ATS 400

Automatic Test System

Model HG-AC

Product Information Sheet

PRÜFTECHNIK

Short summary - overview

Item number	206561
Hipot Test	100 – 5,000 V AC, 0.1- 100 mA, 500 VA Isc > 200 mA, potential-free
Protective Earth Test	0.5 - 25 A AC, 1 - 500 mΩ
Function test, mains	230 V AC, depends on mains supply 0.01 - 10 A AC
Continuity test	0.5 - 25 V AC, 1 - 600 Ω

Overview and range of application

- Combined test device for both safety and function tests
- Fully electronic test system
- CE compliant, standard safety technology as required in BS/EN 50191.
- Menu-controlled test procedures:manual or fully automatic
- 5 different models: from the remote version to stand-alone with 5.7" or 10.4" screen with TFT and touch, with WIN CE ® or WINDOWS ®
- Automatic switchover between test tasks via internal relay matrix
- LAN, USB, RS232, CAN, VGA, DIGITAL-IN/OUT, Analog-IN/OUT, Frequency-IO (depending on the user interface)
- Freely programmable test procedure, parameters, limit values, startoptions, operator information, sequence options, …
- Remote control (DLL, ASCII, LabVIEW, .NET, ETL DataView, Digital-IO)
- Extension modules: matrix, AC- and DC-sources, hot HV, contact units for test object, …
- Error report: Acoustic, optical and via interface
- Connections for safety circuit and signal lights according to BS/EN 50191
- Patents:
  DE: 100 11 466.0 and 100 11 345.1
  EU: 01 105 568.8 and 01 105 567.0

Universal usage

- As a combination-test system for manual operation at a bench
- In semi-automatic test stations
- In fully-automatic test stations
- 19" rack space version available

Remote-controllable

- Control interface (RS232) for remote control by software (DLL, ASCII, LabVIEW, .NET or via the operating software Dataview)
- Digital interface for remote control by PLC (start, stop, in operation, failed, passed, ext. relay control, status-information, …)
- All digital outputs are via solid-state signals, not relay contacts

Usage examples

- Testing with contacting adapter and PE-test probes
- Testing with test pistols
- Testing with fixed connections for two handed operation
- Testing with safety test cage (protection against direct contact)
- Semi or fully-automatic testing on a production line.

Optional front panels

Available in five different versions, from the Remote version to the X8 Premium

X2 – PREMIUM LINE: The Remote Version

- No display
- Remote control via PC with ETL DataView
- Remote control via PC with customer specific application and ETL drivers (DLL, ASCII, LabVIEW, NET)
- Remote control via PLC and ASCII-driver
- Membrane keypad and status indicators
- Digital-IO, RS232, CAN, safety circuit, signal light, …

X4 – PREMIUM LINE: The Stand-Alone Version

Functionality and interfaces as X2 model

+ 5.7" TFT- colour display and touch
+ WIN CE ® – operating system
+ User interface DataView 3 for editing of test plans, parameters, device settings, user administration
+ optional USB and LAN interface
+ Remote control via PLC optional incl. digital program selection
+ Storage of results (XML, HTML, CSV) local on SD-card, or optionally on USB-medium or via LAN-interface on customer server

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X5 – PREMIUM LINE: The Extended Stand-Alone Version

Functionality and interfaces as X2 model

+ 10.4" TFT- colour display and touch
+ WIN CE ® – operating system
+ User interface DataView 3 for editing of test plans, parameters, device settings, user administration, …
+ USB and LAN interface
+ Remote control optional incl. digital program selection
+ Storage of results (XML, HTML, CSV) to SD-card, or optional on USB-medium or via LAN-interface on customer server

X6 – PREMIUM LINE: Built-in PC Version

Functionality and interfaces as X2 model

+ Built in PC without display, external monitor necessary
+ WINDOWS 7 ® – operating system
+ User interface DataView 3 for editing of test plans, parameters, device settings, user administration, …
+ USB-, LAN-, and VGA-interface
+ Remote control optional incl. digital program selection
+ Storage of results (XML, HTML, CSV, PDF, label and paper print-out) on hard disk, on printer or label printer, USB-medium or via LAN-interface on customer server

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X8 – PREMIUM LINE: The High-End Version

Functionality and interfaces as X2 model

+ 10.4" TFT- colour display and touch
+ WINDOWS 7 ® – operating system
+ User interface DataView 3 for editing of test plans, parameters, device settings, user administration, …
+ USB-, LAN-, and VGA-interface
+ Remote control optional incl.digital program selection
+ Storage of results (XML, HTML, CSV, PDF, label- and paper print-out) locally on hard disk, printer or label printer, USB-medium or via LAN-interface on customer server

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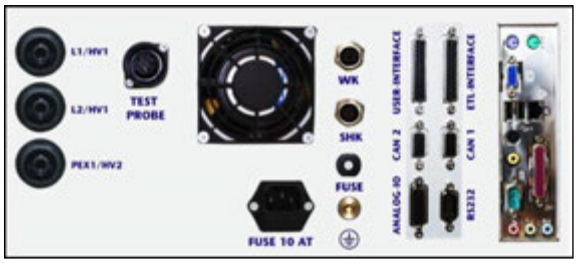
Rear view of the X8 Version



Interfaces and connections

- PC interface as USB, LAN and VGA
- Digital-IO to remote control, to connect user interfaces and to display status messages
- RS232 interface
- ETL CAN bus for controlling peripheral equipment (matrix, sources, etc.)
- Safety circuit, warning lights
- Optional digital-IO and individual setup
- Optional analogue-IN/OUT and frequency-IO recording speed- and direction of rotation
- Fuses, mains connection
- Redundant ground connector
- Connections for test object (DUT)

Detailed functional description

Fully electronic test system
Exact adjustment of test voltages and test currents for repeatable and consistent results. All test levels are regulated and are independent of any mains voltage fluctuations.

Safety circuit with two positively driven safety relays
The safety technology is designed according to EN 50191.
There are three options for connecting available: with test pistols, test cages, two-handed operation or within a production line.

Menu-controlled test procedures: Manual or fully automatic
The user can choose between a single test with all available test modules or testing with a pre-defined test plan. Tests via a test plan are reproduced in production giving operating staff through clear status information and error messages.

Switchover between test tasks is carried out automatically via an internal relay matrix
The test object only has to be connected once.

Operating manuals and digital photos
Different operator instructions and digital photos can be displayed before and during the test as well as during an error message, providing optimal safety guidance to operating staff.

Automatic test start
The start signal can be triggered by slightly pressing the test pistols to the test object (patent). The test voltage will only be switched on when the tips of both test pistols are safely connected to the test object. This will prevent the test object from voltage peaks and ensure the correct test time. (Functionality depends on the built in test modules).

Open circuit monitoring and connection monitoring to the test object
The high voltage cables are designed using 4-wire-technology. Source-sense monitoring ensures maximum process reliability (patent) and safety.

Fault detection: Over limit detection, arc detection and peak detection
Insulation fault of the test object can be detected by several methods. Insulation fault alarm will be triggered by an over-current limit or by a special peak detection that will detect even low-energy spikes.

Ramp function and detection of the breakdown voltage in case of hipot test
The test voltage can be ramped up gradually. Rise and fall times are selectable. The voltage ramp enables gentle testing where a particular standard demands a certain profile. The voltage at which an isolation fault occurs will be displayed.

All testing modes can be run via individual menus
All parameters: test voltage, test current, limit values, test times, start options, operater instructions, matrix settings, process options and the testing sequence can easily be made into menus.

User defined settings
Easy changes to: language settings, user administration, storage options, behaviour of digital inputs/outputs and audible warning of status and error status, options to contacting and wire-break monitoring, data manager for test plans and result data files.

Test device for operating “Stand-Alone” or remotely controlled via interface
The test device can be controlled by a Windows software (user interface software ETL DataView), a self created custom software application (DLL, LabVIEW, C#, .NET), simple command parameters (ASCII) or digitally using digital input/output.

CAN-Interface to add extension modules
The test system offers the possibility of adding external modules and measurement tasks via a ETL CAN interface. The system can be extended to a relay matrix, 1 and 3 phase sources for a function test or a hot HV-test under mains voltage conditions.

Error message: acoustic, optical and via interface
Incorrect test objects can be detected safely and the errors are shown and documented in the result file.

Maintenance: updateable via remote interface
Customer-specific changes and updates can be imported via interfaces. Using PC systems (X6 or X8) offers the additional possibility of remote maintenance via teamviewer.

Interfaces and connections

ETL-Interface / Digital-IO
Digital interface for PLC connection, footswitch or a remote panel including signalling of start, stop, good or bad result, faulty test object and test in progress. Predefined test programs can be digitally selected. All digital outputs are solid state, no relay contacts.

RS232 / PC-interface
For computer connection all parameters can be selected via a central program. The defined test values will be automatically adjusted by the testing device. The interface also allows permanent data logging and control of status information. PC-software options are: data management software ETL DataView or drivers (DLL, ASCII, LabVIEW, .NET) for your own application.

CAN-Interface
Expansion of the test system by add-on features and by further extensions. Any number of ETL test devices and CAN-components may be attached to this interface and can be remotely controlled.

Signal light connector and safety circuit
A safety signal light combination consisting of red/green warning lights can be connected, as specific in BS/ EN 50191. Three different wiring options are available for testing with test pistols, test cages, two-handed operation or automatic production lines.

Connections to the test object
The standard interface enables individual test station design, enabling use in the laboratory, production and automatic production lines. The options include test pistols, testing probes, clamps, contact-units, test cages or simply with cables. There are several combinations and options.

LAN – Interface, control option
To connect to the customer's own network, e.g. for direct storage of the result.

USB - Interface, control option
To connect additional storage devices and other USB-based extensions (e.g. WLAN) as well as keyboard and mouse.

Display-Interface (VGA) , depending on model

USER-IO / Digital-IO
Optional digital interface allowing complete control from a remote source. The user Interface enables the connection of actuators or relays and the signals from sensors or similar. There are 8 digital outputs and 12 digital inputs available. All digital outputs are solid state, no relay contacts.

Interface extension for analog- and frequency-IOs
Optional interfaces for analog in/out and frequency in/out for speed and rotation/directional recording.

Specifications

General data

Input voltage	230 V, 50 Hz / 60 Hz
Mains connection	IEC mains cable supplied
Tolerance mains voltage	+/- 10 %
Current consumption	max. 10 A
Fuse	10 A, T, 5 x 20 mm, 250 V
Displays	X2-Variation: no display, remote control variation X4-Variation: TFT colour display 5,7" with touch X5-Variation: TFT colour display 10,4" with touch X6-Variation: no display, external monitor necessary X8-Variation: TFT colour display 10,4" with touch
Operating system user interface	X2-Variation: Only remote control variation X4-Variation: WIN CE ® X5-Variation: WIN CE ® X6-Variation: WINDOWS ® X8-Variation: WINDOWS ®
Storage of test plans and results	X2-Variation:Storage through superordinate control unit X4-Variation:Selectable local on SD-CARD, optional USB or LAN X5-Variation:Selectable local on SD-CARD, USB or LAN X6-Variation:Selectable local on hard disk, USB or LAN X8-Variation:Selectable local on hard disk, USB or LAN
Setting of test parameters	Manual in the single test menu or via test plan (user interface DataView) All-automatic via interface (ASCII, DLL, LabVIEW, .NET)
Error message	Audio, optical and via interface
Dimensions (W x H x D)	400 x 210 x 420 mm / extended version: 400 x 210 x 520 mm
Weight	Approx. 25,8 kg
Casing	Metallic case, RAL 7035
Basic equipment with delivery	Manual, mains cable, safety circuit plug
Calibration	Factory-calibration incl. calibration certificate DAkkS-calibration (BS/EN17025 similar to UKAS) option

Environmental conditions

Casing	IP20
Humidity	max. 80 %, not condensing
Allowed range of temperature	+ 5 to + 40 °C
Max. hight above sea level	2,000 m
Cooling	Internal fan cooling

Interfaces

ETL-Interface / Digital-IO	Start, stop, good result, bad result and test in progress (all digital outputs are solid state)
RS232 / PC- Interface	Remote control interface for customer applications or for data management package ETL DataView
CAN Interface	For expanding the test system by additional devices and additional ext. extension test modules
LAN Interface	For connection to the customer's own network, e.g. for storage of the test results, depending on the operating variation
USB port	For connection to external storage device as well as keyboard and mouse, depending on the operating variation
VGA-port	For connection to an external display, only X6- and X8- models

Connections – test object, safety components

Signal lights	For connecting a combined green/red warning light according to EN 50191
Safety circuit	Three different options of safety circuit available ▪ Testing with test pistols ▪ Testing with test cages/two-handed operation ▪ Testing in an automatic production line
Connections for the test object	L1/HV1: connection phase DUT * L2/HV1: connection N DUT * PEX/HV2: connection PE DUT * PE Probe: case contacting *DUT -Device under test
Mains connection	IEC connector, 10 A, with fuse
USER-Interface / Digital-IO, optional	Digital interface for full remote control (all digital outputs are solid state)
Analogue-IO, optional	4 analogue input signals (0 - 10 V DC) 2 analogue outputs (D/A), for example: results monitoring
Frequency-IO, optional	4 frequency inputs for recording speed- and there rotation-direction

Expanded device-Setup

User administration	Individual setup password protected
Signal configuration	Individual setup for digital results
Data manager for test plans and results	Individual setup of storage options, storage location, naming of the result files and automatic creation of sub-directories
Buzzer-options	Individual setup of acoustic warning
Basic settings of the test system	Language selection, device name, interface configuration
Start of the operating interfaces	Individual setting of the start menu. (e.g. direct start in the test selection menu via barcode)
Test selection menu	Manual via selection window, process reliability via barcode- or keyboard entry, via digital interface or through read-out of a files
Manager for dummy testing	Dummy testing can be set according to the configuration: automatically requested (e.g. at program start, at user changes, via digital interface, after a certain number of test objects, a certain time or after a time interval)
Locking options for the test cage	Individual setting of the locking options (during the test, on Good, on Bad, …) Optional module

Start options for testing

Start- and stop- signal by test pistol *	Special 4-wire-technology for automated test start and connection monitoring. Test voltage will only start when both test pistols have contact to the test object. (depending on the built-in test modules)
Automatic start via safety circuit	The test can be started when the cage door is closed, for example
Start button on the device	Front panel button for test-start
Start via contact monitoring, patented*	Start will only take place if the source and sense are connected, without any cable break
Start by serial interface	Start takes place through higher-level control system (SPS or PC)
Start by digital interface	Digital I/O for example as PLC, footswitch, push button, etc. …
Start options	Individual setup of start modes

(*) patented:
The ETL contact monitoring (KÜ) is a patented technology:

German patents: 100 11 466.0 and 100 11 345.1
European patents: 01 105 568.8 und 01 105 567.0

Electrical safety and norms

EN 61010-1	safety regulations for electrical measurement, control- and lab- equipment
EN 61326-1	electrical measurement, control- and lab- equipment – EMC-requirements
EN 61000-3-3 / EN 61000-3-2	Electromagnetic compatibility (EMC)
EN 50191	Erection and operation of electrical test equipment
EN 60598-1	luminaire / Part 1: General requirements and tests
Contamination level	2
Protection class	1

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