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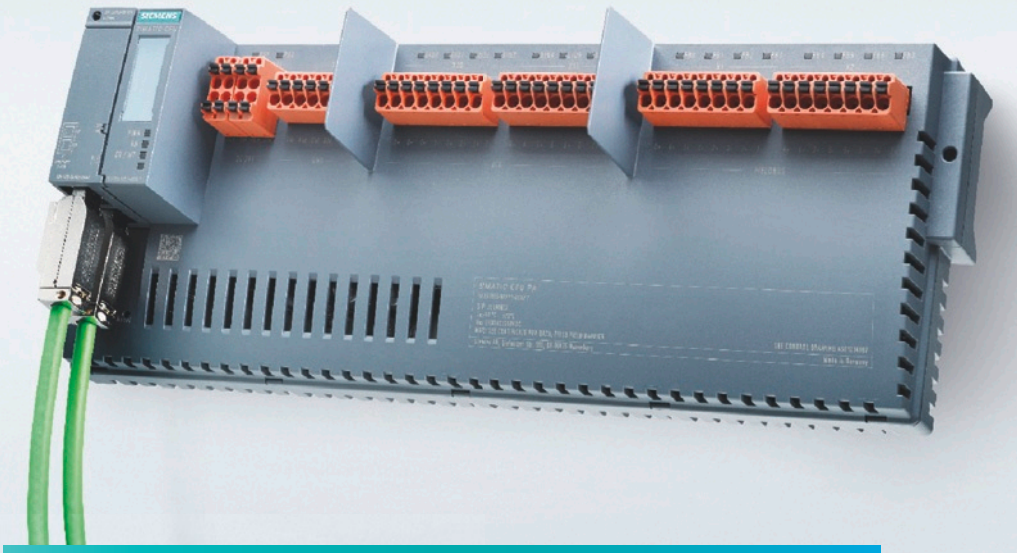

Flyer

April 2017
Edition

SIMATIC Compact Field Unit

Plug-and-produce simplicity and more flexibility through consistent decentralization

Ready for a change in perspective at the field level?

Digitalization offers important impulses for the process industry. You can benefit from higher flexibility with more simple device integration at highest availability.

With our new approach to field device connection, the SIMATIC Compact Field Unit (CFU) makes it possible to transfer your conventional system concept into a digital plant.

What are the challenges you face today with field device connection?

- High effort for device integration and replacement
- Time-consuming, error-susceptible wiring and marshalling across multiple levels, resulting in complex hardware FAT
- Miles of copper cabling, thousands of terminal points
- High planning and documentation costs
- Variety of individual control cabinets
- Large numbers of different components and protocols require costly spare parts inventories and training

The SIMATIC CFU has the answer to these challenges

- Plug-and-produce simplicity
- More flexibility through consistent decentralization

The new thinking is already here

- From a centralized to a distributed I/O approach: Achieve highest flexibility through modularization of your plant.
- From static to freely-configurable I/O: Benefit from highly comfortable software wiring.
- From complex to simple device integration: The name of the game is plug-and-produce instead of trial and error.
- From specific to standardized solutions: Makes full cost control over the plant lifecycle possible.

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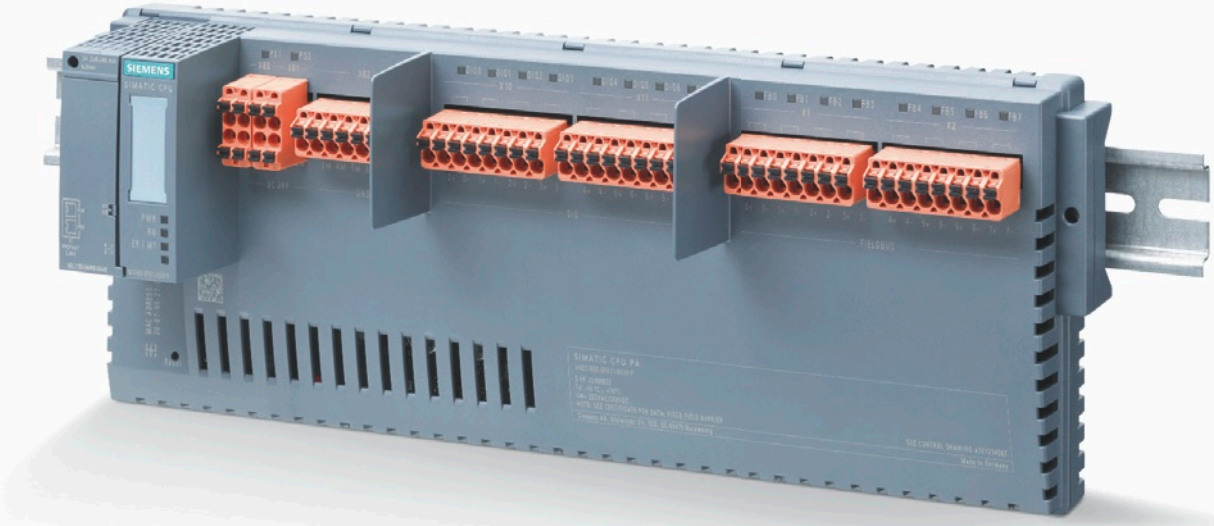

SIMATIC CFU PA

The new SIMATIC CFU is a real game changer in field device connection and offers entirely new perspectives regarding simplicity and flexibility. This compact field unit is installed at the process level and is connected via PROFINET directly to the process control system to form the foundation for digitalization in the field. Utilization of digital fieldbus communication simplifies field device interfacing considerably compared to conventional 4...20-mA technology.

Plug-and-produce simplicity

Digitalization requires a consistent and digital communication down to the sensors and actors. This can be built up using the tried and tested, standard PROFIBUS PA which has been implemented into the PA Edition of the SIMATIC CFU, thus combining ruggedness and simplified integration with all the advantages of the PROFINET standard based on Industrial Ethernet. Connected devices are addressed automatically, and device integration is simple via standardized communication profiles.

This absolutely innovative realization of the implementation of the PROFIBUS PA concept makes it possible to combine the simplicity of a point-to-point wiring system with the scalability of digital PROFIBUS PA fieldbus communication.

As with digital field devices, it is not necessary to know prior to connection whether the discrete field device is a sensor or actuator – this is automatically identified and configured when the device is connected.

More flexibility through consistent decentralization

Thanks to the installation directly in the field, classic control cabinets are no longer required, resulting in significant savings for cables and number of terminations as well as reduction of planning and documentation effort. The high granularity (16 I/O per SIMATIC CFU) enables flexible assignment to the higher-level controllers.

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Device integration and replacement has never been easier!

Previously, device integration was associated with:
- increased potential for errors
- time intense set-up
- training of personnel

We designed the SIMATIC CFU in order to make all this a thing of the past. Convince yourself from the new rules in the field level!

Device integration scenario

What does the integration of a conventional PROFIBUS PA pressure transmitter into the process control system of the future look like using a SIMATIC CFU?

After tool-free connection of the pressure transmitter using push-in terminals, the SIMATIC CFU carries out an initialization process whereby the field device is addressed automatically. The SIMATIC CFU then checks whether the connected field device supports the "pressure transmitter" communication profile pre-defined during engineering. The communication profiles are standardized worldwide by PROFIBUS & PROFINET International, they are available for all PROFIBUS PA field devices. That's how fast and simple it is to integrate the pressure transmitter into the process control system, ready for use – that's plug-and-produce!

Compared with the previous manual integration process, the installation time is reduced from half an hour or more to less than a minute. This is where the benefits of integrated digitalization become especially visible.

Device replacement scenario

It's an all-too familiar scene for plant operators:
It's Saturday night and a field device failure brings production to a plant shutdown. In addition to the LED diagnostics directly on the device, detailed reports are also provided by the SIMATIC PCS 7 Maintenance Station according to NE 107.

It's now easy for the maintenance personnel on the scene thanks to SIMATIC CFU and plug-and-produce: whether latest version of device or different manufacturer – no difference thanks to the new standard profiles! After connecting the new device, the SIMATIC CFU carries out the addressing and standardized integration completely automatically. A static green LED light in the corresponding channel and a system message signal successful completion. The service call is over.

In order to facilitate preventive maintenance of the field devices, the SIMATIC CFU also features predictive diagnostic functions which continuously provide information about the current system status.

Functionalities

The SIMATIC CFU was specifically designed to meet the requirements of the process industry in the Internet of Things environment:

System connection via Industrial Ethernet standard
- Redundant PROFINET connection (S2) for the highest availability
- Flexible connectivity options via PROFINET bus adapters (e.g. electrical, optical or mixed)

Combination of digital fieldbus and discrete I/O
- 8× digital fieldbus (PROFIBUS PA)
- 8x digital inputs/outputs, freely configurable

Ready for the field
- For installation in hazardous areas up to Ex-zone 2-22
- Extended temperature range from -40 to +70 °C
- Conformal coating
- Can be used at altitudes up to 4 000 meters
- Enhanced interference immunity according to NAMUR recommendation NE21
- Easy, orderable standardized cabinet supports up to 96 I/O

Ease of use
- Automatic addressing of PROFIBUS PA field devices
- System-supported identification and integration of PROFIBUS PA field devices into the process control system:
  - Use of standardized PA profiles
  - Commissioning, device exchange and maintenance wizards
- Implementation of diagnostic messages according to NAMUR recommendation NE107
- 35-mm DIN rail mounting

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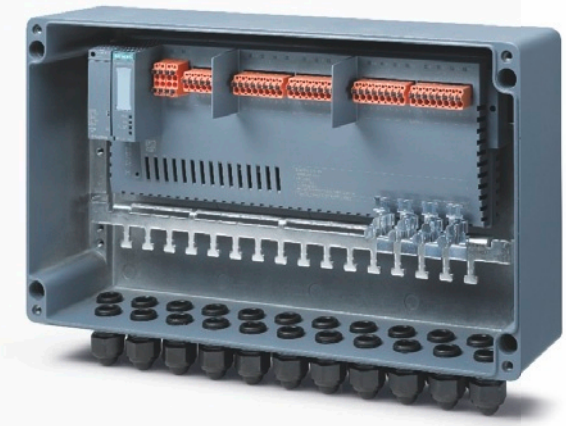
SIMATIC CFU – Lay the cornerstone for digitalization at the field level!



SIMATIC CFU PA in an aluminum housing

Benefits at a glance

- Plug-and-produce simplicity
  - Fast and fail-safe device integration
  - Simple and safe device replacement without additional engineering effort

  Device integration is easier and fail-safe. The installation time is reduced from half an hour or more to less than a minute.

- More flexibility through consistent decentralization
  - Complete elimination of individual cabinets
  - Reduction in marshalling and cabling effort
  - Less planning and documentation effort
  - Standardized design – no hardware FAT required
  - Parallelization of work processes
  - Flexible system expansion without need for stocking of spares
  - Reduced installation effort, less complexity and lower maintenance costs

  Up to 70% fewer terminations required and cabling reduction of 30% and more

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