



Variable frequency drive, 400 V AC, 3-phase, 39 A, 18.5 kW, IP55/NEMA 12,  
Radio interference suppression filter, OLED display

**Part no.** DA1-34039FB-B55C  
**Catalog No.** 169392  
**Alternate Catalog No.** DA1-34039FB-B55C  
**EL-Nummer (Norway)** 4137314

## Delivery program

|                                    |                 |    |   |
|------------------------------------|-----------------|----|---|
| Product range                      |                 |    | Variable frequency drives   |
| Part group reference (e.g. DIL)    |                 |    | DA1   |
| Rated operational voltage          | U <sub>e</sub>  |    | 400 V AC, 3-phase<br>480 V AC, 3-phase  |
| Output voltage with V <sub>e</sub> | U <sub>2</sub>  |    | 400 V AC, 3-phase<br>480 V AC, 3-phase  |
| Mains voltage (50/60Hz)            | U <sub>LN</sub> | V  | 380 (-10%) - 480 (+10%)   |
| <b>Rated operational current</b>   |                 |    |   |
| At 150% overload                   | I <sub>e</sub>  | A  | 39  |
| Note                               |                 |    | Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40 °C  |
| <b>Assigned motor rating</b>       |                 |    |   |
| Note                               |                 |    | for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm <sup>-1</sup> at 50 Hz or 1800 min <sup>-1</sup> at 60 Hz |
| Note                               |                 |    | Overload cycle for 60 s every 600 s   |
| Note                               |                 |    | at 400 V, 50 Hz   |
| 150 % Overload                     | P               | kW | 18.5  |
| 150 % Overload                     | I <sub>M</sub>  | A  | 36  |
| Note                               |                 |    | at 440 - 480 V, 60 Hz   |
| 150 % Overload                     | P               | HP | 25  |
| 150 % Overload                     | I <sub>M</sub>  | A  | 34  |
| Degree of Protection               |                 |    | IP55/NEMA 12  |
| Interface/field bus (built-in)     |                 |    | OP-Bus (RS485)/Modbus RTU, CANopen®   |
| Fieldbus connection (optional)     |                 |    | Ethernet IP<br>DeviceNet<br>PROFIBUS<br>PROFINET<br>Modbus-TCP<br>EtherCAT<br>SmartWire-DT  |
| Fitted with                        |                 |    | Radio interference suppression filter<br>Brake chopper<br>Additional PCB protection<br>OLED display   |
| Parameterization                   |                 |    | Keypad<br>Fieldbus<br>drivesConnect<br>drivesConnect mobile (App)   |
| Frame size                         |                 |    | FS4   |
| Connection to SmartWire-DT         |                 |    | yes<br>in conjunction with DX-NET-SWD1 SmartWire DT module  |

## Technical data

|                    |  |  |   |
|--------------------|--|--|---|
| <b>General</b>     |  |  |   |
| Standards          |  |  | Specification for general requirements: IEC/EN 61800-2<br>EMC requirements: IEC/EN 61800-3<br>Safety requirements: IEC/EN 61800-5-1 |
| Certifications     |  |  | CE, UL, cUL, RCM, UkrSEPRO, EAC   |
| Approvals          |  |  | DNV   |
| Production quality |  |  | RoHS, ISO 9001  |

|                                    |          |    |   |
|------------------------------------|----------|----|---|
| Climatic proofing                  | $P_w$    | %  | < 95%, average relative humidity (RH), non-condensing, non-corrosive  |
| Air quality                        |          |    | 3C3, 3S3  |
| Ambient temperature                |          |    |   |
| Operating ambient temperature min. |          | °C | -10   |
| Operating ambient temperature max. |          | °C | + 40  |
|                                    |          |    | operation (with 150 % overload)   |
| Storage                            | $\theta$ | °C | -40 - +60   |
| Radio interference level           |          |    |   |
| Radio interference class (EMC)     |          |    | C2, C3, depending on the motor cable length, the connected load, and ambient conditions. External radio interference suppression filters (optional) may be necessary. |
| Environment (EMC)                  |          |    | 1st and 2nd environments as per EN 61800-3  |
| maximum motor cable length         | $l$      | m  | C2 ≤ 5 m<br>C3 ≤ 25 m   |
| Mounting position                  |          |    | Vertical  |
| Altitude                           |          | m  | 0 - 1000 m above sea level<br>Above 1000 m: 1% derating for every 100 m<br>max. 4000 m  |
| Degree of Protection               |          |    | IP55/NEMA 12  |
| Protection against direct contact  |          |    | BGV A3 (VBG4, finger- and back-of-hand proof)   |

### Main circuit

|   |            |     |  |
|---|------------|-----|--|
| Supply  |            |     |  |
| Rated operational voltage                                   | $U_e$      |     | 400 V AC, 3-phase<br>480 V AC, 3-phase   |
| Mains voltage (50/60Hz)                                     | $U_{LN}$   | V   | 380 (-10%) - 480 (+10%)  |
| Input current (150% overload)                               | $I_{LN}$   | A   | 44.1   |
| System configuration  |            |     | AC supply systems with earthed center point  |
| Supply frequency  | $f_{LN}$   | Hz  | 50/60  |
| Frequency range   | $f_{LN}$   | Hz  | 48 - 62  |
| Mains switch-on frequency                                   |            |     | Maximum of one time every 30 seconds   |
| Power section   |            |     |  |
| Function  |            |     | Variable frequency drive with internal DC link and IGBT inverter   |
| Overload current (150% overload)                            | $I_L$      | A   | 58.5   |
| max. starting current (High Overload)                       | $I_H$      | %   | 200  |
| Note about max. starting current                            |            |     | for 4 seconds every 40 seconds   |
| Output voltage with $V_e$                                   | $U_2$      |     | 400 V AC, 3-phase<br>480 V AC, 3-phase   |
| Output Frequency  | $f_2$      | Hz  | 0 - 50/60 (max. 500)   |
| Switching frequency   | $f_{PWM}$  | kHz | 8<br>adjustable 4 - 24 (audible)   |
| Operation Mode  |            |     | U/f control<br>Speed control with slip compensation<br>sensorless vector control (SLV)<br>optional: Vector control with feedback (CLV) |
| Frequency resolution (setpoint value)                       | $\Delta f$ | Hz  | 0.1  |
| Rated operational current                                   |            |     |  |
| At 150% overload  | $I_e$      | A   | 39   |
| Note  |            |     | Rated operational current at a switching frequency of 8 kHz and an ambient air temperature of +40 °C                                   |
| Power loss  |            |     |  |
| Heat dissipation at rated operational current $I_e = 150\%$ | $P_V$      | W   | 444  |
| Efficiency  | $\eta$     | %   | 97.6   |
| Maximum leakage current to ground (PE) without motor        | $I_{PE}$   | mA  | 2.47   |
| Fitted with   |            |     | Radio interference suppression filter<br>Brake chopper<br>Additional PCB protection<br>OLED display                                    |
| Safety function   |            |     | STO (Safe Torque Off, SIL2, PLd Cat 3)   |
| Frame size  |            |     | FS4  |
| Motor feeder  |            |     |  |

|   |                  |     |   |
|---|------------------|-----|---|
| Note  |                  |     | for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with 1500 rpm <sup>-1</sup> at 50 Hz or 1800 min <sup>-1</sup> at 60 Hz |
| Note  |                  |     | Overload cycle for 60 s every 600 s   |
| Note  |                  |     | at 400 V, 50 Hz   |
| 150 % Overload                                  | P                | kW  | 18.5  |
| Note  |                  |     | at 440 - 480 V, 60 Hz   |
| 150 % Overload                                  | P                | HP  | 25  |
| maximum permissible cable length                | l                | m   | screened: 100<br>screened, with motor choke: 200<br>unscreened: 150<br>unscreened, with motor choke: 300  |
| Apparent power                                  |                  |     |   |
| Apparent power at rated operation 400 V         | S                | kVA | 27.02   |
| Apparent power at rated operation 480 V         | S                | kVA | 32.42   |
| Braking function                                |                  |     |   |
| Standard braking torque                         |                  |     | max. 30 % M <sub>N</sub>  |
| DC braking torque                               |                  |     | max. 100% of rated operational current I <sub>e</sub> , variable  |
| Braking torque with external braking resistance |                  |     | Max. 100% of rated operational current I <sub>e</sub> with external braking resistor  |
| minimum external braking resistance             | R <sub>min</sub> | Ω   | 22  |
| Switch-on threshold for the braking transistor  | U <sub>DC</sub>  | V   | 780 V DC  |

### Control section

|                                |                |   |  |
|--------------------------------|----------------|---|--|
| External control voltage       | U <sub>c</sub> | V | 24 V DC (max. 100 mA)  |
| Reference voltage              | U <sub>s</sub> | V | 10 V DC (max. 10 mA)   |
| Analog inputs                  |                |   | 2, parameterizable, 0 - 10 V DC, 0/4 - 20 mA   |
| Analog outputs                 |                |   | 2, parameterizable, 0 - 10 V, 0/4 - 20 mA  |
| Digital inputs                 |                |   | 3, parameterizable, max. 30 VDC, max. 5 for non-parameterized analog inputs              |
| Digital outputs                |                |   | 2, parameterizable, 24 V DC  |
| Relay outputs                  |                |   | 2, parameterizable, 1 N/O and 1 changeover contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1) |
| Interface/field bus (built-in) |                |   | OP-Bus (RS485)/Modbus RTU, CANopen®  |

### Assigned switching and protective elements

|   |  |   |   |
|---|--|---|---|
| Power Wiring  |  |   |   |
| Safety device (fuse or miniature circuit-breaker)                             |  |   |   |
| IEC (Type B, gG), 150 %   |  |   | FAZ-B63/3   |
| UL (Class CC or J)  |  | A | 60  |
| Mains contactor   |  |   |   |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DILM25  |
| Main choke  |  |   |   |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DX-LN3-040  |
| Radio interference suppression filter (external, 150 %)                       |  |   | DX-EMC34-042  |
| Radio interference suppression filter, low leakage currents (external, 150 %) |  |   | DX-EMC34-042-L  |
| Note regarding radio interference suppression filter                          |  |   | Optional external radio interference suppression filter for longer motor cable lengths and for use in different EMC environments  |
| DC link connection  |  |   |   |
| Braking resistance  |  |   |   |
| 10 % duty factor (DF)   |  |   | DX-BR022-5K1  |
| 20 % duty factor (DF)   |  |   | DX-BR022-9K2  |
| 40 % duty factor (DF)   |  |   | R:2 x DX-BR012-18K1   |
| Notes concerning braking resistances:   |  |   | R:m = "m" resistors connected in series<br>The brake resistors are assigned based on the maximum rated power of the variable frequency drive. Additional brake resistors and designs (e.g. different duty cycles) are available upon request. |
| Motor feeder  |  |   |   |
| motor choke   |  |   |   |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DX-LM3-050  |
| Sine filter   |  |   |   |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DX-SIN3-048   |
| All-pole sine filter  |  |   |   |

## Design verification as per IEC/EN 61439

| Technical data for design verification   |                   |    |     |
|--|-------------------|----|-----|
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 39  |
| Heat dissipation per pole, current-dependent   | P <sub>vid</sub>  | W  | 0   |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 444 |
| Static heat dissipation, non-current-dependent   | P <sub>vs</sub>   | W  | 0   |
| Heat dissipation capacity  | P <sub>diss</sub> | W  | 0   |
| Operating ambient temperature min.   |                   | °C | -10 |
| Operating ambient temperature max.   |                   | °C | 40  |
| IEC/EN 61439 design verification   |                   |    |     |
| 10.2 Strength of materials and parts   |                   |    |     |
| 10.2.2 Corrosion resistance  |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.2.3.1 Verification of thermal stability of enclosures   |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat   |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects           |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.2.4 Resistance to ultra-violet (UV) radiation   |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.2.5 Lifting   |                   |    |     |
| Does not apply, since the entire switchgear needs to be evaluated.   |                   |    |     |
| 10.2.6 Mechanical impact   |                   |    |     |
| Does not apply, since the entire switchgear needs to be evaluated.   |                   |    |     |
| 10.2.7 Inscriptions  |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.3 Degree of protection of ASSEMBLIES  |                   |    |     |
| Does not apply, since the entire switchgear needs to be evaluated.   |                   |    |     |
| 10.4 Clearances and creepage distances   |                   |    |     |
| Meets the product standard's requirements.   |                   |    |     |
| 10.5 Protection against electric shock   |                   |    |     |
| Does not apply, since the entire switchgear needs to be evaluated.   |                   |    |     |
| 10.6 Incorporation of switching devices and components   |                   |    |     |
| Does not apply, since the entire switchgear needs to be evaluated.   |                   |    |     |
| 10.7 Internal electrical circuits and connections  |                   |    |     |
| Is the panel builder's responsibility.   |                   |    |     |
| 10.8 Connections for external conductors   |                   |    |     |
| Is the panel builder's responsibility.   |                   |    |     |
| 10.9 Insulation properties   |                   |    |     |
| 10.9.2 Power-frequency electric strength   |                   |    |     |
| Is the panel builder's responsibility.   |                   |    |     |
| 10.9.3 Impulse withstand voltage   |                   |    |     |
| Is the panel builder's responsibility.   |                   |    |     |
| 10.9.4 Testing of enclosures made of insulating material   |                   |    |     |
| Is the panel builder's responsibility.   |                   |    |     |
| 10.10 Temperature rise   |                   |    |     |
| The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |                   |    |     |
| 10.11 Short-circuit rating   |                   |    |     |
| Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |                   |    |     |
| 10.12 Electromagnetic compatibility  |                   |    |     |
| Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |                   |    |     |
| 10.13 Mechanical function  |                   |    |     |
| The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |                   |    |     |

## Technical data ETIM 7.0

| Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)  |  |    |           |
|--|--|----|-----------|
| Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kV (ec!@ss10.0.1-27-02-31-01 [AKE177014]) |  |    |           |
| Mains voltage  |  | V  | 342 - 528 |
| Mains frequency  |  |    | 50/60 Hz  |
| Number of phases input   |  |    | 3         |
| Number of phases output  |  |    | 3         |
| Max. output frequency  |  | Hz | 500       |
| Max. output voltage  |  | V  | 500       |
| Nominal output current I <sub>2N</sub>   |  | A  | 39        |
| Max. output at quadratic load at rated output voltage  |  | kW | 18.5      |
| Max. output at linear load at rated output voltage   |  | kW | 18.5      |
| Relative symmetric net frequency tolerance   |  | %  | 10        |
| Relative symmetric net voltage tolerance   |  | %  | 10        |
| Number of analogue outputs   |  |    | 2         |
| Number of analogue inputs  |  |    | 2         |

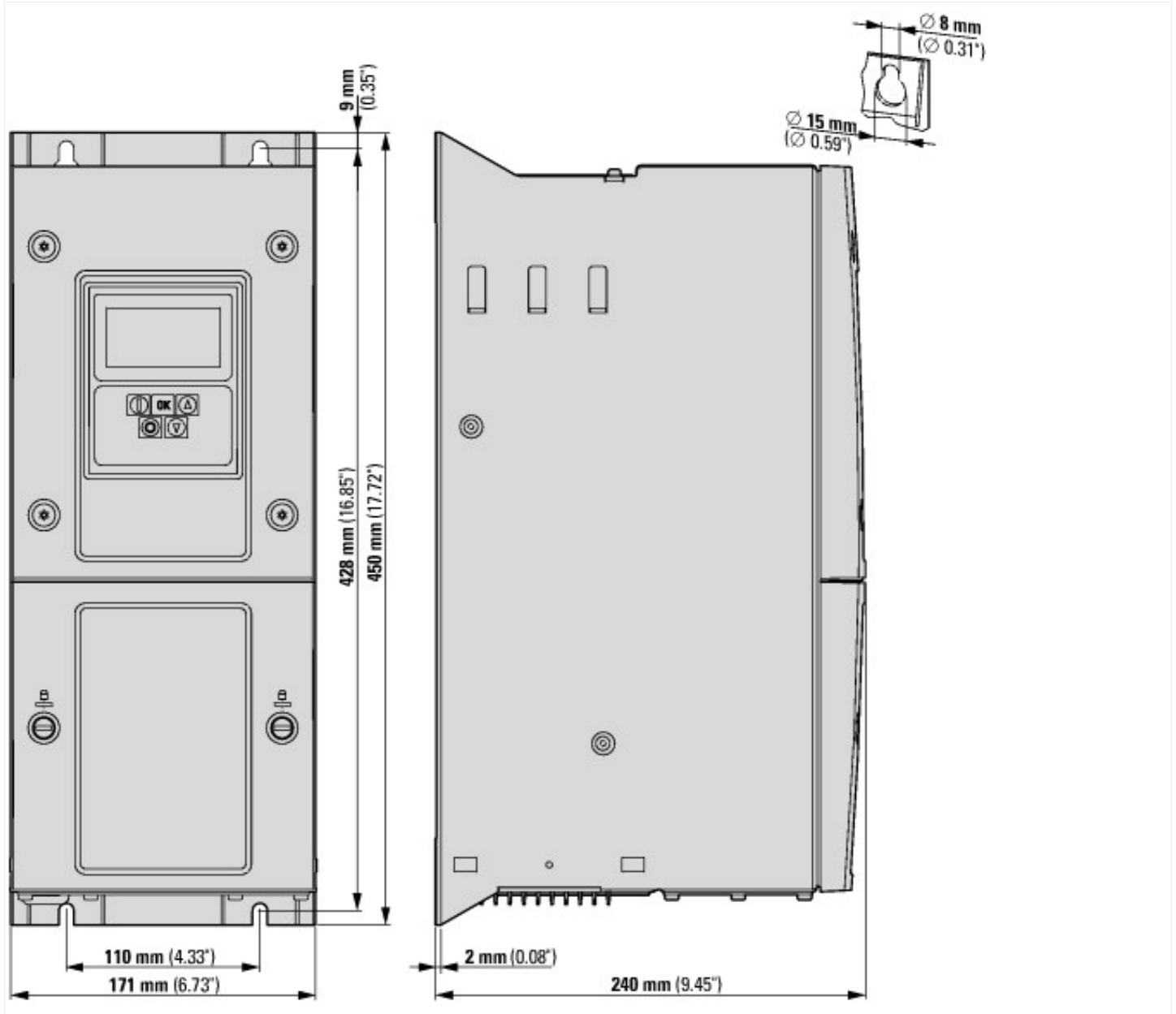
|  |  |    |             |
|--|--|----|-------------|
| Number of digital outputs                              |  |    | 2           |
| Number of digital inputs                               |  |    | 5           |
| With control unit                                      |  |    | Yes         |
| Application in industrial area permitted               |  |    | Yes         |
| Application in domestic- and commercial area permitted |  |    | Yes         |
| Supporting protocol for TCP/IP                         |  |    | Yes         |
| Supporting protocol for PROFIBUS                       |  |    | Yes         |
| Supporting protocol for CAN                            |  |    | Yes         |
| Supporting protocol for INTERBUS                       |  |    | No          |
| Supporting protocol for ASI                            |  |    | No          |
| Supporting protocol for KNX                            |  |    | No          |
| Supporting protocol for MODBUS                         |  |    | Yes         |
| Supporting protocol for Data-Highway                   |  |    | No          |
| Supporting protocol for DeviceNet                      |  |    | Yes         |
| Supporting protocol for SUCONET                        |  |    | No          |
| Supporting protocol for LON                            |  |    | No          |
| Supporting protocol for PROFINET IO                    |  |    | Yes         |
| Supporting protocol for PROFINET CBA                   |  |    | No          |
| Supporting protocol for SERCOS                         |  |    | No          |
| Supporting protocol for Foundation Fieldbus            |  |    | No          |
| Supporting protocol for EtherNet/IP                    |  |    | Yes         |
| Supporting protocol for AS-Interface Safety at Work    |  |    | No          |
| Supporting protocol for DeviceNet Safety               |  |    | No          |
| Supporting protocol for INTERBUS-Safety                |  |    | No          |
| Supporting protocol for PROFIsafe                      |  |    | No          |
| Supporting protocol for SafetyBUS p                    |  |    | No          |
| Supporting protocol for BACnet                         |  |    | Yes         |
| Supporting protocol for other bus systems              |  |    | Yes         |
| Number of HW-interfaces industrial Ethernet            |  |    | 0           |
| Number of interfaces PROFINET                          |  |    | 0           |
| Number of HW-interfaces RS-232                         |  |    | 0           |
| Number of HW-interfaces RS-422                         |  |    | 0           |
| Number of HW-interfaces RS-485                         |  |    | 1           |
| Number of HW-interfaces serial TTY                     |  |    | 0           |
| Number of HW-interfaces USB                            |  |    | 0           |
| Number of HW-interfaces parallel                       |  |    | 0           |
| Number of HW-interfaces other                          |  |    | 0           |
| With optical interface                                 |  |    | No          |
| With PC connection                                     |  |    | Yes         |
| Integrated breaking resistance                         |  |    | Yes         |
| 4-quadrant operation possible                          |  |    | No          |
| Type of converter                                      |  |    | U converter |
| Degree of protection (IP)                              |  |    | IP55        |
| Degree of protection (NEMA)                            |  |    | 12          |
| Height   |  | mm | 450         |
| Width  |  | mm | 173         |
| Depth  |  | mm | 240         |

## Approvals

|                                      |  |  |   |
|--------------------------------------|--|--|---|
| Product Standards                    |  |  | UL 508C; CSA-C22.2 No. 14; IEC/EN61800-3; IEC/EN61800-5; CE marking |
| UL File No.                          |  |  | E172143   |
| UL Category Control No.              |  |  | NMMS, NMMS7   |
| CSA File No.                         |  |  | UL report applies to both US and Canada                             |
| North America Certification          |  |  | UL listed, certified by UL for use in Canada                        |
| Specially designed for North America |  |  | No  |

|                      |  |
|----------------------|--|
| Suitable for         | Branch circuits  |
| Max. Voltage Rating  | 3- 480 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey) |
| Degree of Protection | IEC: IP55  |

## Dimensions



## Additional product information (links)

### IL04020011Z DA1 variable frequency drives (FS4 - 7)

IL04020011Z DA1 variable frequency drives (FS4 [https://es-assets.eaton.com/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL04020011Z2018\\_04.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020011Z2018_04.pdf) - 7)

### MN04020005Z DA1 variable frequency drives, Installation manual

MN04020005Z Frequenzumrichter DA1, Installationshandbuch - Deutsch [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020005Z\\_DE.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020005Z_DE.pdf)

MN04020005Z DA1 variable frequency drives, Installation manual - English [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020005Z\\_EN.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020005Z_EN.pdf)

MN04020005Z Convertitore di frequenza DA1, manuale Installazione - italiano [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020005Z\\_IT.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020005Z_IT.pdf)

### MN04020006Z DA1 variable frequency drives, Parameters manual

MN04020006Z Frequenzumrichter DA1, Parameterhandbuch - Deutsch [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020006Z\\_DE.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020006Z_DE.pdf)

MN04020006Z DA1 variable frequency drives, Parameters manual - English [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020006Z\\_EN.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020006Z_EN.pdf)

MN04020006Z Convertitore di frequenza DA1, manuale Parametri - italiano [https://es-assets.eaton.com/DOCUMENTATION/AWB\\_MANUALS/MN04020006Z\\_IT.pdf](https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN04020006Z_IT.pdf)

