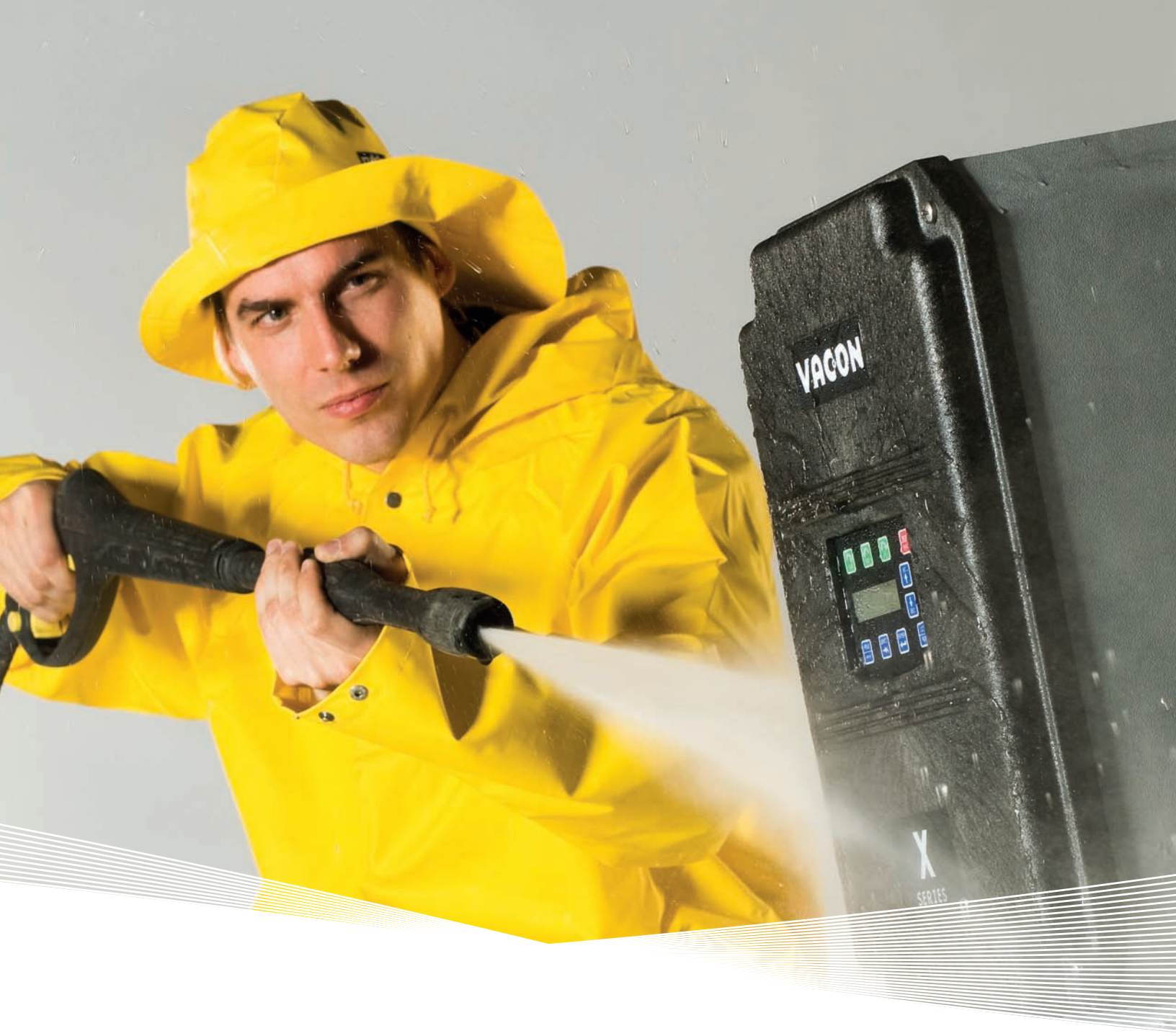


VACON X SERIES

RUGGED DRIVES FOR THE REAL WORLD

VACON

DRIVEN BY DRIVES

THE TOUGHEST AC DRIVES ON THE PLANET!

The Vacon X4 and X5 AC Drives are designed for REAL world that is not gentle or forgiving to electronic products. They have been designed to keep driving in harsh environments and are built from the ground up to survive hostile conditions and still be simple to use. They are built to be mounted where the work is, not hidden in another enclosure or room that adds costs and space.

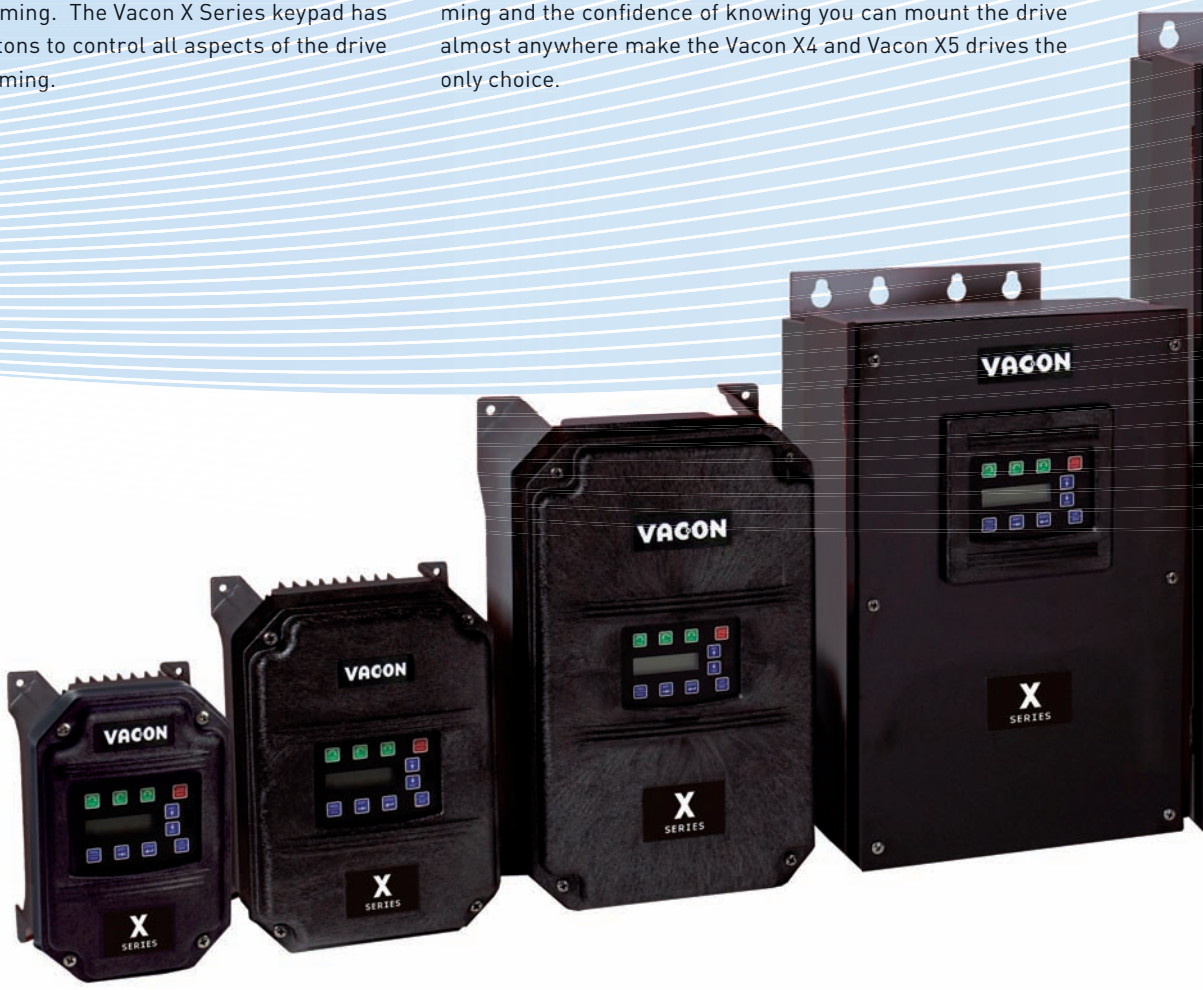
The same enclosures that can survive in the harsh industrial world makes them ideal when cleanliness is extremely important, such as the Food and Beverage industry where high pressure washings are needed on a regular basis. The Vacon X4 and X5 drives, through 100 HP, exceed the specifications of their rated NEMA 4X / IP66 Indoor and Outdoor Use enclosures. AND all models up through 30 HP can withstand high pressure washdown of 1,000 PSI at 6 inches!

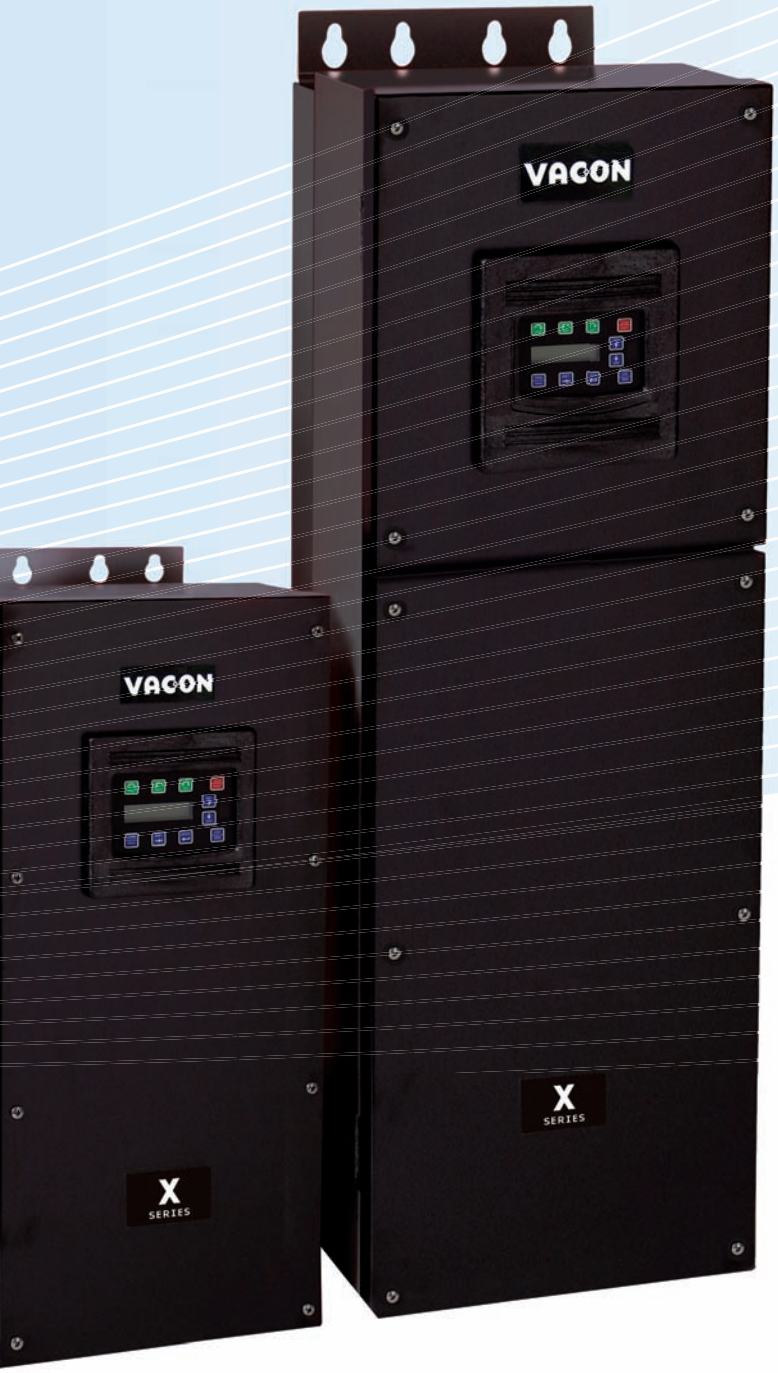
The Vacon X Series drives have the brains to go with their brawn. All models are packed with advanced control and operation features that make them the best choice for everything from simple, stand-alone applications to advanced system-level controls.

The Vacon X Series drives also boast the easiest programming and operation in the industry. The bright, clear, backlit display provides an easy to read and customizable view for operation and programming. The Vacon X Series keypad has large, well marked buttons to control all aspects of the drive operation and programming.

The Vacon X4 has the toughness and features to handle most industrial jobs with ease. If the application is more unique, the X5 accepts option boards, and has a USB interface, fully coated PC boards for added protection and other advanced features such as a real-time-clock.

A tough enclosure, an easy to read display, simple programming and the confidence of knowing you can mount the drive almost anywhere make the Vacon X4 and Vacon X5 drives the only choice.





Toughest packaging

- NEMA 4X / IP66 Indoor and Outdoor Use enclosures through 100 HP; NEMA 12 / IP55 for 125 HP and above
- Withstands 1,000 PSI washdown at 6 inches on models though 30 HP
- Thick injected foam and metal covers protect against bumps and misuse
- Mounts close to the motor to eliminate long motor lead problems

Easiest to use

- Simple intuitive programming
- Multi-language display – no codes to learn
- Wireless programming using PDA-trAC+® for Windows Mobile 5®
- Application Marcos make set-up a breeze

Most versatile

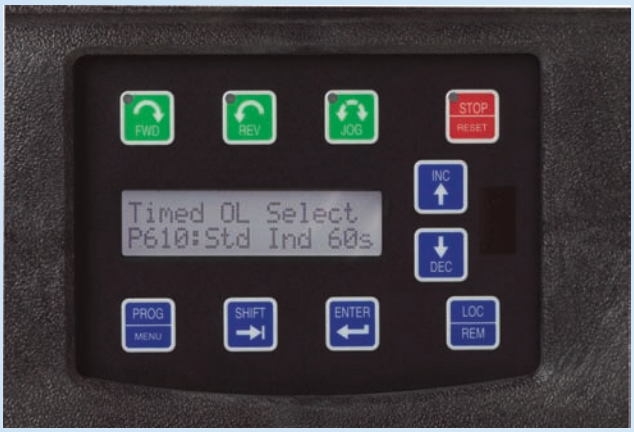
- Operate form keypad, remote signals, computers or any combination
- Mount them where you use them
- Built-in 9-step PLC functions (25-step with X5)
- ARCTIC Mode maintains safe operating temperature in cold locations

SIMPLE TO OPERATE

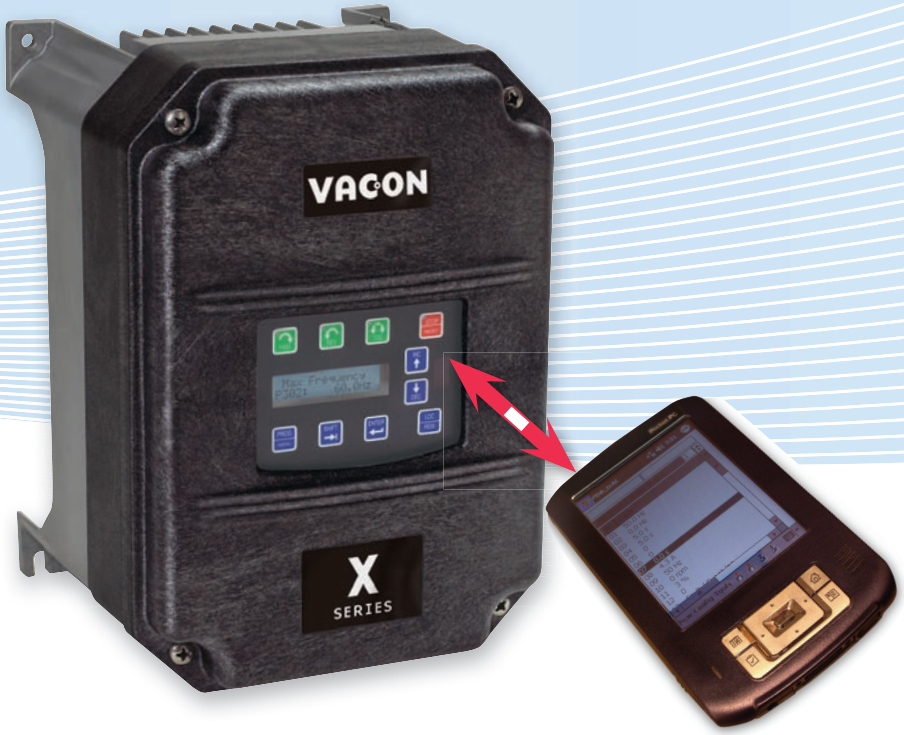
Basic operations are a breeze with Vacon's enhanced keypad. The familiar design uses color-coded buttons with text and symbols, remains easy-to-use and understand, yet offers an unprecedented breadth of functionality. With a few simple touch commands, operators have access to parameters for configuration, start-up, operation and troubleshooting.

- Run set-up macros for fan, pump, or sensorless vector applications with real time clock capabilities. Collect real time data and event logs using a choice of communication protocols or through the standard USB port.

- Expand the basic operations with predefined macro commands that simplify common application set ups. One-touch menu selection collects the most frequently used parameters and presets them with common application settings. Collect real time data and event logs using a choice of communication protocols or through standard USB port.



Vacon's user-friendly keypad makes operation simple. The easy-to-read display communicates status information.



PDA-trAC+® software allows Pocket PC devices with infra-red networking capabilities to be used for accurate product configuration. No more need for special cables, adapters or opening enclosures to change a setting! Download your free copy from our web site: www.vacon.com

- The user-connection terminal strip handles common jobs with ease while providing application flexibility with extra inputs and relays not found on other drives.
- Standard "Built-In" Dynamic Braking Resistors virtually eliminate nuisance trips, providing more uptime.
- 60:1 constant torque turn down ratio provides low speed performance when you need it. Optional performance with enhanced turndown ratio using encoder feedback option.

ADVANCED VACON X5 FEATURES

USB FUNCTIONS

- Parameter Save / Recall
- Save parameter set to USB stick and upload to another drive
- Stored data easily opened with Microsoft Excel
- Ability to define custom file name (numbers or text)
- Easy firmware upgrades using standard USB memory stick

REAL TIME CLOCK FUNCTION

- Control operation based on time-of-day. Separate weekday and weekend settings available
- Fault Information — real time data is stored with all faults
- Signals an event via text on the display or contact closure, independent of drive operation
- Keeper Function — logs time-based data from external or internal signals
- Data read via serial communication or transferred to USB Memory Stick

PROGRAM SEQUENCER ENHANCEMENTS

- Improved functionality is closer to traditional PLC than available with current X4
- New loop and branch capabilities available
- Real Time Clock — time-of-day (TOD) enable function, allows programmed operation to specific periods of the day or week

OPTIONS

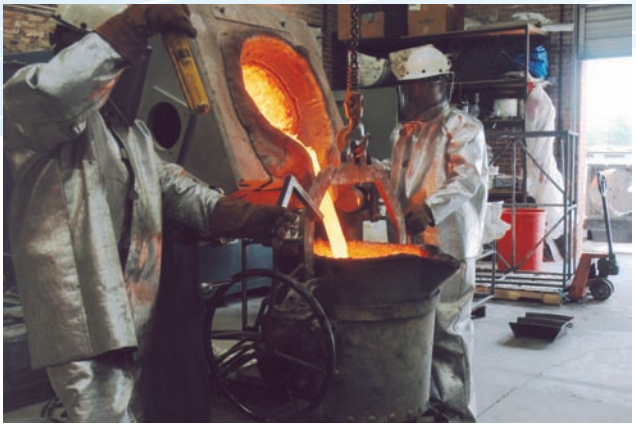
The ability to accept option boards enhances the Vacon X5's application flexibility.

Current options afford Vacon X5 Profibus with the opportunity to communicate on powerful serial communication networks like DeviceNet, Ethernet IP, Profibus and Modbus TCP/IP. An additional option affords the opportunity to interface a shaft mounted optical encoder to the Vacon X5 for improved performance. All options include five (5) channels of 115Vac control options.

Remote IP66-rated keypad are also available for both the Vacon X4 and X5 drives.

APPLICATIONS

Municipal Water Supply Application — User needs to gather information on a scheduled basis of the amount of water that is pumped out of a municipal well. The readings must be gathered weekly and be in thousands of gallons per day. The Keeper function can gather this automatically and the operator only needs to download once a week. The information is in CSV format that will open in Excel with defined headers.



Unattended Operation — Energy savings add up every day with Vacon X5's time-of-day functionality providing automated startup of critical operating systems. Prior to the arrival of the production team, each morning the dust collector, cooling fans and even the lights in a foundry all start-up to full operating status without the need for human intervention. At the end of the day, no one needs to remember to shut these systems down. The Vacon X5 takes care watching the clock for you. Saving energy is just one of the benefits delivered by the Vacon X5.

PRODUCT RANGE

VACON X Series 115 Vac 1-ph, NEMA 4X/IP66 Indoor and Outdoor, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option Board
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	(Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C1S010C	0.5	0.37	2.2	1	0.75	4.2	5	F1A	Y
VACONX4C1S010C	VACONX5C1S010C09	0.5	0.37	2.2	1	0.75	4.2	5	F0	N

VACON X Series 200-230 Vac 3-ph, NEMA 4X/IP66 Indoor and Outdoor, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option Board
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	(Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C20010C	0.5	0.37	2.2	1	0.75	4.2	5	F1A	Y
---	VACONX5C20020C	1	0.75	4.2	2	1.5	6.8	8.2	F1A	Y
---	VACONX5C20030C	2	1.5	6.8	3	2.2	9.6	11.5	F1A	Y
---	VACONX5C20050C	3	2.2	9.6	5	4	15.2	18.2	F1A	Y
---	VACONX5C20075C	5	4	15.2	7.5	5.5	22	26	F1A	Y
---	VACONX5C20100C	7.5	5.5	22	10	7.5	28	34	F2A	Y
---	VACONX5C20150C	10	7.5	28	15	11	42	50	F2A	Y
---	VACONX5C20200C	15	11	42	20	15	54	65	F3	Y
---	VACONX5C20250C	20	15	54	25	18.5	68	82	F3	Y
VACONX4C20010C	VACONX5C20010C09	0.5	0.37	2.2	1	0.75	4.2	5	F0	N
VACONX4C20020C	VACONX5C20020C09	1	0.75	4.2	2	1.5	6.8	8.2	F0	N
VACONX4C20030C	VACONX5C20030C09	2	1.5	6.8	3	2.2	9.6	11.5	F0	N
VACONX4C20050C	VACONX5C20050C09	3	2.2	9.6	5	4	15.2	18.2	F1	N
VACONX4C20075C	VACONX5C20075C09	5	4	15.2	7.5	5.5	22	26	F1	N
VACONX4C20100C	VACONX5C20100C09	7.5	5.5	22	10	7.5	28	34	F2	N
VACONX4C20150C	VACONX5C20150C09	10	7.5	28	15	11	42	50	F2	N
VACONX4C20200C	---	15	11	42	20	15	54	65	F3	N
VACONX4C20250C	---	20	15	54	25	18.5	68	82	F3	N

VACON X Series 380-460 Vac 3-ph, NEMA 4X/IP66 Indoor and Outdoor, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option Board
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	(Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C40010C	0.5	0.37	1.1	1	0.75	2.1	2.5	F1A	Y
---	VACONX5C40020C	1	0.75	2.1	2	1.5	3.4	4.1	F1A	Y
---	VACONX5C40030C	2	1.5	3.4	3	2.2	4.8	5.8	F1A	Y
---	VACONX5C40050C	3	2.2	4.8	5	4	7.6	9.1	F1A	Y
---	VACONX5C40075C	5	4	7.6	7.5	5.5	11	13.2	F1A	Y
---	VACONX5C40100C	7.5	5.5	11	10	7.5	14	16.8	F1A	Y
---	VACONX5C40150C	10	7.5	14	15	11	21	25	F2A	Y
---	VACONX5C40200C	15	11	21	20	15	27	32	F2A	Y
---	VACONX5C40250C	20	15	27	25	18.5	34	41	F2A	Y
---	VACONX5C40300C	25	18.5	34	30	22	40	48	F2A	Y
---	VACONX5C40400C	30	22	40	40	30	52	63	F3	Y
---	VACONX5C40500C	40	30	52	50	37	65	78	F3	Y
---	VACONX5C40600C	50	37	65	60	45	77	92	F4	Y
---	VACONX5C40750C	60	45	77	75	55	96	115	F4	Y
---	VACONX5C41000C	75	55	96	100	75	124	149	F4	Y
VACONX4C40010C	VACONX5C40010C09	0.5	0.37	1.1	1	0.75	2.1	2.5	F0	N
VACONX4C40020C	VACONX5C40020C09	1	0.75	2.1	2	1.5	3.4	4.1	F0	N
VACONX4C40030C	VACONX5C40030C09	2	1.5	3.4	3	2.2	4.8	5.8	F0	N
VACONX4C40050C	VACONX5C40050C09	3	2.2	4.8	5	4	7.6	9.1	F1	N
VACONX4C40075C	VACONX5C40075C09	5	4	7.6	7.5	5.5	11	13.2	F1	N
VACONX4C40100C	VACONX5C40100C09	7.5	5.5	11	10	7.5	14	16.8	F1	N
VACONX4C40150C	VACONX5C40150C09	10	7.5	14	15	11	21	25	F2	N
VACONX4C40200C	VACONX5C40200C09	15	11	21	20	15	27	32	F2	N
VACONX4C40250C	VACONX5C40250C09	20	15	27	25	18.5	34	41	F2	N
VACONX4C40300C	VACONX5C40300C09	25	18.5	34	30	22	40	48	F2	N
VACONX4C40400C	---	30	22	40	40	30	52	63	F3	N
VACONX4C40500C	---	40	30	52	50	37	65	78	F3	N
VACONX4C40600C	---	50	37	65	60	45	77	92	F4	N
VACONX4C40750C	---	60	45	77	75	55	96	115	F4	N
VACONX4C41000C	---	75	55	96	100	75	124	149	F4	N

VACON X Series 380-460 Vac 3-ph, NEMA 12/IP55, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option Board
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	(Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C41250D	100	75	124	120	90	156	187	F5	Y
---	VACONX5C41500D	125	90	156	150	110	180	216	F5	Y
---	VACONX5C42000D	150	110	180	200	132	240	288	F5	Y
VACONX4C41250D	---	100	75	124	120	90	156	187	F5	N
VACONX4C41500D	---	125	90	156	150	110	180	216	F5	N
VACONX4C42000D	---	150	110	180	200	132	240	288	F5	N

VACON X Series 575 Vac 3-ph, NEMA 4X/IP66 Indoor and Outdoor, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	Boards? (Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C50010C	0.5	0.37	0.9	1	0.75	1.7	2	F1A	Y
---	VACONX5C50020C	1	0.75	1.7	2	1.5	2.7	3.2	F1A	Y
---	VACONX5C50030C	2	1.5	2.7	3	2.2	3.9	4.7	F1A	Y
---	VACONX5C50050C	3	2.2	3.9	5	4	6.1	7.3	F1A	Y
---	VACONX5C50075C	5	4	6.1	7.5	5.5	9	10.8	F1A	Y
---	VACONX5C50100C	7.5	5.5	9	10	7.5	11	13.2	F1A	Y
---	VACONX5C50150C	10	7.5	11	15	11	17	20	F2A	Y
---	VACONX5C50200C	15	11	17	20	15	22	26	F2A	Y
---	VACONX5C50250C	20	15	22	25	18.5	27	32	F2A	Y
---	VACONX5C50300C	25	18.5	27	30	22	32	38	F2A	Y
---	VACONX5C50400C	30	22	32	40	30	41	49	F3	Y
---	VACONX5C50500C	40	30	41	50	37	52	62	F3	Y
---	VACONX5C50600C	50	37	52	60	45	62	74	F4	Y
---	VACONX5C50750C	60	45	62	75	55	77	92	F4	Y
---	VACONX5C51000C	75	55	77	100	75	99	119	F4	Y
VACONX4C50010C	VACONX5C50010C09	0.5	0.37	0.9	1	0.75	1.7	2	F1	N
VACONX4C50020C	VACONX5C50020C09	1	0.75	1.7	2	1.5	2.7	3.2	F1	N
VACONX4C50030C	VACONX5C50030C09	2	1.5	2.7	3	2.2	3.9	4.7	F1	N
VACONX4C50050C	VACONX5C50050C09	3	2.2	3.9	5	4	6.1	7.3	F1	N
VACONX4C50075C	VACONX5C50075C09	5	4	6.1	7.5	5.5	9	10.8	F1	N
VACONX4C50100C	VACONX5C50100C09	7.5	5.5	9	10	7.5	11	13.2	F1	N
VACONX4C50150C	VACONX5C50150C09	10	7.5	11	15	11	17	20	F2	N
VACONX4C50200C	VACONX5C50200C09	15	11	17	20	15	22	26	F2	N
VACONX4C50250C	VACONX5C50250C09	20	15	22	25	18.5	27	32	F2	N
VACONX4C50300C	VACONX5C50300C09	25	18.5	27	30	22	32	38	F2	N
VACONX4C50400C	---	30	22	32	40	30	41	49	F3	N
VACONX4C50500C	---	40	30	41	50	37	52	62	F3	N
VACONX4C50600C	---	50	37	52	60	45	62	74	F4	N
VACONX4C50750C	---	60	45	62	75	55	77	92	F4	N
VACONX4C51000C	---	75	55	77	100	75	99	119	F4	N

VACON X Series 575 Vac 3-ph, NEMA 12/IP55, EMC Class C4

Product Code		Motor Shaft Power and Current							Frame	Option
Vacon X4	Vacon X5	Heavy Duty (150%)			Normal Duty (120%)			OL Amps (1 Min/10 Min)	Size	Boards? (Y/N)
		HP	kW	Amps	HP	kW	Amps			
---	VACONX5C51250D	100	75	99	120	90	125	150	F5	Y
---	VACONX5C51500D	125	90	125	150	110	144	173	F5	Y
---	VACONX5C52000D	150	110	144	200	132	192	230	F5	Y
VACONX4C51250D	---	100	75	99	120	90	125	150	F5	N
VACONX4C51500D	---	125	90	125	150	110	144	173	F5	N
VACONX4C52000D	---	150	110	144	200	132	192	230	F5	N

Vacon X4 & X5 Frame Dimensions and Weights

	Dimensions (Inches) *			Weight *	Dimensions (mm) *			Weight *
	W	H	D	(lbs)	W	H	D	(kg)
Frame 0	6,5	9,47	6,08	8,5	165	241	155	3,85
Frame 1	8,72	12,01	6,51	14	221	306	166	6,35
Frame 1A	8,72	12,01	8,49	14	221	306	216	6,35
Frame 2	10,75	17,38	7,91	29,5	273	442	201	13,38
Frame 2A	10,75	17,38	9,89	29,5	273	442	251	13,38
Frame 3	11,19	20,19	11,73	50	286	513	314	22,68
Frame 4	12,84	29,35	13,8	95	326	745	351	43,1
Frame 5	16,31	50,77	16,88	305	414	1290	429	138,35

*without shipping package

TYPE DESIGNATION CODE

VACONX5 C 4 0050 C 09

Options
09 = No Option Board Capability

Enclosure
C = NEMA 4X / IP66
D = NEMA 12 / IP55

Horsepower
(See horsepower codes table)

Input Voltage
1S = 115 Vac +/-15% Single-Phase
2 = 200-230 Vac +/-15% Three-Phase
4 = 380-460 Vac +/-15% Three-Phase
5 = 575 Vac +/-15% Three-Phase

Torque
C = Constant Torque Normal Duty

Vacon X4
Vacon X5

VACON X4 AND VACON X5 SPECIFICATIONS

Environmental	Operating temperature	-10°C to +40°C (14°F to 104°F)			
	Storage temperature	-20°C to 65°C (-4°F to 149°F)			
	Humidity	0% to 95% non-condensing			
	Altitude	1,000 m (3,300 ft) without derating			
	Maximum vibration	Per EN50178: Frame Size 0 and 1 5G			
	Acoustic noise	80 dba sound power at 1 m (3 ft)			
	Cooling	1 - 5 HP models: Natural convection 7.5 - 200 HP: Forced air (temperature controlled external fan)			
	Protection Level	1 – 100 HP models: NEMA 4X / IP66 Indoor or Outdoor Use (1 – 30 HP models: 1,000 psi water spray at 6 inches) 125 – 200 HP models: NEMA 12 / IP55			
	Agency approvals	UL, cUL, CE			
Electrical	Input voltage	115 Vac 1 phase, +/- 15% 1 HP 200-230 Vac, 3 phase, +/- 15% 1-25 HP 380-460 Vac, 3 phase, +/- 15% 1-200 HP 575 Vac, 3 phase, +/- 15% 1-200 HP			
	Line frequency	50 / 60 Hz +/-2 Hz			
	Source kVA (maximum)	10 times the unit rated kVA (65kA maximum)			
	DC bus voltage for: Overvoltage trip Dynamic brake activation Normal undervoltage (UV) trip	115 Vac models 406 Vdc 388 Vdc 199 Vdc	230 Vac models 406 Vdc 388 Vdc 199 Vdc	460 Vac models 814 Vdc 776 Vdc 397 Vdc	575 Vac models 1017 Vdc 970 Vdc 497 Vdc
	Control system	V/Hz or Sensorless Vector Control (SVC) Carrier frequency = 1 to 16 kHz programmable			
	Output voltage	0 to 100% of line voltage, 3 phase			
	Overload capacity	120% of rated RMS current for 60 seconds (Normal Duty rating) 150% of rated RMS current for 60 seconds (Heavy Duty rating)			
	Frequency output	Range: 0.1 – 400Hz; Stability: 0.1Hz, 0.1% analog over 24 hours +/- 10°C			
Control Features	Reference inputs	3 – Analog / digital input: 0-5 / 0-10 Vdc, 0-4/20mAdc, 0-1/10/100kHz; each includes independent calibration adjustments			
	Reference supply voltage	10 Vdc (10 mAdc maximum)			
	Digital inputs (10)	Off = 0 to 3 Vdc, On = 10 to 32 Vdc (pull-up logic), selectable between pull-up and pull-down logic			
	Digital supply voltage	24 Vdc (150 mAdc maximum)			
	Preset frequencies	X4: 8 preset frequencies; X5: 16 preset frequencies			
	Digital outputs	2 SPDT relay output: 130 Vac, 1 Amp / 250 Vac, 0.5 Amp 2 open collector outputs 50 mA per device			
	Analog output	0-10Vdc (5mA max) / 0-4/20mAdc (500 ohm load)			
	DC holding/injection braking	At start, stop, by frequency with adjustable current level and time or continuous DC injection by digital input			
	Current limit	Four-quadrant adjustable from 5 to 150%			
	Speed ramps	Primary and alternate adjustable from 0.1 to 3200.0 seconds			
	Voltage boost	Adjustable fixed boost or adjustable auto boost			
	Voltage characteristic	V/Hz - Linear, pump, fan or 2-piece linear; Sensorless Vector			
	Timed overload	Adjustable inverse time trip (shear pin, 30 sec, 60 sec, 5 minutes) for standard or inverter-duty motors			
	Protective features	Overcurrent, Overvoltage fault, ground fault, short circuit, Dynamic Brake overload, drive temperature, power wiring fault. Drive-timed overload, input voltage quality, overvoltage ridethrough			
	Program Sequence Controller	X4: 9-step, PLC-type functionality to control speed, direction and ramp times based on time, analog input, digital input or pulse count. X5: 25-step, PLC-type functionality that can control speed, direction and ramps based on time, analog input,digital input, or pulse input. Conditional branching, addressable outputs and real time operations possible.			
	PI and PID Feedback	X4: PI Process control available with the use of a customer supplied transducer, either 0-10Vdc, 4-20mA or optical encoder input to the drive. X5: Process control available with the use of a customer supplied transducer, either 0-10Vdc, 4-20mA or optical encoder input to the drive. Includes an optional sleep mode, activated when the loop is satisfied.			

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