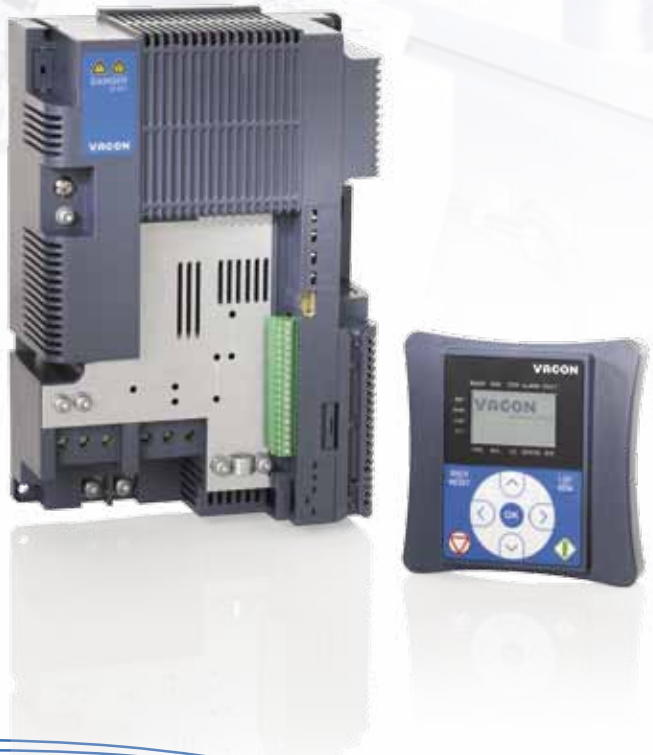
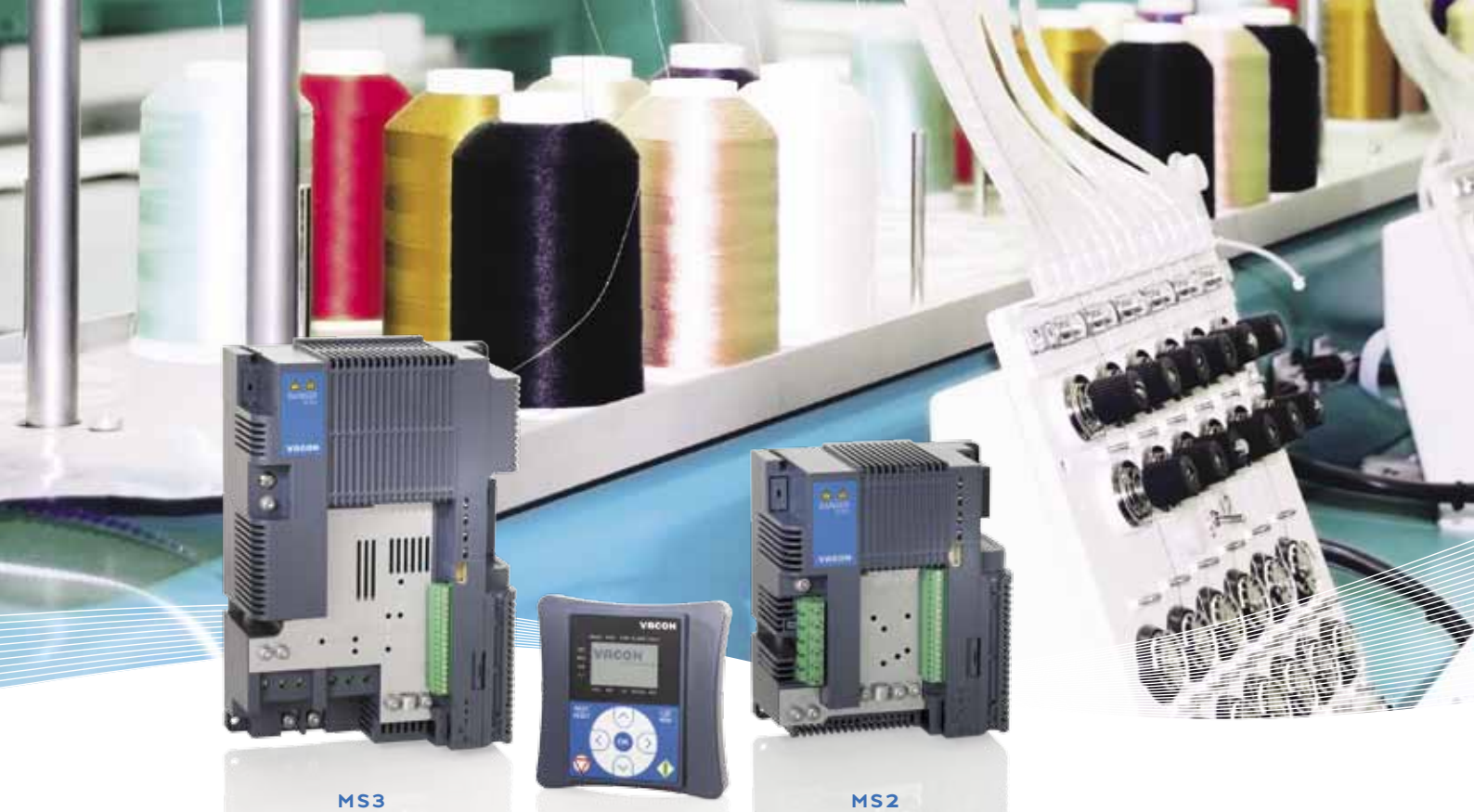
VACON

DRIVEN BY DRIVES



VACON 20 COLD PLATE

FLEXIBILITY IN COOLING



THE PERFECT DRIVE FOR MACHINERY INTEGRATION

The VACON 20 Cold Plate is an open frame cold plate drive, designed to be installed inside a customers' enclosure using any type of cooling media, depending on the requirements of the installation. Both cooling ribs heatsink or water cooled media are suitable for this cost effective and extremely flexible drive. As the inverter has no heat fins, it requires less mounting depth creating considerable space savings. Panels can therefore be smaller and costs reduced. Cabinets can be sealed and IP66 protection can be easier to achieve. This is an advantage in dusty and moist conditions, where any through flow of air would cause a dust build-up resulting in possible failure of the internal components. It can be used also in very harsh and demanding environments, where the operating temperature (inside the customers' enclosure) can reach high values up to 70 °C.

BUILT-IN FEATURES

- Innovative and compact cold plate design for easy handling and integration
- Oversized components for extended lifetime
- Supports asynchronous induction as well as permanent magnet synchronous motors
- High switching frequency up to 16 kHz with automatic derating in case of overheating
- Extensive operating conditions: temperature up to 70 °C without derating
- RS485 Modbus communication integrated
- I/O resources fully programmable
- STO function according to EN 61800-5-2 (SIL2) available as standard
- Echo connectors (Molex type) for I/O terminals and fieldbus communication for fast connection to external HMI controller
- Built-in EMC filter for category level C2
- Brake chopper integrated as standard

ADDITIONAL FEATURES

- Expansion slot for additional option boards (e.g. fieldbus or I/O boards)
- Optional text keypad with non-volatile memory (for copy / paste of parameter settings)
- Optional keypad with back holding magnets for easy handling during commissioning and service
- PC tools based on RS422 interface for parameter settings and monitoring
- Smart built-in functionality based on IEC 61131
- Optional integrated brake resistor (in MS2)
- Drive status indicators (leds) on top side
- Completely tailorable, with Vacon NC 61131 tool for creating customer specific applications

TECHNICAL DATA

GENERAL

Communication	RS485	Standard: Modbus RTU, BACnet, N2
	HMI	RS422 based for PC tools or Keypad interface
Software features	Control characteristics	Induction and PMSM motor control Switching frequency up to 16 kHz (factory default 6 kHz) Frequency control U/f and Open loop sensorless vector control Motor tuning identification and flying start mode
	Protections	Overload and underload protections Motor thermal protection Missing phase detection Automatic reset to avoid interruption of the process
Motor connection	Output voltage	0...Uin
	Output current	Continuous rated current In at rated ambient temperature
		Overload 1.5 x In max 1 min / 10 min
	Starting current / torque	Current 2 x In for 2 secs every 20 sec period
	Output frequency	0...320 Hz - resolution 0.01 Hz
Ambient conditions	Ambient operating temperature Storage temperature Altitude Enclosure class	-10 °C (no frost)...+70 °C without derating (cold plate maximum temperature 85 °C) -40 °C....+85 °C 100% load capacity (no derating) up to 1000 m; 1% derating every 100 m up to 3000 m Built-in unit
EMC	Immunity Emissions	Complies with EN 61800-3, level C2

I/O CONNECTIONS

Standard I/O		
Terminal		**Signal**
A	RS485	Differential receiver/transmitter
B	RS485	Differential receiver/transmitter
1	+10V$_{ref}$	Reference output
2	AI1+	Analog input 1, voltage or current
3	AI1-	Analog input 1 common
6	24V$_{out}$	24 V aux. voltage
7	GND	I/O ground
8	DI1	Digital input 1
9	DI2	Digital input 2
10	DI3	Digital input 3
4	AI2+	Analog input 2, voltage or current
5	AI2-	Analog input 2 common
13	GND	I/O ground
14	DI4	Digital input 4
15	DI5	Digital input 5
16	DI6	Digital input 6
18	AO1+	Analog output signal (+output)
20	DO1	Digital output (open collector)

Relays			STO connections	
Terminal			**Terminal**	
22	RO1/2 CM	Relay output 1	**S1**	Isolated digital output 1
23	RO1/3 NO		**G1**	
24	RO2/1 NC	Relay output 2	**S2**	Isolated digital output 2
25	RO2/2 CM		**G2**	
26	RO2/3 NO		**F+**	STO feedback
			F-	

OPTIONS

Keypad	
VACON-PAN-HMTX-MC06	Magnetic Handheld keypad (1.0m cable)

OPTIONS BOARDS

Option boards	
OPT-B1-V	6 x DI/DO, each digital input can be individually programmed to also act as digital output
OPT-B2-V	2 x Relay output + Thermistor
OPT-B4-V	1 x AI, 2 x AO (isolated)
OPT-B5-V	3 x Relay output
OPT-B9-V	1 x RO, 5 x DI (42-240 VAC)
OPT-BF-V	1 x AO, 1 x DO, 1 x RO (AoDoRo)
OPT-C3-V	Profibus
OPT-E6-V	CANOpen
OPT-E7-V	Devicenet

RATINGS AND DIMENSIONS

Supply voltage	AC drive type	Power		Motor current		Frame size	Dimensions W x H x D		Weight	
		kW	HP	I_N [A]	1.5 x I_N [A]		mm	inches	kg	lb
380-480 VAC 3-phase	VACON0020-3L-0003-4-CP	0.75	1	2.4	3.6	MS2	133 x 159 x 80	5.24 x 6.26 x 3.15	2	4.4
	VACON0020-3L-0004-4-CP	1.1	1.5	3.3	5.0					
	VACON0020-3L-0005-4-CP	1.5	2	4.3	6.5					
	VACON0020-3L-0006-4-CP	2.2	3	5.6	8.4					
	VACON0020-3L-0008-4-CP	3.0	5	7.6	11.4					
	VACON0020-3L-0009-4-CP	4.0	6	9.0	13.5	MS3	161 x 240 x 83	6.34 x 9.45 x 3.27	3	6.6
	VACON0020-3L-0012-4-CP	5.5	7.5	12.0	18.0					
	VACON0020-3L-0016-4-CP	7.5	10	16.0	24.0					

TYPE CODE KEY

VACON	0020	3L	0006	4	CP	+	OPTION CODES

0020 — **Product Range**
Vacon 20

3L — **Input/Function**
3L = Three-phase input

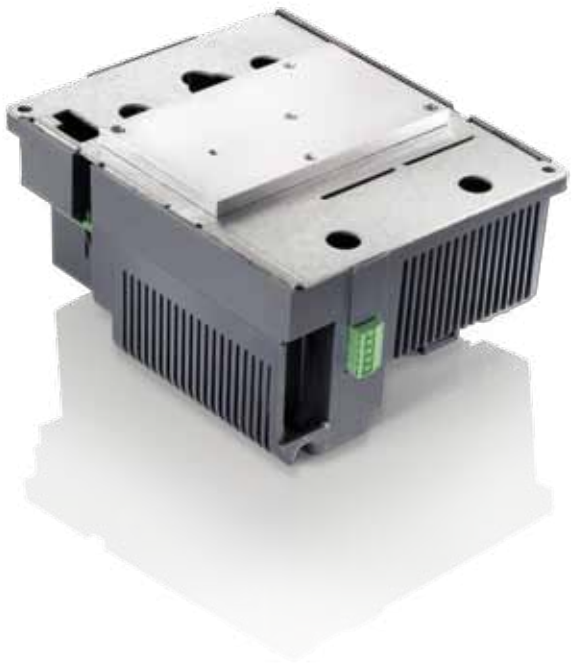
0006 — **Drive rating in Ampere**
e.g. 0006 = 6 A

4 — **Supply voltage**
4 = 380-480 V

CP — **Cold Plate**
EMC level C2
STO integrated
Brake chopper integrated

+

OPTION CODES
+DBIR = Dynamic Brake chopper resistor
+HMTX = Text keypad
+S_B1 = 6 x DI/DO
+S_B2 = 2 x RO + Thermistor
+S_B4 = 1 x AI, 2 x AO
+S_B5 = 3 x RO
+S_B9 = 1 x RO, 5 x DI (42-240VAC)
+S_BF = 1 x AO, 1 x DO, 1 x RO
+S_E3 = Profibus
+S_E6 = CanOpen



VACON AT YOUR SERVICE

Vacon is driven by a passion to develop, manufacture and sell the best AC drives and inverters in the world — and to provide customers with efficient product life-cycle services. Our AC drives offer optimum process control and energy efficiency for electric motors. Vacon inverters play a key role when energy is produced from renewable sources. Vacon has production and R&D facilities in Europe, Asia and North America, and sales and service operations in nearly 90 countries. In 2011, Vacon's revenues amounted to EUR 380.9 million, and the company employed globally approximately 1,500 people. The shares of Vacon Plc (VAC1V) are quoted on the main list of the Helsinki stock exchange (NASDAQ OMX Helsinki).

Vacon partner

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