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SICAM AK

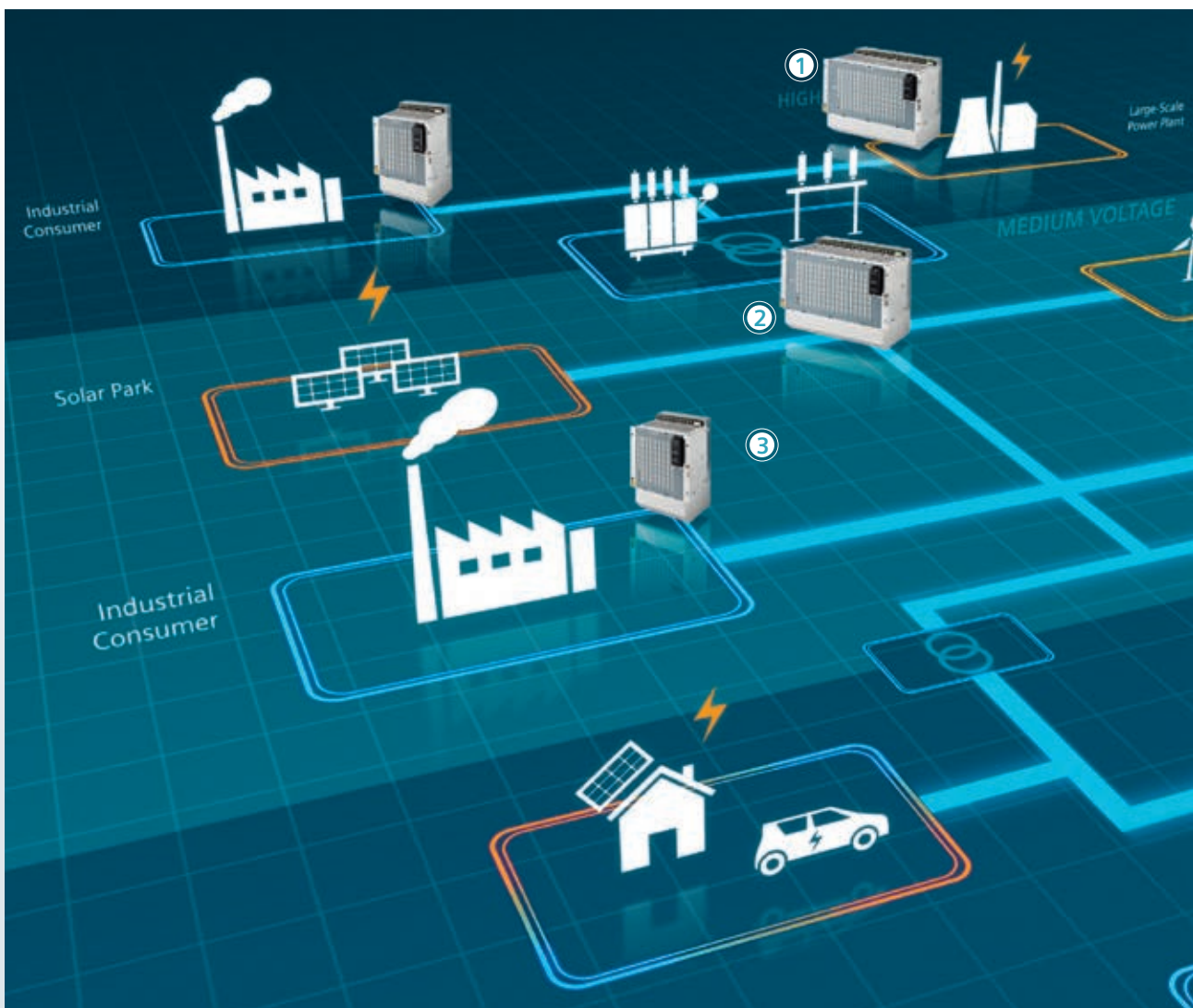
Flexible automation for all applications

Answers for infrastructure and cities.

A leader in flexibility and function: The SICAM AK automation component

The SICAM AK hardware-based substation automation solution is a practical all-rounder. Thanks to its high level of functionality and flexibility, it can be used in different areas:

- ① Power plants
- ② Switching and substations
- ③ Industrial plants



Extensive advantages and benefits: You're in good hands with SICAM AK

Flexible: SICAM AK for your tasks

- As a telecontrol substation or central unit
- As a substation controller
- For power plant management
- With local or remote peripheral equipment
- As a data node, front-end, or gateway
- As an automation unit with independent functional groups
- For rear panel or 19" rack installation

Comprehensive: communication options

- Use of up to 66 serial interfaces for local and remote communication
- Serial communication, LAN/WAN (Ethernet) in accordance with IEC 60870-5-101 / 103 / 104 and IEC 61850
- Profibus DP
- Numerous third-party protocols available

Safe: scalable redundancy

- Component redundancy
- Duplication of processing / communication elements

Simple: in engineering and maintenance

- Creation of user programs for open-loop and closed-loop control functions in accordance with IEC 61131-3
- Object-oriented engineering
- Consistent data storage
- Engineering also possible from remote locations
- Plug & Play for spare parts by means of flash card
- Storage of parameters and firmware on flash card
- Module replacement without engineering tool

Convenient: intelligent terminals from SICAM TM

- Direct connection of actuators and sensors with wire cross-sections of up to 2.5 mm²
- Remote installation possible for up to 200 m
- Binary input / output also for 110 / 220 VDC
- Mounting on 35 mm DIN rail

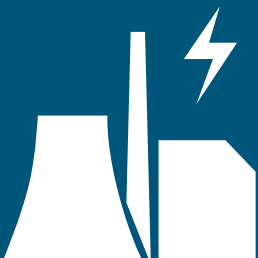
Extra: expansion of your SICAM platform

- SICAM Safety applications provide safe open-loop and closed-loop control functions for your existing SICAM hardware
- SICAM Safety input / output modules are identical in design to SICAM TM terminals and can be used together in any combination



Versatile in use and performance: SICAM AK meets your requirements

A high level of functionality and flexibility are the foundation of every automation system. But the innovative SICAM AK automation component takes innovation one step further. It additionally offers comprehensive options for telecontrol, communication, and for connecting peripheral equipment, making it incredibly versatile.



SICAM AK makes it possible

A well-designed system concept is what makes the SICAM AK so flexible and versatile. It offers numerous possibilities for the automation of power supply networks to match your performance and redundancy requirements. Automation, telecontrol, and communication functions are flexibly combined in full compliance with IEC 61850.

An added bonus: Client and server functionality can be offered at the same time on a single Ethernet interface. This feature has been confirmed by an independent laboratory, which has certified the server functionality as proof of interoperability.

This is your SICAM AK solution

- Central unit or telecontrol substation
- Data node or front-end
- Automation unit
 - with independent functional groups
 - with local or remote peripheral equipment



Innovative in application and usage: Discover the potential of SICAM AK

Telecontrol, communication, simple connection of peripheral equipment are all standard requirements for SICAM AK. But the innovative automation component offers many more possibilities for your special tasks.

Central or remote input/output

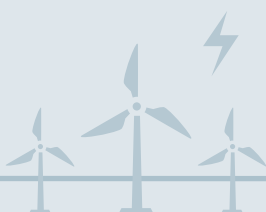
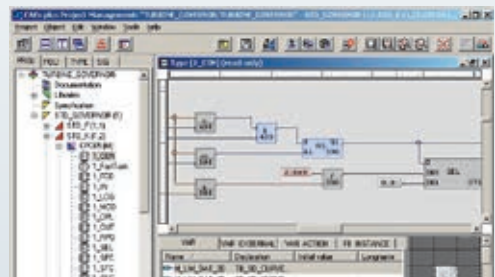
Both are possible: Through augmentation with SICAM TM peripheral elements (up to 200m away from the central unit). Including potential savings: Handover interfaces are systematically reduced by direct connection of actuators and sensors with wire cross-sections of up to 2.5 mm². Binary input and output modules up to 220VDC open up additional savings potential at the interface level.

Efficient engineering

With SICAM TOOLBOX II: Highly efficient engineering can be carried out from remote locations, from system diagnostics to online testing. The close interfacing with design tools such as ELCAD ensures consistent documentation of the entire system, while the user programs for closed-loop and open-loop control functions are created in CAEx plus in accordance with IEC 61131-3, thereby minimizing the time and effort needed for training.

Simple replacement

Uncomplicated thanks to Plug & Play: Configuration and all parameters of SICAM AK are stored on the flash card. The advantage is that in the event of a fault, a replacement device can be put into operation in seconds – without a PC or resetting of parameters. In combination with the comprehensive remote diagnostic options, this allows you to reduce downtimes to a minimum.



Strong in safety and efficiency: The SICAM AK and SICAM Safety duo

Increased safety for your plant: easy and convenient with SICAM Safety.

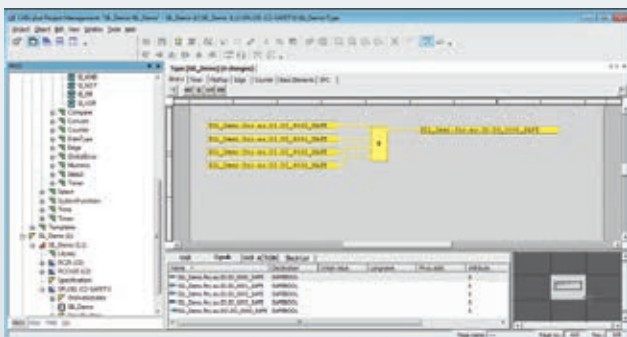
Benefit from a consistent, end-to-end solution

Up-to-date safety: fast and easy with the integration of SICAM Safety. In addition to automation functions, your SICAM platform meets all necessary safety requirements. It provides a single system with more functionality and uniform engineering – so you get safety with efficiency.

SICAM Safety for your industry

SICAM Safety is optimally suited for the automation of hydropower plants. The modules protect turbines and generators from mechanical overload by reliably detecting:

- Impermissible operating states
- Imbalance of the shaft due to bearing damage
- Rise in temperature (interwinding fault in the generator)
- Guide vane fracture (Francis turbine)



In addition, SICAM Safety is the ideal solution for your requirements in the oil and gas sector. For safety-related automation functions in pipelines, you can rely on proven SICAM quality.

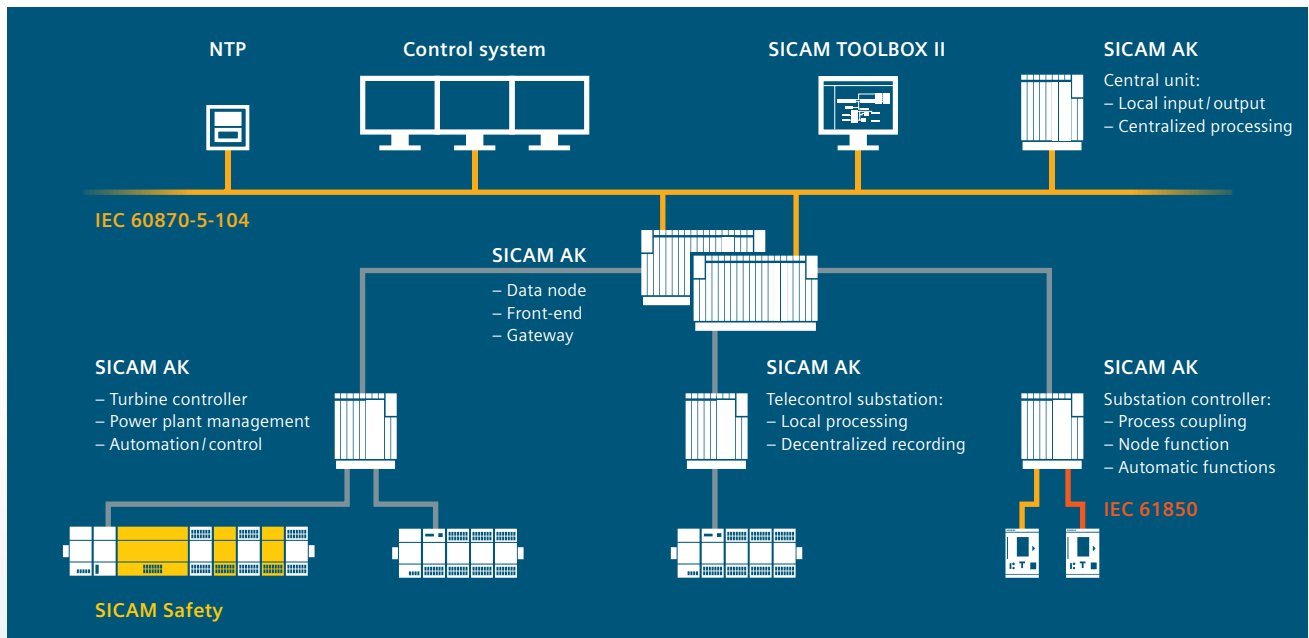
Rely on our experience

We have packed proven solutions into an innovative automation component. The result: SICAM AK.

- The functions are safe: standard and safety-related automation functions are separate
- Communication is reliable: between the safety-related control and safety-related peripheral equipment, communication takes place via the PROFIsafe protocol
- The engineering is simple – with SICAM TOOLBOX II: You can edit the safety parameters with OPM II; use the CAEx Safety toolset to verify and validate the safety controls and parameters



Convincing in design and scope: Configurations and data for SICAM AK



Rely on top hardware

- Multiprocessor and firmware principle with 32-bit processor technology
- One master control element with
 - up to 2 communication interfaces
 - automation function
 - connection to the TOOLBOX II engineering system
- Up to 16 additional processing and communication elements
- Up to 66 protocol elements for
 - serial communication (point-to-point, multi-point, dial-up traffic)
 - LAN/WAN (Ethernet)
 - Profibus DP
- Up to 272 peripheral elements

Discover all functions

- Node function for building up multi-hierarchical networks with virtually any topology
- Automation functions at all levels of a local or distributed network
- Drawing up a function plan according to IEC 61131-3 with CAEx plus for open-loop and closed-loop control functions
- Configurable telecontrol functions with and without time tagging
- Time synchronization via minute pulse, time signal receiver, serial communications link, or NTP server (LAN/WAN)
- Data routing via selective or automatic data flow

- Uniform functionality as per IEC 60870-5-101 / 103 / 104 for consistent addressing from acquisition to output
- Scalable redundancy through:
 - duplication of 1 to 5 processing or communication elements
 - duplication of the whole automation unit
- Independent functional groups
- Decentralized archive
- Standby transmission route concept
- Parameter setting, diagnostics, and testing by means of TOOLBOX II both locally and from remote locations
- Storage of parameters and firmware on flash card

Technical data at a glance

- Protocols: IEC 60870-5-101, 103, 104, IEC 61850, Profibus DP, SAT SSI, SAT PCMBA, Modbus, DNP 3.0, IEC 61107, and more
- Open-loop and closed-loop control functions: 512 kB for user program in each case, approximately 50,000 variables and signals, of which 2,000 buffered, 250 buffered setpoint values
- EMC: IEC 60870-2, IEC 60255, IEC 60950, IEC 61000, EN 50082, CISPR 22, and more
- Temperature range: 0 to +55 °C
- Dimensions (W x H x D):
 - CM-2834: 280 x 291 x 285 mm; Space required: 400 x 451 x 290 mm
 - CM-2836: 483 x 291 x 285 mm; Space required: 604 x 451 x 290 mm



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