

Specifications ACTAS Cx

Overview



System concept

The test systems of the ACTAS C range are used for manual or automated type / final factory tests on switchgear devices of any design in a stationary environment. They come in a mobile, 38 HU industrial cabinet. A built-in acquisition unit is used for real-time data acquisition and to execute and monitor test steps. ACTAS C systems can be operated using an integrated or external industrial PC on which the MS Windows™ operating system and the ACTAS software package has been installed. An industrial TFT monitor, keyboard and mouse can be built into the front panel if required.

The system is modular in design and can be extended as required. Customer-specific solutions can be delivered on request. In addition and if required, customers can provide individual components such as the PC or special sources themselves.

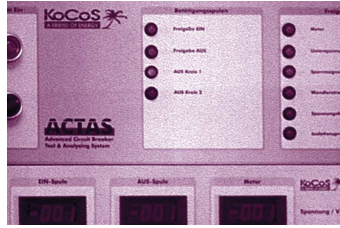
Control outputs

The system features electronic switching outputs (IGBTs) which can be used for the single or three-phase control of up to 2 CLOSE and 3 OPEN switching circuits (optionally 4 CLOSE and 4 OPEN switching circuits). Using an internal switching matrix, the system automatically selects the coil circuit to be tested as specified in the test plan. The operating sequences can be configured in increments of 1 ms. Up to 6 analog outputs can be used to issue control signals to the voltage sources in order to set the test voltages.

IGBTs for controlling the release coils	Voltage	300 VAC	Intrinsically safe via short-circuit and overload protection
	Current	30 AAC/ADC	
	Accuracy	≤ 0.1 ms	
Binary outputs	Relay output	250 VAC/8 A 35 VDC/8 A	(at 300 VDC/0.15 A)
	Transistor output	60 VDC/0.4 A	
Analog outputs for controlling external sources	Analog outputs to set the desired values and the voltage waveform and to release connected sources.		
	Output range	0 to 10 VDC/1mA Input impedance >10 kΩ	
Power supply to external sensors	The auxiliary voltages for internal relay control, the connected sensors and potential-free auxiliary contacts are provided by internal stabilised voltage sources. A fused, high-accuracy reference voltage source is integrated for supplying potentiometers.		
	Reference voltage for analog sensors	10 VDC/3W	
	Supply voltage for incremental sensors	24 VDC/25W	

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Measurement inputs

Depending on the specific model, either 9, 14 or 22 analog measurement inputs

General	Record length	max. 35 min at 100 Hz (max. 400,000 samples)
	A/D-conversion	16 bit
	Resolution	0.006%
	Accuracy	Error < ±0.1%
Analog inputs	Sampling rates	100 Hz to 15 kHz, adjustable
	CLOSE/OPEN coil current	30 AAC/ADC, 4 measuring ranges, internally switchable
	Coil/station voltage	300 VAC
	Motor voltage	300 VAC
	Motor current	40 AAC
	External sensors	± 10 VDC
	Protection	Galvanic isolation using linear opto-couplers (LOC), channel-channel and channel-earth > 2.5 kV
Binary inputs	Time resolution	0.1 ms
	Main contacts	Activation level < 30 Ω
	Resistive contacts	Activation range > 30 Ω to 10 kΩ combined with main contact inputs
	Auxiliary contacts	Activation range 24 to 300 VDC single range
Incremental inputs for digital travel transducers	Signal voltage	24 VDC
	Protocol	RS 422
	Limit frequency	100 kHz

Software

The system has been specially developed for the automated execution of all types of tests on switchgear devices. For this purpose the system is equipped with the complete ACTAS software package. The list given below includes some of the functions provided by the systems of the ACTAS C range:

- Automation functions**
- Execution and monitoring of automatic test sequences and repetitive operations
 - Configurable dialogue boxes for entering results which have been determined manually
 - Interfaces for data import and export
 - Database integration and statistics function
 - Test object identification via barcode
 - Automated archiving of test data
 - Automatic allocation of transducer sets
 - Signalization of test status, e.g. by signaling device
 - User log-in and log-out during operation
 - Central data management
 - Automatic selection and control of operating circuits
 - Motor monitoring both during and independently of tests

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Complete system

Operation, system control, data storage and evaluation using a standard Windows PC

User interface	ACTAS system software for the parameterization, execution and evaluation of switchgear tests under Windows 2000/XP	
Power supply	The complete system is supplied with electricity via the central mains supply panel equipped with a 5 pole 32 A CEE connector. The panel features an additional fused 32 A CEE output for supplying sources connected externally. This output is included in the protection concept. 2 socket outlets with earthing contacts are provided for connecting external devices such as printers. The system is switched on using a central power switch located on the front panel.	
Test object and measurement connections	All the cable connections on the cabinet are plug-in connections which can be secured to prevent them from becoming undone. Test objects are connected to the system via multi-contact industrial plug connectors. Separate connection panels are provided for inputs and outputs. The integration of a device for the allocation of input and output signals for specific switchgear equipment is available as an option. An optional multiplexer module can also be provided for connecting two test objects at the same time. Colour-coded and plug-coded multi-contact plug connectors in push-pull design are used to connect analog and digital sensors and transducers.	
Signaling	The indicator panel on the front of the cabinet uses LEDs to indicate the status of all releases and of the safety circuit as well as showing which coil circuit is selected. Customized LED indicator panels can be added if required, e.g. to display the status of further binary inputs.	
Safety equipment	The cabinet can be disconnected from the power supply by means of the power switch. The power switch can be secured mechanically to prevent it from being switched on again. All supply and test voltages issued by the system can be switched off by means of an emergency stop button located on the front of the cabinet. The emergency stop system prevents restart when the emergency stop button is reset. The system features an industrial plug connection enabling further emergency stop buttons to be looped in by the customer. In addition, a safety binary input is available for monitoring external door contacts, for example. The status of the binary input is monitored and indicated by the system. The releases of all sources are blocked when the safety circuit is open.	
PC interface	Interface for connecting an external operating PC RS232, USB Galvanically isolated	
Interfaces for controlling external sources	The system features analog/digital interfaces to set the desired values and the voltage waveform and to release and measure back the actual value of the sources. Optionally and depending on the type of interface, it is also possible to use logical interfaces to control the sources. Optional: USB, RS232, GPIB (IEEE 488), RS485	
Housing	38 HU standard industrial cabinet on castors The cabinet is equipped with a thermostatically controlled fan module. The lockable rear panel can be opened to access the wiring board.	
Environment	Operating temperature range	10 to 40°C
Standards	Susceptibility EMC immunity EMC emissions Susceptibility Safety	to IEC 255/IEC 801 1 MHz sine wave to IEC 255 EN 50081-2 industrial EN 50081-2 industrial to machinery directive 98/37/EC: An appropriate test report is included confirming performance of the protective conductor test, the insulation test and the residual voltage test.

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Product specifications

	ACTAS C24	ACTAS C16	ACTAS C8
Control outputs			
CLOSE coils via IGBTs	3	3	1
OPEN coils via IGBTs	3	3	1
Relay/electronic switching outputs ^(1,2)	24 (12/12)	16 (8/8)	8 (4/4)
Analog measurement inputs			
	16	8	8
Incremental measurement inputs			
	6	6	2
Binary measurement inputs			
Main and resistive contacts	18	18	6
Auxiliary contacts	36	24	12
Analog outputs⁽²⁾			
	6	6	2
PC interface			
USB, RS232 (115 kbaud)	■	■	■
Housing			
Dimensions (W x H x D)	19", 38 HU 600 x 1840 x 900	19", 38 HU 600 x 1840 x 900	19", 38 HU 600 x 1840 x 900

- (1) Minus the signals required for coil circuits
 (2) Minus the signals required for voltage sources

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Options



The test system can be extended by the addition of optional components such as voltage sources and can be customized by the inclusion of customer-specific connection panels.

Evaluation unit	19" industrial standard, integrated in the front panel of the cabinet,	Height																
	consisting of: Industrial PC (Windows XP operating system, pre-installed user software), 17" TFT monitor, industrial rackmount keyboard/mouse unit.	13 HU																
Sources	<p>The additional current and voltage sources can be used to supply external actuators such as spring-tensioning motors, release and operating coils or heating systems.</p> <p>The outputs of all sources are located on a connection panel and external sources can be looped in if required. The sources are released via integrated power contactors.</p> <p>All sources can be controlled and monitored either manually or automatically by the test system. The desired values are set automatically in accordance with the parameters of the test plan. The sources can be controlled either statically or dynamically, e.g. to test overcurrent or undervoltage releases.</p>																	
	<table border="1"> <tr> <td>Electronic DC voltage source SM 300-10</td> <td> Power 3000 W Voltage 0 to 300 VDC Max. current 10 A </td> <td> <u>Required I/O channels</u> 1 relay output 1 analog actuating signal </td> <td>3 HU</td> </tr> <tr> <td>Electronic DC voltage source SM 300-20</td> <td> Power 6000 W Voltage 0 to 300 VDC Max. current 20 A </td> <td> <u>Required I/O channels</u> 1 relay output 1 analog actuating signal </td> <td>4 HU</td> </tr> <tr> <td>AC/DC voltage source EPOS CV 541</td> <td> Power 5400 VA Voltage 0 to 270 V Max. current 20 AAC/ADC </td> <td> <u>Required I/O channels</u> 2 relay outputs 1 analog actuating signal 1 analog feedback channel </td> <td>4 HU</td> </tr> <tr> <td>AC/DC voltage source EPOS CV 811</td> <td> Power 8100 VA Voltage 0 to 270 V Max. current 30 AAC/ADC </td> <td> <u>Required I/O channels</u> 2 relay outputs 1 analog actuating signal 1 analog feedback channel </td> <td>4 HU</td> </tr> </table>	Electronic DC voltage source SM 300-10	Power 3000 W Voltage 0 to 300 VDC Max. current 10 A	<u>Required I/O channels</u> 1 relay output 1 analog actuating signal	3 HU	Electronic DC voltage source SM 300-20	Power 6000 W Voltage 0 to 300 VDC Max. current 20 A	<u>Required I/O channels</u> 1 relay output 1 analog actuating signal	4 HU	AC/DC voltage source EPOS CV 541	Power 5400 VA Voltage 0 to 270 V Max. current 20 AAC/ADC	<u>Required I/O channels</u> 2 relay outputs 1 analog actuating signal 1 analog feedback channel	4 HU	AC/DC voltage source EPOS CV 811	Power 8100 VA Voltage 0 to 270 V Max. current 30 AAC/ADC	<u>Required I/O channels</u> 2 relay outputs 1 analog actuating signal 1 analog feedback channel	4 HU	
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Process interfaces	<p>Coil circuit extension Extension to 4 OPEN coil circuits and 4 CLOSE coil circuits</p> <p>Patch panel on the cabinet front 2 x 108-pole</p> <p>Custom connection panel on the cabinet front -</p>	<p><u>Required I/O channels</u> 1 relay output</p> <p>The patch panel is used to allocate the inputs and outputs of the test system to the appropriate connection leads of the test object. The allocation is made using industrial plug connectors with the appropriate wiring (allocation) inside the plug housing.</p> <p>Connection panel for connecting the measurement and output signals for coil control, for example, the main and auxiliary contacts and analog or incremental sensors. Connections are made using safety banana sockets and multi-contact sensor sockets. The exact specifications are agreed with individual customers.</p>	- 5 HU 5 HU															
	Binary I/O extension 24 V to 300 VDC	Addition of: 12 universal binary inputs with a common ground 8 binary outputs	-															

Further optional components are available on request.