



**Variable frequency drive, 115 V AC, single-phase, 10.5 A, 0.55 kW, IP66/ NEMA 4X, Brake chopper, 7-digital display assembly, Additional PCB protection, UV resistant, FS2**



**Part no. DC1-S1011NB-A660E1**  
**Catalog No. 199385**

## Delivery program

|                                  |          |    |                                                                                                       |
|----------------------------------|----------|----|-------------------------------------------------------------------------------------------------------|
| Product range                    |          |    | Variable frequency drives                                                                             |
| Part group reference (e.g. DIL)  |          |    | DC1                                                                                                   |
| Rated operational voltage        | $U_e$    |    | 115 V AC, single-phase                                                                                |
| Output voltage with $V_e$        | $U_2$    |    | 115 V AC, single-phase                                                                                |
| Mains voltage (50/60Hz)          | $U_{LN}$ | V  | 110 (-10%) - 115 (+10%)                                                                               |
| <b>Rated operational current</b> |          |    |                                                                                                       |
| At 150% overload                 | $I_e$    | A  | 10.5                                                                                                  |
| Note                             |          |    | Rated operational current at an operating frequency of 6 kHz and an ambient air temperature of +40 °C |
| <b>Assigned motor rating</b>     |          |    |                                                                                                       |
| Note                             |          |    | For AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor |
| Note                             |          |    | Overload cycle for 60 s every 600 s                                                                   |
| Note                             |          |    | at 115 V, 50 Hz                                                                                       |
| 150 % Overload                   | P        | kW | 0.55                                                                                                  |
| 150 % Overload                   | $I_M$    | A  | 10.5                                                                                                  |
| Note                             |          |    | at 110 - 120 V, 60 Hz                                                                                 |
| 150 % Overload                   | P        | HP | 0.75                                                                                                  |
| 150 % Overload                   | $I_M$    | A  | 9.8                                                                                                   |
| Degree of Protection             |          |    | IP66/NEMA 4X                                                                                          |
| Interface/field bus (built-in)   |          |    | OP-Bus (RS485)/Modbus RTU, CANopen®                                                                   |
| Fieldbus connection (optional)   |          |    | SmartWire-DT                                                                                          |
| Fitted with                      |          |    | Brake chopper<br>7-digital display assembly<br>Additional PCB protection<br>UV resistant              |
| Parameterization                 |          |    | Keypad<br>Fieldbus<br>drivesConnect<br>drivesConnect mobile (App)                                     |
| Frame size                       |          |    | FS2                                                                                                   |
| Connection to SmartWire-DT       |          |    | no                                                                                                    |

## Technical data

### General

|                                    |          |    |                                                                                                                   |
|------------------------------------|----------|----|-------------------------------------------------------------------------------------------------------------------|
| Standards                          |          |    | General requirements: IEC/EN 61800-2<br>EMV requirements: IEC/EN 61800-3<br>Safety requirements: IEC/EN 61800-5-1 |
| Certifications                     |          |    | CE, UL, cUL, RCM, Ukr SEPRO, EAC                                                                                  |
| Production quality                 |          |    | RoHS, ISO 9001                                                                                                    |
| Climatic proofing                  | $\rho_w$ | %  | < 95%, average relative humidity (RH), non-condensing, non-corrosive                                              |
| Air quality                        |          |    | 3C3, 3S3                                                                                                          |
| Ambient temperature                |          |    |                                                                                                                   |
| Operating ambient temperature min. |          | °C | -20                                                                                                               |
| Operating ambient temperature max. |          | °C | + 40                                                                                                              |
|                                    |          |    | operation (with 150 % overload)                                                                                   |
| Storage                            | $\theta$ | °C | -40 - +60                                                                                                         |
| Mounting position                  |          |    | Vertical                                                                                                          |
| Altitude                           |          | m  | 0–2000 m above sea level                                                                                          |

|                                                             |            |          |                                                                                                                                                     |
|-------------------------------------------------------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             |            |          | Above 1000 m: 1% derating for every 100 m<br>max. 4000 m without UL                                                                                 |
| Degree of Protection                                        |            |          | IP66/NEMA 4X                                                                                                                                        |
| Protection against direct contact                           |            |          | BGV A3 (VBG4, finger- and back-of-hand proof)                                                                                                       |
| <b>Main circuit</b>                                         |            |          |                                                                                                                                                     |
| <b>Supply</b>                                               |            |          |                                                                                                                                                     |
| Rated operational voltage                                   | $U_e$      |          | 115 V AC, single-phase                                                                                                                              |
| Mains voltage (50/60Hz)                                     | $U_{LN}$   | V        | 110 (-10%) - 115 (+10%)                                                                                                                             |
| Input current (150% overload)                               | $I_{LN}$   | A        | 12.5                                                                                                                                                |
| 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                                                                                                                |
| <b>Power section</b>                                        |            |          |                                                                                                                                                     |
| Function                                                    |            |          | Variable frequency drive with internal DC link and IGBT inverter                                                                                    |
| Overload current (150% overload)                            | $I_L$      | A        | 15.75                                                                                                                                               |
| max. starting current (High Overload)                       | $I_H$      | %        | 175                                                                                                                                                 |
| Output voltage with $V_e$                                   | $U_2$      |          | 115 V AC, single-phase                                                                                                                              |
| Output Frequency                                            | $f_2$      | Hz       | 0 - 50/60 (max. 500)                                                                                                                                |
| Switching frequency                                         | $f_{PWM}$  | kHz      | 8<br>adjustable 4 - 32 (audible)                                                                                                                    |
| Operation Mode                                              |            |          | U/f control<br>Speed control with slip compensation<br>sensorless vector control (SLV)<br>PM motors<br>Synchronous reluctance motors<br>BLDC motors |
| Frequency resolution (setpoint value)                       | $\Delta f$ | Hz       | 0.1                                                                                                                                                 |
| <b>Rated operational current</b>                            |            |          |                                                                                                                                                     |
| At 150% overload                                            | $I_e$      | A        | 10.5                                                                                                                                                |
| Note                                                        |            |          | Rated operational current at an operating frequency of 6 kHz and an ambient air temperature of +40 °C                                               |
| <b>Power loss</b>                                           |            |          |                                                                                                                                                     |
| Heat dissipation at rated operational current $I_e = 150\%$ | $P_V$      | W        | 16.5                                                                                                                                                |
| Efficiency                                                  | $\eta$     | %        | 97                                                                                                                                                  |
| Maximum leakage current to ground (PE) without motor        | $I_{PE}$   | mA       | 2.49                                                                                                                                                |
| Fitted with                                                 |            |          | Brake chopper<br>7-digital display assembly<br>Additional PCB protection<br>UV resistant                                                            |
| Frame size                                                  |            |          | FS2                                                                                                                                                 |
| <b>Motor feeder</b>                                         |            |          |                                                                                                                                                     |
| Note                                                        |            |          | For AC motors with internal and external ventilation with 50/60 Hz without additional start capacitor                                               |
| Note                                                        |            |          | Overload cycle for 60 s every 600 s                                                                                                                 |
| Note                                                        |            |          | at 115 V, 50 Hz                                                                                                                                     |
| 150 % Overload                                              | P          | kW       | 0.55                                                                                                                                                |
| Note                                                        |            |          | at 110 - 120 V, 60 Hz                                                                                                                               |
| 150 % Overload                                              | P          | HP       | 0.75                                                                                                                                                |
| maximum permissible cable length                            | l          | m        | screened: 100<br>screened, with motor choke: 200<br>unscreened: 150<br>unscreened, with motor choke: 300                                            |
| <b>Braking function</b>                                     |            |          |                                                                                                                                                     |
| DC braking torque                                           |            |          | Max. 100% of rated operational current $I_e$ , variable                                                                                             |
| Braking torque with external braking resistance             |            |          | Max. 100% of rated operational current $I_e$ with external braking resistor                                                                         |
| minimum external braking resistance                         | $R_{min}$  | $\Omega$ | 100                                                                                                                                                 |
| Switch-on threshold for the braking transistor              | $U_{DC}$   | V        | 187 V DC                                                                                                                                            |
| <b>Control section</b>                                      |            |          |                                                                                                                                                     |
| Reference voltage                                           | $U_s$      | V        | 10 V DC (max. 10 mA)                                                                                                                                |
| Analog inputs                                               |            |          | 2, parameterizable, 0 - 10 V DC, 0/4 - 20 mA                                                                                                        |

|                                |  |  |                                                               |
|--------------------------------|--|--|---------------------------------------------------------------|
| Analog outputs                 |  |  | 1, parameterizable, 0 - 10 V                                  |
| Digital inputs                 |  |  | 4, parameterizable, max. 30 V DC                              |
| Digital outputs                |  |  | 1, parameterizable, 24 V DC                                   |
| Relay outputs                  |  |  | 1, parameterizable, N/O, 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-B25/1N                                                                                                                                                                                         |
| UL (Class CC or J)                                      |  | A | 25                                                                                                                                                                                                 |
| Mains contactor                                         |  |   |                                                                                                                                                                                                    |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)           |  |   | DILEM-... + P1DILEM                                                                                                                                                                                |
| Main choke                                              |  |   |                                                                                                                                                                                                    |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)           |  |   | DX-LN1-024                                                                                                                                                                                         |
| Radio interference suppression filter (external, 150 %) |  |   | DX-EMC12-014-FS2                                                                                                                                                                                   |
| 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-BR100-0K2                                                                                                                                                                                       |
| 20 % duty factor (DF)                                   |  |   | DX-BR100-0K2                                                                                                                                                                                       |
| 40 % duty factor (DF)                                   |  |   | DX-BR100-0K2                                                                                                                                                                                       |
| Notes concerning braking resistances:                   |  |   | 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. |

### Design verification as per IEC/EN 61439

|                                        |  |    |     |
|----------------------------------------|--|----|-----|
| Technical data for design verification |  |    |     |
| Operating ambient temperature min.     |  | °C | -20 |
| Operating ambient temperature max.     |  | °C | 40  |

### 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  | 99 - 126 |
| Mains frequency                                                                                                                                                                            |  |    | 50/60 Hz |
| Number of phases input                                                                                                                                                                     |  |    | 1        |
| Number of phases output                                                                                                                                                                    |  |    | 1        |
| Max. output frequency                                                                                                                                                                      |  | Hz | 500      |
| Max. output voltage                                                                                                                                                                        |  | V  | 125      |
| Nominal output current I <sub>2N</sub>                                                                                                                                                     |  | A  | 11       |
| Max. output at quadratic load at rated output voltage                                                                                                                                      |  | kW | 0.55     |
| Max. output at linear load at rated output voltage                                                                                                                                         |  | kW | 0.55     |
| Relative symmetric net frequency tolerance                                                                                                                                                 |  | %  | 10       |
| Relative symmetric net voltage tolerance                                                                                                                                                   |  | %  | 10       |
| Number of analogue outputs                                                                                                                                                                 |  |    | 1        |
| Number of analogue inputs                                                                                                                                                                  |  |    | 2        |
| Number of digital outputs                                                                                                                                                                  |  |    | 1        |
| Number of digital inputs                                                                                                                                                                   |  |    | 4        |
| With control unit                                                                                                                                                                          |  |    | Yes      |
| Application in industrial area permitted                                                                                                                                                   |  |    | Yes      |
| Application in domestic- and commercial area permitted                                                                                                                                     |  |    | No       |
| Supporting protocol for TCP/IP                                                                                                                                                             |  |    | No       |
| Supporting protocol for PROFIBUS                                                                                                                                                           |  |    | No       |
| 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                   |  |    | 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                      |  |    | Yes         |
| 4-quadrant operation possible                       |  |    | Yes         |
| Type of converter                                   |  |    | U converter |
| Degree of protection (IP)                           |  |    | IP66        |
| Degree of protection (NEMA)                         |  |    | 4X          |
| Height                                              |  | mm | 257         |
| Width                                               |  | mm | 188         |
| Depth                                               |  | mm | 171.5       |

## 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                  |  |  | 1~ 120 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey)            |
| Degree of Protection                 |  |  | IEC: IP66                                                           |

Dimensions

