CMC 850 – Protection test set dedicated to IEC 61850

The CMC 850 test set focuses specifically on IEC 61850 systems. It communicates with the test object using the real-time protocols GOOSE and Sampled Values. The test set is operated either with the Test Universe software or with RelaySimTest.

The CMC 850 is part of the CMC 850 package, which consists of optimized hardware and essential components of the Test Universe software. The package includes everything needed for time-synchronized testing with GOOSE and Sampled Values. For special protection testing applications, individual Test Universe modules can be ordered separately.

Technical Data

IEC 61850 GOOSE	
Simulation	Mapping of binary outputs to data attributes in published GOOSE messages. Number of virtual binary outputs: 360 Number of GOOSEs to be published: 128
Subscription	Mapping of data attributes from subscribed GOOSE messages to binary inputs. Number of virtual binary inputs: 360 Number of GOOSEs to be subscribed: 128
Performance	Type 1A; Class P2/3 (IEC 61850-5). Processing time (application to network or vice versa): < 1 ms
VLAN support	Selectable priority and VLAN-ID

IEC 61850 Sampled Values (Publishing)	
Specification	IEC 61850-9-2; IEC 61869-9 "9-2LE" DataSets
Sampling Rates	4 000 Hz, 4 800 Hz, 12 800 Hz, 15 360 Hz, 14 400 Hz
Synchronization	Synchronization attribute (smpSynch) is set when the CMC is in synchronized operation mode. Sample count (smpCnt) zero is aligned with top of the second Accuracy data see below
VLAN support	Selectable priority and VLAN-ID
Max. number of SV streams	RelaySimTest: 4, Test Universe: 3

Communications interfaces	
PC connection	Two PoE [1] Ethernet ports: • 10/100/1000 Base-TX • IEEE 802.3af compliant • Port capability limited to one Class 1 (3.84 W) and one Class 2 (6.49 W) powered device USB ports: • USB Type-B port (PC) USB Type-A port (Wi-Fi adapter for wireless control)

Time synchronization	
Timing accuracy IRIG-B synchronization with CMIRIG-B	Error < 1 µs typ., < 5 µs guar.
GPS synchronization with CMGPS 588	Error < 1 µs typ., < 5 µs guar.
Precision Time Protocol (PTP)	IEEE 1588-2008 IEEE C37.238-2011 (Power Profile) IEC/IEEE 61850-9-3 (Utility Profile)

Low level outputs [2]	
Number of outputs	12
Setting range	0 ... ±10 Vpk
Max. output current	1 mA
Accuracy	Error < 0.025 % typ., < 0.07 % guar. at 1 ... 10 V
Resolution	250 µV
Distortion (THD+N) [3]	< 0.015 % typ., < 0.05 % guar.
Unconventional CT/VT simulation	Linear, Rogowski (transient and sinewave)
Overload indication	Yes
Isolation	SELV
Connection	2 x 16 pin combination socket

Binary outputs, transistor	
Type	Open collector transistor outputs
Number	4
Update rate	10 kHz
Imax	5 mA
Connection	16 pin combination socket

External power supply unit	
Nominal / permissible input voltage	100 – 240 VAC / 99 ... 264 VAC (50/60 Hz)
Output voltage	48 VDC (±6.25 %)
Rated current	1.66 A
Rated power	80 W

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

Equipment reliability		
The product adheres to the electromagnetic compatibility (EMC) Directive (CE conform).		
EMC Emission	International / Europe	IEC/EN 61326-1,CISPR 32/EN 55032 (Class A), IEC/EN 61000-3-2/3, IEC/EN 61000-6-4
	North America	47 CFR 15 Subpart B (Class A) of FCC
EMC Immunity	International / Europe	IEC/EN 61326-1
The product adheres to the low voltage Directive (CE conform).		
Safety	International / Europe	IEC/EN 61010-1
	North America	UL 61010-1, CAN/CSA-C22.2 No. 61010-1
Mechanical tests	International / Europe	IEC 60068-2-6 (20 m/s^2 at 10 ... 150 Hz) IEC 60068-2-27 (15 g/11 ms half-sine)

Mechanical data	
Weight	1.7 kg (3.7 lbs)
Dimensions (W x H x D)	85 x 145 x 325 mm (3.3 x 5.7 x 12.8 in)

Certifications	
	TÜV Süd
	Developed and manufactured under an ISO 9001 registered system

Order No.	Delivery contents
P0005930	Hardware: CMC 850 test set Software: IEDScout, GOOSE Configuration, Sampled Values Configuration, QuickCMC, State Sequencer and OMICRON Control Center

[1] PoE = Power over Ethernet
[2] For directly testing relays with low level inputs by simulating signals from non conventional CTs and VTs with low level interfaces and for controlling external voltage or current amplifiers
[3] THD+N: Values at 50/60 Hz, 20 kHz measurement bandwidth, nominal value, and nominal load