

CMC 850: IEC 61850 Test Set




The CMC 850 is OMICRON's 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 test set works with the proven Test Universe software and offers even more useful functions embedded directly in the device.

Operation: PC

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	According to the "Implementation Guideline for Digital Interface to Instrument Transformers Using IEC 61850-9-2" of the IEC International Users Group
Sampling rate	80 samples per cycle for nominal frequencies of 50 Hz and 60 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	3
Communications interfaces	
Ethernet	Two PoE ¹ Ethernet ports: <ul style="list-style-type: none"> 10/100 Mbit/s (10/100 Base-TX, auto-crossover) IEEE 802.3af compliant Port capability limited to one Class 1 (3.84 W) and one Class 2 (6.49 W) powered device
Time synchronization	
Timing accuracy	Error < 1 μs typ., < 5 μs guar.
IRIG-B synchronization with CMIRIG-B	Error < 1 μs typ., < 5 μs guar.
GPS synchronization with CMGPS 588	IEEE 1588-2008
Precision Time Protocol (PTP)	IEEE C37.238-2011 (Power Profile)
With the unique PermaSync functionality, analog and Sampled Values outputs stay permanently in sync with the internal CMC time reference. When a CMC is time-synchronized (IRIG-B, GPS, or PTP), the output quantities are continuously synchronized to the external time source. With CMIRIG-B it is also possible to transmit the internal PPS signal of the CMC to the device under test (e.g. PMUs or IEDs stimulated with a synchronized Sampled Values data stream).	

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 sine wave)
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
Vibration	IEC 60068-2-6 (20 m/s ² at 10 ... 150 Hz)
Shock	IEC 60068-2-27 (15 g/11 ms half-sine)
Safety standards, electromagnetic compatibility	
EMC	The product adheres to the electromagnetic compatibility (EMC) Directive 2004/108/EC (CE conform).
International	IEC 61326-1; IEC 61000-6-4; IEC 61000-3-2/3
USA	FCC Subpart B of Part 15 Class A
Safety	The product adheres to the low voltage Directive 2006/95/EC (CE conform).
International / USA	IEC 61010-1 / UL 61010-1
Canada	CAN/CSA-C22.2 No 61010-1-04
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	
	
Developed and manufactured under an ISO 9001 registered system	

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