

Selection Guide | VACON® 100 X and VACON® 20 X | 0.75 – 37 kW

# Save costs and space with decentral AC drives



**IP66/  
Type 4X**  
outdoor protection  
rating in a  
compact design



# Maximum protection wherever you want

Decentral drive solutions enable engineers and machine designers to save on costs and space. VACON® 100 X and VACON® 20 X manage to combine IP66/Type 4X outdoor enclosure protection with a compact design, which means they can be mounted directly onto the motor, machine or wherever the most efficient location for the drive is.

## Decentral solutions

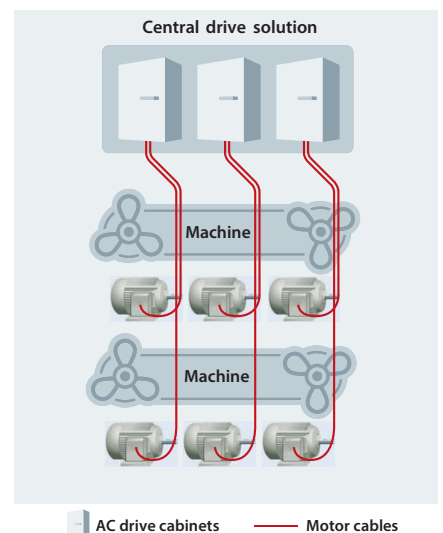
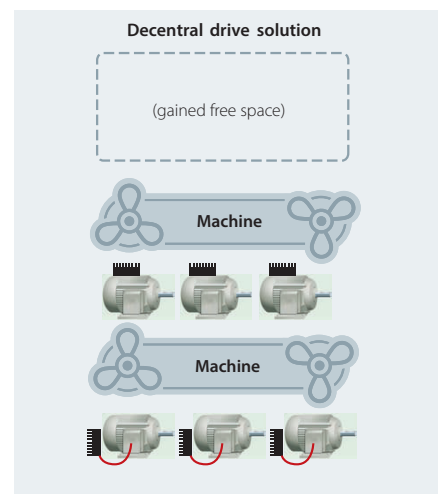
In a decentral drive solution, the drives are located as close as possible to the motor. Significant savings can be achieved in cabling costs, space and energy when the installation does not require the drives to be mounted in a separate electrical room or enclosure.

## Motor mountable OEM solutions

The motor mounted approach has been used in mechanical transmission applications for many years. VACON 100® X and VACON 20® X now bring this trend to a wider range of applications, such as pumps, fans, compressors and many more. In many cases, the best location for the drive can be directly on the working machine, as close to the motor as possible.

## An independent drives supplier

VACON 100® X and VACON 20® X are not tied to any specific motor supplier, which gives the customer the go-ahead to choose the best available solution. Many competitors only offer decentral drives that work with a specific motor – by selecting VACON® 100 X and VACON® 20 X the customer will receive all the advantages and freedom necessary to ensure processes run at an optimal level.





## The decentral drives approach in a nutshell

- Locating the drive as close to the motor as possible
- Minimizing the use of electrical rooms
- Integrating the drive as part of the machine
- No cabinets used for the drives
- Notably shorter length of shield cables needed, reducing costs

## Savings built-in

### Save on cabinet costs

These are examples of how VACON® 100 X and VACON® 20 X can help save on cabinet costs:

- No cabinet needed for the drive
- Heat loss from the drives does not have to be ventilated out of the cabinet
- Weight and size of the cabinet is significantly reduced
- Installation time for the drive is shorter if mounted without an enclosure

### Save more in high powers

With drives available in powers all the way up to 37 kW the decentral drive technology can be utilized in new applications that have previously been limited to traditional cabinet solutions. Examples of how decentral AC drives save more energy when operating with high power include:

- Lower cabinet ventilation costs, if cabinet still needed, as drive heat loss is external
- Savings in cable costs increase with the size of the motor cable
- Less cooling costs for electrical rooms

### Save on cabling costs

Compared to a traditional solution, with the AC drives located in an electrical room, a decentral solution offers significant savings potential in cabling costs. By locating the drive at the machine the length of the motor cable will be minimized. Examples of how VACON® 100 X and VACON® 20 X can help save on cabling costs:

- Minimized length of more costly shielded motor cable
- Reduced cable laying costs

### Single package from the machine builder

A decentral solution provides a more flexible solution as an OEM manufacturer can deliver its machine in one piece and there is no need to install the drives in a separate location.

- A complete package delivered in one piece
- Possibility to offer the customer a better optimized solution
- Minimized installation costs for the end-customer





## VACON® 20 X – performance under pressure

VACON® 20 X is built on experience of producing drives in high enclosures. A decentral drive solution offers countless possibilities. An IP66/Type 4X outdoor protection rating 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 decentral solution

The main purpose of VACON® 20 X is to offer an AC drive that can act in all kinds of decentral 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 certified protection

The VACON® 20 X enclosure is fully compliant with IP66/Type 4X protection rating for outdoor installation and offers 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 is easy to install and commission. If you're looking for

a decentral 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

# What's inside VACON® 20 X

## Removable keypad as option

The removable text keypad has non-volatile memory (for copy/paste parameter settings). Mounted with a magnetic fixing, it can be removed and mounted next to the drive or used remotely during commissioning.

## IP66/Type 4X outdoor certified protection

The VACON® 20 X enclosure is fully compliant with IP66/Type 4X protection rating for outdoor installation, meaning that the drive is resistant to potential hazards such as moisture, dust, detergents and fluctuations in temperature.

## Mains switch integrated as option

Using the integrated drive supply switch option, the drive's main supply can be disconnected and locked for safety during maintenance work. This also saves on investment costs and space.

## Pressure equalizer vent

The pressure equalizer vent allows the enclosure to breathe, no matter how harsh the external conditions, acting as a barrier against condensation, dust and dirt. It equalizes the pressure inside the drive with the surrounding environment, which is vital in preventing the sealing from getting worn down.



## Expansion slot for additional option boards

An expansion slot opens up the possibility of connecting to other fieldbuses and I/O boards.

## Programming designed for OEMs

Built-in PLC functionality, using IEC61131-1 programming methods, allows software logic and parameter list definitions to be modified with the optional VACON® Programming tool.



# Ratings and dimensions

## VACON® 20 X

Supply voltage	AC drive type	Power		Motor current		Enclosure size	Dimensions W x H x D*		Weight	
		kW	HP	I <sub>N</sub> [A]	1.5 x I <sub>N</sub> [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	MU3	205 x 375 x 180	8.07 x 14.76 x 7.09	6	13.23
	VACON0020-3L-0009-4-X	4.0	6.0	9.0	13.5					
	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 protection rating
- 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 decentral 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

# Technical data

## General

<b>Communication</b>	RS485	Standard: Modbus RTU
	HMI	RS422 based for PC tools or keypad interface
<b>Software features</b>	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
<b>Motor connection</b>	Output voltage	0...U <sub>in</sub>
	Output current	Continuous rated current I <sub>n</sub> at rated ambient temperature Overload 1.5 x I <sub>n</sub> max 1 min / 10 min
	Starting current / torque	Current 2 x I <sub>n</sub> for 2 secs every 20 sec period
	Output frequency	0...320 Hz - resolution 0.01 Hz
<b>Ambient conditions</b>	Ambient operating temperature	-10 °C...+40 °C without derating (max. temperature 50 °C with derating)
	Vibration	2g resistance to vibrations (according to 3M6/IEC 60721-3-3)
	Altitude	100% load capacity (no derating) up to 1000 m; 1% derating every 100 m up to 3000 m
	Protection rating	IP66/Type 4X outdoor
<b>EMC</b>	Immunity Emissions	Complies with EN 61800-3, level C2 (3-phase version) and C1 (1-phase version)
<b>Functional safety</b>	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
<b>A</b>	RS485	Differential receiver/transmitter
<b>B</b>	RS485	Differential receiver/transmitter
<b>1</b>	+10V <sub>ref</sub>	Reference output
<b>2</b>	AI1+	Analog input 1, voltage or current
<b>3</b>	AI1-/GND	Analog input 1 common
<b>4</b>	AI2+	Analog input 2, voltage or current
<b>5</b>	AI2-/GND	Analog input 2 common
<b>6</b>	24V <sub>out</sub>	24 V aux. voltage
<b>7</b>	GND / DIC	I/O ground
<b>8</b>	DI1	Digital input 1
<b>9</b>	DI2	Digital input 2
<b>10</b>	DI3	Digital input 3
<b>13</b>	GND	I/O ground
<b>14</b>	DI4	Digital input 4
<b>15</b>	DI5	Digital input 5
<b>16</b>	DI6	Digital input 6
<b>18</b>	AO1+	Analog output signal (+output), voltage
<b>20</b>	DO1	Digital output (open collector)

Relays		STO connections	
Terminal		Terminal	
<b>22</b>	RO1/2 CM	<b>S1</b>	Isolated digital output 1
<b>23</b>	RO1/3 NO		
<b>24</b>	RO2/1 NC	<b>S2</b>	Isolated digital output 2
<b>25</b>	RO2/2 CM		
<b>26</b>	RO2/3 NO	<b>F+</b>	STO feedback
		<b>F-</b>	

## Option boards

<b>OPT-B1-V</b>	6 x DI/DO, each digital input can be individually programmed to also act as digital output
<b>OPT-B2-V</b>	2 x Relay output + Thermistor
<b>OPT-B4-V</b>	1 x AI, 2 x AO (isolated)
<b>OPT-B5-V</b>	3 x Relay output
<b>OPT-B9-V</b>	1 x RO, 5 x DI (42-240 VAC)
<b>OPT-BF-V</b>	1 x AO, 1 x DO, 1 x RO
<b>OPT-E3-V</b>	PROFIBUS DPV1, (screw connector)
<b>OPT-E5-V</b>	PROFIBUS DPV1, (D9 connector)
<b>OPT-E6-V</b>	CANopen
<b>OPT-E7-V</b>	DeviceNet
<b>OPT-BH-V</b>	3 x PT100 or PT1000, NI1000, KTY84-130, KTY84-150, KTY-84-131
<b>OPT-BK-V</b>	AS-interface option card
<b>OPT-CI-V</b>	Modbus TCP option card
<b>OPT-CP-V</b>	PROFINET IO option card
<b>OPT-CQ-V</b>	EtherNet/IP option card
<b>OPT-EC-V</b>	EtherCAT option card
<b>OPT-CJ-V</b>	BACnet MS/TP

## Options

<b>VACON-PAN-HMTX-MC06X</b>	Magnetic handheld keypad
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## Type code key

<b>VACON0020</b>	<b>3L</b>	<b>0006</b>	<b>4</b>	<b>X</b>	<b>+</b>	<b>OPTION</b>	<b>CODES</b>
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<b>0020</b>	<b>Product range</b> VACON 20
<b>3L</b>	<b>Input/Function</b> <b>3L</b> = Three-phase input <b>1L</b> = Single-phase input
<b>0006</b>	<b>Drive rating in Ampere</b> eg. <b>0006</b> = 6 A
<b>4</b>	<b>Supply voltage</b> <b>2</b> = 208-240 V <b>4</b> = 380-480 V
<b>X</b>	<b>IP66/Type 4X outdoor protection rating</b> EMC level C2 (3-phase) or C1 (1-phase) STO integrated (only in 3-phase version) Brake chopper (only in 3-phase version)
<b>+</b>	
<b>OPTION</b>	<b>+HMTX</b> = Text keypad <b>+QDSS</b> = Mains switch <b>+QDSH</b> = Simple operator panel
<b>CODES</b>	





## VACON® 100 X – a top class decentral drive

With a power range from 1.1 kW to 37 kW the VACON® 100 X sets a new benchmark for decentral drives. It comes with IP66/Type 4X outdoor protection rating and has highly advanced control capability which guarantees processes run exactly how you want them to. On top of all this, it has built-in harmonic filtering chokes, making it suitable for public networks.

### Top class protection

IP66/Type 4X outdoor protection approval means that VACON® 100 X comes with all the armour it needs in order to stand up to the challenges that demanding applications can throw at it. The robust, die-cast metal frame is strong enough to withstand 3g vibrations, and its cooling capabilities are excellent. The enclosure is powder coated for protection against corrosion and is designed to be fully operational in outdoor environments. 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.

### Into the heat of the action

The enclosure's heatsink is easy to clean and the large, open cooling ribs allow the drive to perform in temperatures up to 60 °C (with derating). The cooling system is such that it is not dependent on motor airflow like most motor mounted drives, and the fan is speed-controlled and pluggable, and therefore easy to replace.

### Programming designed for OEMs

Built-in PLC functionality, using IEC61131-1 programming methods, allows software logic and parameter list definitions to be modified with the optional VACON® Programming tool. This means that users can customize the drive around their requirements, making it an attractive option for OEM customers.

### Typical applications

- Machinery
- Conveyors
- Pumps
- Fans
- Decentral solutions in a high variety of applications
- Outdoor applications
- Applications exposed to vibrations



# What's inside VACON® 100 X

TÜV/SÜD certified solution



## Pressure equalizer vent

Just like VACON® 20 X, VACON® 100 X comes with a pressure equalizer vent which allows the enclosure to breathe, however harsh the external conditions, and prevents it from getting worn down. This acts as a barrier against condensation, dust and dirt and ensures pressure inside the drive is equalized with the surrounding environment.

## Large cooling ribs

The front of the drive's enclosure offers cooling protection with ribs that don't collect dust. They allow full access to the heatsink and can be cleaned with pressurized water. This makes them easy to maintain and ensures reliable operation.

## Power head

All the power components are contained in one compact and robust unit. Removable connectors are always used to make connections, meaning the power head can be easily removed where needed.

## Terminal box

A single box that contains all the drive's wiring and the control unit, freeing up space elsewhere.

## Expansion slots for additional option boards

Two expansion slots open up the possibility of connecting to other fieldbuses and I/O boards.

## Mains switch integrated as option

Using the integrated drive supply switch option, the drive's main supply can be disconnected and locked during maintenance work. This helps save on investment costs and space and provides safety during the job.

## Mountable in four orientations

Both the drive and the keypad can be mountable in four positions. This means that however you set up the VACON® 100 X, the keypad will remain easily operable. Since there are no electrical cable connections to worry about, it can even be rotated in the field.

## Motor mountable

The drive can be mounted onto any flat surface. Motor mounting is done using additional adaptable parts.

# Ratings and dimensions

## VACON® 100 X

Supply voltage	AC drive type	Power		Motor current		Enclosure size	Dimensions W x H x D**		Weight	
		kW	HP	I <sub>N</sub> [A]	1.5 x I <sub>N</sub> [A]		mm	inches	kg	lb
208-240 VAC, 3-phase	VACON0100-3L-0006-2-X	1.1	1.5	6.6	9.9	MM4	190.7 x 315.3 x 196.4	7.51 x 12.41 x 7.73	8.8	19.4
	VACON0100-3L-0008-2-X	1.5	2.0	8.0	12.0					
	VACON0100-3L-0011-2-X	2.2	3.0	11.0	16.5					
	VACON0100-3L-0012-2-X	3.0	4.0	12.5	18.8					
	VACON0100-3L-0018-2-X	4.0	5.0	18.0	27.0	MM5	232.6 x 367.4 x 213.5	9.16 x 14.46 x 8.41	14.9	32.9
	VACON0100-3L-0024-2-X	5.5	7.5	24.2	36.3					
	VACON0100-3L-0031-2-X	7.5	10.0	31.0	46.5	MM6	350 x 500 x 235	13.78 x 19.69 x 9.25	31.5	69.5
	VACON0100-3L-0048-2-X	11.0	15.0	48.0	72.0					
VACON0100-3L-0062-2-X	15.0	20.0	62.0	93.0						
380-480 VAC, 3-phase	VACON0100-3L-0003-4-X	1.1	1.5	3.4	5.1	MM4	190.7 x 315.3 x 196.4	7.51 x 12.41 x 7.73	8.8	19.4
	VACON0100-3L-0004-4-X	1.5	2.0	4.8	7.2					
	VACON0100-3L-0005-4-X	2.2	3.0	5.6	8.4					
	VACON0100-3L-0008-4-X	3.0	5.0	8.0	12.0					
	VACON0100-3L-0009-4-X	4.0	5.0	9.6	14.4					
	VACON0100-3L-0012-4-X	5.5	7.5	12.0	18.0					
	VACON0100-3L-0016-4-X	7.5	10.0	16.0	24.0	MM5	232.6 x 367.4 x 213.5	9.16 x 14.46 x 8.41	14.9	32.9
	VACON0100-3L-0023-4-X	11.0	15.0	23.0	34.5					
	VACON0100-3L-0031-4-X	15.0	20.0	31.0	46.5					
	VACON0100-3L-0038-4-X	18.5	25.0	38.0	57.0	MM6	350 x 500 x 235	13.78 x 19.69 x 9.25	31.5	69.5
	VACON0100-3L-0046-4-X	22.0	30.0	46.0	69.0					
	VACON0100-3L-0061-4-X	30.0	40.0	61.0	91.5					
	VACON0100-3L-0072-4-X	37.0*	50.0*	72.0*	80.0*					
380-500 VAC, 3-phase	VACON0100-3L-0003-5-X	1.1	1.5	3.4	5.1	MM4	190.7 x 315.3 x 196.4	7.51 x 12.41 x 7.73	8.8	19.4
	VACON0100-3L-0004-5-X	1.5	2.0	4.8	7.2					
	VACON0100-3L-0005-5-X	2.2	3.0	5.6	8.4					
	VACON0100-3L-0008-5-X	3.0	5.0	8.0	12.0					
	VACON0100-3L-0009-5-X	4.0	5.0	9.6	14.4					
	VACON0100-3L-0012-5-X	5.5	7.5	12.0	18.0					
	VACON0100-3L-0016-5-X	7.5	10.0	16.0	24.0	MM5	232.6 x 367.4 x 213.5	9.16 x 14.46 x 8.41	14.9	32.9
	VACON0100-3L-0023-5-X	11.0	15.0	23.0	34.5					
	VACON0100-3L-0031-5-X	15.0	20.0	31.0	46.5					
	VACON0100-3L-0038-5-X	18.5	25.0	38.0	57.0	MM6	350 x 500 x 235	13.78 x 19.69 x 9.25	31.5	69.5
	VACON0100-3L-0046-5-X	22.0	30.0	46.0	69.0					
	VACON0100-3L-0061-5-X	30.0	40.0	61.0	91.5					
	VACON0100-3L-0072-5-X	37.0*	50.0*	72.0*	80.0*					

\* Low overload (110%) \*\* dimensions without keypad and mains switch

### Technical highlights

- IP66/Type 4X outdoor protection rating
- 3g resistance to vibrations (according to 3M7/IEC 60721-3-3)
- Supports both induction and permanent magnet motors
- Option of ability to operate in temperatures ranging from -40 °C to 60 °C
- Integrated with RS485 Modbus and EtherNET communication
- Safe Torque Off (STO) mode according to SIL3
- Built-in EMC filter for EN61800-3 category C2 (C1 as option)
- DC choke and film capacitor meet EN61000-3-12 requirements
- Integrated brake chopper in all frame sizes
- PTC input as standard

### Benefits

- Able to withstand rough conditions such as heat, dirt and vibrations
- Easy to keep clean
- Approval for public networks makes it flexible for installation
- VACON® Programming enables top class integration for countless OEM applications
- High efficiency and simulated air flow ensure long lifetime
- Mountable in any position; fits into any available space

# Technical data

## General

<b>Communication</b>	RS485	Standard: Modbus RTU, BACnet, N2
	Ethernet	Standard: Modbus TCP (EtherNet/IP and PROFINET IO as built-in option)
	HMI	RS422 based for PC tools or keypad interface
<b>Software features</b>	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
<b>Motor connection</b>	Output voltage	0...U <sub>m</sub>
	Output current	Continuous rated current I <sub>n</sub> at rated ambient temperature Overload 1.5 x I <sub>n</sub> for 1 min/10min; 1.1 x I <sub>n</sub> for 1min/10min (for 37 kW only)
	Starting current / torque	Current 2 x I <sub>n</sub> for 2 secs every 20 sec period
	Output frequency	0...320 Hz - resolution 0.01 Hz
<b>Ambient conditions</b>	Ambient operating temperature	-10 °C...+40 °C without derating (max. temperature 60 °C with derating); Arctic mode as option with temperature down to -40 °C
	Vibration	3g resistance to vibrations (according to 3M7/IEC 60721-3-3)
	Altitude	100% load capacity (no derating) up to 1000 m; 1% derating every 100 m up to 3000 m
	Protection rating	IP66 / Type 4X outdoor
<b>EMC</b>	Immunity Emissions	Complies with EN 61800-3, level C2 (C1 as option)
<b>Functional safety</b>	Safe Torque Off (STO)	SIL 3 according to IEC61800-5-2 PL e / Cat 4 according to ISO13849-1

## I/O connections

Standard I/O		
Terminal		Signal
A	RS485	Differential receiver / transmitter
B	RS485	Differential receiver / transmitter
1	+10V <sub>ref</sub>	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 <sub>out</sub>	24 V aux. voltage
7	GND	I/O ground
8	DI1	Digital input 1
9	DI2	Digital input 2
10	DI3	Digital input 3
11	DICOM A	Common for DI1 - DI3
12	24V <sub>out</sub>	24 V aux. voltage
13	GND	I/O ground
14	DI4	Digital input 4
15	DI5	Digital input 5
16	DI6	Digital input 6
17	DICOM B	Common for DI4 - DI6
18	AO1+	Analog output (+output), voltage current
19	AO1- / GND	Analog output signal common (-output)
30	24V	24 V aux. input voltage

Relays			STO connections	
Terminal			Terminal	
21	RO1/1 NC	Relay output 1	S1	Isolated digital output 1
22	RO1/2 CM		G1	
23	RO1/3 NO			
24	RO2/1 NC	Relay output 2	S2	Isolated digital output 2
25	RO2/2 CM		G2	
26	RO2/3 NO			F+ F-
28	Thermistor input			
29				

## Option boards

<b>OPT-B1-V</b>	6 x DI/DO, each digital input can be individually programmed to also act as digital output
<b>OPT-B2-V</b>	2 x Relay output + Thermistor
<b>OPT-B4-V</b>	1 x AI, 2 x AO (isolated)
<b>OPT-B5-V</b>	3 x Relay output
<b>OPT-B9-V</b>	1 x RO, 5 x DI (42-240 VAC)
<b>OPT-BF-V</b>	1 x AO, 1 x DO, 1 x RO
<b>OPT-E3-V</b>	PROFIBUS DPV1, (screw connector)
<b>OPT-E5-V</b>	PROFIBUS DPV1, (D9 connector)
<b>OPT-E6-V</b>	CANopen
<b>OPT-E7-V</b>	DeviceNet
<b>OPT-BH-V</b>	3 x PT100 or PT1000, NI1000, KTY84-130, KTY84-150, KTY84-131
<b>OPT-BK-V</b>	AS-interface option card
<b>OPT-EC-V</b>	EtherCAT option card
<b>OPT-C4-V</b>	LonWorks

## Options

<b>VACON-PAN-HMGR-MC05-X</b>	Handheld/Magnetic fixing IP66 graphical keypad
<b>POW-QDSS-MM04</b>	Integrated disconnect switch for enclosure size MM4
<b>POW-QDSS-MM05</b>	Integrated disconnect switch for enclosure size MM5
<b>POW-QDSS-MM06</b>	Integrated disconnect switch for enclosure size MM6
<b>ENC-QAFH-MM04</b>	Auxiliary Frame Heater option for enclosure size MM4
<b>ENC-QAFH-MM05</b>	Auxiliary Frame Heater option for enclosure size MM5
<b>ENC-QAFH-MM06</b>	Auxiliary Frame Heater option for enclosure size MM6
<b>ENC-QMMF-MM04</b>	Motor Mount Flange for enclosure size MM4
<b>ENC-QMMF-MM05</b>	Motor Mount Flange for enclosure size MM5
<b>ENC-QMMF-MM06</b>	Motor Mount Flange for enclosure size MM6

## Type code key

VACON0100	3L	0006	4	X	+	OPTION	CODES
0100	■ <b>Product range</b> VACON 100						
3L	■ <b>Input/Function</b> 3L = Three-phase input						
0006	■ <b>Drive rating in Ampere</b> eg. 0006 = 6 A						
4	■ <b>Supply voltage</b> 2 = 208-240 V 4 = 380-480 V 5 = 380-500 V						
X	■ <b>IP66/Type 4X outdoor protection rating</b> EMC level C2						
+	STO integrated Brake chopper integrated: DC bus connection integrated						
OPTION	■ <b>+HMGR</b> = Graphical keypad ■ <b>+SRBT</b> = Battery for RTC ■ <b>+FBIE</b> = support for PROFINET IP and EtherNET IP						
CODES							



## Danfoss Drives

Danfoss Drives is a world leader in variable speed control of electric motors. We aim to prove to you that a better tomorrow is driven by drives. It is as simple and as ambitious as that.

We offer you unparalleled competitive edge through quality, application-optimized products targeting your needs – and a comprehensive range of product lifecycle services.

You can rely on us to share your goals. Striving for the best possible performance in your applications is our focus. We achieve this by providing the innovative products and application know-how required to optimize efficiency, enhance usability, and reduce complexity.

From supplying individual drive components to planning and delivering complete drive systems; our experts are ready to support you all the way.

We draw on decades of experience within industries that include:

- Chemical
- Cranes and Hoists
- Food and Beverage
- HVAC
- Lifts and Escalators
- Marine and Offshore
- Material Handling
- Mining and Minerals
- Oil and Gas
- Packaging
- Pulp and Paper
- Refrigeration
- Water and Wastewater
- Wind

You will find it easy to do business with us. Online, and locally in more than 50 countries, our experts are never far away, reacting fast when you need them.

Since 1968, we have been pioneers in the drives business. In 2014, Vacon and Danfoss merged, forming one of the largest companies in the industry. Our AC drives can adapt to any motor technology and we supply products in a power range from 0.18 kW to 5.3 MW.