

ENGINEERING  
TOMORROW

*Danfoss*

Fact sheet | VACON® 3000 Enclosed Drive

# A modular and configurable cabinet-built drive delivering superior performance

Ready to run  
**medium-  
voltage  
drives**

# Power rating

## 12-pulse Diode Front End (DFE) enclosed drives

AC drive type	Continuous rating (variable torque)		Low overload rating 110% (constant torque)		High overload rating 150% (constant torque)		Cabinet dimensions HxWxD [mm]
	Continuous current $I_{th}$ [A]	Continuous power [kVA]	Continuous current $I_L$ [A]	Continuous power [kVA]	Continuous current $I_H$ [A]	Continuous power [kVA]	
<b>Nominal voltage 3300 V</b>							
VACON3000-ED-12-0425-03	425	2430	386	2209	283	1620	2130x2400x1000
VACON3000-ED-12-0640-03	640	3660	582	3327	427	2440	2130x2600x1000
VACON3000-ED-12-0820-03	820	4690	745	4264	547	3127	2130x3400x1000
VACON3000-ED-12-1230-03	1230	7030	1118	6391	650	4680	2130x3800x1000
<b>Nominal voltage 4160 V</b>							
VACON3000-ED-12-0340-04	340	2450	309	2227	227	1633	2130x2400x1000
VACON3000-ED-12-0510-04	510	3670	464	3336	340	2447	2130x2600x1000
VACON3000-ED-12-0650-04	650	4680	591	4255	433	3120	2130x3400x1000
VACON3000-ED-12-0980-04	980	7060	891	6418	650	4680	2130x3800x1000

## Active Front End (AFE) enclosed drives

AC drive type	Continuous rating (variable torque)		Low overload rating 110% (constant torque)		High overload rating 150% (constant torque)		Cabinet dimensions HxWxD [mm]
	Continuous current $I_{th}$ [A]	Continuous power [kVA]	Continuous current $I_L$ [A]	Continuous power [kVA]	Continuous current $I_H$ [A]	Continuous power [kVA]	
<b>Nominal voltage 3300 V</b>							
VACON3000-ED-4Q-0425-03	425	2430	386	2209	283	1620	2130x2400x1000
VACON3000-ED-4Q-0640-03	640	3660	582	3327	427	2440	2130x2600x1000
VACON3000-ED-4Q-0820-03	820	4690	745	4264	547	3127	2130x3600x1000
VACON3000-ED-4Q-1230-03	1230	7030	1118	6391	650	4680	2130x4000x1000
<b>Nominal voltage 4160 V</b>							
VACON3000-ED-4Q-0340-04	340	2450	309	2227	227	1633	2130x2400x1000
VACON3000-ED-4Q-0510-04	510	3670	464	3336	340	2447	2130x2600x1000
VACON3000-ED-4Q-0650-04	650	4680	591	4255	433	3120	2130x3600x1000
VACON3000-ED-4Q-0980-04	980	7060	891	6418	650	4680	2130x4000x1000

## Active Front End (AFE) transformerless enclosed drives

AC drive type	Continuous rating (variable torque)		Low overload rating 110% (constant torque)		High overload rating 150% (constant torque)		Cabinet dimensions HxWxD [mm]
	Continuous current $I_{th}$ [A]	Continuous power [kVA]	Continuous current $I_L$ [A]	Continuous power [kVA]	Continuous current $I_H$ [A]	Continuous power [kVA]	
<b>Nominal voltage 3300 V</b>							
VACON3000-ED-4Q-0425-03+PICM	425	2430	386	2209	283	1620	2130x3000x1000
VACON3000-ED-4Q-0640-03+PICM	640	3660	582	3327	427	2440	2130x3400x1000
VACON3000-ED-4Q-0820-03+PICM	820	4690	745	4264	547	3127	2130x4800x1000
VACON3000-ED-4Q-1230-03+PICM	1230	7030	1118	6391	650	4680	2130x5800x1000
<b>Nominal voltage 4160 V</b>							
VACON3000-ED-4Q-0340-04+PICM	340	2450	309	2227	227	1633	2130x3000x1000
VACON3000-ED-4Q-0510-04+PICM	510	3670	464	3336	340	2447	2130x3400x1000
VACON3000-ED-4Q-0650-04+PICM	650	4680	591	4255	433	3120	2130x4800x1000
VACON3000-ED-4Q-0980-04+PICM	980	7060	891	6418	650	4680	2130x5800x1000



VACON® 3000 Enclosed Drive

# Options

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### AFE supply type

<b>+PHSI</b>	High Source Impedance Please contact Danfoss Drives to check the source impedance specification.
<b>+PICM</b>	Common Mode Filter

### DFE supply type

<b>+PDC1</b>	One additional DC-bulk capacitor
<b>+PDC2</b>	Two additional DC-bulk capacitors

### Functional safety

<b>+QSTO</b>	Safe Torque Off function, Cat 0 (EN 60204-1)
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### Dynamic braking

<b>+DBC</b>	Brake Chopper
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### Output filters

<b>+PODU</b>	dU/dt filter
<b>+POSI</b>	Sine wave filter

### Grounding

<b>+PGGG</b>	Grounded heatsink, grounded bleeding resistor (Standard)
<b>+PGGF</b>	Grounded heatsink, floating bleeding resistor
<b>+PGFG</b>	Floating heatsink, grounded bleeding resistor
<b>+PGFF</b>	Floating heatsink, floating bleeding resistor

### Approvals

<b>+GAMA</b>	Marine approved construction
<b>+GAUL</b>	cUL-listed version

Board & function	Option code & slots	Loose option
OPT-B1   6 x D1/DO	+S_B1   C, D, E	OPT-B1-V
OPT-B2   2 x RO + Thermistor	+S_B2   C, D, E	OPT-B2-V
OPT-B4   1 x A1, 2 x AO	+S_B4   C, D, E	OPT-B4-V
OPT-B5   3 x RO	+S_B5   C, D, E	OPT-B5-V
OPT-B9   3 x RO	+S_B9   C, D, E	OPT-B9-V
OPT-BF   1 x AO, 1 x DO, 1 x RO	+S_BF   C, D, E	OPT-BF-V
OPT-BH   Temperature measurement (non-ATEX) (1x, 2x, 3x PT100, PT1000, Ni1000, KTY84)	+S_BH   C, D, E	OPT-BH-V

Protocol	Option code	Loose option
LonWorks	+S_C4	OPT-C4-V
RS232 Adapter	+S_D3	OPT-D3-V
PROFIBUS DP	+S_E3	OPT-E3-V
PROFIBUS DP with Sub-D9	+S_E5	OPT-E5-V
CANopen	+S_E6	OPT-E6-V
DeviceNet	+S_E7	OPT-E7-V
RS485 (Modbus/N2) with Sub-D9	+S_E8	OPT-E8-V
Advanced dual-port Ethernet	+S_EA	OPT-EA-V
EtherCAT	+S_EC	OPT-EC-V

# Technical data

<b>Topology</b>	3-level neutral point clamped (NPC)	HV-IGBT
<b>Drive capacity</b>	3300 V	425 A, 3300 V, 2.4 MVA   640 A, 3300 V, 3.7 MVA 820 A, 3300 V, 4.7 MVA   1230 A, 3300 V, 7.0 MVA
	4160 V	340 A, 4160 V, 2.5 MVA   510 A, 4160 V, 3.7 MVA 650 A, 4160 V, 4.7 MVA   980 A, 4160 V, 7.1 MVA
<b>Input voltage</b>		3300 V, 3 phases ± 10 % 4160 V, 3 phases ± 10 %
<b>Input frequency</b>		50 Hz ± 5 % (3300 V) or 60 Hz ± 5 % (4160 V)
<b>Rectifier</b>	Active Front End	AFE
	Diode Front End	12-pulse DFE
<b>Input current THD</b>	AFE	< 5 %
	12-pulse DFE	< 15 %
<b>Power factor</b>		> 0.95
<b>Output voltage levels</b>		3 (5 phase-to-phase)
<b>Output frequency</b>		0-120 Hz
<b>Acceleration/deceleration time</b>		0.1-3600 s
<b>Grounding</b>		Isolated neutral, resonant earthing, high resistive earthing or solid earthing (IEC61936-1). For operation in unearthed neutral systems without a dedicated transformer, contact Danfoss Drives.
<b>Switching frequency</b>		AFE: 1050 Hz (50 Hz) and 1260 Hz (60 Hz) INU: 900 Hz synchronous PWM
<b>Motor control method</b>	Asynchronous (induction) motor	U/f control Open loop control Indirect closed loop control Closed loop control
<b>Communication</b>		AI/O, DI/O, fieldbuses (e.g. PROFIBUS DPV1, DeviceNet), industrial Ethernet protocols (PROFINET IO and EtherNet IP™), VACON® PC tool
<b>Main protective functions</b>		Torque and power limit, current limit, overcurrent, overvoltage, undervoltage, loss of auxiliary power, loss of communication, ground fault detection, arc detection, leak detection
<b>Efficiency</b>	AFE + INU	> 97.5 %
	DFE + INU	> 98.5 %, excluding the input transformer
<b>Temperature</b>	Operational ( <i>ambient</i> )	0 °C to +45 °C (+30 °F to +113 °F)
	Storage ( <i>ambient</i> )	-40 °C to +70 °C (-40 °F to +158 °F); No liquid in heat sink under 0 °C (+32 °F)
	Enclosed drive inlet cooling liquid	0 °C to +38 °C (+32 °F to +100 °F). Lowest permitted cooling liquid temperature 2 °C (3.6 °F) above the dew point.
<b>Relative humidity</b>		< 95 % RH, non-condensation, non-corrosive
<b>Cooling</b>	Power module ( <i>phase modules, rectifiers</i> )	Liquid cooled
	Chokes	Hybrid cooling (forced air cooled with air-to-liquid heat exchanger)
<b>Standards</b>		IEC**, cUL**, marine standards**

\*For lower voltage operation, please contact Danfoss Drives

\*\* certification pending