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Data Sheet 12.21/2

PC software, Type iCOS Advanced

Classification

The PC software iCOS Advanced is a module of the control system HiCOS. The software iCOS Advanced forms together with the hardware HiCO Advanced the advanced control. The advanced control extends the basic control to perform automatic tests with high-voltage test systems.

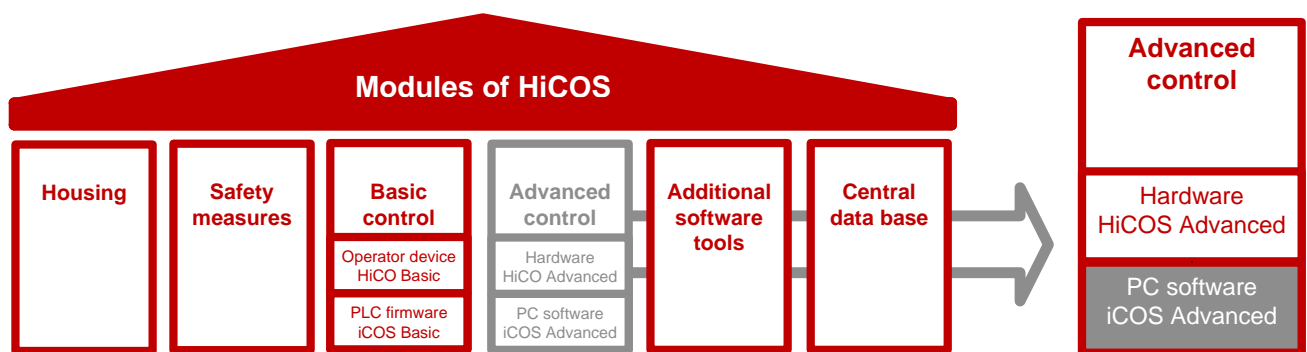


Figure 1: Overview of HiCOS modules – topic of this data sheet: PC software iCOS Advanced

The control system HiCOS is a collection of modules to control test systems and to record, manage, evaluate and report the measuring data. It is suitable for mobile and stationary test systems. The modular design of the control system HiCOS even allows further expansions of the functions.

Existing test systems from other manufacturers can be upgraded with HiCOS.

Description

iCOS Advanced is a modular PC software to operate high-voltage test systems, store data in a local data base, generate reports with predefined templates in MS Word format. The software consists of the following parts:

Table 1: Software parts

Name	Description
Platform	The platform software for the test field includes a local data base for the storage of measured data and the possibility of report generation with predefined templates in MS Word format.
Device interfaces iCOS Interfaces	The device interfaces (see Annex 1) connect test systems and measuring devices with the PC software iCOS Advanced. Additionally to the device interfaces for standard components (e.g. HIGHVOLT test systems and certain OMICRON measuring systems) customized interfaces for other devices can be provided on request.
Test applications iCOS Applications	Test applications (see Annex 2) for the software use the embedded test and measuring systems to perform tests. There are specified applications, e.g. for transformer testing and cable testing, as well as free-configurable applications available. Customized applications with special test sequences can be provided on request
Test wizards iCOS Wizards	Test wizards (see Annex 3) allow the creation of projects. Relevant data of the test object and test can be entered in advance. To reduce the preparation time, templates for test objects and tests can be used.
Language packages (optional)	There are different languages for the software available, e.g. German and English. Other languages can be provided on request.

Functions

- Control of test systems and measuring devices
 - Performing test sequences
 - Loading or saving presets for nominal values or sequences (test setups)
 - Control of single and composite test systems
- Logging of measuring values and status information (locally)
- Local data management
 - Robust data storage
 - Storing all measuring data in one database sorted by test object (e.g. transformer, cable, ...)
 - Saving additional test information such as photos of the test setup or schematics
- Local report generation
 - Generating, saving and printing test reports
 - Post-processing of reports in MS Word
 - Automatic archiving of reports as PDF in the data base

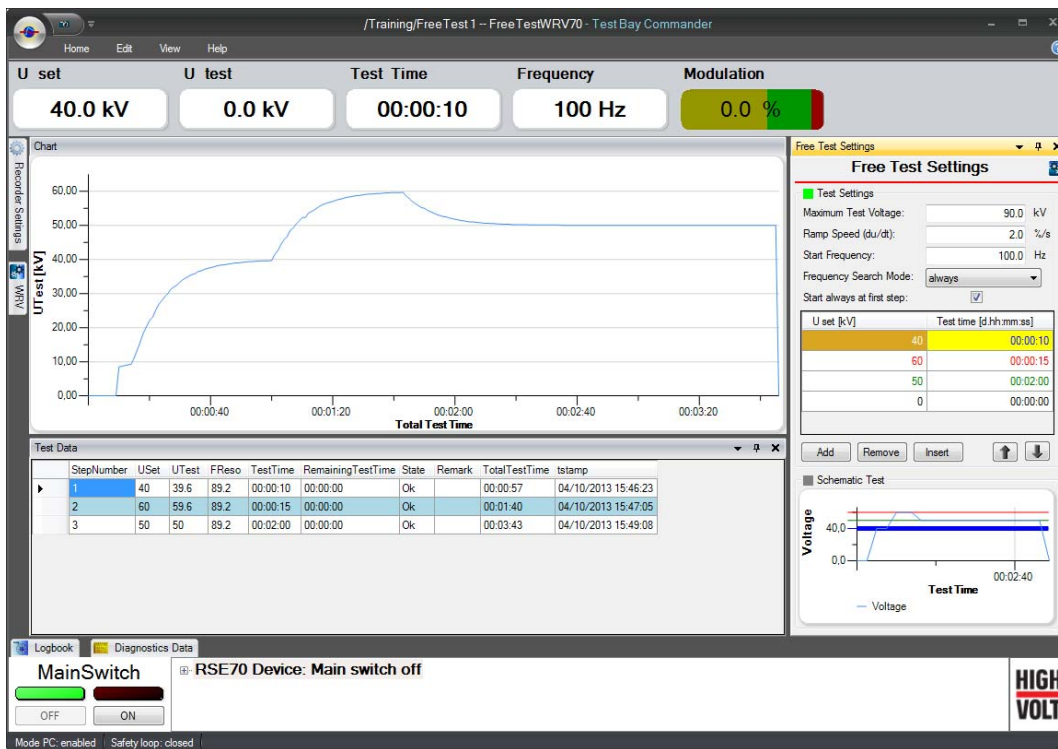


Figure 2: Performing of a test using the freely-configurable application Free Test. The AC resonant test system, type WRV from HIGHVOLT, is embedded via a device interface

Minimum requirements

- Hardware HiCO Advanced (see data sheet 12.20/1)
- or
- Microsoft Windows 7
 - Microsoft Office 2007
 - Up-to-date PC hardware
 - Pentium 4 3.2 GHz or higher
 - 4 GB RAM or higher
 - Screen 1600 x 900 pixel or higher

Annex 1 – iCOS Interfaces

The device interfaces allow the connection of the hardware devices (test systems and measuring devices) with the software (iCOS Applications). Depending on the hardware, there are four different types of interfaces available (see Table 2).

Table 2: Types of interfaces

Type	Description
Automatic interface	The interface allows the application to control the hardware device and enables direct access to the measuring values.
Semi-automatic interface	The measuring values of the hardware device are exported by an external software and imported in the local data base.
Manual interface	The measuring values that are displayed are written manually in the local data base.
Manual input	The measuring values are entered into a predefined Word document to be saved. These documents can be printed out later with the general report.

Customized device interfaces can be provided. The type of the interface results from the specific device design and the requirements of the customer. This allows also the replacement of existing controls of other manufacturers.

Table 3: Customized device interfaces

Name	Description	Manufacturer	Type of interface
LiMOS	Power measuring system	HIGHVOLT	Automatic interface
HiRES (formerly MIAS)	Transient recorder	HIGHVOLT	Automatic interface
MU 18	AC/DC peak voltmeter	HIGHVOLT	Automatic interface
IP	Impulse voltage test system	HIGHVOLT	Automatic interface
WP	AC voltage test system, based on transformers	HIGHVOLT	Automatic interface
GP	DC test system	HIGHVOLT	Automatic interface
WRM	AC resonant test system with variable inductance	HIGHVOLT	Automatic interface
WRV	AC resonant test system with variable frequency	HIGHVOLT	Automatic interface
WV	AC transformer test system	HIGHVOLT	Automatic interface
MPD	Measuring of partial discharge	Omicron	Automatic interface
MI	Measuring of tan delta	Omicron	Automatic interface
ATOS	Measurement of winding resistance and turns ratio	Raytech	Automatic interface
MIT	Insulation tester	Megger	Manual input
OTS	Insulation oil tester	Megger	Manual input
DELTA 4110	Insulation power factor/dissipation factor (tan delta)	Megger	Manual input

Annex 2 – iCOS Applications

Table 4: iCOS Applications

Package	Application	Remark
Standard package		
	Manual Test	Yes
	Free Test	Yes
Transformer package		
	Applied-Voltage Test	Optional
	Induced AC Voltage Test	Optional
	No-Load Loss and Current Test	Optional
	Short-Circuit Impedance and Load Loss Test	Optional
	Zero-Sequence and Impedance Test	Optional
	Winding Resistance Test	Optional
	Turns Ratio Test	Optional
Cable package		On request
Arrester package		On request

Description of applications

Application Manual Test

The application Manual Test integrates the PLC firmware iCOS Basic into the PC software iCOS Advanced. Additionally to the functions of the PLC firmware, the measured values are stored in the local data base and reports can be generated.

Application Free Test

The application Free Test integrates the PLC firmware iCOS Basic into the PC software iCOS Advanced. Additionally to the functions of the PLC firmware it is possible to define an automatic test procedure containing several test steps with different rated voltages and durations. The measured values are stored in the local data base and reports can be generated.

Application Applied-Voltage Test

The application Applied Voltage Test allows to perform applied-voltage tests at transformers. Main test parameters (e.g. test voltage and test frequency) are chosen automatically on the basis of the transformer data.

Application Induced AC Voltage Test

The application Induced Voltage Test allows to perform induced voltage tests at transformers. The voltage steps are chosen automatically on the basis of the transformer data. The application also records measured PD values. They are implemented automatically by an iCOS interface to the PD measuring device or manually.

Application Short-Circuit Impedance and Load Loss

The application Short-Circuit Impedance and Load Loss allows to perform short-circuit tests at transformers. Main test parameters (e.g. test current) are chosen automatically on the basis of the transformer data.

Application No-load loss and current

The application No-load loss and current allows to perform no-load loss tests at transformers. Main test parameters (e.g. test voltage) are chosen automatically on the basis of the transformer data. For supported Current Transformers (CTs) and Voltage Transformers (VTs), the application allows the automatic and manual adaption of the ratio.

Application Zero-Sequence Impedance Test

The application Zero-Sequence Impedance Test allows to perform zero-sequence tests at transformers. Main test parameters (e.g. test current) are chosen automatically on the basis of the transformer data.

Application Winding Resistance Test

The application Winding Resistance Test allows to perform automatic measurement of winding resistance at transformers. Main test parameters are chosen automatically on the basis of the transformer data.

Application Turns Ratio Test

The application Turns Ratio Test allows to perform automatic measurement of turns ratio at transformers. Main test parameters are chosen automatically on the basis of the transformer data.

Annex 3 – iCOS Wizards

General test wizard

The wizard provides a user interface which enables you to create and run new tests, continue existing tests and to show tests without test equipment.

Transformer test wizard

The wizard provides a user interface in which the test object data (transformer) can be entered. Through the wizard tests can also be configured and started.