



**Variable speed starter, Rated operational voltage 400 V AC, 3-phase, Ie 11.3 A, 5.5 kW, 7.5 HP**



**Part no. DE1-34011NN-N20N**  
**Catalog No. 177371**  
**Alternate Catalog No. DE1-34011NN-N20N**  
**EL-Nummer 4104012**  
**(Norway)**

## Delivery program

|                                  |          |    |   |
|----------------------------------|----------|----|---|
| Product range                    |          |    | Variable speed starter  |
| Part group reference (e.g. DIL)  |          |    | DE1   |
| Rated operational voltage        | $U_e$    |    | 400 V AC, 3-phase<br>480 V AC, 3-phase  |
| Output voltage with $V_e$        | $U_2$    |    | 400 V AC, 3-phase<br>480 V AC, 3-phase  |
| Mains voltage (50/60Hz)          | $U_{LN}$ | V  | 380 (-10%) - 480 (+10%)   |
| <b>Rated operational current</b> |          |    |   |
| At 150% overload                 | $I_e$    | A  | 11.3  |
| Note                             |          |    | Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °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 | 5.5   |
| 150 % Overload                   | $I_M$    | A  | 11.3  |
| Note                             |          |    | at 440 - 480 V, 60 Hz   |
| 150 % Overload                   | P        | HP | 7.5   |
| 150 % Overload                   | $I_M$    | A  | 11  |
| Degree of Protection             |          |    | IP20/NEMA0  |
| Interface/field bus (built-in)   |          |    | OP-Bus (RS485)/Modbus RTU   |
| Parameterization                 |          |    | Keypad<br>Fieldbus<br>drivesConnect<br>drivesConnect mobile (App)   |
| Frame size                       |          |    | FS2   |
| Connection to SmartWire-DT       |          |    | yes<br>in conjunction with DX-NET-SWD3 SmartWire DT module  |

## Technical data

### General

|                                    |          |    |   |
|------------------------------------|----------|----|---|
| 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  |
| Production quality                 |          |    | RoHS, ISO 9001  |
| Climatic proofing                  | $\rho_w$ | %  | < 95%, average relative humidity (RH), non-condensing, non-corrosive  |
| Ambient temperature                |          |    |   |
| Operating ambient temperature min. |          | °C | -10   |
| Operating ambient temperature max. |          | °C | +60   |
|                                    |          |    | Derating between 50 °C and 60 °C:<br>None if $f_{PWM} \leq 16$ kHz<br>None if $I_e \leq 10.6$ A and $f_{PWM} \leq 20$ kHz<br>None up to a max. of 57 °C |
|                                    |          |    | operation (150 % overload); max. +60 °C   |
| Storage                            | $\theta$ | °C | -40 - +70   |

|                                   |   |   |   |
|-----------------------------------|---|---|---|
| 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 ≤ 10 m<br>C3 ≤ 25 m  |
| Mechanical shock resistance       |   | g | 15 (11 m/s, EN 60068-2-27)  |
| Vibration                         |   |   | EN 61800-5-1  |
| Altitude                          |   | m | 0 - 1000 m above sea level<br>Above 1000 m: 1% derating for every 100 m<br>max. 2000 m  |
| Degree of Protection              |   |   | IP20/NEMA0  |
| 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   | 12  |
| Supply frequency                                     | $f_{LN}$   | Hz  | 50/60   |
| Frequency range                                      | $f_{LN}$   | Hz  | 45–66 (± 0%)  |
| Mains switch-on frequency                            |            |     | Maximum of one time every 30 seconds  |
| Power section  |            |     |   |
| Overload current (150% overload)                     | $I_L$      | A   | 16.95   |
| max. starting current (High Overload)                | $I_H$      | %   | 200   |
| Note about max. starting current                     |            |     | for 1.875 seconds every 600 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. 300)  |
| Switching frequency                                  | $f_{PWM}$  | kHz | 16<br>adjustable 4 - 32 (audible)   |
| Operation Mode                                       |            |     | U/f control<br>Speed control with slip compensation   |
| Frequency resolution (setpoint value)                | $\Delta f$ | Hz  | 0.025   |
| Rated operational current                            |            |     |   |
| At 150% overload                                     | $I_e$      | A   | 11.3  |
| Note   |            |     | Rated operational current at an operating frequency of 16 kHz and an ambient air temperature of +50 °C  |
| Maximum leakage current to ground (PE) without motor | $I_{PE}$   | mA  | < 3.5 AC, < 10 DC   |
| Frame size   |            |     | FS2   |
| Motor feeder   |            |     |   |
| Note   |            |     | for normal internally and externally ventilated 4 pole, three-phase asynchronous motors with $1500 \text{ rpm}^{-1}$ at 50 Hz or $1800 \text{ min}^{-1}$ at 60 Hz |
| Note   |            |     | Overload cycle for 60 s every 600 s   |
| Note   |            |     | at 400 V, 50 Hz   |
| 150 % Overload                                       | P          | kW  | 5.5   |
| Note   |            |     | at 440 - 480 V, 60 Hz   |
| 150 % Overload                                       | P          | HP  | 7.5   |
| Apparent power                                       |            |     |   |
| Apparent power at rated operation 400 V              | S          | kVA | 7.62  |
| Apparent power at rated operation 480 V              | S          | kVA | 9.15  |
| Braking function                                     |            |     |   |
| Standard braking torque                              |            |     | max. 30 % $M_N$   |
| DC braking torque                                    |            |     | adjustable to 100 %   |

### Control section

|                   |       |   |  |
|-------------------|-------|---|--|
| Reference voltage | $U_s$ | V | 10 V DC (max. 0.2 mA)                        |
| Analog inputs     |       |   | 1, parameterizable, 0 - 10 V DC, 0/4 - 20 mA |
| Digital inputs    |       |   | 4, parameterizable, 10 - 30 V DC             |

|                                |  |  |  |
|--------------------------------|--|--|--|
| Relay outputs                  |  |  | 1, N/O contact, 6 A (250 V, AC-1) / 5 A (30 V, DC-1) |
| Interface/field bus (built-in) |  |  | OP-Bus (RS485)/Modbus RTU                            |

### Assigned switching and protective elements

|   |  |   |  |
|---|--|---|--|
| Power Wiring  |  |   |  |
| Safety device (fuse or miniature circuit-breaker)                             |  |   |  |
| IEC (Type B, gG), 150 %   |  |   | FAZ-B16/3  |
| UL (Class CC or J)  |  | A | 15   |
| Mains contactor   |  |   |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DILEM-...  |
| 110 % overload (VT/I <sub>L</sub> , at 40 °C)                                 |  |   | DILM7-...  |
| Main choke  |  |   |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DX-LN3-016   |
| Radio interference suppression filter (external, 150 %)                       |  |   | DX-EMC34-016   |
| Radio interference suppression filter, low leakage currents (external, 150 %) |  |   | DX-EMC34-016-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 |
| Motor feeder  |  |   |  |
| motor choke   |  |   |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)                                 |  |   | DX-LM3-011   |

### Design verification as per IEC/EN 61439

|  |                   |    |  |
|--|-------------------|----|--|
| Technical data for design verification   |                   |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 11.3   |
| Heat dissipation per pole, current-dependent   | P <sub>vid</sub>  | W  | 0  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 159  |
| 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 | 60   |
|  |                   |    | Operation (with 150 % overload)  |
| 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 Verification of thermal stability of enclosures   |                   |    |  |
| 10.2.3.1 Verification of resistance of insulating materials to normal heat   |                   |    | 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.                                   |

## Technical data ETIM 7.0

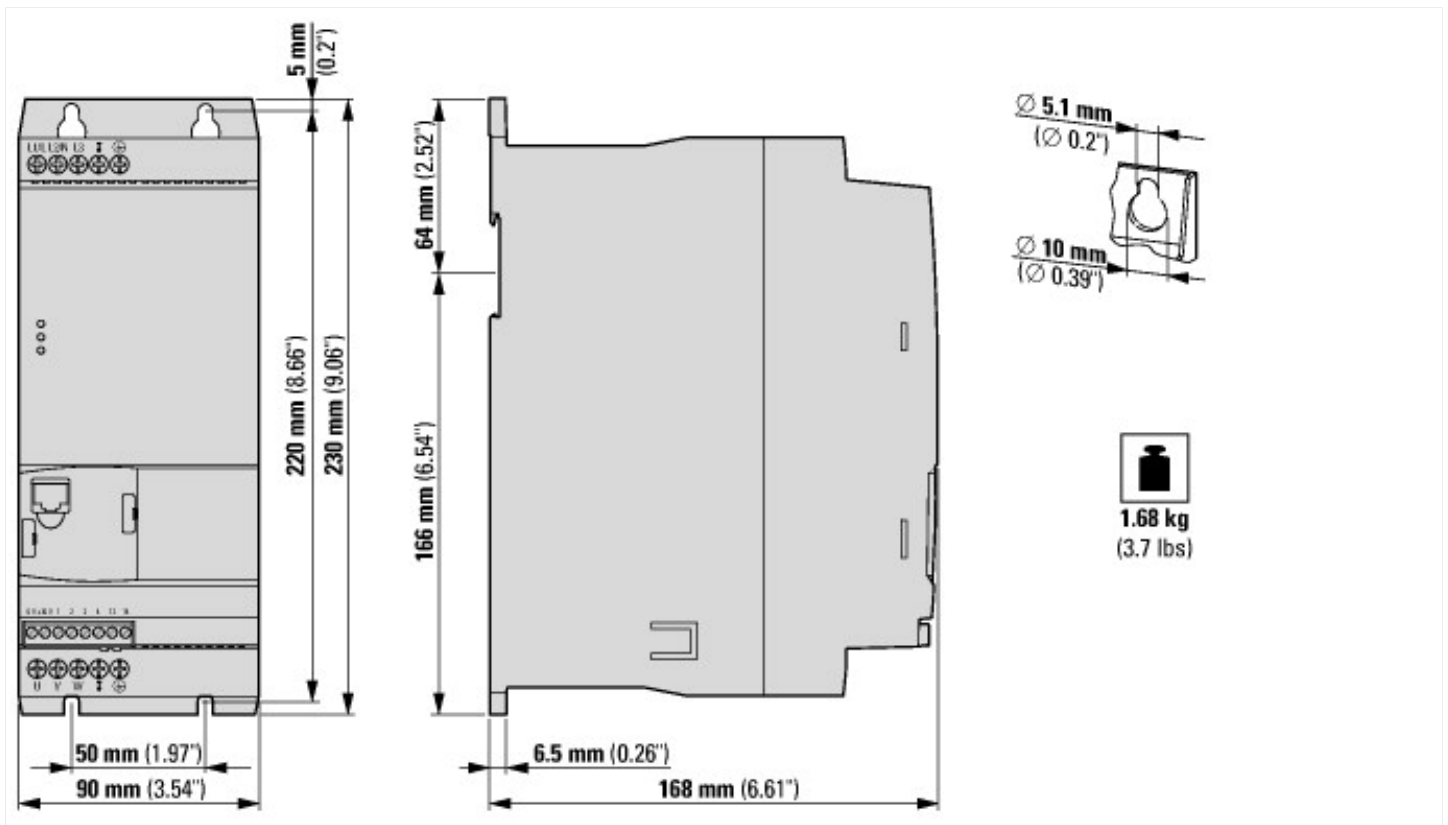
| Low-voltage industrial components (EG000017) / Frequency converter =< 1 kV (EC001857)  |    |           |
|--|----|-----------|
| Electric engineering, automation, process control engineering / Electrical drive / Static frequency converter / Static frequency converter = < 1 kV (ecI@ss10.0.1-27-02-31-01 [AKE177014]) |    |           |
| Mains voltage  | V  | 380 - 480 |
| Mains frequency  |    | 50/60 Hz  |
| Number of phases input   |    | 3         |
| Number of phases output  |    | 3         |
| Max. output frequency  | Hz | 300       |
| Max. output voltage  | V  | 500       |
| Nominal output current I <sub>2N</sub>   | A  | 11.3      |
| Max. output at quadratic load at rated output voltage  | kW | 0.5       |
| Max. output at linear load at rated output voltage   | kW | 0.5       |
| Relative symmetric net frequency tolerance   | %  | 10        |
| Relative symmetric net voltage tolerance   | %  | 10        |
| Number of analogue outputs   |    | 0         |
| Number of analogue inputs  |    | 1         |
| Number of digital outputs  |    | 0         |
| Number of digital inputs   |    | 4         |
| With control unit  |    | No        |
| Application in industrial area permitted   |    | Yes       |
| Application in domestic- and commercial area permitted   |    | Yes       |
| Supporting protocol for TCP/IP   |    | No        |
| Supporting protocol for PROFIBUS   |    | No        |
| Supporting protocol for CAN  |    | No        |
| 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  |    | No        |
| Supporting protocol for SUCONET  |    | No        |
| Supporting protocol for LON  |    | No        |
| Supporting protocol for PROFINET IO  |    | No        |
| 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   |    | No        |
| 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 |    | No          |
| 4-quadrant operation possible  |    | No          |
| Type of converter              |    | U converter |
| Degree of protection (IP)      |    | IP20        |
| Degree of protection (NEMA)    |    | Other       |
| Height                         | mm | 230         |
| Width                          | mm | 90          |
| Depth                          | mm | 168         |

## 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: IP20   |

## Dimensions



## Additional product information (links)

|  |   |
|--|---|
| <b>IL040005ZU DE1 variable frequency drive</b>                             |   |
| IL040005ZU DE1 variable frequency drive                                    | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL040005ZU2018_05.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL040005ZU2018_05.pdf</a> |
| <b>MN040011 DE1 Variable speed starter, Manual</b>                         |   |
| MN040011 DE1 variabler Drehzahlstarter, Handbuch - Deutsch                 | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_DE.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_DE.pdf</a>                       |
| MN040011 DE1 Variable speed starter, Manual - English                      | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_EN.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_EN.pdf</a>                       |
| MN040011 Démarreur à vitesse variable DE1, manuel d'utilisation - français | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_FR.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_FR.pdf</a>                       |

|   |   |
|---|---|
| MN040011 Avviatore a velocità variabile DE1, Manuale - italiano                                 | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_IT.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_IT.pdf</a>   |
| MN040011 Rozrusznik silnikowy z regulacją prędkości DE1, podręcznik - polski                    | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_PL.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_PL.pdf</a>   |
| MN040011 Устройства пуска с регулировкой скорости DE1, руководство - русский                    | <a href="ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_RU.pdf">ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN040011_RU.pdf</a>   |
| CA04020001Z-EN Product Range Catalog: Efficient Engineering for Starting and Controlling Motors | <a href="http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf">http://www.eaton.eu/DE/ecm/groups/public/@pub/@europe/@electrical/documents/content/pct_1095238.pdf</a> |