



**Variable frequency drive, 600 V AC, 3-phase, 30 kW, IP21, Radio interference suppression filter, Brake chopper, OLED display, FR7**

**Part no. SPX030A1-5A4B1**  
**Catalog No. 138647**  
**Alternate Catalog No. SPX030A1-5A4B1**

## 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  | 34  |
| At 110% overload                 | $I_e$    | A  | 41  |
| <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 | 30  |
| 110 % Overload                   | P        | kW | 37  |
| 150 % Overload                   | $I_M$    | A  | 32  |
| 110 % Overload                   | $I_M$    | A  | 39  |
| Note                             |          |    | at 690 V, 60 Hz   |
| 150 % Overload                   | P        | HP | 30  |
| 110 % Overload                   | P        | HP | 40  |
| 150 % Overload                   | $I_M$    | A  | 28  |
| 110 % Overload                   | $I_M$    | A  | 36  |
| Degree of Protection             |          |    | IP21  |
| 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                      |          |    | Radio interference suppression filter<br>Brake chopper<br>OLED display  |
| Frame size                       |          |    | FR7   |
| Connection to SmartWire-DT       |          |    | no  |

## 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  |
| Approvals      |  |  | DNV   |

|                                    |          |    |   |
|------------------------------------|----------|----|---|
| Production quality                 |          |    | RoHS, ISO 9001  |
| Climatic proofing                  | $\rho_w$ | %  | < 95% relative humidity, no condensation, no corrosion, no dripping water   |
| Ambient temperature                |          |    |   |
| Operating ambient temperature min. |          | °C | -10   |
| Operating ambient temperature max. |          | °C | + 50  |
| operation (110 % overload)         | $\theta$ | °C | -10 - +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               |          |    | IP21  |
| 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   | 34   |
| At 110% overload                      | $I_e$      | A   | 41   |
| Fitted with                           |            |     | Radio interference suppression filter<br>Brake chopper<br>OLED display                         |
| Frame size                            |            |     | FR7  |
| 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  | 30   |
| 110 % Overload                        | P          | kW  | 37   |
| Note                                  |            |     | at 690 V, 60 Hz  |
| 150 % Overload                        | P          | HP  | 30   |
| 110 % Overload                        | P          | HP  | 40   |

### 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) |
| <b>Assigned switching and protective elements</b> |  |  |  |
| Power Wiring                                      |  |  |  |
| Main choke  |  |  |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)     |  |  | DX-LN3-050   |
| Motor feeder                                      |  |  |  |
| motor choke                                       |  |  |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)     |  |  | DX-LM3-035   |
| 110 % overload (VT/I <sub>L</sub> , at 40 °C)     |  |  | DX-LM3-050   |
| Sine filter                                       |  |  |  |
| 150 % overload (CT/I <sub>H</sub> , at 50 °C)     |  |  | SIN-0052-6-0-P   |
| 110 % overload (VT/I <sub>L</sub> , at 40 °C)     |  |  | SIN-0052-6-0-P   |

## Design verification as per IEC/EN 61439

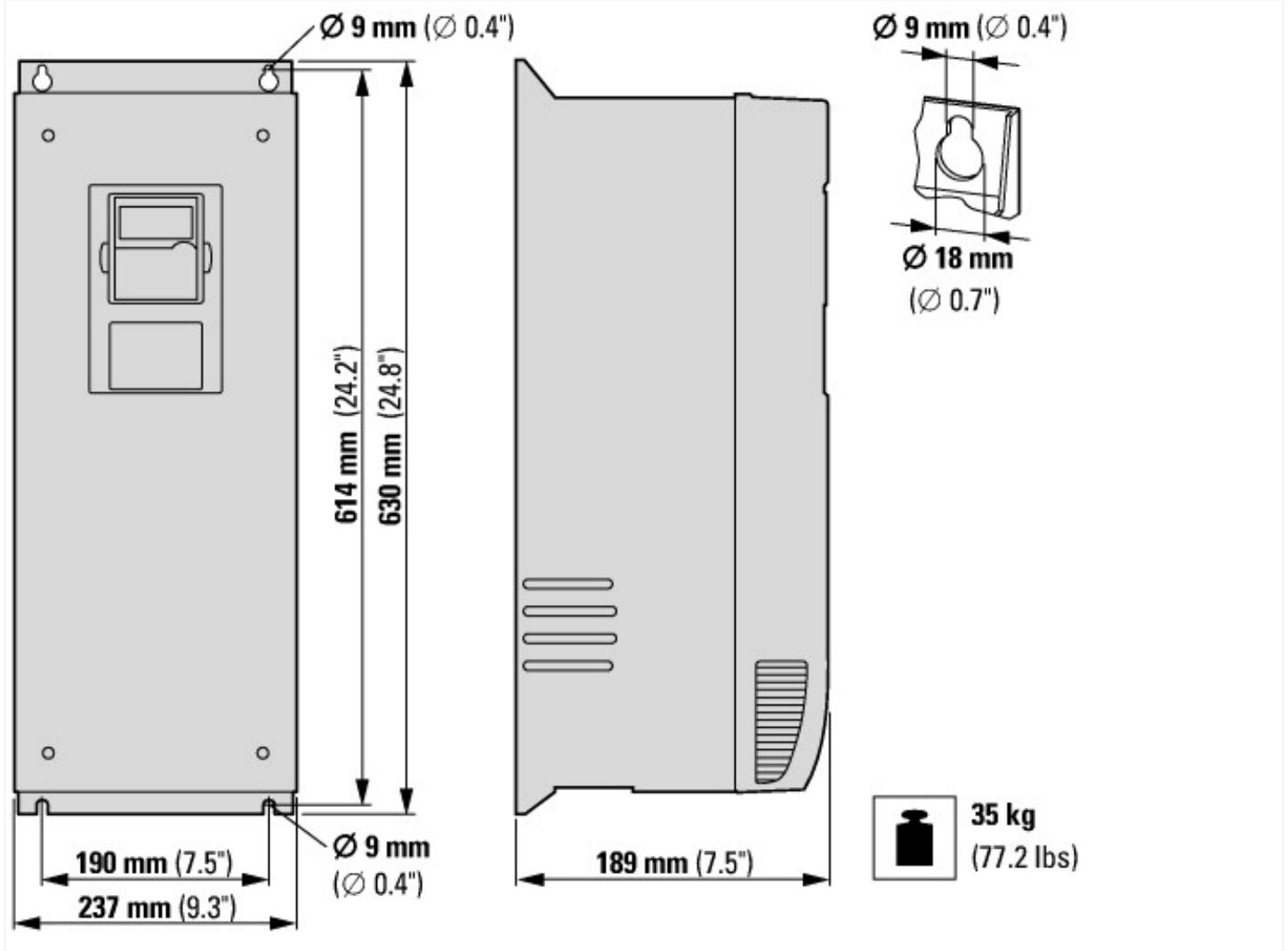
|  |                   |    |  |
|--|-------------------|----|--|
| Technical data for design verification   |                   |    |  |
| Rated operational current for specified heat dissipation   | I <sub>n</sub>    | A  | 34   |
| Heat dissipation per pole, current-dependent   | P <sub>vid</sub>  | W  | 0  |
| Equipment heat dissipation, current-dependent  | P <sub>vid</sub>  | W  | 750  |
| 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 | 50   |
|  |                   |    | 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.                         |

## 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: IP21  |

## Dimensions



## 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>