VACON NXS
ROBUST DRIVE FOR HEAVY USE

VACON
DRIVEN BY DRIVES

THE RELIABLE CHOICE

The Vacon NXS is a compact AC drive in the power range of 0.50—750 HP and supply voltages of 208—690 V for heavy use in machines, buildings and all branches of industry.

The robust design incorporates effective protection against supply network disturbances. Trip-free operation is also guaranteed due to sophisticated motor control principles and motor/drive protection features, component selection and effective cooling.

Enclosure classes of NEMA 1 and NEMA 12 and integrated high-level EMC filters make the Vacon NXS suitable for all environments.

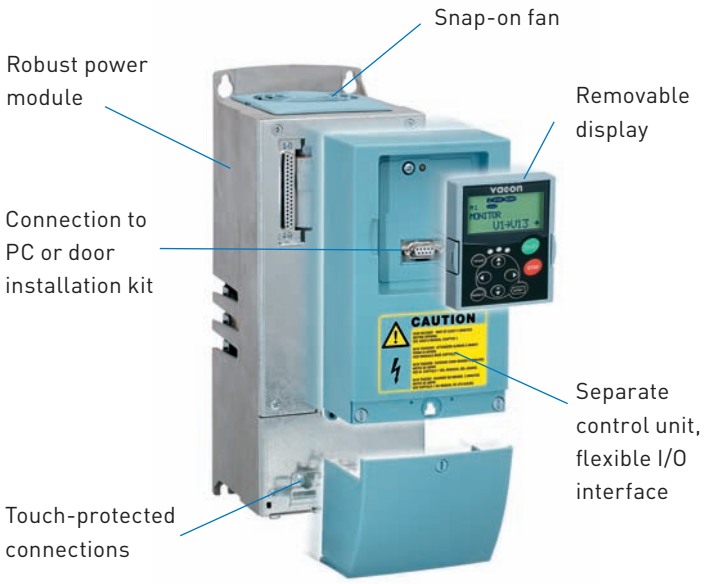
The Start-Up Wizard and the standard All-In-One Application Package make parameter setting extremely easy in all cases, from simple to complex.

The wide and flexible standard I/O and option for five I/O boards provide versatile controllability. The most common fieldbus options are also available.

The modular design of the Vacon NXS brings several advantages: the control terminals are safely separated from power terminals, upgrading the control inputs and outputs is easy and convenient, replacing the cooling fan (the only regularly replaceable component) is fast, the display panel can be utilized for parameter copying, etc.

Features

- Easy to use display panel
- Interactive programming with Start-Up Wizard
- Versatile All-in-One Package
- PID controller and PFC for 1-5 pumps
- Special applications available (water application package, high speed, etc.)
- Five slots for control boards (2 basic boards and 3 option boards)
- High switching frequency, low noise
- Steady state speed error < 1%
- Low torque ripple
- Starting torque > 200%, depending on AC drive sizing
- Suitable for multi-motor applications



VACON NXS NEMA 1

FR4 FR5 FR6 FR7 FR8 FR9

The mechanical design is extremely compact. The NEMA 12 units in particular are the smallest AC drives on the market. All units are suitable for both wall and enclosure mounting with all necessary components: integrated EMC filters, AC chokes, cable protection, dust and water protection. The effective super-cooling principle allows high ambient temperatures and high switching frequencies without derating.

Vacon NXS 208—240 V (3 phase supply). NEMA 1/NEMA 12. EMC level H. air-cooled AC drive

Order type code	Motor shaft power and current							Size	Dimensions	Weight
NEMA 1/NEMA 12	High overload (150%)				Low overload (120%)					
For NEMA 12, replace '2' with '5', e.g. NXS00042A**5**H1....	HP	kW	Amps	Amps overload	HP	kW	Amps overload	FR	W x H x D inches	[lbs]
NXS00042A2H1SSSA1A2	0.75	.55	3.7	5.6	1	.75	4.8	FR4	5.04x11.50x7.48	11
NXS00072A2H1SSSA1A2	1	.75	4.8	7.2	1.5	1.1	6.6	FR4	5.04x11.50x7.48	11
NXS00082A2H1SSSA1A2	1.5	1.1	6.6	9,9	2	1.5	7.8	FR4	5.04x11.50x7.48	11
NXS00112A2H1SSSA1A2	2	1.5	7.8	11.7	3	2.2	11	FR4	5.04x11.50x7.48	11
NXS00122A2H1SSSA1A2	3	2.2	11	16.5	3	2.2	12.5	FR4	5.04x11.50x7.48	11
NXS00172A2H1SSSA1A2	3	2.2	12.5	18.8	5	3.7	17.5	FR5	5.67x15.39x8.43	18
NXS00252A2H1SSSA1A2	5	3.7	17.5	26.3	7.5	5.5	25	FR5	5.67x15.39x8.43	18
NXS00312A2H1SSSA1A2	7.5	5.5	25	37.5	10	7.5	31	FR5	5.67x15.39x8.43	18
NXS00482A2H1SSSA1A2	10	7.5	31	46.5	15	10	48	FR6	7.68x20.43x9.33	41
NXS00612A2H1SSSA1A2	15	10	48	72	20	15	61	FR6	7.68x20.43x9.33	41
NXS00752A2H0SSSA1A2	20	15	61	91.5	25	18.5	75	FR7	9.33x23.27x10.12	77
NXS00882A2H0SSSA1A2	25	18.5	75	112.5	30	22	88	FR7	9.33x23.27x10.12	77
NXS01142A2H0SSSA1A2	30	22	88	132	40	30	114	FR7	9.33x23.27x10.12	77
NXS01402A2H0SSSA1A2	40	30	105	158	50	37	140	FR8	11.46x29.84x13.54	128
NXS01702A2H0SSSA1A2	50	37	140	210	60	45	170	FR8	11.46x29.84x13.54	128
NXS02052A2H0SSSA1A2	60	45	170	255	75	55	205	FR8	11.46x29.84x13.54	128
NXS02612A2H0SSFA1A2	75	55	205	308	100	75	261	FR9	18.90x45.28x14.25	322
NXS03002A2H0SSFA1A2	75	55	245	368	100	75	300	FR9	18.90x45.28x14.25	322
NXS02612A5H0SSFA1A2	75	55	205	308	100	75	261	FR9	18.90x45.28x14.25	322
NXS03002A5H0SSFA1A2	75	55	245	368	100	75	300	FR9	18.90x45.28x14.25	322

VACON NXS NEMA 12

FR4 FR5 FR6 FR7 FR8 FR9

PRODUCT RANGE

Vacon NXS 380—500 V. NEMA 1/NEMA 12. EMC level H. air-cooled AC drive

Order type code NEMA 1/NEMA 12 For NEMA 12, replace '2' by '5', e.g. NXS00035A**5**H1....	Motor shaft power and current							Size	Dimensions	Weight
	High overload				Low overload					
	HP	kW	Amps	Amps overload	HP	kW	Amps overload	FR	W x H x D inches	[lbs]
NXS00035A2H1SSSA1A2	1	.75	2.2	3,3	2	1.1	3.3	FR4	5.04x11.5x7.48	11
NXS00045A2H1SSSA1A2	1.5	1.1	3.3	5	2	1.1	4.3	FR4	5.04x11.5x7.48	11
NXS00055A2H1SSSA1A2	2	1.5	4.3	6,5	3	2.2	5.6	FR4	5.04x11.5x7.48	11
NXS00075A2H1SSSA1A2	3	2.2	5.6	8,4	5	3.7	7.6	FR4	5.04x11.5x7.48	11
NXS00095A2H1SSSA1A2	5	3.7	7.6	11,4	5	3.7	9	FR4	5.04x11.5x7.48	11
NXS00125A2H1SSSA1A2	5	3.7	9	13,5	7.5	5.5	12	FR4	5.04x11.5x7.48	11
NXS00165A2H1SSSA1A2	7.5	5.5	12	18	10	7.5	16	FR5	5.67x15.39x8.43	18
NXS00225A2H1SSSA1A2	10	7.5	16	24	15	10	23	FR5	5.67x15.39x8.43	18
NXS00315A2H1SSSA1A2	15	10	23	35	20	15	31	FR5	5.67x15.39x8.43	18
NXS00385A2H1SSSA1A2	20	15	31	47	25	18.5	38	FR6	7.68x20.43x9.33	41
NXS00455A2H1SSSA1A2	25	18.5	38	57	30	22	46	FR6	7.68x20.43x9.33	41
NXS00615A2H1SSSA1A2	30	22	46	69	40	30	61	FR6	7.68x20.43x9.33	41
NXS00725A2H0SSSA1A2	40	30	61	92	50	37	72	FR7	9.33x23.27x10.12	77
NXS00875A2H0SSSA1A2	50	37	72	108	60	45	87	FR7	9.33x23.27x10.12	77
NXS01055A2H0SSSA1A2	60	45	87	131	75	55	105	FR7	9.33x23.27x10.12	77
NXS01405A2H0SSSA1A2	75	55	105	158	100	75	140	FR8	11.46x29.84x13.54	128
NXS01685A2H0SSSA1A2	100	75	140	210	125	90	170	FR8	11.46x29.84x13.54	128
NXS02055A2H0SSSA1A2	125	90	170	255	150	110	205	FR8	11.46x29.84x13.54	128
NXS02615A2H0SSFA1A2	150	110	205	308	200	150	261	FR9	18.9x45.28x14.25	322
NXS03005A2H0SSFA1A2	200	150	245	368	250	190	300	FR9	18.9x45.28x14.25	322

Vacon NXS 525—690 V. NEMA 1/NEMA 12. EMC level L. air-cooled AC drive

Order type code NEMA 1/NEMA 12 For NEMA 12, replace '2' by '5', e.g. NXS00035A**5**H1....	Motor shaft power and current							Size	Dimensions	Weight
	High overload				Low overload					
	HP	kW	Amps	Amps overload	HP	kW	Amps overload	FR	W x H x D inches	[lbs]
NXS00046A2L0SSSA1A2	2	1.5	3.2	5	3	2.2	4.5	FR6	7.68x20.43x9.33	41
NXS00056A2L0SSSA1A2	3	2.2	4.5	6,8	3	2.2	5.5	FR6	7.68x20.43x9.33	41
NXS00076A2L0SSSA1A2	3	2.2	5.5	8,3	5	3.7	7.5	FR6	7.68x20.43x9.33	41
NXS00106A2L0SSSA1A2	5	3.7	7.5	11,3	7.5	55.	10	FR6	7.68x20.43x9.33	41
NXS00136A2L0SSSA1A2	7.5	5.5	10	15	10	7.5	13.5	FR6	7.68x20.43x9.33	41
NXS00186A2L0SSSA1A2	10	7.5	13.5	20,3	15	10	18	FR6	7.68x20.43x9.33	41
NXS00226A2L0SSSA1A2	15	10	18	27	20	15	22	FR6	7.68x20.43x9.33	41
NXS00276A2L0SSSA1A2	20	15	22	33	25	18.5	27	FR6	7.68x20.43x9.33	41
NXS00346A2L0SSSA1A2	25	18.5	27	41	30	22	34	FR6	7.68x20.43x9.33	41
NXS00416A2L0SSSA1A2	30	22	34	51	40	30	41	FR7	9.33x23.27x10.12	77
NXS00526A2L0SSSA1A2	40	30	41	62	50	37	52	FR7	9.33x23.27x10.12	77
NXS00626A2L0SSSA1A2	50	37	52	78	60	45	62	FR8	11.46x29.84x13.54	128
NXS00806A2L0SSSA1A2	60	45	62	93	75	55	80	FR8	11.46x29.84x13.54	128
NXS01006A2L0SSSA1A2	75	55	80	120	100	75	100	FR8	11.46x29.84x13.54	128
NXS01256A2L0SSFA1A2	100	75	100	150	125	90	125	FR9	18.9x45.28x14.25	322
NXS01446A2L0SSFA1A2	125	90	125	188	150	110	144	FR9	18.9x45.28x14.25	322
NXS01706A2L0SSFA1A2	150	110	144	216	150	110	170	FR9	18.9x45.28x14.25	322
NXS02086A2L0SSFA1A2	200	150	170	255	200	150	208	FR9	18.9x45.28x14.25	322

Hardware configurations, Standalone units

FUNCTION	AVAILABILITY
IP21	Standard
IP54 (FR10 only)	Optional (H: +20mm)
Integrated fuses	Standard
Integrated load switch	Optional
EMC filtering L	Standard
EMC filtering T	Optional
Integrated brake chopper (cabling top entry)	Optional (H: +122 mm)

FR10

FR11

Vacon NXS 525—690 V. NEMA 1/NEMA 12. EMC level L. air-cooled standalone AC drive

Order type code	Motor shaft power and current							Size	Dimensions	Weight
	High overload				Low overload					
NEMA 1	HP	kW	Amps	Amps overload	HP	kW	Amps overload	FR	W x H x D inches	[lbs]
NXS02616A2L0SSAA1A2	200	150	208	312	250	185	261	FR10	23.43x79.53x23.7	750
NXS03256A2L0SSAA1A2	250	185	261	392	300	225	325	FR10	23.43x79.53x23.7	750
NXS03856A2L0SSAA1A2	300	225	325	488	400	300	385	FR10	23.43x79.53x23.7	750
NXS04166A2L0SSAA1A2	300	225	325	488	450	335	416	FR10	23.43x79.53x23.7	750
NXS04606A2L0SSAA1A2	400	300	385	578	450	335	460	FR11	31.26x79.45x23.7	882
NXS05026A2L0SSAA1A2	450	335	460	690	500	375	502	FR11	31.26x79.45x23.7	882
NXS05906A2L0SSAA1A2	500	375	502	753	550	410	590	FR11	31.26x79.45x23.7	1036
NEMA 12										
NXS02616A5L0SSAA1A2	200	150	208	312	250	185	261	FR10	23.43x79.53x23.7	750
NXS03256A5L0SSAA1A2	250	185	261	392	300	225	325	FR10	23.43x79.53x23.7	750
NXS03856A5L0SSAA1A2	300	225	325	488	400	300	385	FR10	23.43x79.53x23.7	750
NXS04166A5L0SSAA1A2	300	225	325	488	450	335	416	FR10	23.43x79.53x23.7	750

VACON NXS TYPE DESIGNATION CODE

NXS 0007 5 A 2 H 1 SSS A1A20000C3

- Factory installed I/O boards and expanders (slots A, B, C, D and E)
  - C3 = Profibus board OPT-C3 (slot E)
  - 00 = no board (slot D)
  - 00 = no board (slot C)
  - A1 = basic I/O boards OPT-A1 (slot A)
  - A2 = basic output relay board OPT-A2 (slot B)
  - A3 = basic output relay board OPT-A3 (slot B) including thermistor input
- Hardware modifications (power unit, special modifications, board varnishing)
- Brake chopper option:
  - 0 = no brake chopper
  - 1 = internal brake chopper
  - 2 = internal brake chopper and resistor
- Emission level:
  - H = fulfils the standard EN 61800-3 (2004), category C2
  - T = fulfils the standard EN 61800-3 (2004), category C4. Low earth current solution for IT networks
  - L = fulfils the standard EN 61800-3 (2004), category C3
  - C = fulfils the standard EN 61800-3 (2004), category C1
- Enclosure classification:
  - 2 = IP21
  - 5 = IP54
- Control keypad:
  - A = standard alpha-numeric keypad
  - B = no keypad
  - G = graphic keypad (Chinese and Russian letters)
- Nominal mains voltage:
  - 2 = 208...240 V AC (3-phase)
  - 5 = 380...500 V AC (3-phase)
  - 6 = 525...690 V AC (3-phase)
- Nominal current
  - Maximum continuous current of the unit @ 40°C
  - e.g. 0007 = 7 Amps
- Product range:
  - NXS

VACON NXS CONTROL UNIT

There are no fixed inputs or outputs in the Vacon NXS. There are five slots (A, B, C, D and E) for I/O boards, and a suitable board can be selected for each slot (see the table below).

The NXS units are delivered with OPT-A1 and OPT-A2 boards if the I/O is not specified. In many countries, boards OPT-A1 and OPT-A3 are used as standard I/O as the galvanically isolated thermistor input is often required.

Removable terminals, snap-in card installation, automatic card identification and instructions on the drive help making quick connections. If necessary, the inputs, outputs and fieldbus boards can be added in the field. The Vacon NXS is simply the most flexible frequency converter series on the market.

An external +24 V supply option enables communication with the control unit even if the mains supply is switched off (e.g. fieldbus communication and parameter settings).

VACON OPTION BOARDS

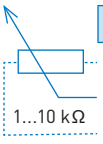
Card typecode	Card slot					I / O signal													
	A	B	C	D	E	DI	DO	DI DO	AI mA ±V	AI mA isol.	AO mA V	AO mA isol.	RO NO NC	RO NO	+10V ref	Therm	+24 EXT +24V	Pt100	42-240 VAC input	NOTE
Basic I/O cards (OPT-A)																				
OPT-A1						6	1		2		1				1		2			
OPT-A2													2							
OPT-A3													1	1		1				
OPT-A8						6	1		2		1				1		2			1)
OPT-A9						6	1		2		1				1		2			2.5 mm² terminals
I/O expander cards (OPT-B)																				
OPT-B1								6									1			Selectable DI/DO
OPT-B2													1	1		1				
OPT-B4										1		2					1			2)
OPT-B5														3						
OPT-B8																	1	3		
OPT-B9														1					5	
Fieldbus cards (OPT-C)																				
OPT-C2						RS-485 (Multiprotocol)														Modbus, N2
OPT-C3						Profibus DP														
OPT-C4						LonWorks														
OPT-C5						Profibus DP (D9 type connector)														
OPT-C6						CANopen (slave)														
OPT-C7						DeviceNet														
OPT-C8						RS-485 (Multiprotocol, D9 type connector)														Modbus, N2
OPT-CI						Modbus/TCP														
OPT-CJ						BACNet														

NOTES: Allowed slots for the board are marked in blue.

1) analogue signals galvanically isolated as a group, 2) analogue signals galvanically isolated separately.

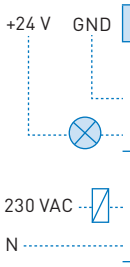
VACON NXS STANDARD I/O

OPT-A1



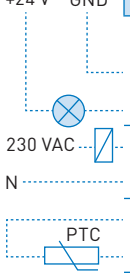
Terminal		Defaults settings	Programmable
1	+10V	Reference voltage	
2	AI1+	Frequency reference 0–10 V	-10–+10 V, 0/4–20 mA
3	AI1-	AI common (GND)	Differential
4	AI2+	Frequency reference 4–20 mA	0–20mA, 0/-10 V–10 V
5	AI2-	AI common (differential)	GND
6	+24V	Control supply (bidirectional)	
7	GND	I/O Ground	
8	DIN1	Start forward	Many possibilities
9	DIN2	Start reverse	Many possibilities
10	DIN3	External fault input	Many possibilities
11	CMA	Common for DIN1 - DIN3 (GND)	Floating
12	+24V	Control supply (bidirectional)	
13	GND	I/O Ground	
14	DIN4	Multi-step speed select 1	Many possibilities
15	DIN5	Multi-step speed select 2	Many possibilities
16	DIN6	Fault reset	Many possibilities
17	CMB	Common for DIN4 - DIN6 (GND)	Floating
18	AO1+	Output frequency (0–20 mA)	Many possibilities
19	AO1-	AO common (GND)	4–20 mA, 0–10 V
20	DO1	READY, I ≤ 50 mA, U ≤ 48 VDC	Many possibilities

OPT-A2



Terminal		Defaults settings	Programmable
21	R01	RUN	Many possibilities
22	R01		
23	R01		
24	R02	FAULT	Many possibilities
25	R02		
26	R02		

OPT-A3 (alternative)



Terminal		Defaults settings	Programmable
21	R01	RUN	Many possibilities
22	R01		
23	R01		
25	R02	FAULT	Many possibilities
26	R02		
28	TI1+	Thermistor input fault	Warning, fault, no response
29	TI1-		

Default settings of OPT-A1, OPT-A2 and OPT-A3 for the Basic and Standard Applications.

OTHER TYPICAL OPTIONS

OPTION	ORDER TYPECODE	AVAILABILITY	NOTE
NEMA 12 enclosure	Factory option	All	Replace '2' by '5' in the type code, e.g. NXS02605A**5**H0 (SSS...)
	IP5-FR_	FR4, FR5, FR6	NEMA 12 kit, e.g. IP5-FR4
Through-hole mounting	Factory option	FR4-FR9	E.g. NXS02605A**T**H0S**T**S..., IP54 back, IP21 front, kits available
Integrated brake choppers	Standard	FR4-6/230, 500 V	E.g. NXS00455A2H**1** (SSS...)
	Factory option	FR7-, FR6-/690 V	E.g. NXS02605A2H**1** (SSS...)
External brake resistors (380 - 500 V range)	BRR-0022-LD-5	00035-00225	LD = Light duty: 5 sec nominal torque braking from nominal speed decreasing linearily to zero, once per 120 sec. HD = Heavy duty: 3 sec nominal torque braking at nominal speed + 7 sec nominal torque braking from nominal speed decreasing linearily to zero, once per 120 sec. Replace LD by HD in the type code, e.g. BRR-0105-**HD**-5 Brake resistors are also available for 208-240 V and 525-690 V NXS drives The brake resistor manual is available for more precise selection
	BRR-0031-LD-5	00315	
	BRR-0045-LD-5	00385-00455	
	BRR-0061-LD-5	00615	
	BRR-0105-LD-5	00725-01055	
	BRR-0300-LD-5	01405-03005	
Integrated brake resistors	Factory option	FR4-6/500 V	Replace '1' by '2' in the typecode, e.g. NXS00455A2H**2** (SSS...) Light duty: 2 sec nominal torque braking from nominal speed decreasing linearily to zero, once per 60 sec.
Graphical display panel	Factory option	All	Replace 'A' by 'G', e.g. NXS00455**G**2H1 (SSS..), supports Chinese & Russian
	PAN-G	All	Order typecode when ordered separately
Panel door installation sets	DRA-02B (-04B, -15B)	All	Length of RS232C cable is specified in the typecode, e.g. DRA-02B includes 2-meter RS232C cable
Varnished circuit boards	Factory option	All	Frame sizes FR4-FR8: replace the 'S' by 'V', e.g. NXS00455A2H1SS**V**..., frame size FR9-FR11: replace 'S' by 'G'
C-level RFI filters	Factory option	FR4-6/500 V	Replace 'H' by 'C' in the typecode, e.g. NXS00455A5**C**1 (SSS..)
Du/dt & sinus filters			Available for all drives, contact local Vacon supplier

FIRST-CLASS USABILITY

The uncluttered text display panel with a well-defined menu structure and functions such as automatic parameter copy and start-up wizard makes commissioning and fine-tuning as easy as possible.

A maximum of three values can be monitored simultaneously (the multi-monitoring feature).

The Vacon PC tools are available for downloading from the Vacon website at http://www.vacon.com. These include:

- Vacon NCDrive for parameter setting, copying, storing, printing, monitoring and controlling
- Vacon NCLoad for software updating and uploading special software to the drive
- Vacon NC61131-3 Engineering is available for making tailor-made software. A license key and training required.

The Vacon PC tools require only an RS232C cable for communication with the drive (no adapters etc. required).

Basic

I/O	Defaults	
AI1	f_{ref}	P
AI2	f_{ref}	P
DI1	Start forward	
DI2	Start reverse	
DI3	External fault	P
DI4	Speed select 1	
DI5	Speed select 2	
DI6	Fault reset	
AO1	f_{out}	P
DO1	Ready	
RO1	Run	
RO2	Fault	

Suitable for most purposes

Standard

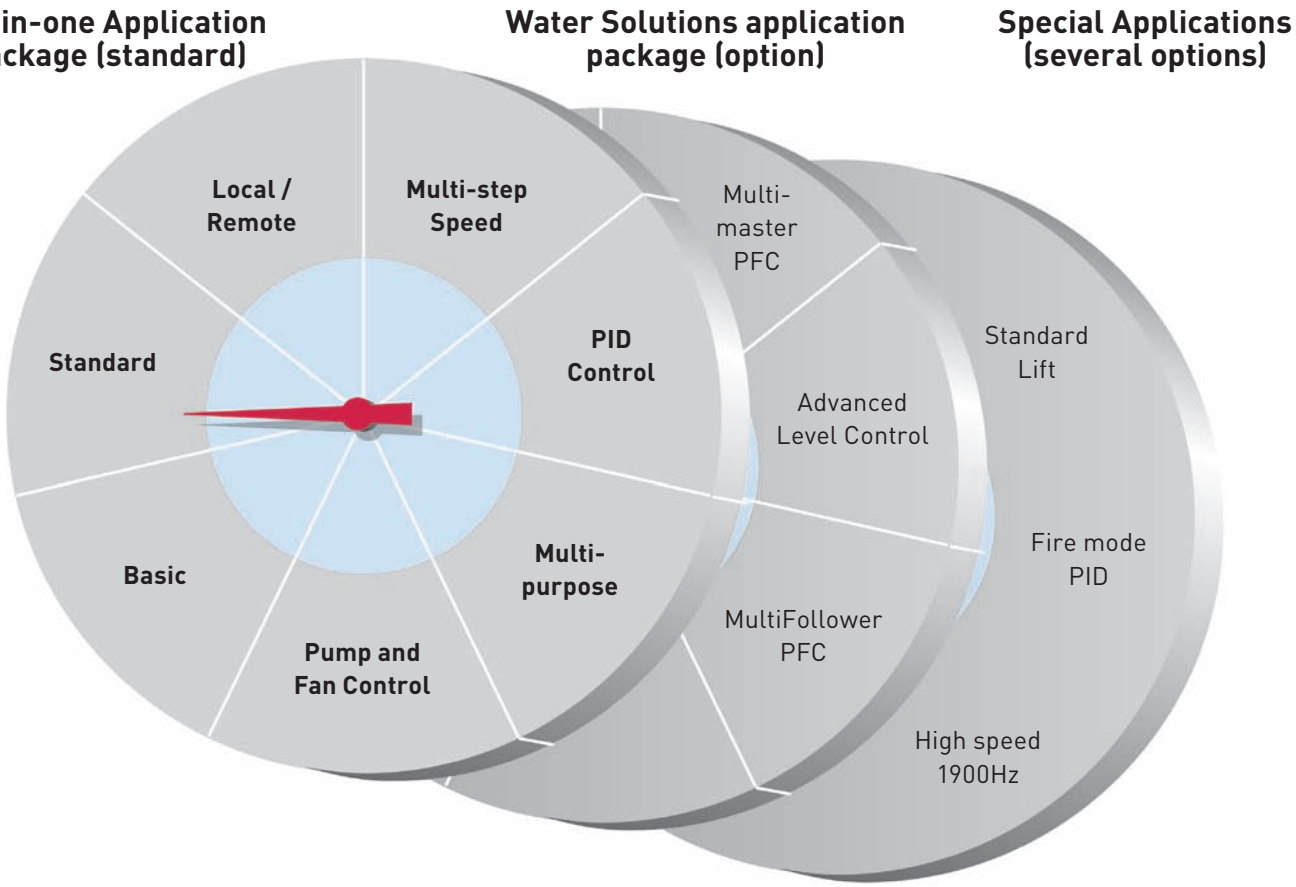
I/O	Defaults	
AI1	f_{ref}	P
AI2	f_{ref}	P
DI1	Start forward	P
DI2	Start reverse	P
DI3	External fault	P
DI4	Speed select 1	
DI5	Speed select 2	
DI6	Fault reset	
AO1	f_{out}	P
DO1	Ready	P
RO1	Run	P
RO2	Fault	P

Basic, with more programming possibilities

Local/Remote

I/O	Defaults	
AI1	B f_{ref}	P
AI2	A f_{ref}	P
DI1	A Start forward	P
DI2	A Start reverse	P
DI3	External fault	P
DI4	B Start forward	P
DI5	B Start reverse	P
DI6	A/B selection	
AO1	f_{out}	P
DO1	Ready	P
RO1	Run	P
RO2	Fault	P

Two external control places



The All-in-One application package has seven applications (=default settings and functionality of control inputs and outputs, see tables below) which can be selected with one parameter. The application will also be requested by the Start-up Wizard at the first power-up. With this single setting, the controls can be programmed e.g. for two external control places or a pressure control with the integrated PID controller. In most cases, the default basic application is suitable and only the min/max frequencies as well as motor nominal values must be set.

Thanks to the modular software applications made by the Vacon NC61131-3 Engineering tool, the All-in-One application package can be replaced by the Water application package that contains several applications optimized for water handling. There are also several other general-purpose software applications available.

P = Programmable

Multi-step Speed Control

I/O	Defaults	
AI1	f_{ref}	P
AI2	f_{ref}	P
DI1	Start forward	P
DI2	Start reverse	P
DI3	External fault	P
DI4	Speed select 1	
DI5	Speed select 2	
DI6	Speed select 3	
AO1	f_{out}	P
DO1	Ready	P
RO1	Run	P
RO2	Fault	P

16 fixed speeds

PID Control

I/O	Defaults	
AI1	PID reference	P
AI2	PID actual value	P
DI1	PID start/stop	
DI2	External fault	P
DI3	Fault reset	P
DI4	f ctrl start/stop	
DI5	Jog speed select	P
DI6	PID/f ctrl select	
AO1	f_{out}	P
DO1	Ready	P
RO1	Run	P
RO2	Fault	P

When PID is required

Multi-purpose Control

I/O	Defaults	
AI1	f_{ref}	P
AI2	f_{ref}	P
DI1	Start forward	P
DI2	Start reverse	P
DI3	Fault reset	P
DI4	Jog speed sel	P
DI5	External fault	P
DI6	Acc/dec time sel	P
AO1	f_{out}	P
DO1	Ready	P
RO1	Run	P
RO2	Fault	P

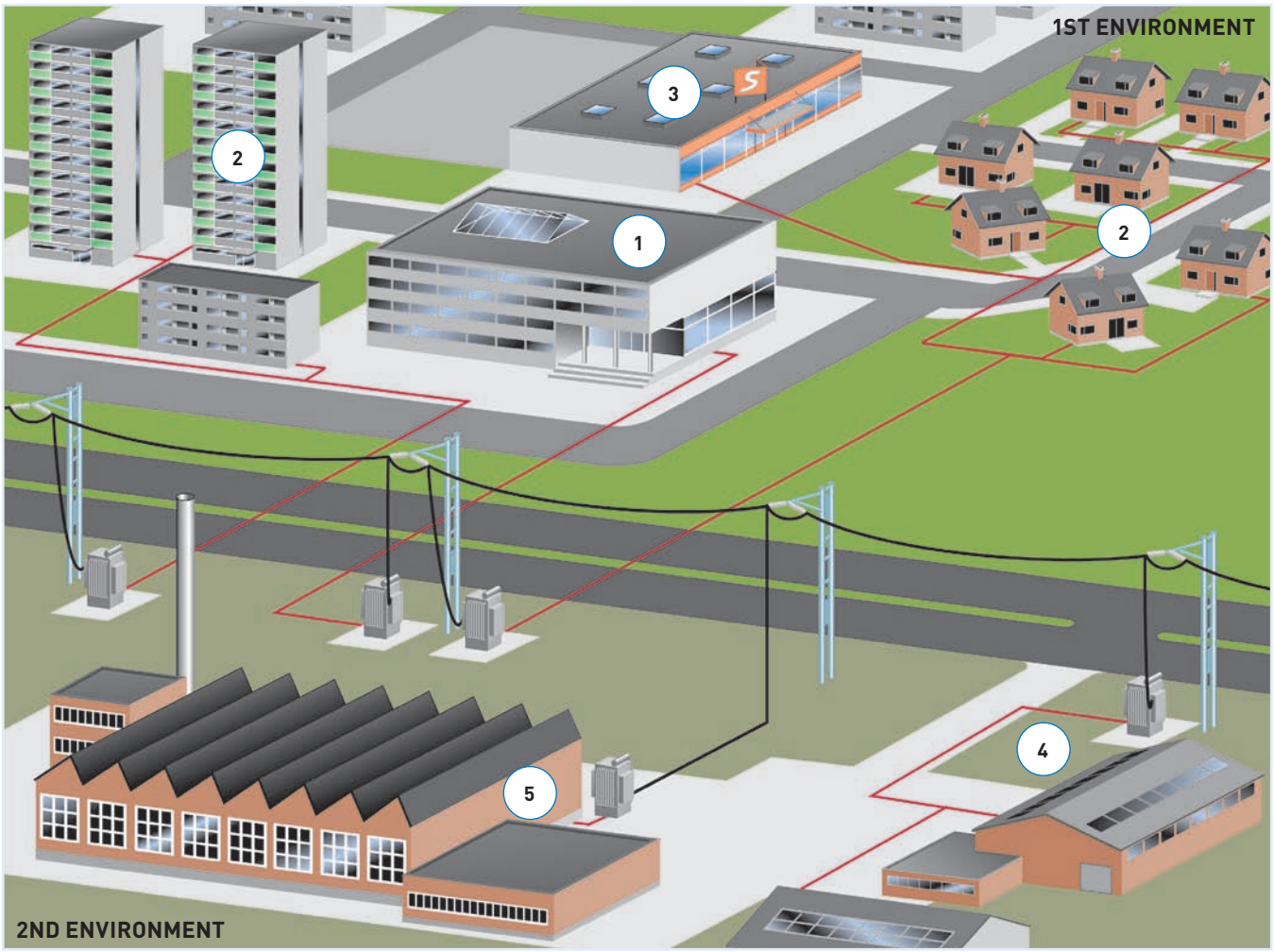
Most flexible of all

Pump and Fan Control

I/O	Defaults	
AI1	PID reference	P
AI2	PID actual value	P
DI1	PID start/stop	P
DI2	Interlock 1	P
DI3	Interlock 2	P
DI4	f ctrl start/stop	P
DI5	Jog speed select	P
DI6	PID/f ctrl select	P
AO1	f_{out}	P
DO1	Fault	P
RO1	Autochange 1	P
RO2	Autochange 2	P

Control of up to five pumps with auto-change

EMC AND INSTALLATION ENVIRONMENT



The product family standard EN61800-3 sets limits for both emissions and immunity of radio frequency disturbances. The environment has been divided into the 1st and 2nd environments, i.e. in practice, the public and industrial networks, respectively.

Radio Frequency Interference (RFI) filters are typically required to meet the EN61800-3 standard. These filters are integrated in the Vacon NXS as standard.

The 208–240 V and 380–500 V ranges of the Vacon NXS (FR4-FR9) fulfills the requirements of the 1st and 2nd environments (H level: EN61800-3(2004), category C2). No additional RFI filters or cabinets are required. The FR10-FR11 and the 525-690 V range of the Vacon NXS fulfills the requirements of the 2nd environment (L-level: EN61800-3(2004), category C3).

The units in the frame sizes of FR4, FR5 and FR6 (the voltage range from 380 to 500 V) are also available with extremely low-emission integrated EMC filters (C level: EN61800-3 (2004), category C1). This is sometimes required in very sensitive locations such as hospitals.

EMC Selection Table, restricted distribution

	1	2	3	4	5	
Vacon NXS EMC	**Hospital**	**Residential Area**	**Commercial**	**Light Industry Area**	**Heavy Industry**	**Marine**
C	O					
H	R	R	R	O	O	
L				R	R	
T					R (IT Network)	R (IT Network)

R = Required ; O = Optional

Mains connection	Input voltage U_{in}	208...240 V; 380...500 V; 525...690 V; (–15%...+10%)
	Input frequency	50...60 Hz (± 10%)
	Connection to mains	Once per minute or less (normal case)
Motor connection	Output voltage	0—V_{in}
	Continuous output current	High overloadability Amps Low overloadability Amps
	Overload Capacity	High: 150% Nominal Amps; 1 min, Low: 110% Nominal Amps; 1 min
	Output frequency	0...320 Hz; up to 7200 Hz with special software
	Frequency resolution	0.01 Hz
Control characteristics	Control method	Frequency control V/f; Open Loop Vector Control (speed, torque)
	Switching frequency	208..240V/380..500V: FR4-6: 1...16 kHz; Factory default: 10 kHz FR7-9: 1...10 kHz; Factory default: 3.6 kHz FR10-11: 1...6 kHz; Factory default: 3.6 kHz 525..690V: FR4-11: 1...6 kHz, Factory default: 1.5 kHz
	Field weakening point	8...320 Hz
	Acceleration time	0...3000 sec
	Deceleration time	0...3000 sec
	Braking	DC brake: 30% * T_N (without brake resistor), flux braking
Ambient conditions	Ambient operating temperature	14 F (no frost)...122 F: High OL (FR10-FR11: max 104 F) 14 F (no frost)...104 F: Low OL (NXS 0416 6 and NXS 0590 6: max 95 F)
	Storage temperature	-40F...158 F
	Relative humidity	0 to 95% RH, non-condensing, non-corrosive, no dripping water
	Air quality: - chemical vapours - mechanical particles	 IEC 60721-3-3, unit in operation, class 3C2 IEC 60721-3-3, unit in operation, class 3S2
	Altitude	100% load capacity (no derating) up to 3280 feet 1-% derating for each 328 feet above 3280 feet; max. 9840 feet
	Vibration EN50178/EN60068-2-6	5...150 Hz: Displacement amplitude 1 mm (peak) at 5...15.8 Hz (FR10-FR11: 0,25 mm (peak) at 5...31 Hz) Max acceleration amplitude 1 G at 15.8...150 Hz (FR10 and up: 1 G at 31...150 Hz)
	Shock EN50178, EN60068-2-27	UPS Drop Test (for applicable UPS weights) Storage and shipping: max 15 G, 11 ms (in package)
	Enclosure class	NEMA 1 and NEMA 12
EMC	Immunity	Fulfil all EMC immunity requirements
	Emissions	**EMC level C**: EN61800-3 (2004), category C1 **EMC level H**: EN61800-3 (2004), category C2 **EMC level L**: EN61800-3 (2004), category C3 **EMC level T**: Low earth-current solution suitable for IT networks, EN61800-3 (2004), category C4
Safety		EN 50178 (1997), EN 60204-1 (2006), IEC 61800-5, CE, UL, CUL; (see unit nameplate for more detailed approvals)
Control connections (OPT-A1, -A2 or OPT-A1, -A3)	Analogue input voltage	0...+10 V (–10 V...+10 V joystick control), R_i = 200 kΩ, resolution 0.1%, accuracy ±1%
	Analogue input current	0(4)...20 mA, R_i = 250 Ω differential, resolution 0.1%, accuracy ±1%
	Digital inputs	6, positive or negative logic; 18...30 VDC
	Auxiliary voltage	+24 V, ±15%, max. 250 mA
	Output reference voltage	+10 V, +3%, max. load 10 mA
	Analogue output	0(4)...20 mA; R_L max. 500 Ω, resolution 10 bit, accuracy ±2%
	Digital output	Open collector output, 50 mA/48 V
	Relay outputs	2 programmable change-over (NO/NC) relay outputs (OPT-A3: NO/NC+NO) Switching capacity: 24 VDC/8 A, 250 VAC/8 A, 125 VDC/0.4 A. Min. switching load: 5 V/10 mA
	Thermistor input (OPT-A3)	Galvanically isolated, R_{trip} = 4.7 kΩ
Protections		Overvoltage, undervoltage, earth fault, mains supervision, motor phase supervision, overcurrent, unit overtemperature, motor overload, motor stall, motor underload, short-circuit of +24 V and +10 V reference voltages

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