

Fact Sheet | VACON® 3000 Drive Kit

Boost your toughest applications with a unique modular approach

The VACON® 3000 Drive Kit gives you a set of modules offering new opportunities to easily and reliably create purpose-built MV drives. These power modules can be engineered deeper than ever before into system solutions, allowing for designs that better suit the needs of your application.

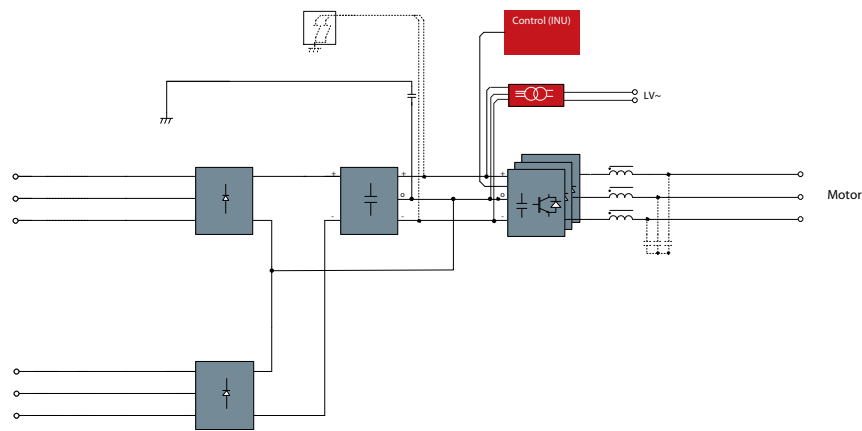
Definite purpose

**Medium-
voltage
drives**

Power rating

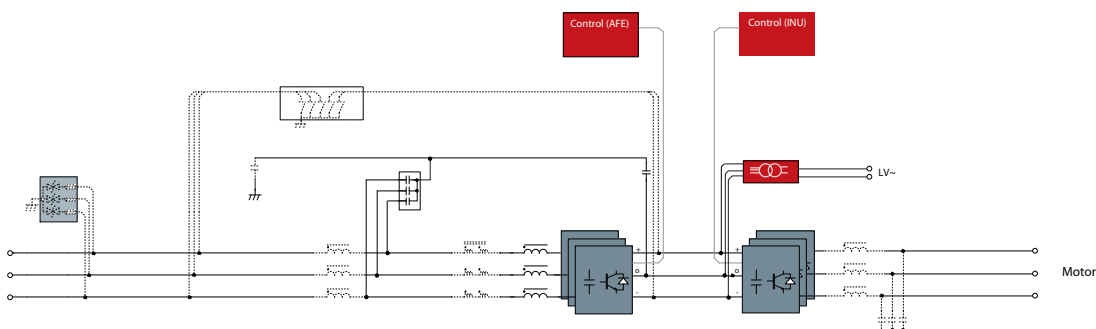
12-pulse DFE drives

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_{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							
VACON3000-12-0425-03	425	2430	386	2209	283	1620	L20HLx3 (425-03)
VACON3000-12-0640-03	640	3660	582	3327	427	2440	L30HLx3 (640-03)
VACON3000-12-0820-03	820	4690	745	4264	547	3127	L20HLx6 (425-03)
VACON3000-12-1230-03	1230	7030	1118	6391	650	4680	L30HLx6 (640-03)
Nominal voltage 4160 V							
VACON3000-12-0340-04	340	2450	309	2227	227	1633	L20HLx3 (340-04)
VACON3000-12-0510-04	510	3670	464	3336	340	2447	L30HLx3 (510-04)
VACON3000-12-0650-04	650	4680	591	4255	433	3120	L20HLx6 (340-04)
VACON3000-12-0980-04	980	7060	891	6418	650	4680	L30HLx6 (510-04)



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_{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							
VACON3000-4Q-0425-03	425	2430	386	2209	283	1620	L20HLx3 (425-03)
VACON3000-4Q-0640-03	640	3660	582	3327	427	2440	L30HLx3 (640-03)
VACON3000-4Q-0820-03	820	4690	745	4264	547	3127	L20HLx6 (425-03)
VACON3000-4Q-1230-03	1230	7030	1118	6391	650	4680	L30HLx6 (640-03)
Nominal voltage 4160 V							
VACON3000-4Q-0340-04	340	2450	309	2227	227	1633	L20HLx3 (340-04)
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Options

VACON® 3000 Drive Kit

Factory option	Description	Option slot			
		B	C	D	E
I/O options					
+S_B1	6 x DI / DO, programmable	■			
+S_B2	1RO(NO/NC),1RO(NO), Thermistor		■	■	■
+S_B4	1 x A1, 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		■	■	■
+S_BH	3 x Temp sensor inputs (PT100, PT1000, KTY84-130, KTY84-150, KTY84-131, NI1000)		■	■	■
Communications					
+S_E3	PROFIBUS DPV1			■	■
+S_E5	PROFIBUS DPV1 (D9)			■	■
+S_E6	CANopen			■	■
+S_E7	DeviceNet			■	■
+S_EC	EtherCAT			■	■
+S_E9	Dual Port Ethernet			■	■
+S_EA	Dual port Ethernet			■	■
Power dependent options					
+PICM	Input common mode filter <i>(for AFE variants only)</i>				
+PODU	Output dU/dt filter ¹⁾				
+POSI	Output sine filter ¹⁾				
+PHSI	High source impedance <i>(for AFE variants only)</i>				
+DBCUC	Brake chopper for dynamic braking <i>(excl. resistor)</i> ²⁾				
Auxiliary units options					
+QAIT	Isolated auxiliary transformer for power section				
+QGSW	Grounding switch				
+QPTR	Potential transformer				
+QSPD	Surge protection device (for AFE variants only)				
+PMRK	Mounting rack				
+SAXB	Additional auxiliary I/O board				
+HGAS	Phase module gasket sealing				
+PGDN	DC neutral-to-ground resistor not connected				
Precharge input voltage					
+QP24	240 VAC				
+QP40	400 VAC				
+QP48	480 VAC				

¹⁾Contact Danfoss Drives for +PODU and +POSI options

²⁾The +DBCUC option is for DFE variants only. For AFE variants contact Danfoss Drives

VACON® 3000 Drive Kit

Standard factory option	Description
Default for all VACON® 3000 drives	
+HMGR	Graphical keypad



L20HL



L30HL



Control unit



Pre-charge unit



Choke

Technical data

Topology	3-level neutral point clamped (NPC)	HV-IGBT
Inverter (INU) capacity	L20HLx3	425 A, 3300 V, 2.4 MVA ^{1]} 340 A, 4160 V, 2.4 MVA ^{1]}
	L30HLx3	640 A, 3300 V, 3.7 MVA ^{1]} 510 A, 4160 V, 3.7 MVA ^{1]}
Diode front-end (DFE) capacity	D22HL	1700 A, 1850 V 1700 A, 2360 V
Input operating voltage	Active Front End	3300 V, 3 phases ± 10 % 4160 V, 3 phases ± 10 %
	12-pulse DFE ^{2]}	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 and 24-pulse DFE
Input current THD	AFE	< 5 %
	12-pulse DFE	Typically <<15%
	24-pulse DFE	Typically <<8%
Power factor		>0.95
Output voltage levels		3 (5 phase-to-phase)
Output frequency		0-120 Hz
Acceleration/deceleration time		0.1-3600 s
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
Switching frequency	AFE	1050 Hz (50 Hz) and 1260 Hz (60 Hz)
	INU	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.
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%
Protection rating		IP00
Temperature	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)
	Power module inlet cooling liquid	0 °C to +43 °C (+32 °F to +109 °F) Lowest allowed cooling liquid temperature 2 °C (36 °F) above the dew point
Relative humidity		< 95 % RH, non-condensation, non-corrosive
Cooling	Power and phase modules (<i>Rectifier, inverter, and brake chopper units</i>)	Closed-loop liquid cooling with grounded heatsink using ethylene glycol-based heat transfer fluid with corrosion inhibitors No need to use de-ionised water, less complexity and less maintenance.
	Chokes	Hybrid cooling (<i>forced air cooled with air-to-liquid heat exchanger</i>)
Standards^{3]}		IEC, cUL, marine standards

1] Higher power capacities achieved by paralleling inverters
 2] For lower voltage operation, please contact Danfoss Drives
 3] Certification pending



Any information, including, but not limited to information on selection of product, its application or use, product design, weight, dimensions, capacity or any other technical data in product manuals, catalogues descriptions, advertisements, etc. and whether made available in writing, orally, electronically, online or via download, shall be considered informative, and is only binding if and to the extent, explicit reference is made in a quotation or order confirmation. Danfoss cannot accept any responsibility for possible errors in catalogues, brochures, videos and other material. Danfoss reserves the right to alter its products without notice. This also applies to products ordered but not delivered provided that such alterations can be made without changes to form, fit or function of the product. All trademarks in this material are property of Danfoss A/S or Danfoss group companies. Danfoss and the Danfoss logo are trademarks of Danfoss A/S. All rights reserved.