



125434
SPX400A1-5A4N1

Overview

Specifications

Resources



Delivery program

Technical data

Design verification as
per IEC/EN 61439

Technical data ETIM 7.0

Approvals

Dimensions

DELIVERY PROGRAM

Product range
Variable frequency drives

Part group reference (e.g. DIL)
SPX

Rated operational voltage [U_e]
600 V AC, 3-phase
690 V AC, 3-phase

Output voltage with V_e [U_2]
600 V AC, 3-phase
690 V AC, 3-phase

Mains voltage (50/60Hz) [U_N]
525 (-15%) - 690 ($\pm 10\%$) V

Rated operational current [I_e]

At 150% overload [I_e]
385 A

At 110% overload [I_L]
460 A

Assigned motor rating

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]
355 kW

110 % Overload [P]
450 kW

110 % Overload [I_M]
446 A

Note
at 690 V, 60 Hz

150 % Overload [P]
400 HP

110 % Overload [P]
450 HP

150 % Overload [I_M]
332 A

110 % Overload [I_M]
358 A

Degree of Protection
IP21

Fieldbus connection (optional)

PROFIBUS-DP

PROFINET

EtherCAT

EtherNet/IP

LonWorks

CANopen®

DeviceNet

Modbus-TCP

Modbus-RTU

BAOnet MS/TP

Fitted with

Radio interference suppression filter

OLED display

Frame size

FR11

Connection to SmartWire-DT

no

TECHNICAL DATA

General

Standards

Specification for general requirements: IEC/EN
61800-2

EMC requirements: IEC/EN 61800-3

Safety requirements: IEC/EN 61800-5-1

Certifications

CE, UL, cUL, RCM

Approvals

DNV

Production quality

RoHS, ISO 9001

Climatic proofing [p_{H}]

< 95% relative humidity, no condensation, no
corrosion, no dripping water %

Ambient temperature
Operating ambient temperature min.
-10 °C

Ambient temperature
Operating ambient temperature max.
+50 °C

Ambient temperature
operation (110 % overload) [9]
-10 - +40 °C

Ambient temperature
Storage [9]
-40 - +70 °C

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.

Radio interference level
Environment (EMC)
1st and 2nd environments as per EN 61800-3

Mounting position
Vertical

Altitude
0 - 1000 m above sea level
above 1000 m with 1 % performance reduction
per 100 m
max. 3000 mm

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
690 V AC, 3-phase

Supply
Mains voltage (50/60Hz) [U_N]
525 (-15%) - 690 ($\pm 10\%$) V

Supply
System configuration
AC supply systems with earthed center point

Supply
Supply frequency [f_{LN}]
50/60 Hz

Supply
Frequency range [f_{LN}]
45–66 ($\pm 0\%$) Hz

Power section
Function
Variable frequency drive with internal DC link and IGBT inverter

Power section
Output voltage with V_e [U_2]
600 V AC, 3-phase
690 V AC, 3-phase

Power section
Output Frequency [f_2]
0 - 50/60 (max. 320) Hz

Power section
Switching frequency [f_{PWM}]
1.5
adjustable 1 - 6 kHz

Power section
Operation Mode
U/f control
sensorless vector control (SLV)
optional: Vector control with feedback (CLV)

Power section
Frequency resolution (setpoint value) [Δf]
0.01 Hz

Power section
Rated operational current
At 150% overload [I_e]

385 A

Power section
Rated operational current
At 110% overload [I_e]
460 A

Power section
Fitted with
Radio interference suppression filter
OLED display

Power section
Frame size
FR11

Motor feeder
Note
For AC motors with internal and external
ventilation with 50 Hz / 60 Hz

Motor feeder
Note
Overload cycle for 60 s every 600 s

Motor feeder
Note
at 690 V, 50 Hz

Motor feeder
150 % Overload [P]
355 kW

Motor feeder
110 % Overload [P]
450 kW

Motor feeder
Note
at 690 V, 60 Hz

Motor feeder
150 % Overload [P]
400 HP

Motor feeder
110 % Overload [P]
450 HP

Control section

External control voltage [U_c]
24 V DC (max. 250 mA) V

Reference voltage [U_s]
10 V DC (max. 10 mA) V

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

Mbtor feeder
motor choke
110 % overload (VT/I_L , at 40 °C)
DUT-0590-6-0-S

Mbtor feeder
Sine filter
150 % overload (CT/I_H , at 50 °C)
SIN-0460-6-0-P

Mbtor feeder
Sine filter
110 % overload (VT/I_L , at 40 °C)
SIN-0460-6-0-P

DESIGN VERIFICATION AS PER IEC/EN 61439

Technical data for design verification

Rated operational current for specified heat dissipation [I_n]
385 A

Heat dissipation per pole, current-dependent [P_{vid}]
0 W

Equipment heat dissipation, current-dependent [P_{vid}]
8875 W

Static heat dissipation, non-current-dependent [P_{vs}]
0 W

Heat dissipation capacity [P_{diss}]
0 W

Operating ambient temperature min.
-10 °C

Operating ambient temperature max.
+50 °C

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 Strength of materials and parts
10.2.3.1 Verification of thermal stability of enclosures
Meets the product standard's requirements.

10.2 Strength of materials and parts
10.2.3.2 Verification of resistance of insulating materials to normal heat
Meets the product standard's requirements.

10.2 Strength of materials and parts

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 Strength of materials and parts

10.2.4 Resistance to ultra-violet (UV) radiation

Meets the product standard's requirements.

10.2 Strength of materials and parts

10.2.5 Lifting

Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts

10.2.6 Mechanical impact

Does not apply, since the entire switchgear needs to be evaluated.

10.2 Strength of materials and parts

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 Insulation properties
10.9.3 Impulse withstand voltage
Is the panel builder's responsibility.

10.9 Insulation properties
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
447 - 759 V

Mains frequency
50/60 Hz

Number of phases input
3

Number of phases output
3

Max. output frequency
320 Hz

Max. output voltage
690 V

Nominal output current I_{2N}
460 A

Max. output at quadratic load at rated output
voltage
450 kW

Max. output at linear load at rated output voltage
355 kW

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
Yes

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
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

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

1

Number of HW-interfaces RS-422

0

Number of HW-interfaces RS-485
0

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
Yes

Type of converter
U converter

Degree of protection (IP)
IP21

Degree of protection (NEMA)
1

Height
1155 mm

Width
709 mm

Depth

468 mm

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

