ENGINEERING
TOMORROW

Fact sheet | VACON® 3000 Enclosed Drive

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

Ready to run
medium-voltage drives

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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 [MVA]	Continuous current I_L [A]	Continuous power [MVA]	Continuous current I_H [A]	Continuous power [MVA]	
Nominal voltage 3300 V							
VACON3000-ED-12-0425-03	425	2.4	386	2.2	283	1.6	2130x2400x1000
VACON3000-ED-12-0640-03	640	3.7	582	3.3	427	2.4	2130x2600x1000
VACON3000-ED-12-0820-03	820	4.7	745	4.3	547	3.1	2130x3400x1000
VACON3000-ED-12-1230-03	1230	7.0	1118	6.4	650	3.7	2130x3800x1000
Nominal voltage 4160 V							
VACON3000-ED-12-0340-04	340	2.4	309	2.2	227	1.6	2130x2400x1000
VACON3000-ED-12-0510-04	510	3.7	464	3.3	340	2.4	2130x2600x1000
VACON3000-ED-12-0650-04	650	4.7	591	4.3	433	3.1	2130x3400x1000
VACON3000-ED-12-0980-04	980	7.1	891	6.4	650	4.7	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 [MVA]	Continuous current I_L [A]	Continuous power [MVA]	Continuous current I_H [A]	Continuous power [MVA]	
Nominal voltage 3300 V							
VACON3000-ED-4Q-0425-03	425	2.4	386	2.2	283	1.6	2130x2400x1000
VACON3000-ED-4Q-0640-03	640	3.7	582	3.3	427	2.4	2130x2600x1000
VACON3000-ED-4Q-0820-03	820	4.7	745	4.3	547	3.1	2130x3800x1000
VACON3000-ED-4Q-1230-03	1230	7.0	1118	6.4	650	3.7	2130x4400x1000
Nominal voltage 4160 V							
VACON3000-ED-4Q-0340-04	340	2.4	309	2.2	227	1.6	2130x2400x1000
VACON3000-ED-4Q-0510-04	510	3.7	464	3.3	340	2.4	2130x2600x1000
VACON3000-ED-4Q-0650-04	650	4.7	591	4.3	433	3.1	2130x3800x1000
VACON3000-ED-4Q-0980-04	980	7.1	891	6.4	650	4.7	2130x4400x1000

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]	
Nominal voltage 3300 V							
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	2130x5200x1000
VACON3000-ED-4Q-1230-03+PICM	1230	7030	1118	6391	650	4680	2130x6000x1000
Nominal voltage 4160 V							
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	2130x5200x1000
VACON3000-ED-4Q-0980-04+PICM	980	7060	891	6418	650	4680	2130x6000x1000

VACON® 3000 Enclosed Drive

Options

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AFE supply type [1]	
+PHSI	High Source Impedance
+PICM	LCL with common mode filter
Functional safety	
+QSTO	Safe Torque Off function, Safe Torque Off and Safe Stop 1, SIL3
Precharge input voltage	
+QP24	240 VAC
+QP40	400 VAC
+QP48	480 VAC
Dynamic braking [2]	
+DBCU	Brake Chopper
Output filter [3]	
+PODU	dU/dt filter
+POSI	Sine wave filter
+POCM	Common mode filter
Common mode capacitor to ground [4]	
+PGC0	Removed

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Heat exchanger option [5]	
+PH00	Liquid/liquid HEX not included
+PHET	Titanium Liquid/liquid HEX included
Coolant connection [5]	
+PLCT	From top
Control & fan voltage	
+QFV1	115 VAC
+QFV2	230 VAC
DC grounding resistor	
+PGD0	DC neutral-to-ground resistor not connected
AFE short circuit current	
+PUFE	40 kA, for 100 ms
CE Certificates	
+GACE	EU declaration, CE mark
UL Certificates	
+GAUL	cUL certificate
Marine approvals [6]	
+GALR	Lloyd's Register
+GADN	Det Norske Veritas

Please contact Danfoss Drives to check the
[1] source impedance specification and supply type selection
[2] brake chopper option selection for DFE enclosed drives
[3] output filter specification/selection and availability
[4] common mode capacitor option selection
[5] heat exchanger and coolant connection options availability
[6] other marine approvals availability

Board & function	Option code & slots	Loose option
OPT-B1 [7] | 6 x DI/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

[7] OPT-B1-V default for DFE systems and default for AFE control unit for AFE systems

Protocol [8]	Option code & slot	Loose option
PROFIBUS DP	+S_E3 | D, E	OPT-E3-V
PROFIBUS DP with Sub-D9	+S_E5 | D, E	OPT-E5-V
CANopen	+S_E6 | D, E	OPT-E6-V
DeviceNet	+S_E7 | D, E	OPT-E7-V
Dual-port Ethernet	+S_E9 | D, E	OPT-E9-V
Advanced dual-port Ethernet	+S_EA | D, E	OPT-EA-V
EtherCAT	+S_EC | D, E	OPT-EC-V

[8] If fieldbus protocol option board selected, will be installed into INU and AFE control units.

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Technical data

Topology	3-level neutral point clamped (NPC)	HV-IGBT
Drive capacity	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
Input operating voltage	Active Front End	3300 V, 3 phases ± 10 % | 4160 V, 3 phases ± 10 %
	12-pulse DFE*	2x 1850 V AC ± 10 % | 2x 2360 V AC ± 10 %
Input frequency		50 Hz ± 5 % (3300 V) or 60 Hz ± 5 % (4160 V)
Rectifier	Active Front End	AFE
	Diode Front End	12-pulse DFE
Input current THD	AFE	<5 %
	12-pulse DFE	Typically <15%
Protection rating		IP54 (NEMA 12)
Power factor		>0.95
Short circuit rating	AFE	25 kA for 100 ms, or 40 kA for 100 ms (option, +PUFE)
	12-pulse DFE	25 kA for 100 ms
Output voltage levels		3 (5 phase-to-phase)
Output frequency		0-120 Hz
Acceleration/deceleration time		0.1-3600 s
Common mode capacitor ground		25 µF
Grounding		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
Control voltage		120 V (4160 V) or 240 V (3300 V)
Switching frequency	AFE	1050 Hz (50 Hz) and 1260 Hz (60 Hz)
	12-pulse DFE	900 Hz synchronous PWM
Motor control method	Asynchronous (induction) motor	U/f control Sensorless vector control (open loop) Vector control (closed loop, with fallback to sensorless operation available if encoder fails)
	SoftSync® functionality	Integrated SoftSync® functionality protects and enhances motor performance The SoftSync® function reduces typical motor current transients and lowers the current harmonic distortion during motor acceleration and deceleration, preventing pulsation or reduced motor shaft torque
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, arc detection, leak detection
Efficiency at rated load	12-24-pulse DFE	≥ 98.8%, excluding the input transformer
	AFE for dedicated transformer	≥ 97.8%, excluding the input transformer
	AFE with input common mode filter (+PICM)	≥ 97.4%
Temperature	Operational *(ambient)*	0 °C to +45 °C (+30 °F to +113 °F)
	Storage *(ambient)*	-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.
Relative humidity		< 95 % RH, non-condensation, non-corrosive
Cooling	Power and phase modules *(Rectifier, inverter, & brake chopper units)*	Closed-loop liquid cooling with grounded heatsink using ethylene glycol-based heat transfer fluid with corrosion inhibitors (Deionized water not needed)
	Chokes	Hybrid cooling (forced air cooled with air-to-liquid heat exchanger)
	Other components inside the cabinet, for example capacitors	Internal forced air circulation with air-to-liquid heat exchange
Standards		IEC**, cUL**, marine standards**

**For lower voltage operation, please contact Danfoss Drives*
*** certification pending*