VACON® 20 X — PERFORMANCE UNDER PRESSURE

VACON 20 X sees Vacon building on its experience of producing high class enclosures drives to offer a decentralized drive solution with countless possibilities. An IP66/Type 4X Outdoor enclosure enclosure offers the best possible protection from any factors that may be encountered in harsh environments, while other great features such as large cooling ribs and an integrated mains switch make VACON 20 X the right choice when your drive needs to be integrated directly into the application.

WHEN YOU NEED A DECENTRALIZED SOLUTION

The main purpose of VACON 20 X is to offer an AC drive that can act in all kinds of decentralized applications and is still flexible and easy to use. With this in mind, it has features such as a wide array of fieldbus connections, and Safe Torque Off mode, proving that robustness doesn't have to compromise simplicity.

IP66/TYPE 4X OUTDOOR ENCLOSURE CERTIFIED PROTECTION

VACON 20 X comes with an enclosure that is compliant with IP66/Type 4X Outdoor enclosure requirements, offering the best possible protection against external issues. This protection is essential in moist or dusty conditions, where dust could otherwise build up through airflow and cause internal components to fail. The enclosure is certified 3M6 according to IEC 60721-3-3 resistant to 2g vibrations and the rubber sealing comes equipped with a protective Snap-in Vent (Membrane IP69K). This ensures the pressure inside the drive is equalized with the surrounding environment, which in turn prevents the sealing from being worn down. In addition, the drive's design is such that it is operable in temperatures of up to 40°C (up to 50°C with derating).

EVERYTHING IN ONE PLACE

Despite its highly developed enclosure, the drive remains a masterpiece in easy installation and commissioning. If you're looking for a decentralized solution, chances are that space is at a premium. VACON 20 X has all the standard features you would expect along with a wide range of options, all in one place. The option of having a built-in main switch is a great saver when it comes to installation costs – the drive provides the housing for the switch and makes the drive work in the field to full effect. No need for engine rooms or cabling systems – with VACON 20 X, all the standard functionality and a whole range of options come in a single box.

TYPICAL APPLICATIONS

- Machinery
- Pumps
- Conveyors
- Fans
- Washdown duty installations
- General purpose installations

RATINGS & 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
208-240V VAC, 1-phase	VACON0020-1L-0004-2-X	0.75	1.0	3.7	5.6	MU2	169 x 295 x 154	6.65 x 11.61 x 6.06	3.4	7.50
	VACON0020-1L-0005-2-X	1.1	1.5	4.8	9.6					
	VACON0020-1L-0007-2-X	1.5	2.0	7.0	10.5					
208-240 VAC, 3-phase	VACON0020-3L-0004-2-X	0.75	1.0	3.7	5.6	MU2	169 x 295 x 154	6.65 x 11.61 x 6.06	3.4	7.50
	VACON0020-3L-0005-2-X	1.1	1.5	4.8	7.2					
	VACON0020-3L-0007-2-X	1.5	2.0	7.0	10.5					
	VACON0020-3L-0011-2-X	2.2	3.0	11.0	16.5	MU3	205 x 375 x 180	8.07 x 14.76 x 7.09	6	13.23
	VACON0020-3L-0012-2-X	3.0	4.0	12.5	18.8					
	VACON0020-3L-0017-2-X	4.0	5.0	17.5	26.3					
380-480 VAC, 3-phase	VACON0020-3L-0003-4-X	0.75	1.0	2.4	3.6	MU2	169 x 295 x 154	6.65 x 11.61 x 6.06	3.4	7.50
	VACON0020-3L-0004-4-X	1.1	1.5	3.3	5.0					
	VACON0020-3L-0005-4-X	1.5	2.0	4.3	6.5					
	VACON0020-3L-0006-4-X	2.2	3.0	5.6	8.4					
	VACON0020-3L-0008-4-X	3.0	5.0	7.6	11.4					
	VACON0020-3L-0009-4-X	4.0	6.0	9.0	13.5	MU3	205 x 375 x 180	8.07 x 14.76 x 7.09	6	13.23
	VACON0020-3L-0012-4-X	5.5	7.5	12.0	18.0					
	VACON0020-3L-0016-4-X	7.5	10.0	16.0	24.0					

* dimensions without Keypad and Mains Switch

TECHNICAL HIGHLIGHTS

- 2g resistance to vibrations (according to 3M6/IEC 60721-3-3)
- IP66/Type 4X Outdoor enclosure
- Large cooling ribs
- Option of integrated mains switch
- Safe Torque Off (STO) function according to SIL3 (only in three-phase version)
- Runs induction and permanent magnet motors
- Integrated PID controller
- Wide amount of fieldbus connections
- Built-in EMC filter for category level C2 (3-phase version) C1 (1-phase version).
- Brake chopper integrated (only in 3-phase version)

BENEFITS

- Cost savings from decentralized concept
- Can be used in almost any environment
- Can be cleaned with pressurized water
- Custom-made software solutions with built-in PLC functionality for OEMs
- Mountable in any position; fits into any available space

GENERAL

Communication	RS485	Standard: Modbus RTU
	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
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 Vibration Altitude Enclosure class	-10 °C...+40 °C without derating (max. temperature 50°C with derating) 2g resistance to vibrations (according to 3M6/IEC 60721-3-3) 100% load capacity (no derating) up to 1000 m; 1% derating every 100 m up to 3000 m IP66 / Type 4X Outdoor enclosure
EMC	Immunity Emissions	Complies with EN 61800-3, level C2 (3-phase version) and C1 (1-phase version)
Functional safety	Safe Torque Off (STO)	SIL 3 according to IEC61800-5-2 PL e / Cat 4 according to ISO13849-1 (only in three-phase version)

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- /GND	Analog input 1 common
4	AI2+	Analog input 2, voltage or current
5	AI2- / GND	Analog input 2 common
6	24V$_{out}$	24 V aux. voltage
7	GND / DIC	I/O ground
8	DI1	Digital input 1
9	DI2	Digital input 2
10	DI3	Digital input 3
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), voltage
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-MC06X	Magnetic Handheld keypad

OPTION 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
OPT-E3-V	Profibus DPV1, (screw connector)
OPT-E5-V	Profibus DPV1, (D9 connector)
OPT-E6-V	CANopen
OPT-E7-V	DeviceNet
OPT-BH-V	3 x PT100 or PT1000, NI1000, KTY84-130, KTY84-150, KTY-84-131
OPT-BK-V	AS-interface option card
OPT-CI-V	Modbus TCP option card
OPT-CP-V	Profinet IO option card
OPT-CQ-V	Ethernet IP option card
OPT-EC-V	EtherCAT option card

TYPE CODE KEY

VACON0020 - 3L - 0006 - 4 - X + OPTION CODES

0020 — **Product range**
VACON 20

3L — **Input/Function**
3L = Three-phase input
1L = Single-phase input

0006 — **Drive rating in Ampere**
eg. 0006 =6 A

4 — **Supply voltage**
2 = 208-240 V
4 = 380-480 V

X — **IP66/Type 4X Outdoor enclosure drive**
EMC level C2 (3-phase) or C1 (1-phase)
STO integrated (only in 3-phase version)

+ — Brake chopper (only in 3-phase version)

OPTION CODES — +HMTX = Text keypad
+QDSS = Mains switch
+QDSH = Simple Operator Panel