CAUTION

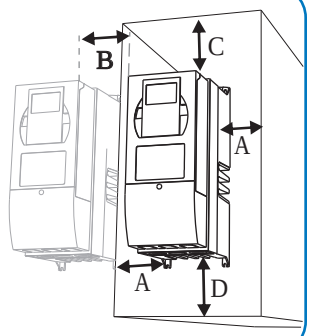
HIGH VOLTAGE!	SEE USER´S MANUAL CHAPTER 1
VARAUSJÄNNITE!	KATSO KÄYTTÖOHJE KOHTA 1
HÖG SPÄNNING!	SE ANVÄNDARMANUALEN KAPITEL 1
HOCHSPANNUNG!	SIEHE BETRIEBSANLEITUNG KAP. 1
HAUTE TENSION!	VOIR MANUEL UTILISATEUR CHAP. 1
ALTA TENSIONE!	VEDI MANUALE BASE CAPITOLO 1
ALTA TENSIÓN!	VER EL CAPITULO. 1 DEL MANUAL

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

Dimensions (mm)

NXL	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



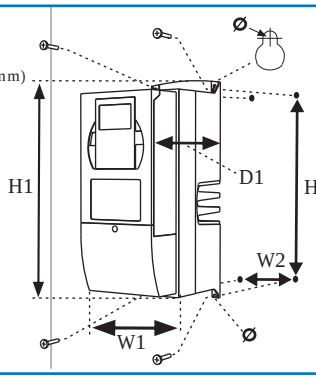
2 MOUNTING

Mounting dimensions (mm)

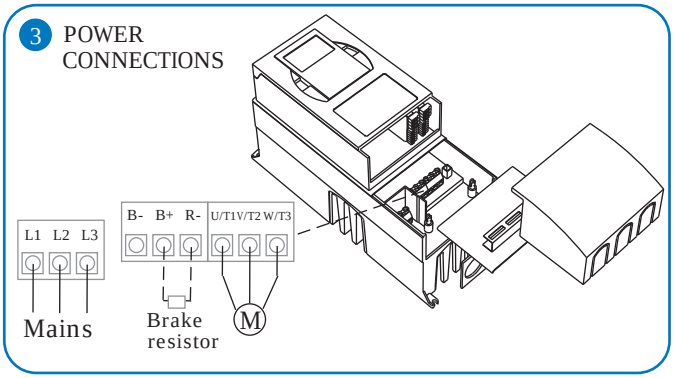
NXL	H2	W2	Ø
0003-0012 5	313	100	7
0016-0031 5	406	100	7
0038-0061 5	541	148	9

Unit dimensions (mm)

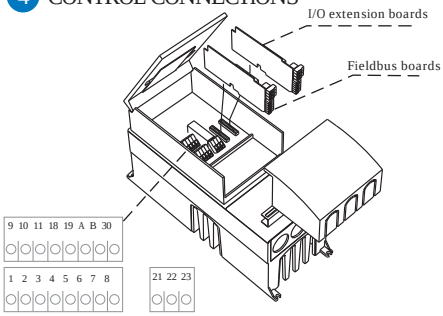
NXL	H1	W1	D1
0003-0012 5	327	128	190
0016-0031 5	419	144	214
0038-0061 5	558	195	237



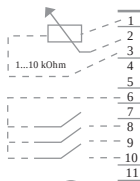
3 POWER CONNECTIONS



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		

CONTROL I/O extension (optional)

OPT-AA

	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		

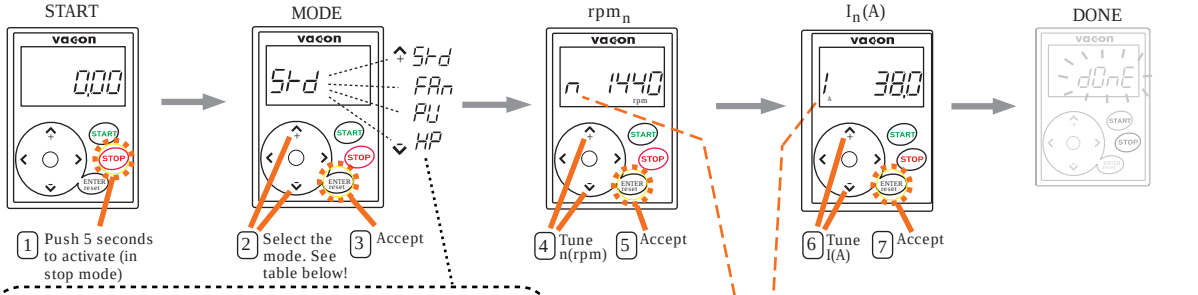
OR

OPT-AI

	Terminal	Signal	Default
12	+24 V	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	TI1+	Thermistor input	
29	TI1-	Thermistor input	
25	RO1	Relay output 1	
26	RO1		RUN

5 START-UP WIZARD

=Push the button



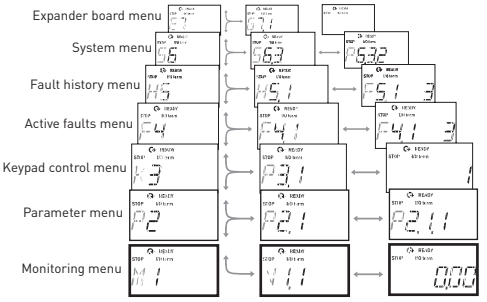
	P2.1.1 Min. Freq (Hz)	P2.1.2 Max.Freq (Hz)	P2.1.3 Acc time (s)	P2.1.4 Dec time (s)	P2.1.5 Current limit (A)	P2.1.6 Motor Un (V)*	P2.1.7 Motor fn (Hz)	P2.1.11 Start funct.	P2.1.12 Stop funct.	P2.1.13 U/f optimization	P2.1.14 I/O ref	P21.21 Auto restart	P3.1 Control place
Std Standard	0 Hz	50 Hz	3 s	3 s	I_H*1,5	400 V*	50 Hz	0=Ramp	0=Coasting	0=Not used	0=Ai1 0-10V	0=Not used	I/O
FAn Fan	20 Hz	50 Hz	20 s	20 s	I_L*1,1	400 V*	50 Hz	0=Ramp	0=Coasting	0=Not used	0=Ai1 0-10V	0=Not used	I/O
PU Pump	20 Hz	50 Hz	5 s	5 s	I_L*1,1	400 V*	50 Hz	0=Ramp	1=Ramp	0=Not used	0=Ai1 0-10V	0=Not used	I/O
HP High performance	0 Hz	50 Hz	1 s	1 s	I_H*1,8	400 V*	50 Hz	0=Ramp	0=Coasting	1=automatic torque boost	0=Ai1 0-10V	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

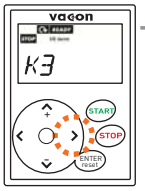
Navigation and selection keys



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	

8 KEYPAD CONTROL MENU K3



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	(%)

9 PARAMETER SETTINGS

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

BASIC PARAMETERS

Code	Parameter	Note
P 2.1.1	Min frequency	(Hz)
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
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
P 2.1.12	Stop function	0=Coasting 1=Ramp
P 2.1.13	U/f optimisation	0=Not used 1=Automatic torque boost
P 2.1.14	I/O reference	0=AI1 1=AI2 2=Keypad reference 3=Fieldbus reference (FBSpeedReference) 4=Motor potentiometer 5=AI1/AI2 selection
P2.1.15	AI2 signal range	1=0mA - 20mA 2=4mA - 20mA 3=0V - 10V 4=2V - 10V

Code	Parameter	Note
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 voltage (0-UnMotor) 7=DC-link volt (0-1000V) 8=PI controller ref. value 9=PI contr. act. value 1 10=PI contr. error value 11=PI controller output
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
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=AI1/AI2 selection
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 M1 - H5 visible

10 FAULT CODES

CODE	FAULT
1	Overcurrent
2	Overvoltage
3	Earth fault
8	System fault
9	Undervoltage
11	Output phase supervision
13	Frequency converter undertemperature
14	Frequency converter overtemperature
15	Motor stalled
16	Motor overtemperature
17	Motor underload
22	EEPROM checksum fault
24	Counter fault
25	Microprocessor watchdog fault

CODE	FAULT
29	Thermistor fault
34	Internal bus communication
35	Application fault
39	Device removed
40	Device unknown
41	IGBT temperature
44	Device change
45	Device added
50	Analogue input Iin < 4mA (sel. signal range 4to20 mA)
51	External fault
52	Keypad communication fault
53	Fieldbus fault
54	Slot fault
55	Actual value supervision

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