



Variable frequency drive, 600 V AC, 3-phase, 315 kW, IP00, OLED display, FR10



**Part no.** SPX300A0-5A2N1  
**Catalog No.** 129604  
**Alternate Catalog No.** SPX300A0-5A2N1

## Delivery program

|                                  |          |    |   |
|----------------------------------|----------|----|---|
| Product range                    |          |    | Variable frequency drives   |
| Part group reference (e.g. DIL)  |          |    | SPX   |
| Rated operational voltage        | $U_e$    |    | 600 V AC, 3-phase<br>690 V AC, 3-phase  |
| Output voltage with $V_e$        | $U_2$    |    | 600 V AC, 3-phase<br>690 V AC, 3-phase  |
| Mains voltage (50/60Hz)          | $U_{LN}$ | V  | 525 (-15%) - 690 ( $\pm 10\%$ )   |
| <b>Rated operational current</b> |          |    |   |
| At 150% overload                 | $I_e$    | A  | 325   |
| At 110% overload                 | $I_e$    | A  | 385   |
| <b>Assigned motor rating</b>     |          |    |   |
| Note                             |          |    | For AC motors with internal and external ventilation with 50 Hz / 60 Hz   |
| Note                             |          |    | Overload cycle for 60 s every 600 s   |
| Note                             |          |    | at 690 V, 50 Hz   |
| 150 % Overload                   | P        | kW | 315   |
| 110 % Overload                   | P        | kW | 355   |
| 150 % Overload                   | $I_M$    | A  | 316   |
| Note                             |          |    | at 690 V, 60 Hz   |
| 150 % Overload                   | P        | HP | 300   |
| 110 % Overload                   | P        | HP | 400   |
| 150 % Overload                   | $I_M$    | A  | 251   |
| 110 % Overload                   | $I_M$    | A  | 332   |
| Degree of Protection             |          |    | IP00  |
| Fieldbus connection (optional)   |          |    | PROFIBUS-DP<br>PROFINET<br>EtherCAT<br>EtherNet/IP<br>LonWorks<br>CANopen®<br>DeviceNet<br>Modbus-TCP<br>Modbus-RTU<br>BACnet MS/TP |
| Fitted with                      |          |    | OLED display  |
| Frame size                       |          |    | FR10  |
| Connection to SmartWire-DT       |          |    | no  |

## 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  |
| Approvals                          |          |    | DNV   |
| Production quality                 |          |    | RoHS, ISO 9001  |
| Climatic proofing                  | $\rho_w$ | %  | < 95% relative humidity, no condensation, no corrosion, no dripping water   |
| <b>Ambient temperature</b>         |          |    |   |
| Operating ambient temperature min. |          | °C | -10   |
| Operating ambient temperature max. |          | °C | +40   |
| 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  |
| Mounting position                 |  |   | Vertical  |
| Altitude                          |  | m | 0 - 1000 m above sea level<br>above 1000 m with 1 % performance reduction per 100 m<br>max. 3000 m  |
| Degree of Protection              |  |   | IP00  |
| Protection against direct contact |  |   | BGV A3 (VBG4, finger- and back-of-hand proof)   |

### Main circuit

|                                       |            |     |  |
|---------------------------------------|------------|-----|--|
| Supply                                |            |     |  |
| Rated operational voltage             | $U_e$      |     | 600 V AC, 3-phase<br>690 V AC, 3-phase   |
| Mains voltage (50/60Hz)               | $U_{LN}$   | V   | 525 (-15%) - 690 ( $\pm 10\%$ )  |
| System configuration                  |            |     | AC supply systems with earthed center point  |
| Supply frequency                      | $f_{LN}$   | Hz  | 50/60  |
| Frequency range                       | $f_{LN}$   | Hz  | 45–66 ( $\pm 0\%$ )  |
| Power section                         |            |     |  |
| Function                              |            |     | Variable frequency drive with internal DC link and IGBT inverter                               |
| Output voltage with $V_e$             | $U_2$      |     | 600 V AC, 3-phase<br>690 V AC, 3-phase   |
| Output Frequency                      | $f_2$      | Hz  | 0 - 50/60 (max. 320)   |
| Switching frequency                   | $f_{PWM}$  | kHz | 1.5<br>adjustable 1 - 6  |
| Operation Mode                        |            |     | U/f control<br>sensorless vector control (SLV)<br>optional: Vector control with feedback (CLV) |
| Frequency resolution (setpoint value) | $\Delta f$ | Hz  | 0.01   |
| Rated operational current             |            |     |  |
| At 150% overload                      | $I_e$      | A   | 325  |
| At 110% overload                      | $I_e$      | A   | 385  |
| Fitted with                           |            |     | OLED display   |
| Frame size                            |            |     | FR10   |
| Motor feeder                          |            |     |  |
| Note                                  |            |     | For AC motors with internal and external ventilation with 50 Hz / 60 Hz                        |
| Note                                  |            |     | Overload cycle for 60 s every 600 s  |
| Note                                  |            |     | at 690 V, 50 Hz  |
| 150 % Overload                        | P          | kW  | 315  |
| 110 % Overload                        | P          | kW  | 355  |
| Note                                  |            |     | at 690 V, 60 Hz  |
| 150 % Overload                        | P          | HP  | 300  |
| 110 % Overload                        | P          | HP  | 400  |

### Control section

|                          |       |   |  |
|--------------------------|-------|---|--|
| External control voltage | $U_c$ | V | 24 V DC (max. 250 mA)  |
| 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, 0/4 - 20 mA  |
| Digital inputs           |       |   | 6, parameterizable, max. 30 V DC   |
| Digital outputs          |       |   | 1, parameterizable, 48 V DC/50 mA  |
| Relay outputs            |       |   | 2, parameterizable, N/O, 8 A (24 V DC) / 8 A (250 V AC) / 0,4 A (125 V DC) |

### Assigned switching and protective elements

|   |  |  |                |
|---|--|--|----------------|
| Motor feeder                                  |  |  |                |
| motor choke                                   |  |  |                |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C) |  |  | DX-LM3-450     |
| 110 % overload (VT/I <sub>L</sub> , at 40 °C) |  |  | DX-LM3-450     |
| Sine filter                                   |  |  |                |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C) |  |  | SIN-0390-6-0-P |

## Design verification as per IEC/EN 61439

| Technical data for design verification   |                   |    |  |
|--|-------------------|----|--|
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 325  |
| Heat dissipation per pole, current-dependent   | P <sub>vid</sub>  | W  | 0  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 7875   |
| 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   |
| 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.   |
| 10.2.3.1 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 (ecl@ss10.0.1-27-02-31-01 [AKE177014]) |    |  |           |
| Mains voltage  | V  |  | 525 - 690 |
| Mains frequency  |    |  | 50/60 Hz  |
| Number of phases input   |    |  | 3         |
| Number of phases output  |    |  | 3         |
| Max. output frequency  | Hz |  | 320       |
| Max. output voltage  | V  |  | 690       |
| Nominal output current I <sub>2N</sub>   | A  |  | 385       |
| Max. output at quadratic load at rated output voltage  | kW |  | 355       |
| Max. output at linear load at rated output voltage   | kW |  | 315       |
| Relative symmetric net frequency tolerance   | %  |  | 10        |
| Relative symmetric net voltage tolerance   | %  |  | 10        |
| Number of analogue outputs   |    |  | 1         |

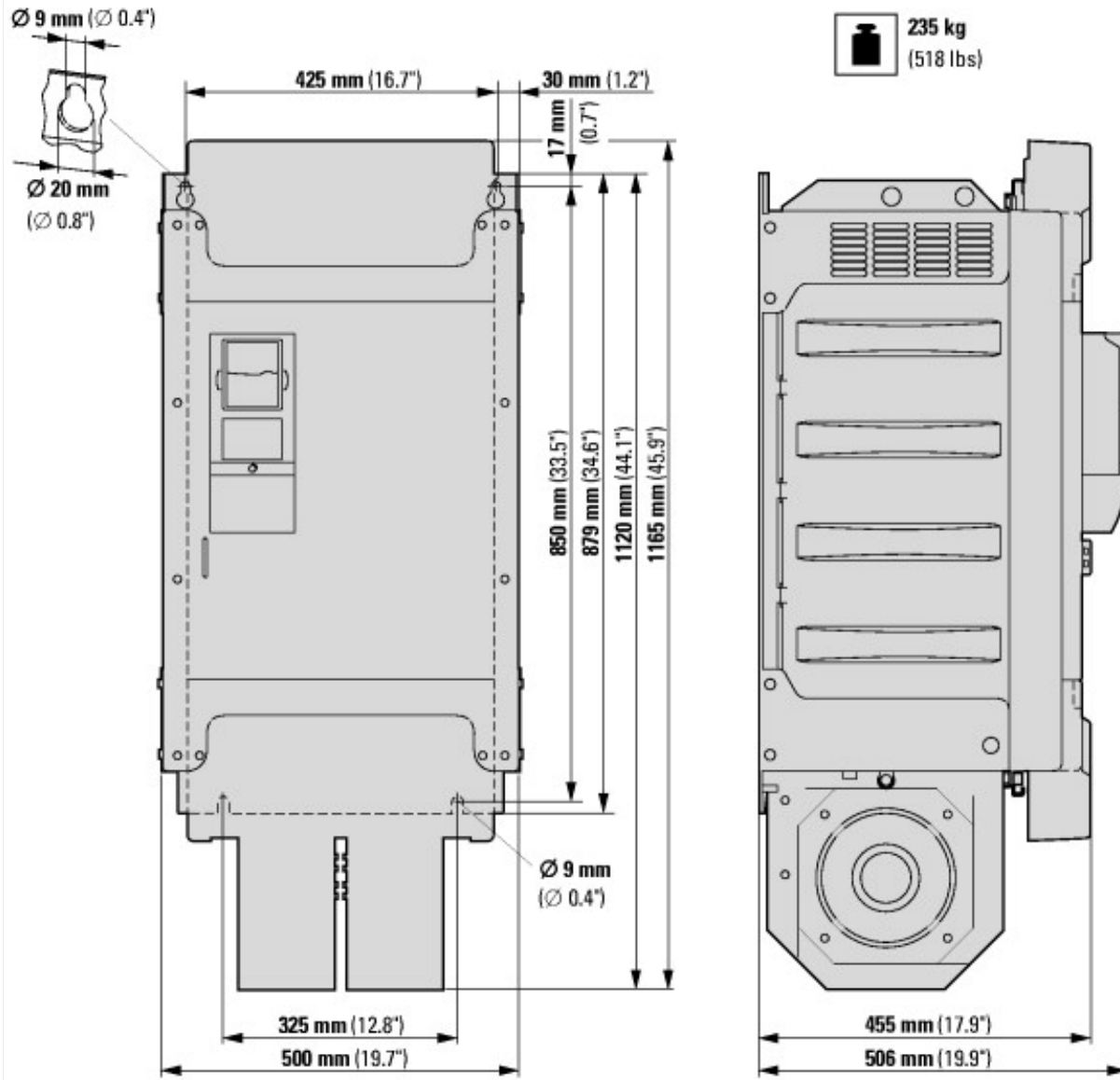
|  |    |             |
|--|----|-------------|
| Number of analogue inputs                              |    | 2           |
| Number of digital outputs                              |    | 1           |
| Number of digital inputs                               |    | 6           |
| With control unit                                      |    | 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                         |    | No          |
| Supporting protocol for Data-Highway                   |    | Yes         |
| Supporting protocol for DeviceNet                      |    | Yes         |
| Supporting protocol for SUCONET                        |    | No          |
| Supporting protocol for LON                            |    | Yes         |
| 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                    |    | No          |
| 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                          |    | 1           |
| With optical interface                                 |    | No          |
| With PC connection                                     |    | Yes         |
| Integrated breaking resistance                         |    | No          |
| 4-quadrant operation possible                          |    | Yes         |
| Type of converter                                      |    | U converter |
| Degree of protection (IP)                              |    | IP00        |
| Degree of protection (NEMA)                            |    | Other       |
| Height   | mm | 1165        |
| Width  | mm | 500         |
| Depth  | mm | 506         |

## Approvals

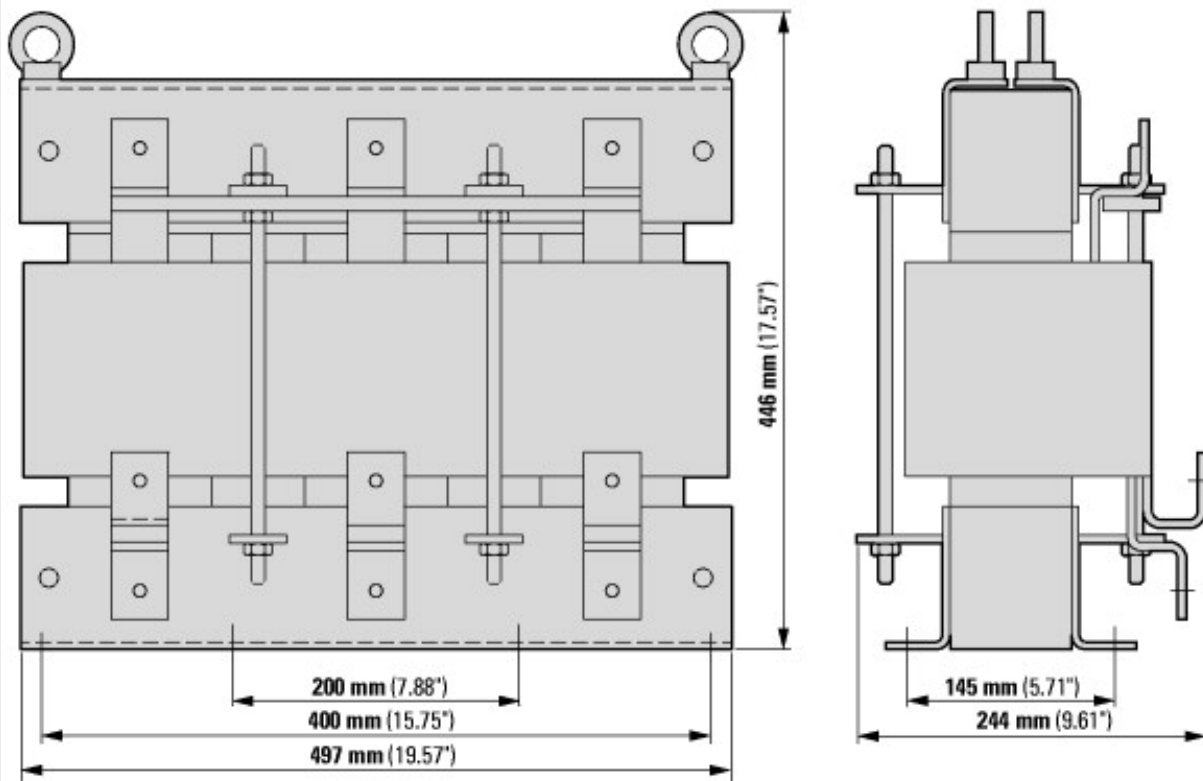
|                         |  |   |
|-------------------------|--|---|
| Product Standards       |  | UL 508C; CSA-C22.2 No. 14; IEC/EN61800-3; IEC/EN61800-5; CE marking |
| UL File No.             |  | E134360   |
| UL Category Control No. |  | NMMS, NMMS2, NMMS7, NMMS8   |
| CSA File No.            |  | UL report applies to both US and Canada                             |
| CSA Class No.           |  | 3211-06   |

|                                      |  |  |
|--------------------------------------|--|--|
| 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- 690 V AC IEC: TN-S UL/CSA: "Y" (Solidly Grounded Wey) |
| Degree of Protection                 |  | IEC: IP00  |

## Dimensions



 **115 kg**  
(253 lbs)



1 x Netzdrossel CHK0520

## Assets (links)

### Declaration of CE Conformity

00002807

### Instruction Leaflets

IL04020008Z2018\_05

## Additional product information (links)

### IL04020008Z Frequency inverter 9000X

IL04020008Z Frequency inverter 9000X

[ftp://ftp.moeller.net/DOCUMENTATION/AWA\\_INSTRUCTIONS/IL04020008Z2018\\_05.pdf](ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020008Z2018_05.pdf)

Documentation

<http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/9000X/SPX9000/index.htm#tabs-4>