

CMC 850

The Protection Test Set Dedicated to IEC 61850



CMC 850 – Protection Testing with Sampled Values and GOOSE

The CMC 850 is the world's first protection test set dedicated to IEC 61850. It focuses on the real-time communication methods of GOOSE and Sampled Values to interface with the devices under test.

The unit is small and lightweight because its focus on IEC 61850 applications means there is no need for conventional binary I/O and amplifiers for the secondary signals. The CMC 850 can utilize the full Test Universe software and can be used in test scenarios with RelaySimTest.

Typical applications

- > IED Development
- > IED Evaluation
- > System Factory Acceptance Testing
- > Systems Commissioning
- > IED Demonstration
- > Training

GOOSE and Sampled Values

For the simulation and subscription of GOOSE up to 360 inputs and outputs are available. When controlled by the Test Universe software, the CMC 850 generates up to three Sampled Values streams. With RelaySimTest, it generates up to four Sampled Values streams.

Time synchronization

The CMC 850 uses the Precision Time Protocol (IEEE 1588) to obtain time and supports the profiles IEC 61850-9-3 and IEEE C37.238 for the electrical power industry.

Traffic segregation

Two Ethernet ports allow safe separation of data traffic from different network segments, for example, substation protocol data and test set control commands.

Compatibility

Test plans containing the GOOSE Configuration and the Sampled Values Configuration module created for other CMC models can be used by the CMC 850 as well.

Extension interface

USB port for device control

Low level outputs 1–6

Low level outputs 7–12

2 PoE (Power over Ethernet) ports for device control, CMGPS 588 or IEC 61850 GOOSE and Sampled Values



CMC 850 package

The CMC 850 is part of the CMC 850 package which contains the key software components from the Test Universe software, making it "ready to go" for testing with GOOSE and Sampled Values.

Software included with the CMC 850 package:

- > IEDScout
- > OMICRON Control Center
- > GOOSE Configuration module
- > Sampled Values Configuration module
- > QuickCMC
- > State Sequencer

CMC 850 package ordering information

Description	Item no.
Hardware: CMC 850 test set Software: IEDScout, GOOSE Configuration, Sampled Values Configuration, QuickCMC, State Sequencer, OMICRON Control Center	P0005930

Your benefits

- > Small and lightweight 1.7 kg / 3.7 lbs, 85×145×325 mm / 3.3×5.7×12.8 in
- > Ready to go software: OMICRON Control Center, IEC 61850 configuration modules, IEDScout, etc.
- > Full Test Universe and RelaySimTest software compatibility
- > Re-use of test plans with GOOSE and Sampled Values
- > Time synchronization via PTP (IEEE 1588)
- > 12 low level analog outputs

omicronenergy.com/cmc850

Overview of technical specifications¹

CMC 850



IEC 61850²

Publishing

GOOSE	360 virtual binary outputs, 128 GOOSEs
Sampled Values	IEC 61850-9-2 („9-2LE“), IEC 61869-9

Subscribing

GOOSE	360 virtual binary inputs, 128 GOOSEs
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Maximum number of streams

Publishing	RelaySimTest: 4, Test Universe: 3 (1 stream: 4 V + 4 I)
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Time synchronization

Internal system clock

Frequency drift	< 0.37 ppm / 24 h < 4.6 ppm / 20 years
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CMC 850 to external reference

Absolute timing accuracy (voltage/current)	< 1 µs typ., < 5 µs guar.
Precision Time Protocol (PTP)	IEEE 1588-2008 IEEE C37.238 (Power Profile) IEC 61850-9-3 (Utility Profile)

CMC 850 to test objects

IRIG-B, PPS, PPX	Via CMIRIG-B
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Low level outputs

Number of outputs	12
Setting range	0 ... ±10 Vpk

Binary outputs

Type	4 transistor
Switching voltage	max. 15 V
Switching current	max. 5 mA

External power supply

Nominal input voltage	100 ... 240 VAC, 1-phase (50/60 Hz)
Output voltage	48 VDC

Environmental conditions

Operation temperature	0 ... +50 °C / +32 ... +122 °F
Storage temperature	-25 ... +70 °C / -13 ... +158 °F
Humidity range	Relative humidity 5 ... 95 %, non-condensing

Miscellaneous

Weight	1.7 kg / 3.7 lbs
Dimensions (W×H×D)	85×145×325 mm / 3.3×5.7×12.8 in
PC connection	2 PoE (Power over Ethernet) ports USB Type-B port (PC) USB Type-A port (optional Wi-Fi adapter for wireless control)

Equipment reliability

Electromagnetic interference (EMI)

International / Europe	IEC/EN 61326-1, IEC/EN 61000-6-4 IEC/EN 61000-3-2/3 CISPR 32 (Class A)/EN 55032 (Class A)
North America	47 CFR 15 Subpart B (Class A) of FCC

Electromagnetic susceptibility (EMS)

International / Europe	IEC/EN 61326-1, IEC/EN 61000-6-2 IEC/EN 61000-4-2/3/4/5/6/11
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Safety

International / Europe	IEC/EN 61010-1
North America	UL 61010-1 CAN /CSA-C22.2 No. 61010-1

Mechanical tests

Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27

Certifications

Developed and manufactured under an ISO 9001 registered system



¹ The full technical specifications are available on request. All data specified are guaranteed, except where indicated otherwise. OMICRON guarantees the specified data for one year after factory calibration, within 23 °C ±5 °C / 73 °F ±10 °F in the frequency range from 10 to 100 Hz and after a warm-up phase > 25 minutes

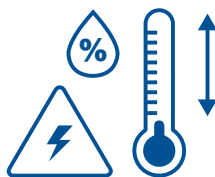
² The GOOSE and Sampled Values functionality require software licences for the respective configuration modules

We create customer value through ...

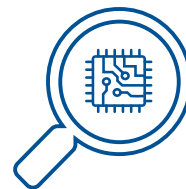
Quality



Highest safety and security standards

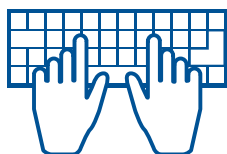


Up to 72 hours burn-in tests



100% routine testing for all components

Innovation



>200 developers keep our solutions up-to-date



Reinvestment >15% in R&D

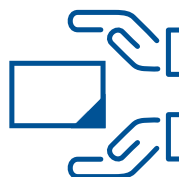


Up to 80% time saving through automation

Support



Professional technical support



Comprehensive calibration and repair services



20+ offices worldwide

Knowledge



>300 Academy trainings per year



OMICRON hosted trainings and events



Free papers & application notes

OMICRON is an international company that works passionately on ideas for making electric power systems safe, secure, and reliable. Our pioneering solutions are designed to meet our industry's current and future challenges. We always go the extra mile to empower our customers: we react to their needs, provide extraordinary local support, and share our expertise.

Within the OMICRON group, we research and develop innovative technologies for all fields in electric power systems. Customers worldwide rely on the accuracy, speed, and quality of our reliable, user-friendly solutions for electrical testing of medium- and high-voltage equipment, protection systems, digital substations, and cybersecurity.

Founded in 1984, OMICRON draws on their decades of profound expertise in the field of electric power engineering. A dedicated team of more than 1,300 employees provides solutions with 24/7 support at 23 locations worldwide and serves customers in more than 170 countries.



Emotions are energy. Our energy moves.

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