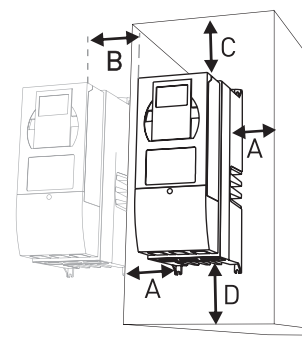


CAUTION



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

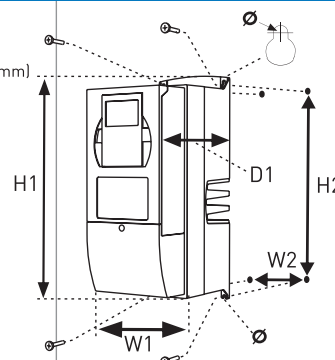
1 COOLING



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

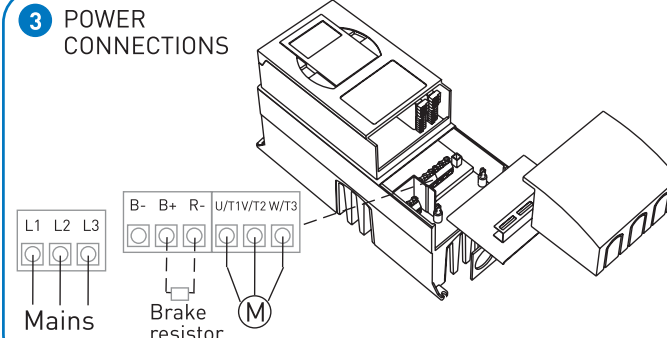
2 MOUNTING



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	

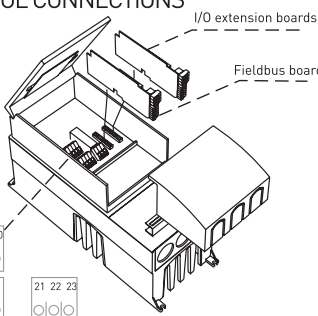
Unit dimensions (mm)				
NXL	H1	W1	D1	
0003-0012 5	327	128	190	
0016-0031 5	419	144	214	
0038-0061 5	558	195	237	

3 POWER CONNECTIONS



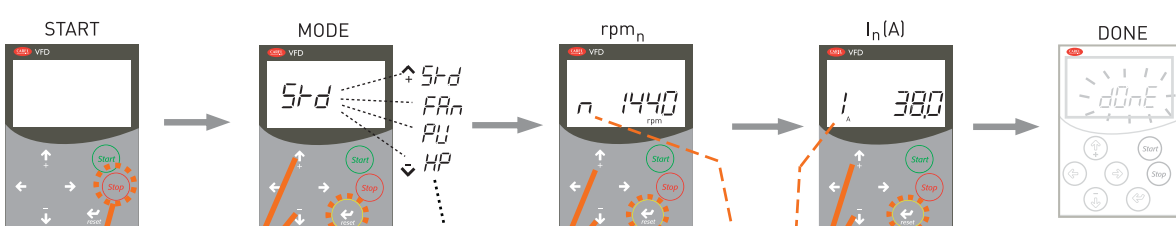
Mains: L1, L2, L3
 Brake resistor: B-, B+, R-
 Motor: U/T1, V/T2, W/T3

4 CONTROL CONNECTIONS



CONTROL I/O standard			CONTROL I/O extension (optional)		
Terminal	Signal	Default	Terminal	Signal	Default
1	10 Vref	Reference voltage	1	+24V	24 V auxiliary voltage
2	AI1+	Analog input, 0-10V	2	GND	I/O ground
3	AI1-	Analog input common	3	DIN1	Digital input 1 Preset speed 2
4	AI2+	Analog input, 0/4-20 mA	4	DIN2	Digital input 2 Fault reset
5	AI2-	Analog input common	5	DIN3	Digital input 3 Disable PID
6	24 Vout	24 V auxiliary voltage	6	DO1	Digital output Ready
7	GND	I/O ground	24	RO1	Relay output 1
8	DIN1	Digital input 1 Start forward	25	RO1	Relay output 1
9	DIN2	Digital input 2 Start reverse	26	RO1	Relay output 1
10	DIN3	Digital input 3 Preset speed 1			
11	GND	I/O ground			
18	AO1+	Analog output Output freq.	12	+24 V	24 V auxiliary voltage
19	AO1-	Analog output common	13	GND	I/O ground
A	RS 485	Serial bus (Modbus RTU)	14	DIN1	Digital input 1 Preset speed 2
B	RS 485	Serial bus	15	DIN2	Digital input 2 Fault reset
30	+24V	External control voltage supply	16	DIN3	Digital input 3 Disable PID
21	RO1	Relay output 1	28	T11+	Thermistor input
22	RO1	Relay output 1	29	T11-	Thermistor input
23	RO1	Relay output 1	25	RO1	Relay output 1
			26	RO1	Relay output 1

5 START-UP WIZARD



- Push 5 seconds to activate (in stop mode)
- Select the mode. See table below!
- Accept
- Tune n(rpm)
- Accept
- Tune I_n(A)
- Accept

Mode	P2.11 Min. Freq (Hz)	P2.12 Max Freq (Hz)	P2.13 Acc time (s)	P2.14 Dec time (s)	P2.15 Current limit(A)	P2.16 Motor Un (V)*	P2.17 Motor fn(Hz)	P2.111 Start funct.	P2.112 Stop funct.	P2.113 U/f optimization	P2.114 I/O ref	P2.121 Auto restart	P3.1 Control place
Std	0	50	3	3	I _n *1,5	400	50	0=	0=	0=	0=	0=	I/O
Standard	Hz	Hz	s	s	V*	Hz	Hz	Ramp	Coasting	Not used	0-10V	Not used	
FRn	20	50	20	20	I _n *1,1	400	50	0=	0=	0=	0=	0=	I/O
Fan	Hz	Hz	s	s	V*	Hz	Hz	Ramp	Coasting	Not used	0-10V	Not used	
PU	20	50	5	5	I _n *1,1	400	50	0=	1=	0=	0=	0=	I/O
Pump	Hz	Hz	s	s	V*	Hz	Hz	Ramp	Ramp	Not used	0-10V	Not used	
HP	0	50	1	1	I _n *1,8	400	50	0=	0=	1=	0=	0=	I/O
High performance	Hz	Hz	s	s	V*	Hz	Hz	Ramp	Coasting	automatic torque boost	0-10V	Not used	

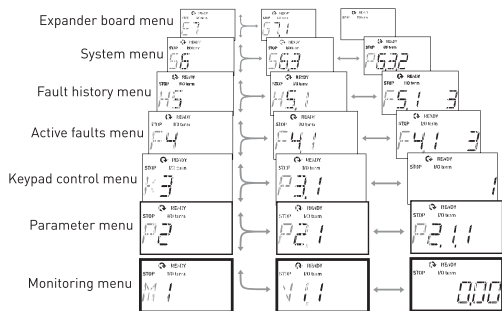
*I_n drives of 208V...230V this value is 230V

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
<i>Std</i> Standard mode	P 2.1.8 Nominal motor speed
<i>FAN</i> Fan mode	P 2.1.9 Nominal motor current
<i>PU</i> Pump mode	
<i>HP</i> 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, cc 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	P2.1.18	DIN3 function	0=Not used 1=Reverse 2=External fault, cc 3=External fault, cc 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
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 (FDSpeedReference) 4=Motor potentiometer 5=AI1/AI2 selection	P2.1.19	Preset speed 1	[Hz]
P 2.1.15	AI2 signal range	1=0mA - 20mA 2=4mA - 20mA 3=0V - 10V 4=2V - 10V	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 - HS visible

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 (set. 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

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	(%)

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