

# AXC F 2000 EA - Controller



1551772

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Controller (SPS), PLCnext Control; Programming: High-level language and IEC 61131-3; Operating system: Yocto/Linux® (real-time); Programming tool: PLCnext Engineer, Eclipse®, Visual Studio®, MATLAB®/ Simulink®; Product certified in accordance with IEC 62351-3 and IEC 62443 (SL2) (Certification conditions see user documentation); Processor: Arm® Cortex®-A53, 3x 1.2 GHz.

## Your advantages

- Real-time-capable Linux operating system for deterministic and reliable execution of time-critical processes
- Developed for the field of energy applications
- Numerous protocols supported such as: http, https, FTP, SNMP, IPsec, syslog
- Contains licenses for IEC 60870-5-101/-104 and Modbus/RTU
- Supports common fieldbus protocols (IEC 60870-5-101/-104, IEC 61850, Modbus TCP/RTU, Ethernet TCP/IP, etc.), for integration into existing energy technology systems and installations.
- Maximum design freedom thanks to the combination of classic PLC programming with modern high-level languages such as C++, C#, or Python
- Meets the highest security requirements of industrial automation – for the protection of your applications and data
- Specially developed Axioline Smart Elements for maximum flexibility and scalability
- 3 independent Ethernet interfaces
- Meets increased requirements in accordance with IEC 61850-3 Class H
- Extended temperature range of -40 °C ... +70 °C
- Integrated cybersecurity meets security standards in accordance with IEC 62443 and IEC 62351-3

## Commercial data

Item number	1551772
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DR09
Product key	DRMBAA
GTIN	4067923029323
Weight per piece (including packing)	422.7 g
Weight per piece (excluding packing)	356.8 g
Customs tariff number	85371091
Country of origin	DE

## Technical data

### Notes

#### Note on application

Note on application	Only for industrial use
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### Product properties

Product type	Controller
Product family	PLCnext Control
Type	modular
Special properties	Product certified in accordance with IEC 62351-3 and IEC 62443 (SL2) Certification conditions see user documentation

#### Insulation characteristics

Protection class	II (IEC 61140, EN 61140, VDE 0140-1)
Overvoltage category	II (IEC 61010-2-201/EN IEC 61010-2-201)
Pollution degree	2

#### Display

Diagnostics display	no
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### System properties

Trusted Platform Module	TPM 2.0
Flash memory	4 GByte (internal flash memory) SD card from Phoenix Contact (for external flash memory, see accessories)
Retentive data storage	1 Mbyte (NVRAM)

#### IEC 61131 runtime system

Program memory	12 Mbyte
Data storage system	32 Mbyte (internal flash memory)

#### Axioline

Amount of process data	max. 1482 Byte (per station (total input and output data))
	max. 1024 Byte (Axioline F local bus (input))
	max. 1024 Byte (Axioline F local bus (output))
Number of supported devices	max. 63 (per station)
Number of local bus devices that can be connected	max. 63 (observe current consumption)

#### INTERBUS-Master

Amount of process data (Axioline input/output data max.)	max. 1482 Byte (per station (total input and output data))
Amount of process data (Axioline input data max.)	max. 1024 Byte (Axioline F local bus (input))
Amount of process data (Axioline output data max.)	max. 1024 Byte (Axioline F local bus (output))

#### Function

Diagnostics display	no
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Redundancy function	yes
Industrial cybersecurity	yes

## Programming data

Register length (master)	148 Byte
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## Functionality

Programming languages supported	Symbolic flowchart (SFC)
	Ladder diagram (LD)
	Function block diagram (FBD)
	Structured text (ST)
	C++
	C#
	Java
	Python®
Simulink®	

## System requirements

Application interface	OPC UA®
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## Electrical properties

### Real-time clock

Realtime clock	yes
Description realtime clock	typ. 10 ppm, max. 20 ppm at 25°C

### Potentials

Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC (including all tolerances, including ripple (± 5 %))
Power consumption	max. 16.2 W
Protective circuit	Surge protection; electronic
	Reverse polarity protection; electronic

### Potentials: Axioline F local bus supply ( $U_{Bus}$ )

Supply voltage	5 V DC (via bus base module)
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## Output data

### Relay

Number of outputs	1
Connection method	ST
Contact switching type	Single contact, 1 changeover contact
Contact connection type	Socket/pin

## Interfaces

Supported protocols	HTTP
	HTTPS

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	SFTP
	MQTT (via corresponding app)
	OPC UA® Server
	OPC UA® Client (via corresponding app)
	DHCP (via corresponding app)
	IEC 60870-5-101 (Via extension module)
	IEC 60870-5-104
	IEC 61850 (via corresponding library)
	Modbus/RTU
	Modbus/TCP (via corresponding library)
	IPsec
	syslog
	DHCP
Web server	yes

#### Axioline F local bus

Number of interfaces	1
Connection method	Bus base module
Transmission speed	100 Mbps

#### Ethernet

Bus system	RJ45
Number of interfaces	3
Connection method	RJ45 jack
Note on the connection method	Auto negotiation and autocrossing
Transmission speed	100/1000/10000 Mbps (full duplex)
Transmission physics	Ethernet in RJ45 twisted pair
Transmission length	max. 100 m

#### Dimensions

Width	100 mm
Height	126.93 mm
Depth	75 mm
Note on dimensions	The depth applies when a TH 35-7.5 DIN rail is used (in accordance with EN 60715).

#### Material specifications

Color (Housing)	gray (RAL 7042)
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#### Environmental and real-life conditions

##### Ambient conditions

Degree of protection	IP20 (Manufacturers declaration, not evaluated by UL)
Ambient temperature (operation)	-40 °C ... 70 °C up to 2000 m above mean sea level (observe derating)
	-40 °C ... 70 °C up to 3000 m above mean sea level (≥ 55°C (at maximum 1 A at UBus), observe derating)

	55 °C ... 70 °C (Observe the requirements in the user manual for operation in the extended temperature range in accordance with IEC 61850-3.)
	-40 °C ... 70 °C (Observe the requirements in the user manual for operation in the extended temperature range in accordance with IEC 61850-3.)
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	5 % ... 95 % (according to DIN EN 61131-2)
Permissible humidity (storage/transport)	5 % ... 95 % (according to DIN EN 61131-2)
Shock (operation)	30g (in accordance with EN 60068-2-27/IEC 60068-2-27)
Vibration (operation)	5g (in accordance with EN 60068-2-6/IEC 60068-2-6)
Air pressure (operation)	70 kPa ... 106 kPa (up to 3000 m above sea level)
Air pressure (storage/transport)	58 kPa ... 106 kPa (up to 4500 m above mean sea level)

## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Conformance with EMC directives	Immunity test in accordance with EN IEC 61000-6-5 Electrostatic discharge (ESD)IEC 61000-4-2 Criterion A, 6 kV contact discharge, 8 kV air discharge
	Immunity test in accordance with EN IEC 61000-6-5 Electromagnetic fieldsIEC 61000-4-3 Criterion A, Field intensity: 10 V/m
	Immunity test in accordance with EN IEC 61000-6-5 Fast transients (burst)IEC 61000-4-4 Criterion A, 4 kV
	Immunity test in accordance with EN IEC 61000-6-5 Transient overvoltage (surge)IEC 61000-4-5 Criterion A, 4 kV asymmetrical, 2 kV symmetrical
	Immunity test in accordance with EN IEC 61000-6-5 Conducted interferenceIEC 61000-4-6 Criterion A, Test voltage 10 V
	Noise emission test in accordance with EN 61000-6-4/IEC 61000-6-4 pass

## Mounting

Mounting type	DIN rail mounting
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## Approvals

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**cULus Listed**

Approval ID: E238705

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## Classifications

### ECLASS

ECLASS-13.0	27242207
ECLASS-15.0	27242207

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## Environmental product compliance

### EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I

### China RoHS

Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.

### EU REACH SVHC

REACH candidate substance (CAS No.)	Diboron trioxide(CAS: 1303-86-2)
	Lead(CAS: 7439-92-1)

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