

# WE ARE DRIVES



VACON<sup>®</sup> 20



**DRIVE CENTRE**   
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## VACON® 20 – POSSIBILITIES AND PERFORMANCE

The VACON® 20 AC drive comes packed with functionality and possibilities to bring any machine control to a completely new level. The compact size in combination with a wide power range is the base, but the VACON® 20's possibilities do not end there. A built-in PLC functionality, which is one of the most flexible on the market, makes this product adapt to every task and bring cost savings to the user.

In order for machine builders to be able to compete in an increasingly competitive market, it is important to continuously seek solutions to further improve performance and cost efficiency – VACON® 20 offers new possibilities here.

### WIDE POWER RANGE

The VACON® 20 is available in all common voltages in the range of 110-600V. Combined with a wide power range up to 18.5kW /25 HP. The VACON® 20 has something for customers all over the globe. Customers can reduce costs by implementing our harmonized product range and increase efficiency in their manufacturing processes. In currents above 16A the drive is available with a built-in harmonic filtering choke for public networks according to IEC61000-3-12.

### CUTTING-EDGE PERFORMANCE

Machinery performance is very much dependent on the performance of the AC drive. In the VACON® 20 we have done our best to cut cycle times and maximize the control performance of the drive. The built-in RS-485 interface offers a cost effective and simple serial control interface for the drive. With optional modules, the Vacon 20 can be connected to almost any fieldbus system including CANOpen, DeviceNet and Profibus DP.

### FAST INSTALLATION AND SET-UP

The VACON® 20 is designed for efficient volume manufacturing where every second in installation and configuration time counts. Easy access terminals, built-in DIN rail mounting and the MCA parameter copying tool which can clone settings without main power in the drive are all examples of features that help reduce start-up time.

### WRITE CUSTOM APPLICATIONS USING VACON PROGRAMMING

The ability to customize functionality presents OEMs an opportunity to increase machine performance and save costs. The customer can build his own control logic in the drive and utilize unused I/O of the drive for performing other machine related tasks. In addition, the the parameter list can be freely modified and application specific parameter sets and default settings can be created. By utilizing the VACON Programming\* PC Tool, VACON® 20 can help make better and more cost effective machine designs.

\*Contact your local Vacon office for more information.

#### KEY BENEFITS:

- Fieldbus connectivity
- Parameter copying without main power
- Custom-made software possible

#### TYPICAL APPLICATIONS:

- Pumps & Fans
- Conveyors
- Packaging, processing and washing machines

#### TECHNICAL HIGHLIGHTS:

- Wide power range up to 25HP/18.5kW
- High performance and functionality
- Full I/O + option board support
- Fast installation and setup
- Optional Integral DC Choke available for MI4 - MI5

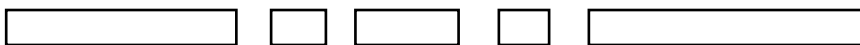


## RATINGS AND DIMENSIONS

Supply voltage	AC drive type	Output Power and Current High Overload (150%)			Frame size	Dimensions W x H x D		Weight	
		HP	kW	I <sub>N</sub> (A)		mm	inches	kg	lb
110-120 VAC, 1-phase	VACON0020-1L-0001-1-R02	0.33	0.25	1.7	MI2	90 x 195 x 102	3.54 x 7.68 x 4.02	0.7	1.54
	VACON0020-1L-0002-1-R02	0.5	0.37	2.4					
	VACON0020-1L-0003-1-R02	0.75	0.55	2.8					
	VACON0020-1L-0004-1-R02	1	0.75	3.7					
	VACON0020-1L-0005-1-R02	1.5	1.1	4.8					
208-240 VAC, 1-phase	VACON0020-1L-0001-2-R02	0.33	0.25	1.7	MI1	66 x 160 x 99	2.60 x 6.30 x 3.90	0.55	1.21
	VACON0020-1L-0002-2-R02	0.5	0.37	2.4					
	VACON0020-1L-0003-2-R02	0.75	0.55	2.8					
	VACON0020-1L-0004-2-R02	1	0.75	3.7	MI2	90 x 195 x 102	3.54 x 7.68 x 4.02	0.7	1.54
	VACON0020-1L-0005-2-R02	1.5	1.1	4.8					
	VACON0020-1L-0007-2-R02	2	1.5	7					
	VACON0020-1L-0009-2-R02	3	2.2	9.6					
208-240 VAC, 3-phase	VACON0020-3L-0001-2-R02	0.33	0.25	1.7	MI1	66 x 160 x 99	2.60 x 6.30 x 3.90	0.55	1.21
	VACON0020-3L-0002-2-R02	0.5	0.37	2.4					
	VACON0020-3L-0003-2-R02	0.75	0.55	2.8					
	VACON0020-3L-0004-2-R02	1	0.75	3.7	MI2	90 x 195 x 102	3.54 x 7.68 x 4.02	0.7	1.54
	VACON0020-3L-0005-2-R02	1.5	1.1	4.8					
	VACON0020-3L-0007-2-R02	2	1.5	7	MI3	100 x 255 x 109	3.94 x 10.04 x 4.29	0.99	2.18
	VACON0020-3L-0011-2-R02	3	2.2	11					
	VACON0020-3L-0012-2-R02	-	3	12.5					
	VACON0020-3L-0017-2-R02	5	4	17.5	MI4	165 x 370 x 165	6.5 x 14.6 x 6.5	8	18
	VACON0020-3L-0025-2-R02	7.5	5.5	25					
	VACON0020-3L-0031-2-R02	10	7.5	31	MI5	165 x 414 x 202	6.5 x 16.3 x 8	10	22
	VACON0020-3L-0038-2-R02	15	11	38					
	380-480 VAC, 3-phase	VACON0020-3L-0001-4-R02	0.5	0.37	1.3	MI1	66 x 160 x 99	2.60 x 6.30 x 3.90	0.55
VACON0020-3L-0002-4-R02		0.75	0.55	1.9					
VACON0020-3L-0003-4-R02		1	0.75	2.4					
VACON0020-3L-0004-4-R02		1.5	1.1	3.3	MI2	90 x 195 x 102	3.54 x 7.68 x 4.02	0.7	1.54
VACON0020-3L-0005-4-R02		2	1.5	4.3					
VACON0020-3L-0006-4-R02		3	2.2	5.6	MI3	100 x 255 x 109	3.94 x 10.04 x 4.29	0.99	2.18
VACON0020-3L-0008-4-R02		5	3	7.6					
VACON0020-3L-0009-4-R02		6	4	9					
VACON0020-3L-0012-4-R02		7.5	5.5	12	MI4	165 x 370 x 165	6.5 x 14.6 x 6.5	8	18
VACON0020-3L-0016-4-R02		10	7.5	16					
VACON0020-3L-0023-4-R02		15	11	23	MI5	165 x 414 x 202	6.5 x 16.3 x 8	10	22
VACON0020-3L-0031-4-R02		20	15	31					
VACON0020-3L-0038-4-R02		25	18.5	38					
525-600 VAC, 3-phase	VACON0020-3L-0002-7-R02	1	0.75	1.7	MI3	100 x 255 x 109	3.94 x 10.04 x 4.29	0.99	2.18
	VACON0020-3L-0003-7-R02	2	1.5	2.7					
	VACON0020-3L-0004-7-R02	3	2.2	3.9					
	VACON0020-3L-0006-7-R02	5	4	6.1					
	VACON0020-3L-0009-7-R02	7.5	5.5	9					

## TYPE DESIGNATION CODE

VACON 0020 - 3L - 0009 - 4 + OPTION CODES



Product

Input phase

Current rating

Voltage rating

+ Options

# I/O CONFIGURATION

VACON® 20

Terminal	Description	Vacon 20	
1	+10 V <sub>ref</sub>	Maximum load 10 mA	●
2	AI1	0-10V	●
3	GND		●
4	AI2	0-10V / 0(4)-20mA*	●
5	GND		●
6	24 V <sub>out</sub>	Max. 50 mA / CP 100 mA	●
7	GND/DIC*		●
8	DI1		●
9	DI2	0-+30 V R <sub>i</sub> = 12 kΩ	●
10	DI3	Cold Plate R <sub>i</sub> = 4 kΩ	●
13	DOC	Digital output common	●
14	DI4		●
15	DI5	0-+30 V R <sub>i</sub> = 12 kΩ	●
16	DI6	Cold Plate R <sub>i</sub> = 4 kΩ	●
18	AO	Analogue output	0-10V / 0(4)-20mA*
20	DO	Open collector, max. load 48 V/50 mA	●
22	RO13-CM	Relay output 1	●
23	RO14-NO		●
24	RO22-NC	Relay output 2	●
25	RO21-CM		●
26	RO24-NO		●
A	A - RS485	Modbus RTU	●
B	B - RS485	Modbus RTU	●

\* Selectable



MCA ADAPTER



OPTION BOARD MOUNTING KIT

## PC INTERFACE AND PARAMETER COPYING

The MCA (Micro Communications Adapter) is a snap-on and intelligent copying unit for Vacon 10 and Vacon 20 products.

- Parameter copying without main power in the drive
- Download settings directly to the MCA from PC without a drive
- HW interface for PC connection to the drive

Factory installed options code	Description	Suitability Vacon 20
+EMC2	C2-Level EMC filter (includes +QPES)	●
+QFLG	Flange mounting kit for MI4 and MI5	●



KEYPAD DOOR MOUNTING KIT

## OPTIONS BOARDS

The Vacon 20 supports a wide range of option boards including Profibus DP, DeviceNet, CANOpen, as well as a wide range of I/O extension boards. Contact your Vacon partner for more information.

Separately delivered options code	Description
ENC-SLOT-MC03-13	Option board mounting kit Vacon 20 MI1-MI3
ENC-SLOT-MC03-45	Option board mounting kit Vacon 20 MI4-MI5
ENC-IP21-Mix	IP21 cover MI1-MI3. x=1,2,3
ENC-IN01-Mix	UL Type 1 Kit MI1-MI5. x=1,2,3,4,5
VACON-ADP-MCAA	MCA RS-422 adapter w/ parameter copy
VACON-ADP-MCAA-KIT	Complete MCA + USB cable kit
VACON-ADP-PASSIVE	Passive RS-422 adapter
VACON-PAN-HMDR-MC03	Complete keypad door mounting kit (3.0 m cable)
VACON-PAN-HMTX-MC06	Magnetic/Handheld keypad (1.0m cable)

\*Requires VACON-ADP-PASSIVE



IP21/UL TYPE 1 KIT

<b>Mains connection</b>	Input voltage $U_{in}$	110...120 V, -15 %...+10 % 1~ 208...240 V, -15 %...+10 % 1~ 208...240 V, -15 %...+10 % 3~ 380...480 V, -15 %...+10 % 3~ 575 V, -15 %...+10 % 3~
	Input frequency	45...66 Hz
	Connection to mains	Once per minute or less (normal case)
<b>Motor connection</b>	Output voltage	0... $U_{in}$ (2 x $U_{in}$ with 115 V drives)
	Output current	Continuous rated current $I_N$ at rated ambient temperature overload 1.5 x $I_N$ max. 1 min/10 min
	Starting current / Torque	Current 2 x $I_N$ for 2 secs in every 20 sec period Torque depends on motor
	Output frequency	0...320 Hz
	Frequency resolution	0.01 Hz
<b>Control characteristics</b>	Control method	Frequency Control U/f. Open loop sensorless vector control
	Switching frequency	1.5...16 kHz; Factory default 4 kHz, (575 V model default 2 kHz)
	Braking torque	100 % x $T_N$ with brake chopper in 3-phase version sizes MI2-5 30 % x $T_N$ with DC-braking. Dynamic flux braking available in all types
<b>Ambient conditions</b>	Ambient operating temperature	-10°C (no frost)...+50°C: rated loadability $I_N$ (1L-0009-2, 3L-0007-2, 3L-0011-2 and with options ENC-IP21-Mix and ENC-IN01-Mix ambient max +40°C)
	Storage temperature	-40°C...+70°C
	Altitude	100 % load capacity (no derating) up to 1000 m 1 % derating for each 100 m above 1000 m; max. 2000 m
	Enclosure class	MI1-3:IP20, MI4-5:IP21, MI1 - MI5: UL Open Type
<b>EMC</b>	Immunity	Complies with EN61800-3 (2004)
	Emissions	208-240 V: EMC level C2: with an internal +EMC2 option 380-480 V: EMC level C2: with an internal +EMC2 option Note: All models ending in "-R02" are delivered as EMC4
<b>Approvals</b>	EN61800, C-Tick, Gost R, CB, CE, UL, cUL, IEC (not all versions, see unit nameplate for more detailed approvals)	