output voltage levels		3 (5 phase-to-phase)
Output frequency		0-100 Hz
Accel./Decel. time		0.1-3600 s
Grounding		Resistance grounded neutral point, low or high resistance grounding system of electricity supply
Switching frequency		900 Hz
Motor control method	Asynchronous (induction) motor	Closed loop control ( <i>with pulse encoder feedback</i> ) Open loop control ( <i>without pulse encoder feedback</i> )
Communication		AI/O, DI/O, fieldbuses (e.g. Profibus DPV1, DeviceNet), industrial Ethernet protocols (PROFINET IO and EtherNet IP™), VACON® PC tool
Main protective functions		Torque and power limit, current limit, overcurrent, overvoltage, undervoltage, loss of auxiliary power, loss of communication, ground fault detection
Efficiency	AFE	>97.5 %
	DFE	>98.5 %, excluding the input transformer
Temperature	Operational	0 °C to +45 °C (+30 °F to +113 °F)
	Storage	-40 °C to +70 °C (-40 °F to +158 °F); No liquid in heat sink under 0 °C (+32 °F)
	Phase module inlet cooling liquid	0 °C to +43 °C (+32 °F to +109 °F). Lowest allowed cooling liquid temperature 2 °C (3.6 °F) above the dew point.
Relative humidity		< 95 % RH, non-condensation, non-corrosive
Cooling	Power module ( <i>phase modules, rectifiers</i> ) Chokes	Liquid cooled, water/glycol (80/20), with inhibitors Air cooled, forced ventilated
Standards		IEC**, UL** ** certifications pending



# Power rating

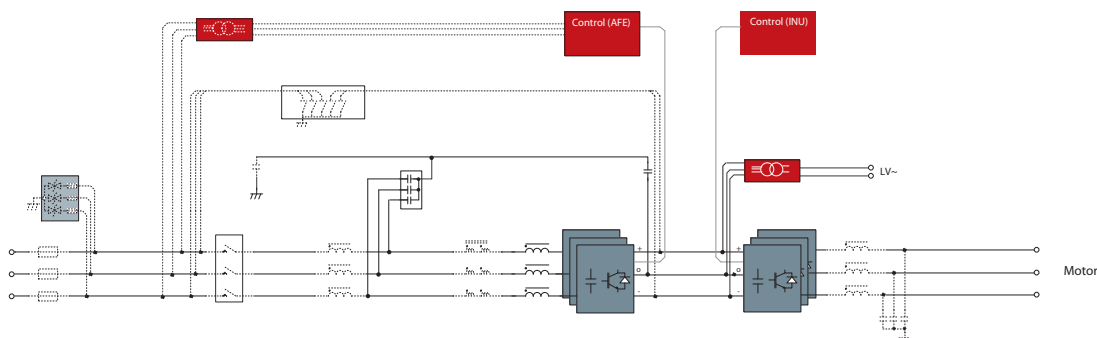
## 12-pulse DFE drives

AC drive type	Continous rating (variable torque)		Low overload rating 110% (constant torque)		High overload rating 150% (constant torque)		Output frame size
	Continous current I <sub>th</sub> [A]	Continous power [kVA]	Continous current I <sub>L</sub> [A]	Continous power [kVA]	Continous current I <sub>H</sub> [A]	Continous power [kVA]	
Nominal voltage 3300 V							
VACON3000-12-0425-03	425	2430	386	2209	283	1620	L20HL x3 (425-03)
VACON3000-12-0640-03	640	3660	582	3327	427	2440	L30HL x3 (640-03)
VACON3000-12-0820-03	820	4690	745	4264	547	3127	L20HL x6 (425-03)
VACON3000-12-1230-03	1230	7030	1118	6391	650	4680	L30HL x6 (640-03)
Nominal voltage 4160 V							
VACON3000-12-0340-04	340	2450	309	2227	227	1633	L20HL x3 (425-03)
VACON3000-12-0510-04	510	3670	464	3336	340	2450	L30HL x3 (640-03)
VACON3000-12-0650-04	650	4680	591	4255	433	3120	L20HL x6 (425-03)
VACON3000-12-0980-04	980	7060	891	6418	650	4680	L30HL x6 (640-03)



## Active Front End drives

AC drive type	Continuous rating (variable torque)		Low overload rating 110% (constant torque)		High overload rating 150% (constant torque)		Output frame size
	Continuous current I <sub>th</sub> [A]	Continuous power [kVA]	Continuous current I <sub>L</sub> [A]	Continuous power [kVA]	Continuous current I <sub>H</sub> [A]	Continuous power [kVA]	
Nominal voltage 3300 V							
VACON3000-4Q-0425-03	425	2430	386	2209	283	1620	L20-HL x3 (425-03)
VACON3000-4Q-0640-03	640	3660	582	3327	427	2440	L30-HL x3 (640-03)
VACON3000-4Q-0820-03	820	4690	745	4264	547	3127	L20-HL x6 (425-03)
VACON3000-4Q-1230-03	1230	7030	1118	6391	650	4680	L30-HL x6 (640-03)
Nominal voltage 4160 V							
VACON3000-4Q-0340-04	340	2450	309	2227	227	1633	L20HL x3 (340-04)
VACON3000-4Q-0510-04	510	3670	464	3336	340	2450	L30HL x3 (510-04)
VACON3000-4Q-0650-04	650	4680	591	4255	433	3120	L20HL x6 (340-04)
VACON3000-4Q-0980-04	980	7060	891	6418	650	4680	L30HL x6 (510-04)





# Options

## VACON® 3000

Factory option	Description	Option slot				AC drive
		B	C	D	E	VACON® 3000
I/O options						
	Standard I/O board: 2 x AI, 6 x DI, 1 x AO, 10 V <sub>ref</sub> , 24 V <sub>in</sub> , 2 x 24 V <sub>out</sub> , RS485, 3 x RO	■				■
+S_B1	6 x DI / DO, programmable		■	■	■	■
+S_B4	1 x AI, 2 x AO (isolated)		■	■	■	■
+S_B5	3 x RO		■	■	■	■
+S_B9	1 x RO, 5 x DI (42-240 V AC)		■	■	■	■
+S_BF	1 x AO, 1 x DO, 1 x RO		■	■	■	■
Communications						
+FBIE	Industrial Ethernet protocols: PROFINET IO and EtherNet/IP™ (software option onboard)			■	■	■
+S_E3	PROFIBUS DPV1			■	■	■
+S_E5	PROFIBUS DPV1 (D9)			■	■	■
+S_E7	DeviceNet			■	■	■
+S_EC	EtherCAT			■	■	■
+S_E9	Dual Port Ethernet			■	■	■
Power dependent options						
+PICM	Input common mode filter					■
+QTVS	Transient suppressor on input					■
+PODU	Output dU/dt filter					■
+POSI	Output sine filter					■
+PHSI	High source impedance (for AFE variants)					■
+DBCUC	Brake chopper for dynamic braking (excl. resistor)					■
Auxiliary units options						
+QPTR	Potential transformer for input voltage measurement					■
+QAIT	Isolated auxiliary transformer for power section					■
+PRCK	Rack for power modules					■
+QGSW	Grounding switch					■

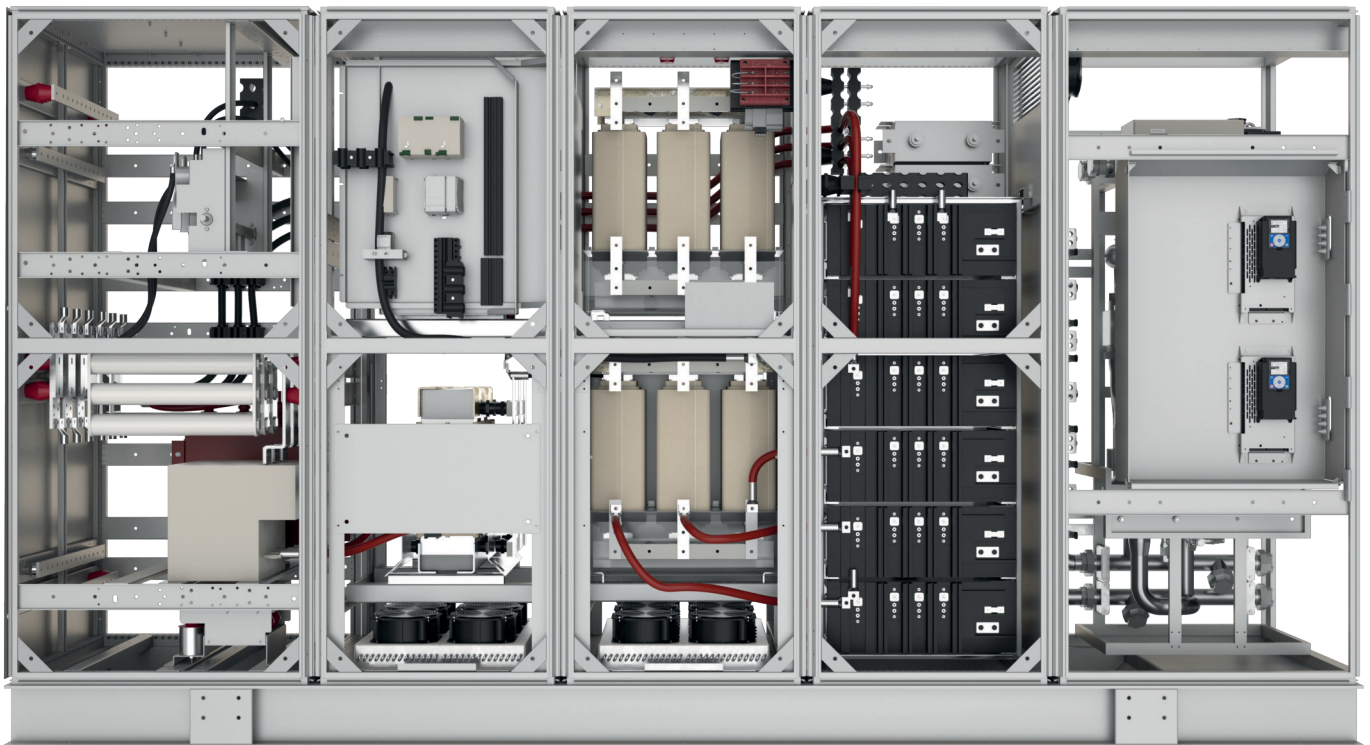


# Typecode key

## VACON® 3000

VACON3000	4Q	0425	03	+PICM	+QPTR
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VACON3000	Product range VACON® 3000
4Q	Front end 3L = 6-pulse 12 = 12-pulse 24 = 24-pulse 4Q = AFE
0425	Drive rating e.g. 0425 = 425 A
03	Supply voltage 03 = 3300 V 04 = 4160 V
+PICM	Options e.g. +PICM = Input common mode filter
+QPTR	Options e.g. +QPTR = Potential transformer for input voltage measurement (for AFE)





# A partner you can trust

## The Danfoss MV Drives Partner Program

Danfoss cooperates with a special network of partner companies with long-standing experience in the medium voltage sector. They integrate individual drive modules, input and filter technology in one compact, fully assembled and tested unit and provide their support on-site during installation, start up and service.

### Certified and fully supported by Danfoss

The Danfoss Drives Medium Voltage Partner (MVP) Program provides partners with the necessary tools,

training and support needed to create definite purpose medium-voltage drives for your project. We supply the core components for the MV drives, while they engineer and assemble the MV drive cabinets for you.

### Add value for your business

These value-add partners, including System Integrators, OEMs and Panel Builders work together with Danfoss to create synergies that deliver application optimized medium-voltage drives for you.

### Fully supported

Our partners continuously receive support via the MVP Program, adding value by being able to create their own system and cabinet offering – tailored perfectly to the applications and segments where they are experts.

## What's in it for me?

Our program includes a benefits package to help our partner and you succeed:



Dedicated access to MVP Program



Business collaboration



Continuous knowledge transfer



Collaborative partnership



Exclusive training possibilities



Access to comprehensive documentation



Accurate, simple and easy to work with



Business confidentiality at all levels



Specialized engineering support



Access to Danfoss Drives' experts and support teams



MVP Program Certifications



Mechanical and electrical cabinet reference design



# This is **what it takes**

These are the skills and attitudes needed for our partners to create the ultimate customer oriented MV drive solution

1. Low or medium voltage drives as a core strategic element – with proven competence
2. Access to customers using medium voltage drives
3. Willingness to invest in medium voltage drives business
4. Engineering, product integration and project management capabilities
5. Competent and capable technicians, sales and service people
6. World-class standard operating procedures and risk mitigation management
7. Set of core competences to engineer and integrate our medium voltage offering
8. Segment and application focus
9. Willing to serve customers in the best possible way
10. Experience in integrating medium voltage equipment e.g. MV switchgears



by Danfoss Drives

Become a Partner and find your own ways to compete in the Medium Voltage Drives market and create your own value added solutions.

Contact us now at  
**[mvp.danfoss.com](http://mvp.danfoss.com)**





## 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 used with all major motor brands and technologies in power sizes from small to large.

**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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