

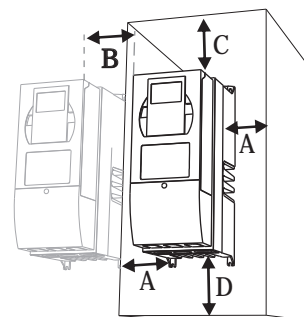
# CAUTION



**HIGH VOLTAGE!** SEE USER'S MANUAL CHAPTER 1  
**VARAUSJÄNNITE!** KATSO KÄYTTÖOHJE KOHTA 1  
**HÖG SPÄNNING!** SE ANVÄNDARMANUALEN KAPITEL 1  
**HOCHSPANNUNG!** SIEHE BETRIEBSANLEITUNG KAP. 1  
**HAUTE TENSION!** VOIR MANUEL UTILISATEUR CHAP. 1  
**ALTA TENSIONE!** VEDI MANUALE BASE CAPITOLO 1  
**ALTA TENSIÓN!** VER EL CAPITULO. 1 DEL MANUAL

## 1 COOLING

A = Clearance around the unit  
 B = Distance from the unit to another unit  
 C = Free space above the unit  
 D = Free space underneath the unit

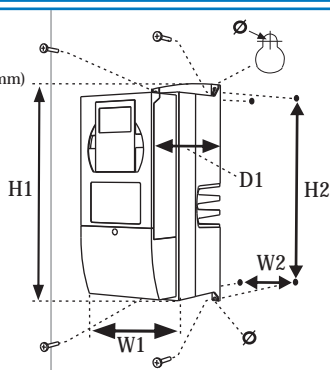


NXL	Dimensions (mm)			
	A	B	C	D
0003-0012 5	20	20	100	50
0016-0031 5	20	20	120	60
0038-0061 5	30	20	160	80

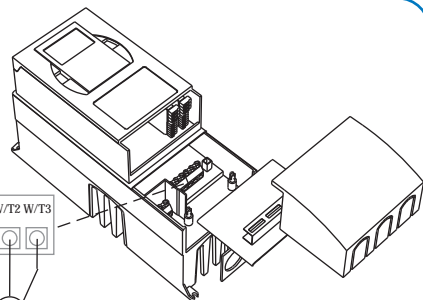
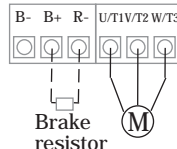
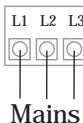
## 2 MOUNTING

NXL	Mounting dimensions (mm)		
	H2	W2	Ø
0003-0012 5	313	100	7
0016-0031 5	406	100	7
0038-0061 5	541	148	9

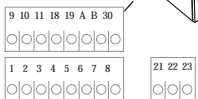
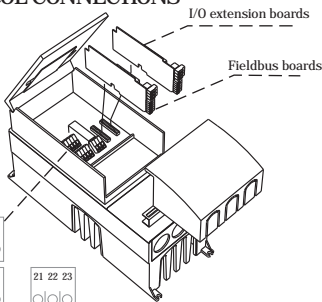
NXL	Unit dimensions (mm)		
	H1	W1	D1
0003-0012 5	327	128	190
0016-0031 5	419	144	214
0038-0061 5	558	195	237



## 3 POWER CONNECTIONS



## 4 CONTROL CONNECTIONS



### CONTROL I/O standard

Terminal	Signal	Default
1	10 Vref	Reference voltage
2	AI1+	Analog input, 0-10V
3	AI1-	Analog input common
4	AI2+	Analog input, 0/4-20 mA
5	AI2-	Analog input common
6	24 Vout	24 V auxiliary voltage
7	GND	I/O ground
8	DIN1	Digital input 1 Start forward
9	DIN2	Digital input 2 Start reverse
10	DIN3	Digital input 3 Preset speed 1
11	GND	I/O ground
18	AO1	Analog output Output freq.
19	AO1-	Analog output common
A	RS 485	Serial bus (Modbus RTU)
B	RS 485	Serial bus
30	+24V	External control voltage supply
21	RO1	Relay output 1
22	RO1	FAULT
23	RO1	FAULT

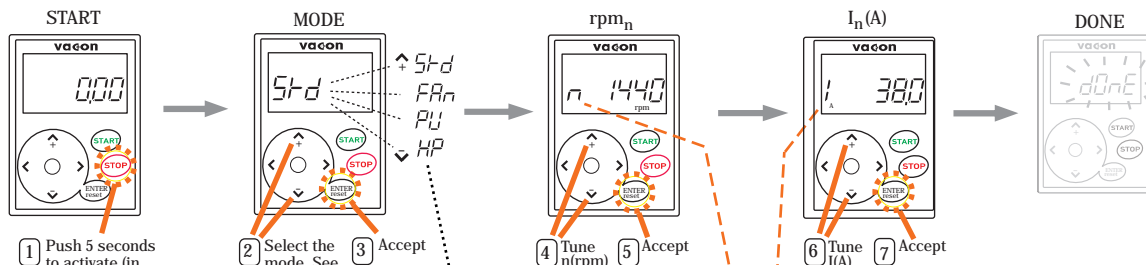
### CONTROL I/O extension (optional)

Terminal	Signal	Default
1	+24V	24 V auxiliary voltage
2	GND	I/O ground
3	DIN1	Digital input 1 Preset speed 2
4	DIN2	Digital input 2 Fault reset
5	DIN3	Digital input 3 Disable PID
6	DO1	Digital output Ready
24	RO1	Relay output 1
25	RO1	RUN
26	RO1	RUN

OR

Terminal	Signal	Default
12	+24V	24 V auxiliary voltage
13	GND	I/O ground
14	DIN1	Digital input 1 Preset speed 2
15	DIN2	Digital input 2 Fault reset
16	DIN3	Digital input 3 Disable PID
28	TI+	Thermistor input
29	TI-	Thermistor input
25	RO1	Relay output 1
26	RO1	RUN

## 5 START-UP WIZARD =Push the button

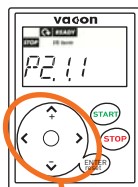


	P2.1.1 Min. Freq (Hz)	P2.1.2 Max Freq (Hz)	P2.1.3 Acc time (s)	P2.1.4 Dec time (s)	P2.1.5 Current limit(A)	P2.1.6 Motor Un (V)*	P2.1.7 Motor In(Hz)	P2.1.11 Start funct.	P2.1.12 Stop funct.	P2.1.13 U/f optimization	P2.1.14 I/O ref	P2.1.21 Auto restart	P3.1 Control place
<b>Std</b> Standard	0 Hz	50 Hz	3 s	3 s	L*1.5	400 V*	50 Hz	0= Ramp	0= Coasting	0= Not used	0= Ai1	0= Not used	I/O
<b>FAN</b> Fan	20 Hz	50 Hz	20 s	20 s	L*1.1	400 V*	50 Hz	0= Ramp	0= Coasting	0= Not used	0= Ai1	0= Not used	I/O
<b>PU</b> Pump	20 Hz	50 Hz	5 s	5 s	L*1.1	400 V*	50 Hz	1= Ramp	0= Ramp	0= Not used	0= Ai1	0= Not used	I/O
<b>HP</b> High performance	0 Hz	50 Hz	1 s	1 s	L*1.8	400 V*	50 Hz	0= Ramp	0= Coasting	1= automatic torque boost	0= Ai1	0= Not used	I/O

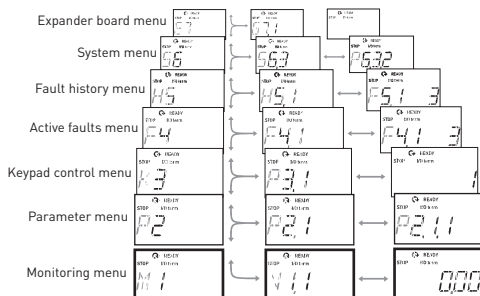
\*In drives of 208V...230V this value is 230V

NOTE! Startup Wizard returns all other parameters to factory defaults!

## 6 MENU STRUCTURE



Navigation and selection keys



## 7 MONITORING MENU M1

Code	Signal name	Unit
V1.1	Output frequency	Hz
V1.2	Frequency reference	Hz
V1.3	Motor speed	rpm
V1.4	Motor current	A
V1.5	Motor torque	%
V1.6	Motor power	%
V1.7	Motor voltage	V
V1.8	DC-link voltage	V
V1.9	Unit temperature	°C
V1.10	Analogue input 1	
V1.11	Analogue input 2	
V1.12	Analogue output current	mA
V1.13	Analogue output current 1, expander board	mA
V1.14	Analogue output current 2, expander board	mA
V1.15	DIN1, DIN2, DIN3	
V1.16	DIE1, DIE2, DIE3	
V1.17	RO1	
V1.18	ROE1, ROE2, ROE3	
V1.19	DOE1	
V1.20	PID Reference	%
V1.21	PID Actual value	%
V1.22	PID Error value	%
V1.23	PID Output	%
V1.24	Autochange 1,2,3	
V1.25	Mode: 0= Not selected (default), 1= Standard, 2= Fan, 3= Pump, 4= High performance	

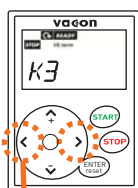
## 9 PARAMETER SETTINGS

SELECTED MODE		MOTOR NAME PLATE VALUES	
Std	Standard mode	P 2.1.8	Nominal motor speed
Fan	Fan mode	P 2.1.9	Nominal motor current
Pu	Pump mode		
HP	High performance mode		

### BASIC PARAMETERS

Code	Parameter	Note	Code	Parameter	Note		
P 2.1.1	Min frequency	[Hz]	P2.1.16	Analogue output function	0=Not used 1=Output freq. (0-fmax) 2=Freq. reference (0-fmax) 3=Motor speed (0-Mot.nom. spd) 4=Output current (0-InMotor) 5=Motor torque (0-TnMotor) 6=Motor power (0-PnMotor) 7=Motor voltage (0-UnMotor) 8=DC-link volt (0-1000V) 9=PI controller ref. value 10=PI contr. act. value 1 11=PI contr. error value 12=PI controller output		
P 2.1.2	Max frequency	[Hz] NOTE: If fmax > than the motor synchronous speed, check suitability for motor and drive system					
P 2.1.3	Acceleration time 1	[s]					
P 2.1.4	Deceleration time 1	[s]					
P 2.1.5	Current limit	Output current limit (A) of the unit					
P 2.1.6	Nominal voltage of the motor	[V] Check the rating plate of the motor			P2.1.17	DIN2 function	0=Not used 1=Start Reverse 2=Reverse 3=Stop pulse 4=External fault, cc 5=External fault, oc 6=Run enable 7=Preset speed 2 8= Motor pot. UP (cc) 9= Disable PID (Direct freq. ref.) 10=Interlock 1
P 2.1.7	Nominal frequency of the motor	[Hz] Check the rating plate of the motor					
P 2.1.8	Nominal speed of the motor	[rpm] The default applies for a 4-pole motor and a nominal size frequency converter.					
P 2.1.9	Nominal current of the motor	[A] Check the rating plate of the motor					
P 2.1.10	Motor cos	Check the rating plate of the motor					
P 2.1.11	Start function	0=Ramp 1=Flying start 2=Conditional flying st.					
P 2.1.12	Stop function	0=Coasting 1=Ramp			P2.1.18	DIN3 function	0=Not used 1=Reverse 2=External fault, cc 3=External fault, oc 4=Fault reset 5=Run enable 6=Preset speed 1 7=Preset speed 2 8=DC-braking command 9=Motor pot. UP (cc) 10=Motor pot. DOWN (cc) 11=Disable PID (PID ctrl selection) 12=PID Keypad ref. 2 selection 13=Interlock 2 14=Thermistor input (See Ch. 6.2.4) 15=Force control place to I/O 16=Force ctrl place to fieldbus 17=A11/A12 selection
P 2.1.13	U/f optimisation	0=Not used 1=Automatic torque boost					
P 2.1.14	I/O reference	0=A11 1=A12 2=Keypad reference 3=Fieldbus reference (FBSpeedReference) 4=Motor potentiometer 5=A11/A12 selection					
P2.1.15	AI2 signal range	1=0mA - 20mA 2=4mA - 20mA 3=0V - 10V 4=2V - 10V					
P2.1.19	Preset speed 1	[Hz]					
P2.1.20	Preset speed 2	[Hz]					
P2.1.21	Autom. restart	0=Not used 1=Used	P2.1.22	Parameter conceal	0=All parameters and menus visible 1=P2.1 and menus MI - H5 visible		

## 8 KEYPAD CONTROL MENU K3



Push 5 seconds for quick change of control place:

KEYPAD ↔ I/O FIELDBUS

Parameters	Selections
P3.1 Selection of control place	1= I/O Terminals, 2=Keypad, 3=Fieldbus
R3.2 Keypad reference	[Hz]
P3.3 Keypad direction	0= Forward, 1= Reverse
P3.4 Stop button activation	0= Limited function, 1= Always enabled
P3.5 PID reference 1	[%]
P3.6 PID reference 2	[%]

## 10 FAULT CODES

CODE	FAULT	CODE	FAULT
1	Overcurrent	29	Thermistor fault
2	Overvoltage	34	Internal bus communication
3	Earth fault	35	Application fault
8	System fault	39	Device removed
9	Undervoltage	40	Device unknown
11	Output phase supervision	41	IGBT temperature
13	Frequency converter undertemperature	44	Device change
14	Frequency converter overtemperature	45	Device added
15	Motor stalled	50	Analogue input lin < 4mA (sel. signal range 4to20 mA)
16	Motor overtemperature	51	External fault
17	Motor underload	52	Keypad communication fault
22	EEPROM checksum fault	53	Fieldbus fault
24	Counter fault	54	Slot fault
25	Microprocessor watchdog fault	55	Actual value supervision

ud01074B

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