DATASHEET - SPX300A1-5A4N1

Variable frequency drive, 600 V AC, 3-phase, 315 kW, IP21, Radio interference suppression filter, OLED display, FR10

Part no.	SPX300A1-5A4N1
Catalog No.	125417
Alternate Catalog No.	SPX300A1-5A4N1
EL-Nummer (Norway)	4100156

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_{LN}	V	525 (-15%) - 690 (±10%)
Rated operational current			
At 150% overload	I_e	A	325
At 110% overload	I_e	A	385
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	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			IP21
Fieldbus connection (optional)			PROFIBUS-DP PROFINET EtherCAT EtherNet/IP LonWorks CANopen® DeviceNet Modbus-TCP Modbus-RTU BACnet MS/TP
Fitted with			Radio interference suppression filter OLED display
Frame size			FR10
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	ρ_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)	ϑ	°C	-10 - +40
Storage	ϑ	°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 above 1000 m with 1 % performance reduction per 100 m 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 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 690 V AC, 3-phase
Output Frequency	f_2	Hz	0 - 50/60 (max. 320)
Switching frequency	f_{PWM}	kHz	1.5 adjustable 1 - 6
Operation Mode			U/f control sensorless vector control (SLV) optional: Vector control with feedback (CLV)
Frequency resolution (setpoint value)	Δf	Hz	0.01
Rated operational current			
At 150% overload	I_e	A	325
At 110% overload	I_e	A	385
Fitted with			Radio interference suppression filter 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$_H$, at 50 °C)			DX-LM3-450
110 % overload (VT/I$_L$, at 40 °C)			DX-LM3-450
Sine filter			
150 % overload (CT/I$_H$, at 50 °C)			SIN-0390-6-0-P
110 % overload (VT/I$_L$, at 40 °C)			SIN-0390-6-0-P

Design verification as per IEC/EN 61439

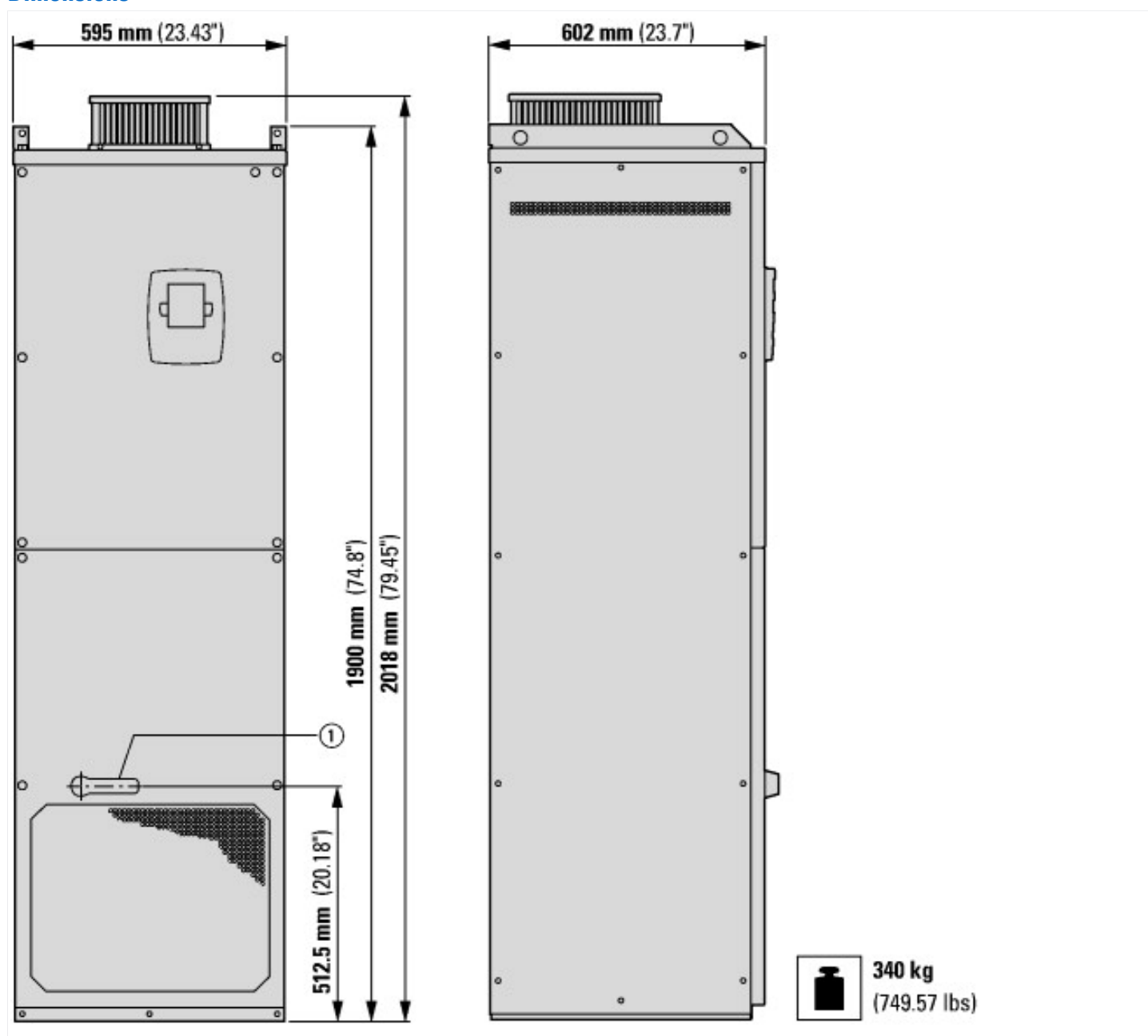| Technical data for design verification			
Rated operational current for specified heat dissipation	I$_n$	A	325
Heat dissipation per pole, current-dependent	P$_{vid}$	W	0
Equipment heat dissipation, current-dependent	P$_{vid}$	W	7875
Static heat dissipation, non-current-dependent	P$_{vs}$	W	0
Heat dissipation capacity	P$_{diss}$	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.

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	447 - 759
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 I2N	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		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	mm	2018	
Width	mm	595	
Depth	mm	602	

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

595 mm (23.43")

602 mm (23.7")

1900 mm (74.8")

2018 mm (79.45")

512.5 mm (20.18")

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340 kg
(749.57 lbs)

Additional product information (links)

IL04020008Z Frequency inverter 9000X

IL04020008Z Frequency inverter 9000X	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL04020008Z2018_05.pdf
Documentation	http://www.eaton.eu/Europe/Electrical/ProductsServices/AutomationControl/SwitchingProtectingDrivingMotors/9000X/SPX9000/index.htm#tabs-4