SOL-SA-PCU-41XX - Controller

1114234

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Similar figure

PLCnext Control based on AXC F 2152. Prepared for a customer-specific application with a power generation plant controller. Basis for the feed-in management of power generation systems that feed into medium- and high-voltage grids. Certified in accordance with VDE-AR-N 4110/4120.

Product description

The PLCnext Control must be extended via a basic application subject to license to create a power generation plant controller in accordance with VDE-AR-N 4110:2018 (and 4120:2018) in combination with FGW TR8 Rev.09 for type 1 and type 2 systems. The licenses for the basic application are available in the PLCnext Store.
The PLCnext components included in the basic application satisfy the following requirements:

Active power control

• Setpoint definition by the grid operator and third parties
• P(f) characteristic curve (type 2 systems only)

Reactive power control

• cos(φ)
• Reactive power control with voltage limitation function
• Q(U) characteristic curve
• Q(P) characteristic curve

Other

• Reactive power prioritizing operating mode
• Controller bypass (bypass mode)
• Monitoring voltage conditions at the grid connection point for connecting the power generation unit after protection is triggered at the power generation unit (VDE-AR-N 4120:2018)
• Multiple instantiation of the PLCnext components is possible for independent control of multiple power generation unit types, e.g., system part 1: PV, system part 2: CHP plant, etc.

IMPORTANT INFORMATION

The interfaces (power providers, direct sellers, energy measuring devices, power generation units, portal connection, etc.) are to be connected by the user on the basis of the specific project.
The power generation plant controller functionality is subject to a license. The license required depends on the maximum possible system power. The following licenses are available:

• Power Control Unit – 250 kW (for an active power sum of up to 250 kW)
• Power Control Unit – 1 MW (for an active power sum of up to 1 MW)
• Power Control Unit – 5 MW (for an active power sum of up to 5 MW)
• Power Control Unit – 10 MW (for an active power sum of up to 10 MW)
• Power Control Unit – 50 MW (for an active power sum of up to 50 MW)
• Power Control Unit – UNLIMITED (no limit to the active power sum)

You can purchase the licenses in the PLCnext Store (for links, see the “Downloads” tab).

Your advantages

- Increased resistance to EMI
- Extended temperature range of -25 °C ... 60 °C
- Supports high-level languages
- PROFINET support
- 2 Ethernet interfaces (integrated switch)
- Up to 63 Axioline I/O modules can be aligned directly
- Linux operating system
- Compliance with the grid and system rules of German transmission system operators
- Complete with connector, bus base module, and 2 GB program/configuration memory
- Customer-specific expansion possible with open interfaces

Commercial data

Item number	1114234
Packing unit	1 pc
Minimum order quantity	1 pc
Product key	DTHAAA
GTIN	4063151036973
Weight per piece (including packing)	310.1 g
Weight per piece (excluding packing)	304 g
Country of origin	DE

Technical data

Notes

Notes on operation	To operate the product, you will need a product-specific license based on the active power sum of the generating plant. You can purchase the license in the PLCnext Store (for the link, see the “Downloads” tab).

Product properties

Product type	Controller
Product family	Axioline F
Type	Axioline

Insulation characteristics

Protection class	III (IEC 61140, EN 61140, VDE 0140-1)

System properties

Operating system	Linux

IoT capability: PROFICLOUD

Supports cloud computing	yes
IoT platform	PROFICLOUD

IEC 61131 runtime system

Program memory	8 Mbyte
Retentive data storage	48 kByte (NVRAM)
Data storage system	16 Mbyte
Cycle Time	1 ms (for cyclical task)
Number of data blocks	depending on data storage
Number of control tasks	32 (16 per processor core)

System limits Controller

Amount of process data	max. 8192 bit (per station)
	max. 4096 bit (Input)
	max. 4096 bit (Output)
Number of supported devices	max. 63 (per station)
Number of local bus devices that can be connected	max. 63 (observe current consumption)

PROFINET

Device function	PROFINET controller, PROFINET device
Specification	Version 2.3
Conformance Class	A
Supported functions (PROFINET-Controller)	MRP FSU
Supported functions (PROFINET-Device)	MRP
Update rate	min. 1 ms (4 devices)
	min. 16 ms (64 devices)
Update rate min/max (Supports (device))	1 ms ... 250 ms

Process data width (PROFINET-Device)	64 Byte ... 512 Byte
Number of supported devices (PROFINET-Controller)	max. 64 (at PROFINET controller)
Device ID	0142_{hex}
Vendor ID	$00B0_{hex}$

Functionality

Programming tool	PLCnext Engineer
	Eclipse®
Programming languages supported	Programming in acc. with IEC 61131-3
	C++
	C#
	Java
	Manufacturer-specific

System requirements

Application interface	OPC UA®

Electrical properties

Real-time clock

Real-time clock	yes
Description real-time clock	1.73 s/day = 20 ppm at 25 °C

Connection data

Axioline F connector

Connection method	Push-in connection
Conductor cross-section, rigid	0.2 mm² ... 1.5 mm²
Conductor cross-section, flexible	0.2 mm² ... 1.5 mm²
Conductor cross-section AWG	24 ... 16
Stripping length	8 mm

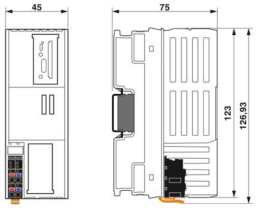
Interfaces

Web server	yes

Axioline F local bus

Number of interfaces	1
Connection method	Bus base module
Number of interfaces	2
Connection method	RJ45 jack
Note on the connection method	Auto negotiation and autocrossing
Transmission speed	10/100 Mbps (full duplex)
Transmission physics	Ethernet in RJ45 twisted pair
Transmission length	max. 100 m
No. of channels	2

Dimensions

Dimensional drawing	
Width	45 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	gray

Environmental and real-life conditions

Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-25 °C ... 60 °C up to 2000 m above mean sea level (observe derating)
	-25 °C ... 55 °C up to 3000 m above mean sea level (observe derating)
	≤ 55 °C (with max. 1 A on U_{Bus})
	> 55 °C ... 60 °C (only in conjunction with an Axioline F power module AXL F PWR 1H (Item no. 2688297))
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)	10g (Bump endurance test according to DIN EN 60068-2-27)
Vibration (operation)	5g
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 61000-6-2/IEC 61000-6-2 Electrostatic discharge (ESD)EN 61000-4-2/IEC 61000-4-2 Criterion B, ±6 kV contact discharge, ±8 kV air discharge
	Immunity test in accordance with EN 61000-6-2/IEC 61000-6-2 Electromagnetic fieldsEN 61000-4-3/IEC 61000-4-3 Criterion A, Field intensity: 10 V/m
	Immunity test in accordance with EN 61000-6-2/IEC 61000-6-2 Fast transients (burst)EN 61000-4-4/IEC 61000-4-4 Criterion B, ±2 kV

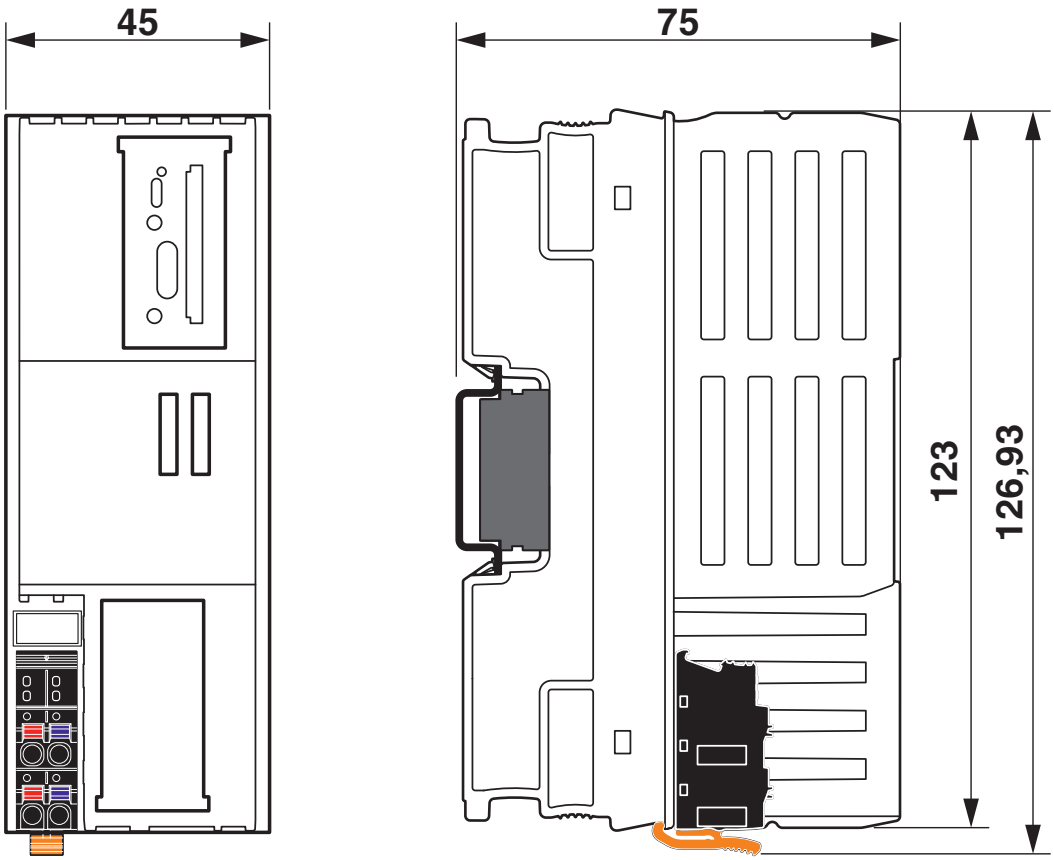
	Immunity test in accordance with EN 61000-6-2/IEC 61000-6-2 Transient overvoltage (surge)EN 61000-4-5/IEC 61000-4-5 Criterion B, DC supply lines: ±0.5 kV/±0.5 kV (symmetrical/asymmetrical), fieldbus cable shield: ±1 kV
	Immunity test in accordance with EN 61000-6-2/IEC 61000-6-2 Conducted interferenceEN 61000-4-6/IEC 61000-4-6 Criterion A, Test voltage 10 V
	Noise emission test in accordance with EN 61000-6-4/IEC 61000-6-4 Class A

Mounting

Mounting type	DIN rail mounting

Drawings

Dimensional drawing



Classifications

ECLASS

ECLASS-13.0	27242207
ECLASS-15.0	27242207

ETIM

ETIM 10.0	EC000236

UNSPSC

UNSPSC 21.0	32151700

Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	6(a), 7(a), 7(c)-I

China RoHS

Environment friendly use period (EFUP)	EFUP-E
	No hazardous substances above the limits

EU REACH SVHC

REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
SCIP	5f9c33b9-fa2a-4949-8857-1e55474d884f

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