

# AXC F 2000 EA - Controller



1551772

<https://www.phoenixcontact.com/us/products/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 |
|---------------------|-------------------------|

### 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 |
|---------------------|----|

### System properties

|                         |  |
|-------------------------|--|
| Trusted Platform Module | TPM 2.0  |
| Flash memory            | 4 GByte (internal flash memory)<br>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 |

## 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® |
|-----------------------|---------|

## 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<sub>Bus</sub>)

|                |                              |
|----------------|------------------------------|
| Supply voltage | 5 V DC (via bus base module) |
|----------------|------------------------------|

## 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                        |
|                     | SFTP                         |
|                     | MQTT (via corresponding app) |

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|            |  |
|------------|--|
|            | 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) |
|-----------------|-----------------|

## 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 fields IEC 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 interference IEC 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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## 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.) | Lead(CAS: 7439-92-1) |
|-------------------------------------|----------------------|

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