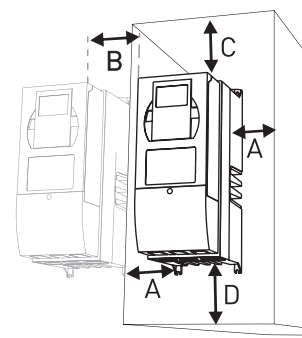


CAUTION



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

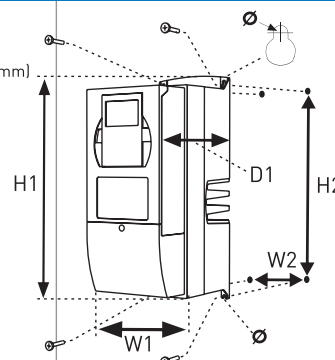
1 COOLING



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 |

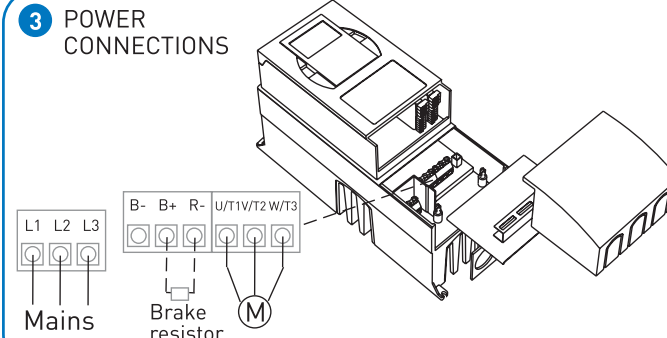
2 MOUNTING



| 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 | |

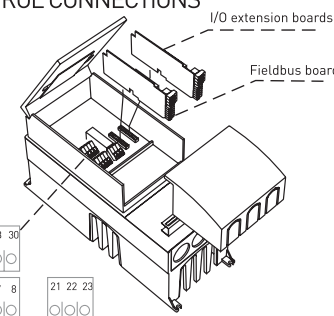
| Unit dimensions (mm) | | | | |
|----------------------|-----|-----|-----|--|
| NXL | H1 | W1 | D1 | |
| 0003-0012 5 | 327 | 128 | 190 | |
| 0016-0031 5 | 419 | 144 | 214 | |
| 0038-0061 5 | 558 | 195 | 237 | |

3 POWER CONNECTIONS



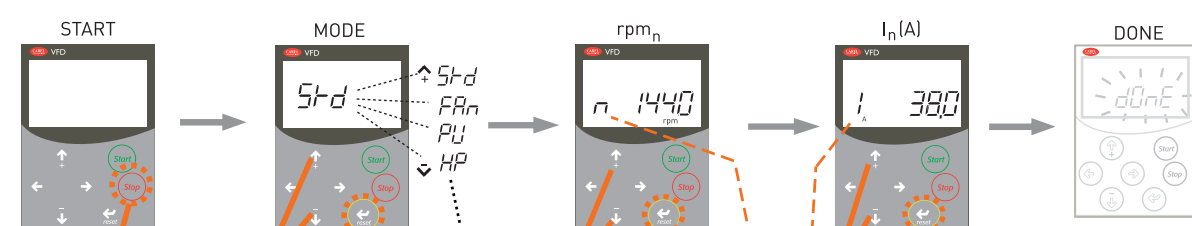
Mains: L1, L2, L3
 Brake resistor: B-, B+, R-
 Motor: U/T1, V/T2, W/T3

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 Standard | 0 Hz | 50 Hz | 3 s | 3 s | I _n *1,5 | 400 V* | 50 Hz | 0= Ramp | 0= Coasting | 0= Not used | 0= AI1 | 0= Not used | I/O |
| FRn Fan | 20 Hz | 50 Hz | 20 s | 20 s | I _n *1,1 | 400 V* | 50 Hz | 0= Ramp | 0= Coasting | 0= Not used | 0= AI1 | 0= Not used | I/O |
| PU Pump | 20 Hz | 50 Hz | 5 s | 5 s | I _n *1,1 | 400 V* | 50 Hz | 0= Ramp | 1= Ramp | 0= Not used | 0= AI1 | 0= Not used | I/O |
| HP High performance | 0 Hz | 50 Hz | 1 s | 1 s | I _n *1,8 | 400 V* | 50 Hz | 0= Ramp | 0= Coasting | 1= automatic torque boost | 0= AI1 | 0= Not used | I/O |

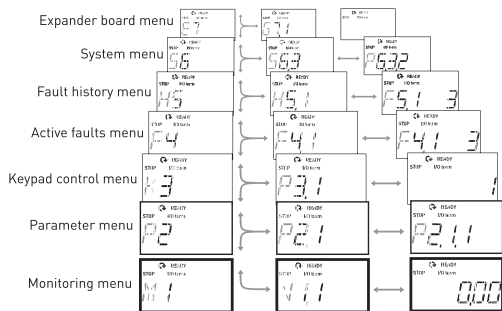
*I_n drives of 208V...230V this value is 230V

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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Smaltimento del prodotto

L'apparecchiatura (o il prodotto) deve essere oggetto di raccolta separata in conformità alle vigenti normative locali in materia di smaltimento

Disposal of the product

The appliance (or the product) must be disposed of separately in accordance with the local waste disposal legislation in force

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