VACON 5X
SMALL AND ROBUST AC DRIVE

VACON
DRIVEN BY DRIVES

THE SIMPLE DRIVE FOR HARSH ENVIRONMENTS

The Vacon 5X is a small and robust range of AC drives designed for the harsh environments found in most process industries and on building sites. The powers available are from 0.37 kW to 7.5 kW (220 V, single-phase, 220 V and 400 V three-phase). The Vacon 5X range is suited for all types of applications, typically industrial conveyors, fans and pumps.

The rugged IP55 enclosure allows installation directly on the wall or other suitable place without further protection in most environments. The Vacon 5X range offers alternatives with or without an integrated RFI filter and with or without an integrated main switch, providing solutions for the most differing needs.

The Vacon 5X is easy to install and commission. There are only a dozen basic parameters to adjust (related to ramp times and motor data), and the I/O interface is simple. The simple keypad and programming matches that of the Vacon 50X and 500X ranges, creating a compatible family of AC drives for tough environments. The Modbus RTU is included as standard, making integration into fieldbus control systems easy.

Industrial segments

- Food processing
- Bottling lines
- Pumping
- Chemical
- Wastewater
- HVAC

Features

- Small footprint
- Integrated main switch available
- Designed for a harsh and wet environment
- Simple in construction
- Easy to use due to advanced features
- Fast setup: 14 basic parameters handle most applications
- Display of motor current and motor rpm
- Modbus RTU included
- Control location can be chosen: I/O, keypad or fieldbus
- Integrated brake chopper for sizes 2 and 3
- I_H sizing: 50% overload for 1 minute
- 75% overload for 2 seconds
- Optional memory stick programming for easy copying of data between drives
- Programmable via a PDA or smart phone

SIZES AND RATINGS

Motor nominal power (kW)	Drive nominal current (A)	Order type code	Main switch (optional) Add	EMC4 (optional) Add	Frame	Measurements (mm) WxHxD	Weight (kg)
1 x 220 VAC							
0.37	2.3	VACON0005-1L-0002-2-X-1	+CILS	+EMC4	F1	78x172x123	1.1
0.75	4.3	VACON0005-1L-0004-2-X-1	+CILS	+EMC4	F1	78x172x123	1.1
1.5	7	VACON0005-1L-0007-2-X-1	+CILS	+EMC4	F1	78x172x123	1.1
1.5	7	VACON0005-1L-0007-2-X-2	+CILS	+EMC4	F2	104x220x150	2.6
2.2	10.5	VACON0005-1L-0011-2-X-2	+CILS	+EMC4	F2	104x220x150	2.6
3 x 200 – 240 VAC							
0.37	2.3	VACON0005-3L-0002-2-X-1	+CILS	+EMC4 *	F1	78x172x123	1.1
0.75	4.3	VACON0005-3L-0004-2-X-1	+CILS	+EMC4 *	F1	78x172x123	1.1
1.5	7	VACON0005-3L-0007-2-X-1	+CILS	+EMC4 *	F1	78x172x123	1.1
1.5	7	VACON0005 3L-0007-2-X-2	+CILS	+EMC4	F2	104x220x150	2.6
2.2	10.5	VACON0005-3L-0011-2-X-2	+CILS	+EMC4	F2	104x220x150	2.6
4	14	VACON0005-3L-0014-2-X-3	+CILS	+EMC4	F3	140x250x160	4
3 x 380 – 480 VAC							
0.75	2.2	VACON0005-3L-0002-4-X-1	+CILS	+EMC4	F1	78x172x123	1.1
1.5	4.1	VACON0005-3L-0004-4-X-1	+CILS	+EMC4	F1	78x172x123	1.1
1.5	4.1	VACON0005-3L-0004-4-X-2	+CILS	+EMC4	F2	104x220x150	2.6
2.2	5.8	VACON0005-3L-0006-4-X-2	+CILS	+EMC4	F2	104x220x150	2.6
4	9.5	VACON0005-3L-0010-4-X-2	+CILS	+EMC4	F2	104x220x150	2.6
5.5	14	VACON0005-3L-0014-4-X-3	+CILS	+EMC4	F3	140x250x160	4
7.5	18	VACON0005-3L-0018-4-X-3	+CILS	+EMC4	F3	140x250x160	4

* = Only +EMC4 version available

Options

+CILS = Main switch version available
+EMC4 = Version for the category C4 available
(Providing no EMC protection: requires centralized action, for industrial environments)

I/O CONNECTIONS

- 2 analog inputs: configurable 0...10 V, 0/4...20 mA (speed reference and actual value signal)
- 3 digital inputs (0/24 V): one of which is one of the analog inputs as well
- 1 analog/digital output 0...10 V or 0/4...20 mA analog; 24 V max as digital output
- 1 NO relay
- 10 V reference voltage out
- 24 V I/O supply voltage

External brake resistors

AC drive	Minimum brake resistance
200 V single- and three-phase models	47 ohms
400 V models, frame size 2	100 ohms
400 V models, frame size 3	22 ohms

TECHNICAL DATA

Mains connection	Input voltage U_{in}	208...240 V; 380...480 V; –10%...+10%
	Input frequency	48...62 Hz
Motor connection	Output voltage	0...U_{in}
	Continuous output current	Ambient temperature max. +40°C, overload 1.5 x I_H (1 min./10 min.)
	Output frequency	0...500 Hz
	Frequency resolution	0.1 Hz
Control characteristics	Control method	U/f Control
	Switching frequency	4...32 kHz effective
	Frequency reference Analogue input Panel reference	Analog (0...10 V, 0...20 mA, 4...20 mA) Digital (keypad) PI control (integral) Modbus RTU
	Field weakening point	25...500 Hz
	Acceleration time	0...600 sec
	Deceleration time	0...600 sec
	Braking torque	DC brake: 30% x T_N (without brake option)
Ambient conditions	Ambient operating temperature	–10°C (no frost)...+40°C: I_H
	Storage temperature	–40°C...+60°C
	Relative humidity	0 to 95% RH, non-condensing, non-corrosive, no dripping water
	Altitude	100% load capacity (no derating) up to 1,000 m 1% derating for each 100 m above 1,000 m max. 2,000 m with UL, max. 4,000 m without UL
	Enclosure class	IP55
EMC	Immunity	Fulfils EN61800-3, first and second environment
	Emissions	Fulfils EN61800-3, first and second environment
Safety		EN 61800-5-1 (2003), EN 60204-1 (2006), CE, UL, cUL, C-tick; (see unit nameplate for more detailed approvals)
Control connections	Analogue input voltage	0...+10 V, R_i = 72 kΩ Resolution 0.025%, linearity < 1% deviation
	Analogue input current	0(4)...20 mA, R_i = 500 Ω
	Digital inputs (3)	Positive logic; 18...30 VDC Logic 0: 0...2 V, Logic 1: 8...30 V
	Auxiliary voltage	+24 V, ±5%, max. voltage ripple < 100 mV; max. 100 mA
	Output reference voltage	+10 V, +3%, max. load 10 mA
	Analogue output	Analog output: 0...10 V (20 mA max). Resolution: 10 bits, linearity < 2% deviation
	Digital outputs	Digital output: 0 V / 24 V push-pull, 20 mA max
	Relay outputs	1 NO relay output Switching capacity: 30 VDC / 5 A, 250 VAC / 6 A, Min. switching load: 5 V / 10 mA
Protections	Overvoltage trip limit Undervoltage trip limit	For 400 V 3-phase supply drives: Overvoltage trip level: 835 V Undervoltage trip level: 478 V (rising volts), 320 V (falling volts) For 230 V supply drives: Overvoltage trip level: 418 V Undervoltage trip level: 239 V (rising volts), 160 V (falling volts)
	Earth fault protection	In case of earth fault in motor or motor cable, only the frequency converter is protected
	Mains supervision	Trips if any of the input phases is missing
	Motor phase supervision	Trips if any of the output phases is missing
	Overcurrent protection	Yes
	Unit overtemperature protection	Yes
	Motor overload protection	Yes
	Motor stall protection	Yes
	Motor underload protection	Yes
	Short-circuit protection of +24 V and +10 V reference voltages	Yes

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BC00357A