Digital Grid Products
At a Glance

Protection, Substation Automation, Power Quality

siemens.com/digitalgrid

SIEMENS

Ingenuity for life

Digital Grid Products
Broadest portfolio – strong brands

Substation Automation, RTU's	Power Quality Feeder Automation	Protection

SICAM	**SICAM, SIPROTEC**	**SIPROTEC, Reyrolle**

SIPROTEC –
Synonym for the world's leading protection technology

More than 1.65 Mill. devices installed therein >500,000 with IEC 61850

First use of electro-magnetic relays

The digital age begins for protection relays

Siemens is honored by Frost & Sullivan for the implementation of IEC 61850

More than one million SIPROTEC-devices in operation

SIPROTEC 5 End-to-End Cyber Security integrated

SIPROTEC 5 goes MindSphere

1910 **1977** **1980** **1998** **2006** **2008** **2010** **2011** **2012** **2015** **2017**

First digital application in Wuerzburg, Germany

Introduction of the SIPROTEC 4 product group

SIPROTEC Compact – outstanding functionality and compact design

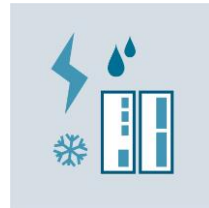SIPROTEC 5 The new benchmark for protection, automation and monitoring

SIPROTEC 5 Process Bus and Digital Substation

Energy Management – Digital Grid Products

SICAM A8000 Series – Wherever energy flows

siemens.com/sicam-a8000

SICAM A8000 Series:
All requirements combined in a single platform

Rough ambient conditions
- 40 … + 70° C

Space-saving design
128x124x123mm (W/H/D)

Automation
PLC - IEC 61131-3

High electric strength
EMC 5kV (IEC 60255-5)

Long product lifecycle
15+ years

Integrated communication
Protocols, GPRS

Cyber Security
IPSec, crypto-chip etc

Scalability
Modules

Energy Management – Digital Grid Products

A strong team:
Equipped for any task

CP-8000   **CP-8021**   **CP-8022**   **I/O module**

/   /   +

Processor with integrated power supply and display

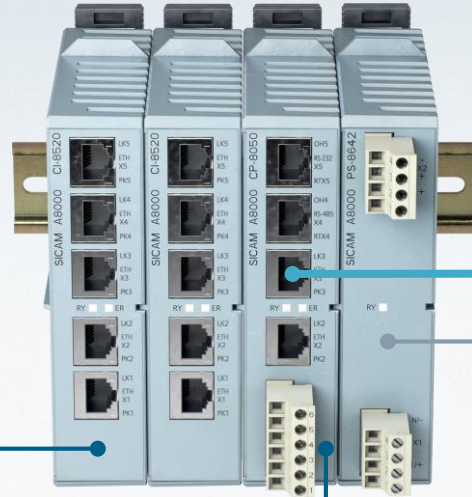Processor with external power supply

Processor + GPRS with external power supply

Expansion modules combinable as needed

The entire family at a glance:
Power supply units, processor modules, and remotely installed expansion module

SICAM CI-8520 / 21

CI-8520 Ethernet communication interface

CI-8521 Ethernet hardware-based application layer firewall

SICAM CP-8050

- max. 16 I/O lines (max. 8 expansion modules / line)
- max. 14 interfaces (modular)

PS-8640
DC 24 – 60 V, 45 W

PS-8642
DC 110 – 240 V, AC 230 V, 45 W

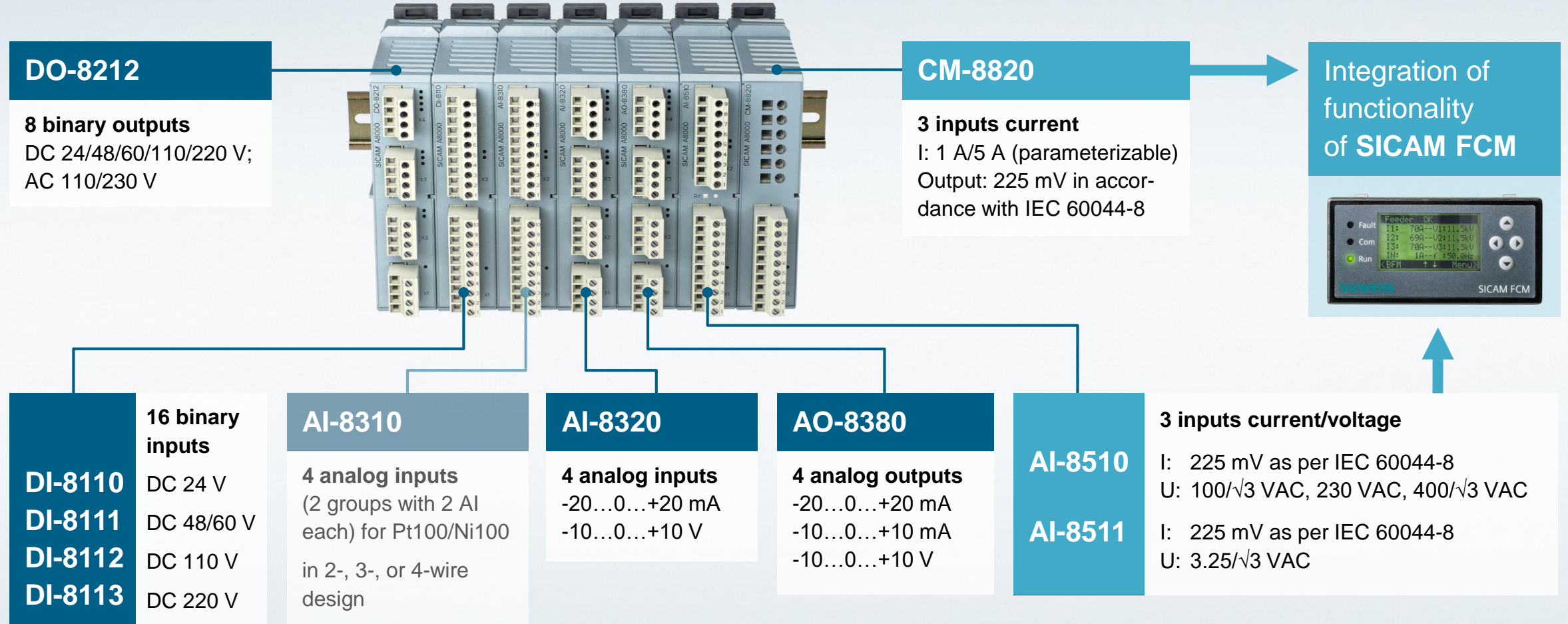- Contact wetting DC 24 V
- Watchdog contact

SICAM CI-8530 / 32

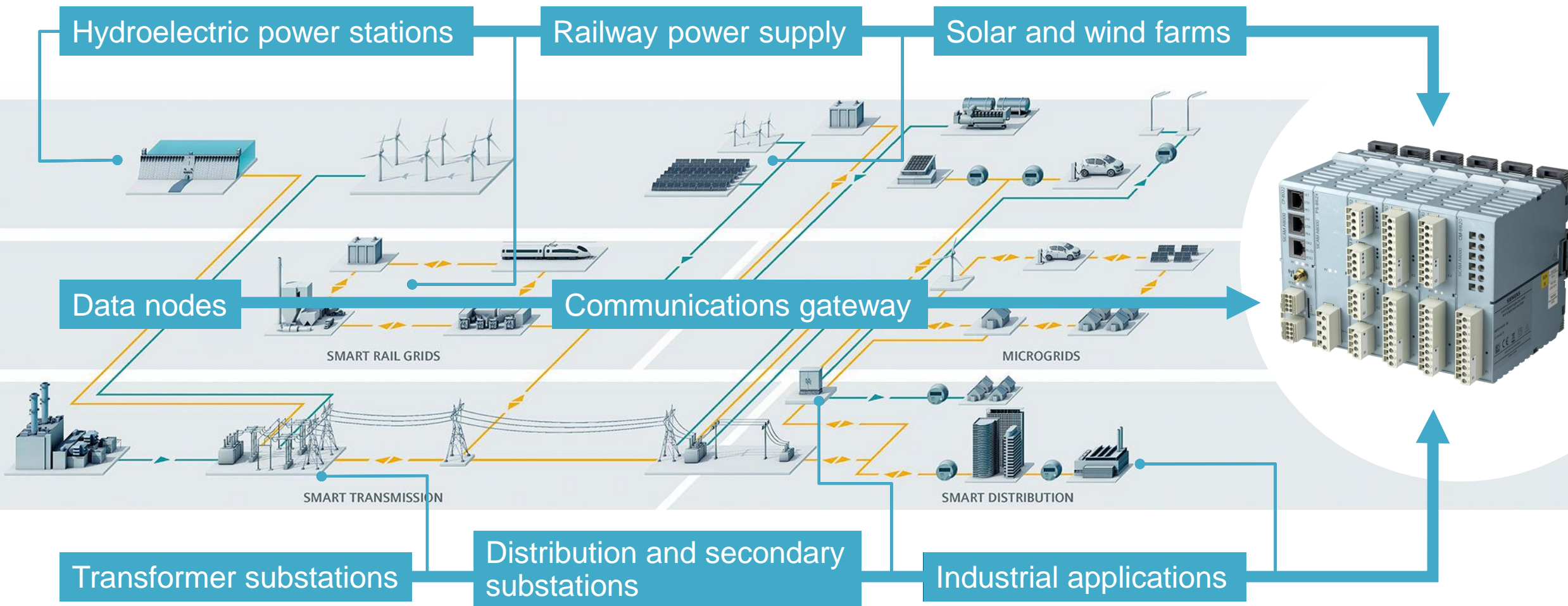**CI-8530** remote interface module electrical DC 24 – 60 V

CI-8532 I/O remote interface module electrical DC 110 – 220 V

The entire family at a glance:
Expansion modules

DO-8212

8 binary outputs
DC 24/48/60/110/220 V;
AC 110/230 V

CM-8820

3 inputs current
I: 1 A/5 A (parameterizable)
Output: 225 mV in accor-
dance with IEC 60044-8

Integration of
functionality
of **SICAM FCM**

	16 binary inputs
DI-8110	DC 24 V
DI-8111	DC 48/60 V
DI-8112	DC 110 V
DI-8113	DC 220 V

AI-8310

4 analog inputs
(2 groups with 2 AI
each) for Pt100/Ni100

in 2-, 3-, or 4-wire
design

AI-8320

4 analog inputs
-20…0…+20 mA
-10…0…+10 V

AO-8380

4 analog outputs
-20…0…+20 mA
-10…0…+10 mA
-10…0…+10 V

AI-8510

AI-8511

3 inputs current/voltage

I: 225 mV as per IEC 60044-8
U: 100/√3 VAC, 230 VAC, 400/√3 VAC

I: 225 mV as per IEC 60044-8
U: 3.25/√3 VAC

Wherever energy flows:
Universal platform allows versatile use

Hydroelectric power stations

Railway power supply

Solar and wind farms

Data nodes

Communications gateway

SMART RAIL GRIDS

MICROGRIDS

SMART TRANSMISSION

SMART DISTRIBUTION

Transformer substations

Distribution and secondary substations

Industrial applications

Energy Management – Digital Grid Products

Convenient engineering:
Parameterization, commissioning and operation

with SICAM WEB

with SICAM TOOLBOX II

Energy Management – Digital Grid Products
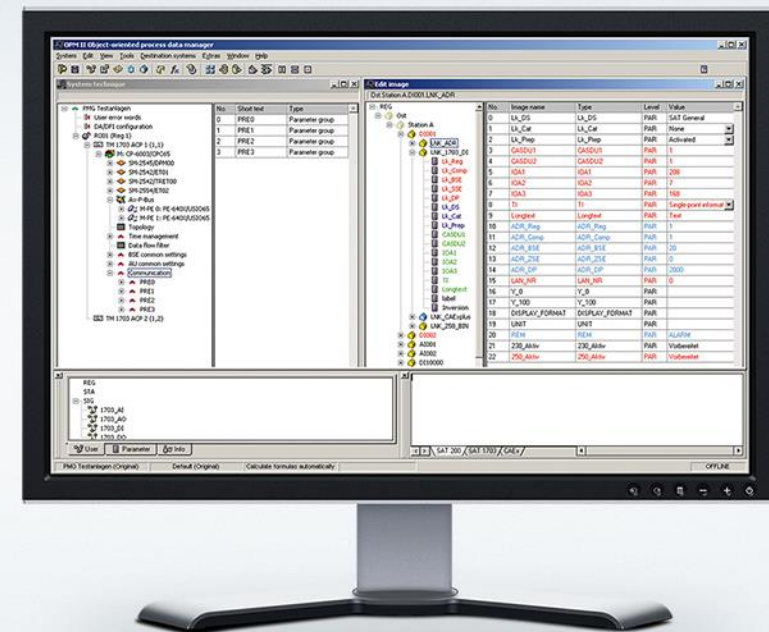
Cyber Security:
Meeting the requirements of tomorrow

Integrated crypto chip

Protects data in a secure environment

IPSec encryption

Enables secure communication via IP networks

Secure and reliable https protocol

Guarantees the secure transmission of sensitive data
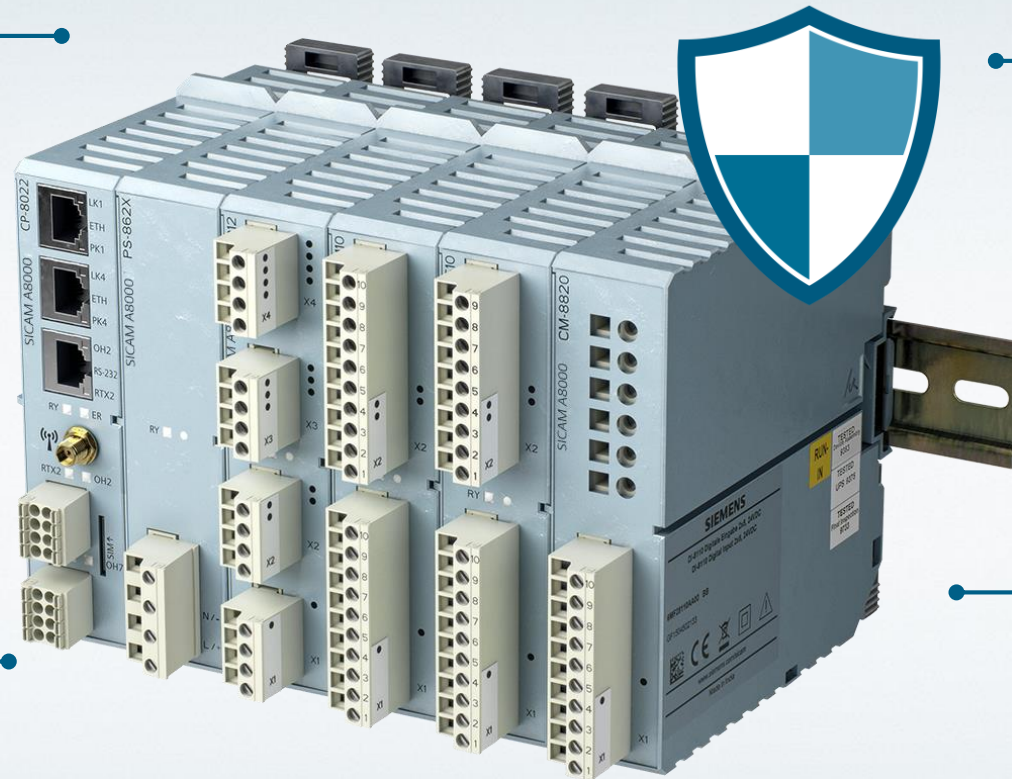
Compliant with BDEW White Paper

Fulfills the recommendations for secure and reliable control and communication systems

Password-protected access to SICAM TOOLBOX II

Ensures that only authorized persons can access your system

Energy Management – Digital Grid Products

Cyber Security:
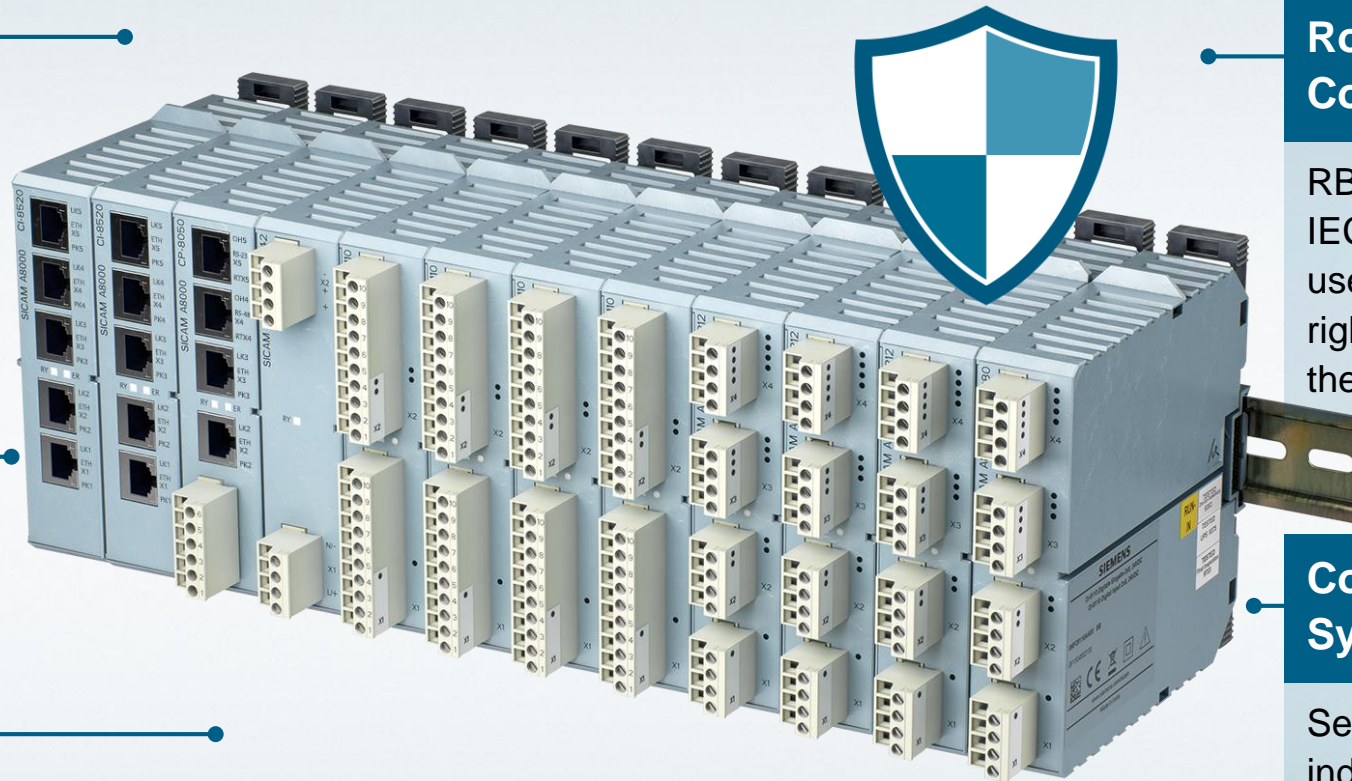## Additional features with SICAM CP-8050

Firewall

For the separation of TCP/IP networks via integrated software firewall additional hardware-based application firewall

Firmware Signature

Protection against firmware manipulation

Security Logbook

Non-volatile storage of SYSLOG events

Role Based Access Control

RBAC in accordance with IEC 62351-8 ensures that users may exercise only the rights that correspond to their assigned role

Configurable System Functions

Selective activation of individual or multiple system functions per communications interface
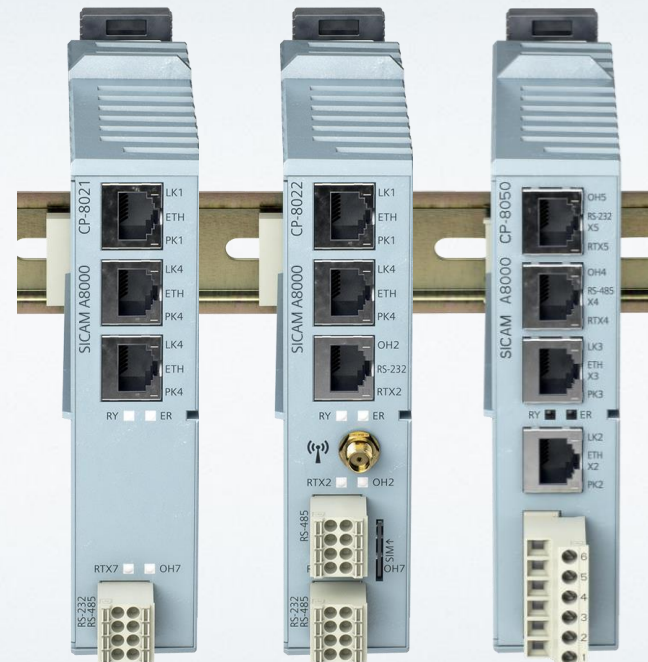
Flexible communication:
Diverse range of interfaces and protocols

Multiple communication options:

CP-8050
- 2 x RJ45 (Ethernet)
- 1 x RS 232 (RJ45)
- 1 x RS 485
- 10 x RJ45 (Ethernet) optional with CI modules

Flexible integration into an existing communications infrastructure through the support of standard protocols, legacy systems, and protocols from third-party manufacturers:
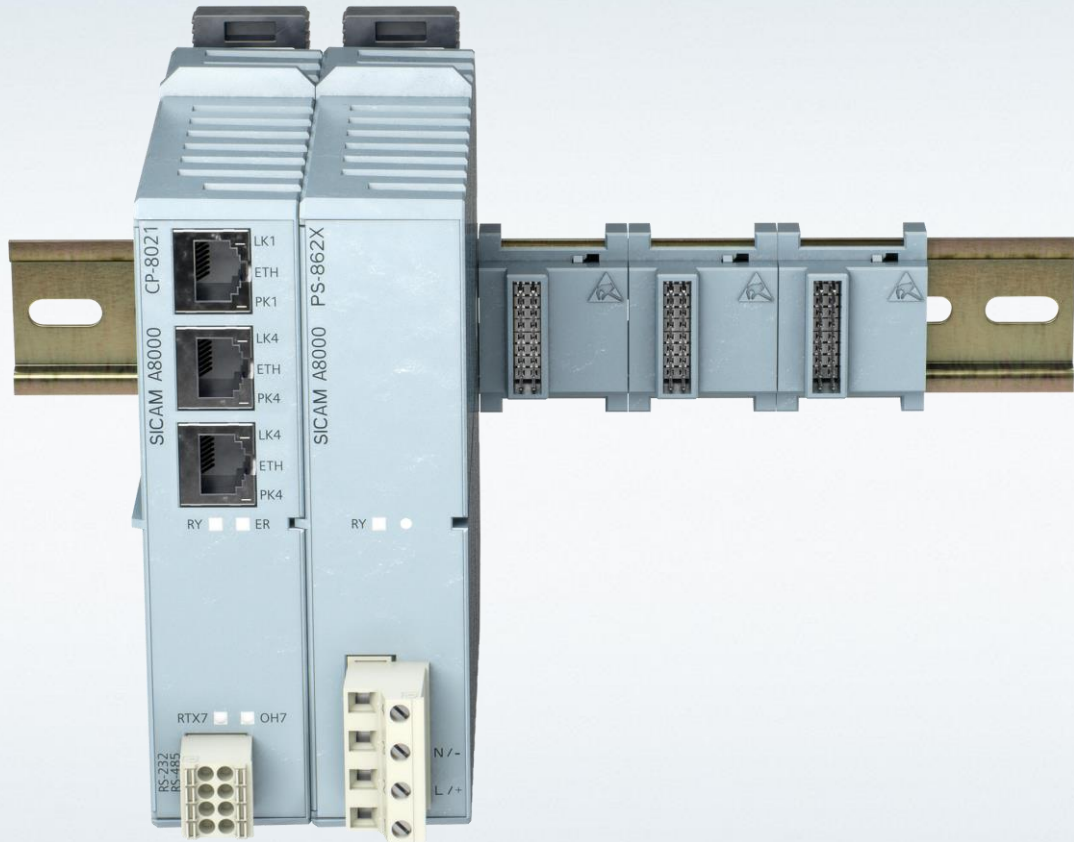
- IEC 61850
- IEC 60870-5-10x
- DNP3.0 serial/TCP
- Modbus RTU/TCP
- Additional protocols upon request

A strong team:
Simple to install
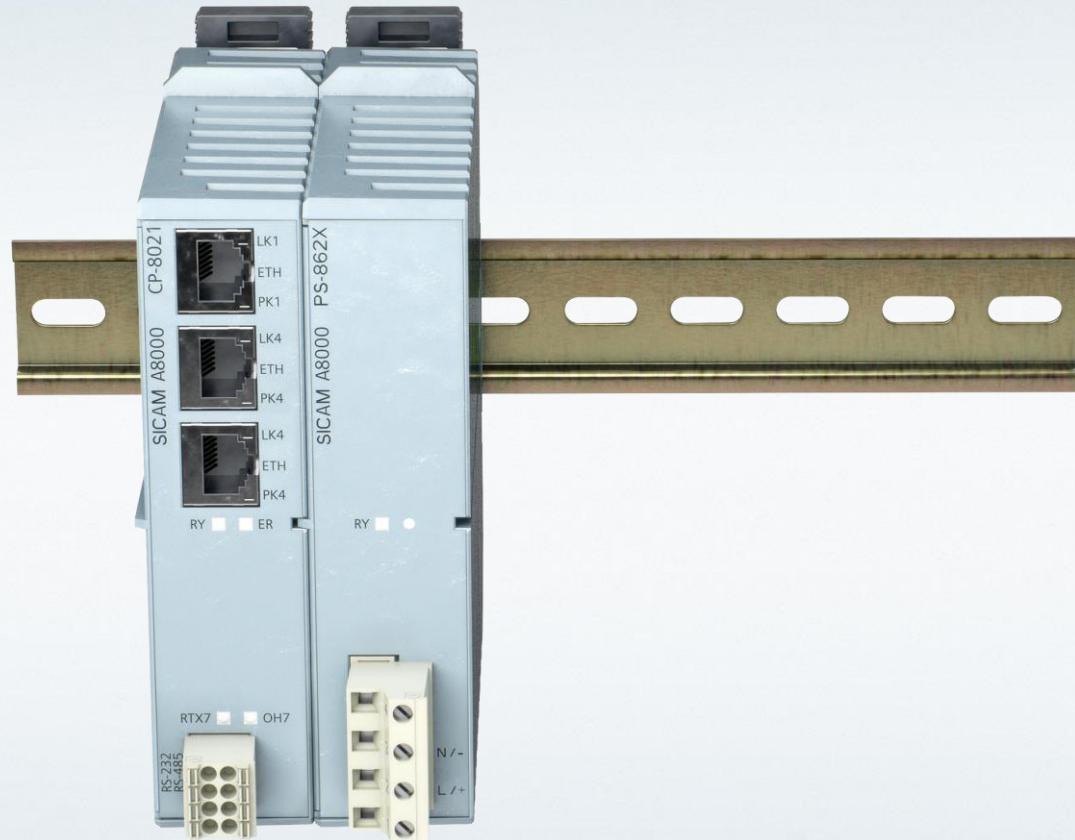
- Compact DIN rail mounting

A strong team:
Simple to install

- Compact DIN rail mounting

- Consistent bus for I/O modules

A strong team:
Simple to install

- Compact DIN rail mounting

- Consistent bus for I/O modules

- Individual combination of modules

- Detection of the plugged modules during startup

Great benefits right from the factory:
Well-designed for practical use

1. Platform modularity for **versatile application options and reduced inventory**

2. Extended temperature range of -40℃ to +70℃ for **rough ambient conditions**

3. Highest EMC stability up to 5 kV (IEC 60255) for **direct use in substations**

4. Integrated short-circuit indicator functionality for **use in cable network monitoring**

5. Use of international standards such as IEC 61850 for **high investment security**

6. Integrated crypto chip and IPSec encryption **to fulfill the high cyber security requirements**

7. Multitude of interfaces and integrated GPRS module for **simple adaptation to existing communication infrastructures**

8. Integrated web parameterization tool for **simple engineering**

9. Plug-and-Play functionality of the modules for **time and cost savings**

Energy Management – Digital Grid Products