

# CMC 356 – *The workhorse*

The Universal Relay Test Set and Commissioning Tool



# CMC 356 – Universal Relay Testing and Commissioning

## CMC 356 – The Workhorse

The CMC 356 is the universal solution for testing all generations and types of protection relays. Its powerful six current sources (three-phase mode: up to 64 A / 860 VA per channel) with a great dynamic range, make the unit capable of testing even high-burden electromechanical relays with very high power demands.

The CMC 356 is the first choice for applications requiring the highest versatility, amplitude and power. Commissioning engineers will particularly appreciate its ability to perform wiring and plausibility checks of current transformers, by using primary injection of high currents from the test set.



2 counter inputs

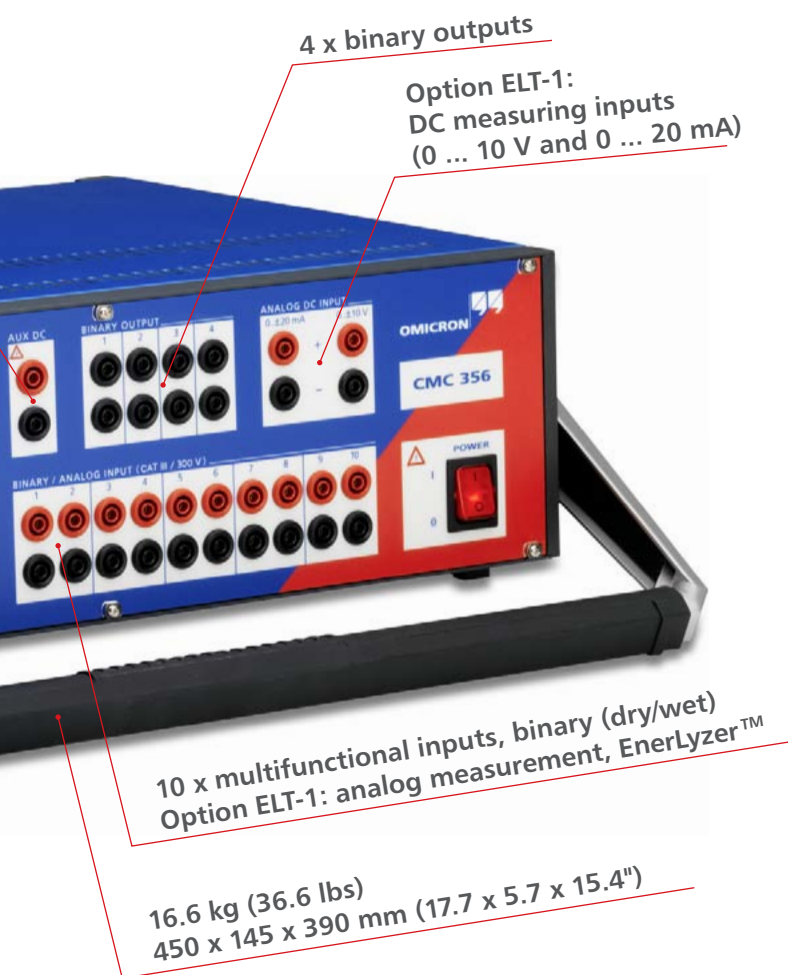
4 binary outputs (transistor)

Interface for CMGPS or CMIRIG-B

Low level outputs 1 - 6  
and 7 - 12 (with option LLO-2)  
( $\pm 10 V_{PK}$ )

2 Ethernet interfaces  
For PC control or CMControl and  
IEC 61850 GOOSE and Sampled Values





The analog test signals are generated digitally using DSP technology. This, in combination with the use of additional error correction algorithms, results in [accurate testing signals](#) even at small amplitudes.

The six current and four voltage [output channels](#) are continuously and independently adjustable in amplitude, phase and frequency. All outputs are overload and short-circuit proof and are protected against external high-voltage transient signals and over-temperature.

The [integrated network interface](#) supports comprehensive testing in the IEC 61850 environments using optional GOOSE simulation and subscription and Sampled Values simulation functionality.

Up to 12 independent channels with [low-level signals](#) are available at the back of the test set, which can be used to test relays which have a low-level input facility or to control external amplifier units.

By utilizing the EnerLyzer software option, the ten binary inputs of a CMC 356 equipped with the ELT-1 hardware option alternatively work as [analog measurement inputs](#). The unit then can also be used as a multifunctional multimeter and transient recorder.

Besides its operation with the powerful Test Universe software running on a PC, the CMC 356 can also manually be controlled with the highly flexible [CMControl unit](#).



CMControl-6 Front Panel Control (option)

## CMC 356: 6 Phase Current + 4 Phase Voltage Test Set and Commissioning Tool

### Protection Relay Test Set

- High-burden electromechanical relays
- Static relays
- Numerical relays
- IEC 61850 IEDs (GOOSE and Sampled Values)
- Relay panels
- End-to-End testing with GPS or IRIG-B
- Busbar protection (up to 22 signal generators)

### Power System Simulator

- Transient fault simulation
- Power swing
- CT saturation simulation
- CB simulation
- Rogowski coil simulation
- Compensated network
- Transient playback (COMTRADE, PL4 (EMTP), ...)

### Programmable Voltage and Current Source

- Production quality assurance
- Manufacturer of substation equipment
- Research & development

### Universal Tool for Substation Commissioning

- Checking SCADA annunciations
- Burden measurement
- CT/VT polarity checker
- Wiring checker
- Plausibility check for CT/VT with primary injection

### Portable 10-Channel Measurement Device<sup>1</sup>

- Transient recording (trigger: binary, PQ, GPS)
- Multimeter for: I, V, f, S, P, Q,  $\cos \varphi$  ...
- Trend recording for: I, V, f, S, P, Q
- Harmonics analysis



<sup>1</sup> With ELT-1 hardware option and EnerLyzer™ software option

## Key Features

- Very powerful current sources for testing high-burden electromechanical relays
- High current amplitudes for 5 A relay testing
- High accuracy and versatility for testing static and numerical relays of all types
- Integrated network for testing IEC 61850 IEDs
- Continuous synchronized outputs with CMIRIG-B (e.g. for PMU or MU testing)
- Primary injection capabilities for commissioning tasks
- Test Universe software with unrivaled manual and automated testing functionality
- Front panel control with the unique CMControl (option)
- 10-channel analog measurement and transient recording functionality (option)
- Reliable and robust

## Additional Benefits

OMICRON provides

- Worldwide high quality technical support
- Platforms for an international knowledge exchange
- Training courses designed for electric power system technicians and engineers

### CMC 356 Ordering Information

CMC 356 with Test Universe Software	
VE002801	CMC 356 Basic
VE002802	CMC 356 Protection
VE002803	CMC 356 Advanced Protection

CMC 356 with CMControl (without Test Universe Software)	
VE002820	CMC 356 with CMControl-6

The CMControl can also be ordered as add-on together with a CMC 356 with Test Universe software or as a later upgrade.

CMC 356 Hardware Options	
VEHO2801	ELT-1 EnerLyzer and Transducer hardware option (if ordered with a new CMC 356)
VEHO2802	ELT-1 EnerLyzer and Transducer hardware factory upgrade (for used CMC 356)
VEHO2803	LLO-2 Additional 6 low level outputs option (if ordered with a new CMC 356)
VEHO2804	LLO-2 Additional 6 low level outputs factory upgrade (for used CMC 356)



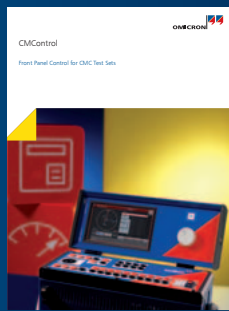
**OMICRON** is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis, and training make the product range complete.

Customers in more than 140 countries rely on the company's ability to supply leading edge technology of excellent quality. Broad application knowledge and extraordinary customer support provided by offices in North America, Europe, South and East Asia, Australia, and the Middle East, together with a worldwide network of distributors and representatives, make the company a market leader in its sector.

The following publications provide detailed information on the products described in this brochure and their applications:



*Product catalog  
(secondary equipment)*



*CMControl brochure*



*Testing Solutions for  
Protection Systems*

For a complete list of available literature please visit our website.

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