## Danfoss Operating Guide

## iC2-Micro Frequency Converters

## 1 Introduction

his operating guide provides necessary information for qualified personnel to install and commission the d and follow the instructions to use the drive safely and professionally.
Do not dispose of equipment containing electrical components together with domestic waste. Collect it separately in accordance with local and currently valid legislation.

## 2 Safety

Pay particular attention to the safety instructions and general warnings to avoid the risk of death, serious injury, and equipment or property damage.
! W AR N I NG !

## igh voltage

ACdives contain high voltage when connected to AC mains input, DC supply, or load sharing UNINTENDED START
The motor may start from control panel, //O inputs, fieldbus, or MyDrive ${ }^{\circ}$ Insight at any time, when the drive is connected the $A C$ mains, $D C$ supply, or load sharing.
DISCHARGE TIME
The drive contains DC
present even when the warning indicator lights are off
Stop the motor, lisconnect AC mains and permanent magne
Wattery backups, UPS, and DC--Iink connections to other drives.
The minimum waiting time is 4 minutes for MAOO1c, MAOCC.
and MA05a drives.
LEAAAGE CURRENT
Leakaece currents of the drive exceed 3.5 mA. Make sure that the minimum size of the ground conductor complies with the
local safety regulations for high touch current equipment.

## 3 Installation

3.1 Mechanical Dimensions

| Enclosuresize | $\begin{gathered} \text { Height } \\ {[m \mathrm{~mm}(\mathrm{in})]} \\ \hline \end{gathered}$ |  |  | $\begin{gathered} \begin{array}{c} \text { Width } \\ {[\mathrm{mm}(\mathrm{in})]} \end{array} \\ \hline \end{gathered}$ |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Depth } \\ {[m m(i n)]^{2}} \end{array} \\ \hline \mathrm{c} \\ \hline \end{array}$ | Mounting holes [mm (in)] |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | A | $\mathrm{A}^{\text {m }}$ |  | B | b |  |  |  |
| ma01c | 150(5.9) | $216(8.5)$ | 140.45.5 | (28) | 55 (22) | $143(5.6)$ | 18) |  |
| M | $176(6.9)$ | 2322(9.1) | 1505 (5.9) | $75(3.0)$ | $59(2.3)$ | 157(6.2) | $45(0.18)$ |  |
| мя01а | 150 | 2025 (8) | 20.4(5) | 70 | $55(22)$ | $158(6.2)$ | 4.50.18) |  |
| маога | 186 | 240 (9.4) | 176.4(6.9) | $75(3.0)$ | $59(23)$ | $175(6.9)$ | $4.50 .18)$ |  |
| маоза | 2385 | 291 (11 | 226 (8) | 903 | 69(2) | 200 | $5.50 .22)$ |  |
| мАО | 292 (11.5) | 365.51 | 2724 (1) | 125 (4.9 | 97 (3. | 2445 | 7.010 |  |
| MA | 335 (13) | 396.5 | 315 (12) | $165(6.5)$ | 140 (5.5) | $248(9.8)$ | 7.00.23 |  |

Note: (1) Including decoupling plate. (2) The potentiometer on the local control panel extends $5.5 \mathrm{~mm}(0.26$ in foom the divive.
3.2 Mounting Clearance

Table 1: Minimum Mounting Clearance

| Enclosure size | Minimum mounting clearance [maximum temperature $\left.50^{\circ} \mathrm{C}\left(122^{\circ} \mathrm{F}\right)\right]$ |
| :---: | :---: |
| All enclosure sizes | Above and below: 100 mm ( 3.9 in ). |
| MA01a-MA05a, MA02\% | Sides: 0 mm (0 in). |

### 3.3 Connecting to Mains and Motor

Mount the ground wires to the PE terminal.
Connect motor to terminals $\mathrm{U}, \mathrm{V}$, and W .
Mount mains supply to terminals L1/L, L2,
and $L 3 / \mathbb{N}$ (single-phase) and tighten. $L 2$, and $L 3 / \mathbb{N}(3$-phase) or $L 1 / L$
or required maximum screwing torque, see the back of the terminal cover.
3.4Load Sharing/Brake
ble 2: Coonnect Terminals


| Brake | - -ODC and + UDC/+BR |
| :--- | :--- |

For MAOO1, MAO2a, and MAO3a drives, wire with recommended connector (UIt
Pod Fully Insulated FASTON Receptacles and Pod fully Insuluated FASTON Receptacles and Tabs, $521366-2, T$ E connectivity). For required maximum sizes, mount the wires to the related terminal and tighten. Illustration 1 : Mounting of Ground For equired maximum screwing torque, see the back of the termis, contact Danfoss or refer to the drive's design guide.


## NOTICE

Voltage levels of up to $850 \mathrm{~V} D C$ may occur between terminals + UDC//BR and -UDC. Not short-circuit protected.
3.5 Control Terminal

- All control cable terminals are located underneath the terminal - cover in front of the drive.


Whustration 3: Overview of Control Terminals in PNP-configuration with Factory Setting (Speed Control Mode)
3.6 R445 Port and RS485 Termination Switch The drive has an RJ45 port which complies with Modbus 485 protocol.
The RJ45 port is used for connecting:

- External control panel (Control Panel 2.0 OP2).
.PC tool (MyDrive® Insight) via an adapter option.



## NOTICE

-The R445 port supports up to $3 \mathrm{~m}(9.8 \mathrm{ft}$ ) of shielded CAT5e cable which is NOT used to directly connect the drive to a PC.
Failure to of oflow this notice causes damage to the PC. Failure to follow this notice causes damage to the PC.
II the drivi is at the end of the field bus, set the R 5485 termination switch to ON.
Do not operate $R S 4855$ termination switch when the drive is powered on

## 4 Programming

### 4.1 Control Panel



Table 4: Status and Operating Indicator Lights

| Name |  |
| :---: | :---: |


| Name |  | Function | Name |  | Function |
| :---: | :---: | :---: | :---: | :---: | :---: |
| MON | On | Shows the drive status. | REV | On | The drive is in reverse direction. |
| PGM | On | The drive is in programming status. |  | Off | The drive is in forward direction. |
| TOR | On | The drive is in torque mode. | ST2 | Refer to Table 6 Multiple Setups Indicator Lights. |  |
|  | Off | The drive is in speed mode. | WARN | Steadily lit when a warning occurs. |  |
| Loc | On | The drive is in local mode. | READY | Steadily lit when the drive is ready. Flashes when a fault occurs. |  |
|  |  |  | FAUL |  |  |



Table 6: Multiple Setups Indicator Lights

| ST2 | off | On | Flash | Flash quickly |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Active setup ${ }^{(1)}$ | Setup 1 | Setup 2 | Setup | Setu | | Active setup(1) | Setup 1 | Setup 2 | Setup 1 | Setup 2 |
| :---: | :---: | :---: | :---: | :---: |
| Programming setup ${ }^{(2)}$ Setup 1 | Setup 2 | Setup 2 | Setup 1 |  |


$\qquad$ 4p 1

tion
After the drive is powered up, press the Home/Menu key to toggle between status display and main menu. Use the Up/Down keys to select items, and press the OK key to confirm selection.


Illustration 6: Operation with Control Panel
4.3 Automatic Motor Adaptation (AMA)

Via running AMA in VVC + mode, the drive builds a mathematical model of the motor to optimize compatiand thus enhances the motor control performance
Some motors may be unable to run the complete version of the test. In that case, select [2] Enable Reduced AMA completes within 5 minutes. For best results, run the following procedure on a cold motor

## Procedure:

. Set motor data according to the motor nameplate.
2. If needed, set motor cable length in parameter P4.2.1.4 Motor Cable Length
s. Se [I] E Enable Complete AMA or [2] Enable Reduced AMA for parameter P4.2.1.3 AMA Mode, the main displa
shows To start AMA, see illustration 7 .
4. Press the Start key, the test runs automatically and the main display indicates when it is completed.
5. When AMA is completed, press any key to exit and return to normal operation mode

| - 1 пп.5- | --7 | - Añ.L- |
| :---: | :---: | :---: |
| To start AMA | AMA is running <br> Illustration 7: AMA Status Indications | AMA is completed |


| 5 Troubleshooting <br> Table 7: Warning and Fault Events Summary |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Number | Description | Warn | Fault | Trip | Caus |
| 2 | Live Zero Error | x | x | - | Signal on terminal 33 or 34 is less than $50 \%$ of the value set in parameter P9.5.2.3. T33 Low Voltage, parameter P9.5.2.5 T33 Low Current, parameter P9.5.3.3 T34 Low Voltage, and parameter P9.5.3.5 T34 Low Current. |
| 3 | No Motor | $x$ | $x$ | - | No motor has been connected to the output of the drive. |
| 4 | Mains Phase Loss ${ }^{\text {(1) }}$ | x | x | x | Missing phase on the supply side, or the voltage imbalance is high. Check the supply voltage. |
| 7 | DC Over Voltage(1) | x | x | - | DC-link voltage exceeds the limit. |
| 8 | DC Under Voltage ${ }^{(1)}$ | x | x | - | DC-link voltage drops below the voltage warning low limit. |
| 9 | Inverter Overloaded | x | x | - | More than 100\% load for too long. |
| 10 | Motor ETR Overtemperature | x | x | - | Motor is too hot due to more than 100\% load for too long |
| 11 | Motor Thermistor Overtemperature | x | x | - | Thermistor or thermistor connection is disconnected, or the mot is too hot. |
| 12 | Torque Limit | x | x | - | Torque exceeds the value set in either parameter P5.10.1 Motor Torque Limit or parameter P5.10.2 Regenerative Torque Limit |
| 13 | Over Current | x | $x$ | $x$ | Inverter peak current limit is exceeded. If this fault occurs on power-up, check whether power cables are mistakenly connected to the motor terminals. |
| 14 | Earth fault | $x$ | $x$ | $\times$ | Discharge from output phases to ground. |
| 16 | Short Circuit | - | x | x | Short circuit in motor or on motor terminals. |
| 17 | Control Word Tim | x | x |  | No communication to the drive. |
| 18 | Start Failed | - | x | - | May be caused by a blocked motor. |
| 25 | Brake Resistor Short | - | x | x | Brake resistor is short-circuited, thus the brake function is disconnected. |
| 26 | Brake Overload | x | x | - | The power transmitted to the brake resistor over the last 120 s exceeds the limit. Possible corrections: Decrease brake energy via lower speed or longer ramp time. |
| 27 | Brake IGBT/Brake chopper Short Circuited | - | x | x | Brake transistor is short-circuited, thus brake function is disconnected. |
| 28 | Brake Check | - | x | x | Brake resistor is not connected/working. |
| 30 | U phase loss | - | $\times$ | x | Motor phase U is missing. Check the phase. |
| 31 | v phase loss | - | x | x | Motor phase V is missing. Check the phase. |
| 32 | W phase loss | - | x | x | Motor phase W is missing. Check the phase. |
| 36 | Mains Failure | x | x | - | This warning/fault is only active if the supply voltage to the drive is less than the value set in parameter P2.3.7 Power Loss Controller Limit, and parameter P2.3.6 Power Loss Action is NOT set to [0] No Function. |
| 38 | Internal Fault | - | x | $x$ | Contact the local supplier. |
| 40 | overload T15 | x | - |  | Check the load connected to terminal 15 or remove short-circuit connection. |
| 46 | Gate drive Voltage Faut | - | $x$ | x | - |
| 47 | 24 V Supply Low | x | x | X | 24 VDC may be overloaded. |
| 50 | AMA calibration failed | - | X |  | A calibration error has occurred. |
| 51 | AMA check $U_{\text {nom }}$ and $l_{\text {omp }}$ | - | x |  | Wrong setting for motor voltage and/or motor current. |
| 52 | AMA low $\mathrm{l}_{\text {nom }}$ | - | x | - | Motor current is too low. Check the settings. |
| 53 | AMA big motor | - | x |  | The power size of the motor is too large for the AMA to operate. |
| 54 | AMA small motor | - | x |  | The power size of the motor is too small for the AMA to operate. |
| 55 | AMA parameter range | - | x | - | The parameter values of the motor are outside of the acceptable range. AMA does not run. |
| 56 | AMA interrupt | - | x | - | The AMA is interupted. |
| 57 | AMA timeout | - | x | - |  |
| 58 | AMA internal | - | x |  | Contact the local supplier. |
| 59 | Current Limit | x | $x$ | - | The drive is overloaded. |
| 60 | External Interlock | - | x | - | External interlock has been activate. |
| 61 | Feedback Error | x | $x$ | - |  |
| 63 | Mechanical Brake | - | x | - | Actual motor current has not exceeded release brake current within start delay time window. |
| 69 | Power Card Temp | x | x | x | The cutout temperature of the power card has exceeded the up limit. |
| 80 | Drive Initialized | - | x | - | All parameter settings are initialized to default settings. |
| 87 | Auto DC brake | x | - | - | Occurr in IT mains when the drive coasts, and the DC voltage is higher than 830 V for 400 V units and 425 V for 200 V units. The motor consumes energy on the DC link. This function can be enabled/disabled in parameter P2.3.13 Auto DC Braking. |
| 95 | Lost load detected | $x$ | $x$ | - |  |
| 99 | Locked Rotor | - | x |  | Rotor is blocked. |
| 126 | Motor Rotating | - | x |  | PM motor is rotating when AMA is performed. |
| 127 | Back EMF too High | x | - | - | The back EMF of PM motor is too high before starting. |
| Err. 89 | Parameter read only | - | - | - | Parameters cannot be changed. |
| Er. 95 | Not while running | - |  | - | Parameters can only be changed when the motor is stopped. |
| Er. 96 | A wrong password was entered | - | - | - | Occurs when using a wrong password for changing a passwordprotected parameter. |

## 6 Specification

| Frequency converter | 02A4 | 04A8 |
| :---: | :---: | :---: |
| Typical shaft output [kW (hp)] | 0.37 (0.5) | 1.1 (1.5) |
| Enclosure size | MA01C | MA02C |
| Output current |  |  |
| Continuous (3x200-240 V [ A$]$ | 2.4 | 4.8 |
| Intermittent ( $3 \times 200-240 \mathrm{~V}$ [ A$]$ | 3.6 | 7.2 |
| Maximum cable size (Mains, motor) [mm²/AWG] | 4/10 |  |
| Maximum input current |  |  |
| Continuous (1x100-120 V [ A$]$ | 11.6 | 25.6 |
| Intermittent ( $1 \times 100-120 \mathrm{~V}$ ) [ A$]$ | 17.4 | 38.4 |
| EMC filer type | C4 |  |

## EMC filter type

| Frequency converter | 02A2 | 04A2 | 06A8 | 09A6 |
| :---: | :---: | :---: | :---: | :---: |
| Typical shaft output [ KW (hp)] | 0.37 (0.5) | 0.75 (1.0) | 1.5 (2.0) | 2.2 (3.0) |
| Enclosure size | MA01c | ma01c | MA02C | MA02a |
| Output current |  |  |  |  |
| Continuous (3x200-240 V [ A$]$ | 2.2 | 4.2 | 6.8 | 9.6 |
| Intermittent ( $3 \times 200-240 \mathrm{~V}$ ) [A] | 3.3 | 6.3 | 10.2 | 14.4 |
| Maximum cable size (Mains, motor) [mm²/AWG | 4/10 |  |  |  |
| Maximum input current |  |  |  |  |
| Continuous (1x200-240 V [ A ] | 6.1 | 11.6 | 18.7 | 26.4 |
| Intermittent ( $1 \times 200-240 \mathrm{~V}$ ) [A] | 8.3 | 15.6 | 26.4 | 37 |


| 3 $\times 200-240 \mathrm{~V} \mathrm{AC} \mathrm{(Normal} \mathrm{overload} \mathrm{150} \mathrm{\%} \mathrm{for}$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Frequency converter | 02A4 | 04A2 | 07 |  | 11 AO | 15A2 |
| Typical shaft output [kW (hp)] | 0.37 (0.5) | 0.75 (1.0) | 1.5 |  | 2.2 (3.0) | 3.7 (5.0) |
| Enclosure size | MA01a | MA01a | MA |  | MA03a | мАоза |
| Output current |  |  |  |  |  |  |
| Continuous (3x200-240 V [ A$]$ | 2.4 | 4.2 | 7. |  | 11 | 15.2 |
| Intermittent (3x200-240 V CA ] | 3.6 | 6.3 | 11. |  | 16.5 | 22.8 |
| Maximum cable size (Mains, motor) [mm²/AWG] |  |  |  |  |  |  |
| Maximum input current |  |  |  |  |  |  |
| Continuous (3x200-240 V [ A ] | 3.8 | 6.7 | 12 |  | 17.7 | 24.3 |
| Intermittent (3x200-240 V) [ A$]$ | 5.7 | 8.3 | 18 |  | 26.6 | 35.3 |
| EMC filer type |  |  | C |  |  |  |
| Table 11: Mains Supply 3x380-480 V AC (Normal overload 150\% for 1 minute) |  |  |  |  |  |  |
| Frequency converter | 01A2 | 02A2 | 0347 | 05A3 | 07A2 | 09A0 |
| Typical shaft output [kW (hp)] | 0.37 (0.5) | 0.75 (1.0) | 1.5 (2.0) | 2.2 (3.0) | 3.0 (4.0) | 4.0 (5.5) |
| Enclosure size | MA01a | MA01a | MA01a | MA02a | MA02a | MA02a |
| Output current |  |  |  |  |  |  |
| Continuous ( $3 \times 380-440 \mathrm{~V}$ ) A$]$ | 1.2 | 2.2 | 3.7 | 5.3 | 7.2 | 9.0 |
| Intermittent ( $3 \times 380-440 \mathrm{~V})$ [ A$]$ | 1.8 | 3.3 | 5.6 | 8.0 | 10.8 | 13.7 |
| Continuous ( $3 \times 400-480 \mathrm{~V}$ [ A$]$ | 1.1 | 2.1 | 3.4 | 4.8 | 6.3 | 8.2 |
| Intermittent ( $3 \times 400-480 \mathrm{~V}$ ) $[\mathrm{A}]$ | 1.7 | 3.2 | 5.1 | 7.2 | 9.5 | 12.3 |
| Maximum cable size (Mains, motor) [mm²/AWG] |  |  |  |  |  |  |
| Maximum input current |  |  |  |  |  |  |
| Continuous (3x380-440 V [ A ] | 1.9 | 3.5 | 5.9 | 8.5 | 11.5 | 14.4 |
| Intermittent ( $3 \times 380-440 \mathrm{~V}$ [ A$]$ | 2.6 | 4.7 | 8.7 | 12.6 | 16.8 | 20.2 |
| Continuous $3 \times 440-480 \mathrm{~V})$ [ $]$ | 1.7 | 3.0 | 5.1 | 7.3 | 9.9 | 12.4 |
| Intermittent ( $3 \times 440-480 \mathrm{~V}$ ) [ A$]$ | 2.3 | 4.0 | 7.5 | 10.8 | 14.4 | 17.5 |
| EMC filer type |  |  | C2 |  |  |  |
| Table 12: Mains Supply 3x380-480 V AC (Normal overload 150\% for 1 minute) |  |  |  |  |  |  |
| Frequency converter | 12A0 | 15A5 | 23A0 | 31A0 | 37A0 | 43A0 |
| Typical shaft output [kW (hp)] | 5.5 (7.5) | 7.5 (10) | 11 (15) | 15 (20) | 18.5 (25) | 22 (30) |
| Enclosure size | мАоза | мАоза | MA04a | MA04a | MA05a | MA05a |
| Output current |  |  |  |  |  |  |
| Continuous ( $3 \times 380-440 \mathrm{~V}$ ) [A] | 12 | 15.5 | 23 | 31 | 37 | 43 |
| Intermittent ( $3 \times 380-440 \mathrm{~V}$ ) [ A$]$ | 18 | 23.5 | 34.5 | 46.5 | 55.5 | 64.5 |
| Continuous $3 \times 400-880 \mathrm{~V}$ [ A$]$ | 11 | 14 | 21 | 27 | 34 | 40 |
| Intermittent ( $3 \times 400-480 \mathrm{~V}$ ) [A] | 16.5 | 21.3 | 31.5 | 40.5 | 51 | 60 |
| Maximum cable size (Mains, motor) [ $\mathrm{mm}^{2} / \mathrm{AWG}$ ] | 4/10 |  | 16/6 |  |  |  |


| Continuous ( $3 \times 380-440 \mathrm{~V}$ [ A$]$ | 19.2 | 24.8 | 33 | 42 | 34.7 | 41.2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Intermittent ( $3 \times 380-440 \mathrm{~V}$ ) $[\mathrm{A}]$ | 27.4 | 36.3 | 47.5 | 60 | 49 | 57.6 |
| Continuous $3 \times 440-480 \mathrm{~V}$ [ A$]$ | 16.6 | 21.4 | 29 | 36 | 31.5 | 37.5 |
| Intermittent ( $3 \times 440-480 \mathrm{~V})$ [ A$]$ | 23.6 | 30.1 | 41 | 52 | 44 | 53 |
| EMC filter type | C2/C4 |  |  |  |  |  |

## 7 Ambient Conditions

Protectionraing

|  | $1 \mathrm{P} 20 /$ Open Type $(\mathbb{P} 21 / \mathrm{Type} 1$ conversion kit as an option |
| :--- | :--- |
| Temperature during operation | $-20^{\circ} \mathrm{C}$ to $55^{\circ} \mathrm{C}\left(-44^{\circ} \mathrm{F}\right.$ to $\left.131^{\circ} \mathrm{F}\right),-10^{\circ} \mathrm{C}$ to $50^{\circ} \mathrm{C}\left(14^{\circ} \mathrm{F}\right.$ to |

tent ding storage/transport
Relative humidity

$$
-25^{\circ} \mathrm{C} \text { to } 65 / 70^{\circ} \mathrm{C}\left(-13^{\circ} \mathrm{F} \text { to } 149 / 158^{\circ} \mathrm{F}\right) \text {. }
$$

5-95\%, non-condensing during operation.
Altitude

Stora | Storage |
| :--- | :--- |
| Transportation |
| Operation | Storage

Mechanical
conditions

EMC Compatibilit
IEC $60721-3-3$, Class 3 M
tor Cable Length
Drive with built-in EMC filter fulfills radiated emission C2 limits.
The drive is designed to operate with optimum performance within the maximum motor cable lengths defined in Table 14 Maximum Motor Cable Length.

| Table 13: EMC Compatibility Motor Cable Length |  |  | Table 14: Maximum Motor Cable Length |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Drive with built in EMC filter | Maximum motor cab | th (shielded), @4kHz | Maximum motor cable length | Shielded | 50 m (164ft) |
|  | C1 (Conducted) | C2 (Conducted) |  |  |  |
| $1 \times 200-240 \mathrm{~V}$ | 5 m (16.4ft) | - |  | Unshielded | 75 m (246ft) |
| $3 \times 400-480 \mathrm{~V}$ | - | 15 m (49.2 ft) |  |  |  |

9 Fuses and Circuit Breakers

| iC2-Micro | Non cabinet |  |  |  |  | Cabinet |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | UL fuse |  |  |  | CEfuse | UL circuit | CE circuit | Test cabinet size [Height $x$ Width $x$ Depth] [mm (in)] | Minimum cabinet volume [L] |
| kW (hp) | RK1 | T | , | cc | gG | $\underset{\substack{\text { ABB MS165 } \\ \text { Maximum } \\ \text { trip level }}}{\text { ABS }}$ | $\underset{\substack{\text { Eaton } \\ \text { Eaxinum } \\ \text { trip level }}}{\substack{\text { min }}}$ |  |  |
| Standard fault current SCCR | 5 kA | 5 kA |  |  | 5 kA | 5 kA | 5 kA |  |  |
| High fault current SCCR | - | 100 kA |  |  | - | 65 kA | - |  |  |
| $1 \times 100-120 \mathrm{VAC}$ |  |  |  |  |  |  |  |  |  |
| 0.37 (0.5) | 25 A |  |  |  | 25 A | 25 A | PKZM4-25 | $\left\lvert\, \begin{gathered} 500 \times 400 \times 260 \\ (19.7 \times 15.7 \times 10.2) \end{gathered}\right.$ | 52 |
| 1.17 (1.5) | 35 A |  |  |  | 50 A | 42 A | PKZM4-50 |  |  |
| $1 \times 200-240 \mathrm{VAC}$ |  |  |  |  |  |  |  |  |  |
| 0.37-0.75 (0.5-1.0) | 25 A |  |  |  | 25 A | 25 A | PKZM4-25 | $\left(\begin{array}{c} 500 \times 400 \times 260 \\ (19.7 \times 15.7 \times 10.2) \end{array}\right.$ | 52 |
| 1.5 (2.0) | 35 A |  |  |  | 35 A | 32 A | PKZM4-32 |  |  |
| 2.2 (3.0) | 40 A |  |  |  | 50 A | 42 A | PKZM4-50 |  |  |
| $3 \times 200-240 \mathrm{VAC}$ |  |  |  |  |  |  |  |  |  |
| 0.37-0.75 (0.5-1.0) | 15 A |  |  |  | 16 A | 16 A | PKZMO-16 | $-\begin{gathered} 500 \times 400 \times 260 \\ (19.7 \times 15.7 \times 10.2) \end{gathered}$ | 52 |
| 1.5 (2.0) | 30 A |  |  |  | 32 A | 32 A | PKZM4-32 |  |  |
| 2.2-3.7 (3.0-5.0) | 40 A |  |  |  | 40 A | 42 A | PKZM4-40 |  |  |
| $3 \times 380-480 \mathrm{VAC}$ |  |  |  |  |  |  |  |  |  |
| 0.37-1.5 (0.5-2.0) | 15 A |  |  |  | 16 A | 16 A | PKZMO-16 | $500 \times 400 \times 260$ <br> $19.7 \times 15.7 \times 10.2)$ | 52 |
| 2.2-4.0. (3.0-5.5) | 30 A |  |  |  | 40 A | 32 A | PKZM4 32 |  |  |
| 5.5-7.5 (7.5-10) | 40 A |  |  |  | 40 A | 42 A | PKZM4-40 |  |  |
| 11-15 (15-20) | 60 A |  |  |  | 63 A | 65 A | PKZM4.63 | $\begin{gathered} 800 \times 400 \times 300 \\ \hline(31.5 \times 15.7 \times 11.8) \end{gathered}$ | 96 |
| 18.5-22 (25-30) | 60 A |  |  |  | 80 A | 80 A | NZMN1-A80 |  |  |

## 10 Technical Documentation

Scan the QR code to access more technical documents for the drive. Or, after scanning
the QR code, click Global English on the website to select your local region's website. search $i$ ic2 to find the documents with your own languages.

Danfoss A/S
Ulsnaes
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