

GC 257 IMP

Impulse Generator Control System

■ The Generator Control System GC 257 IMP allows comfortable and flexible state-of-the-art control of impulse generation systems.

The Industrial PC based control system is specifically designed for the needs of HV testing. This control system is supplied with a Windows based control software package developed based on the experience of four generations of impulse generator controls. The system hardware has an EMC hardened design for safe use also in the most polluted areas.

Active and passive safety is implemented into the system as independent external emergency switches, software watchdogs, graphic symbols and status information for fast understanding.

A protocol file can be used for a further calculation. This file with the protocol of each impulse will be stored as ASCII -File which can be imported in the most spreadsheet or stochastic programs.

A Report File can be used for further data processing. This ASCII format File can be imported into the most Data processing applications and databases.

With the advantage software Sequence it is possible to control complex test cycles and with the advantage software Remote the Impulse system can be controlled by any host computer.

A full online help is built-in the software.



Features

- ☑ **This system controls:**
Charging voltage, charging time, polarity, triggering, counter, history, alarms, trips, earthing, safety, chopping, status visualization, sphere gaps, data logging, data storage, status handling, automation, system diagram visualization, online help.
- ☑ **Manual operation mode** – with all status information, optimization, efficiency calculations etc. but with full operator control.
- ☑ **Free programmable Sequence mode** – optimized for automated production testing. A defined test sequence can be set up by the user easily, run by the software and the results are recorded. All test sequences can be recorded and saved for later use or repetition.
- ☑ **Full visualization of test system** with measuring values, switch positions, grounding system, alarms and warnings etc.
- ☑ **Integration of external measuring devices** over ActiveX components and adaptation of its measuring values for efficiency calculation and remote operation/presetting of measuring devices.
- ☑ **OLE** interface allows data access from other applications (e.g. Excel, Word, etc.)

Benefits

Easy, intuitive understandable and useable graphic user interface (GUI)

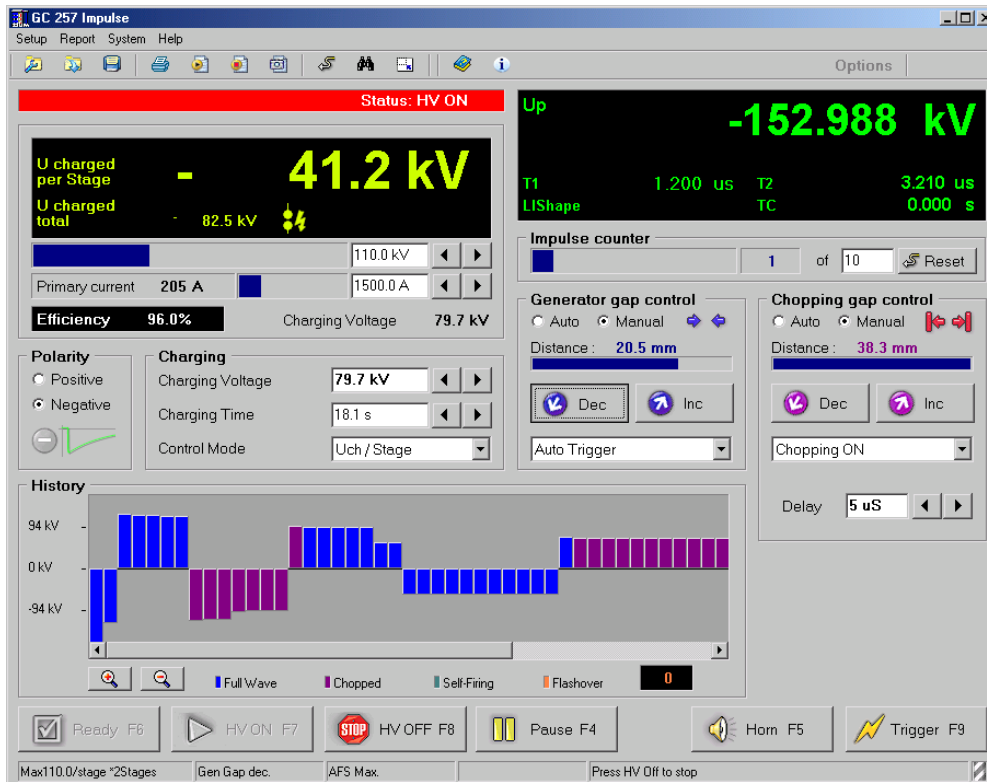
Automatic test report generation from the integrated **Reporting Tool** with user definable layout, logo insertion, etc.

Windows control software with all its advantages of integration, remote control, remote supervision, LAN connection, decentral data-storage, etc.

Easy adaptable to different generators for a easy system upgrading or modernization of all types of generators

Applications

- ➔ **Power Transformer testing**
- ➔ **Switchgear testing**
- ➔ **Surge Arrestor testing**
- ➔ **Research & Development**
- ➔ **Universities**



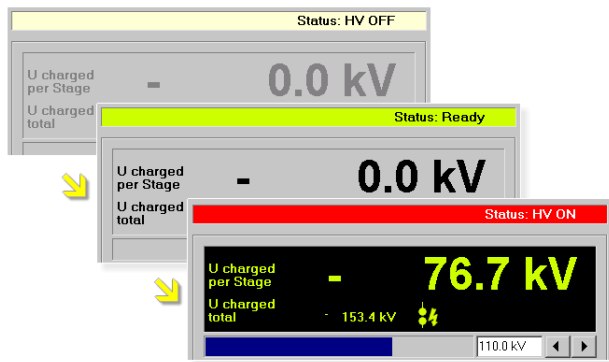
The software user interface has been designed for easy, intuitive operation. Information (e.g. HV status) are brought to operator by graphical signs, color bars, pop-up info boxes, animated images, graphic symbols etc. to ensure operator can see the system status and safety related information with one view on the main screen. For further settings, options etc. sub-screens can be opened or pop up when clicking on the related visualization fields.

Software Features

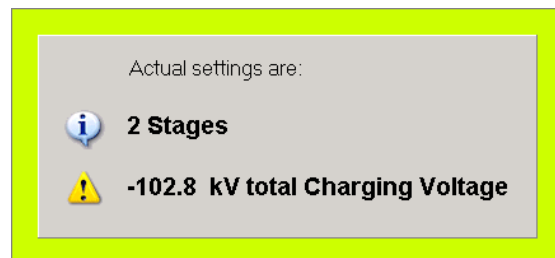
Main actions as "set ready", HV ON" etc. are accessible over short keys which also support the user by its visualized status (only active buttons are enabled)



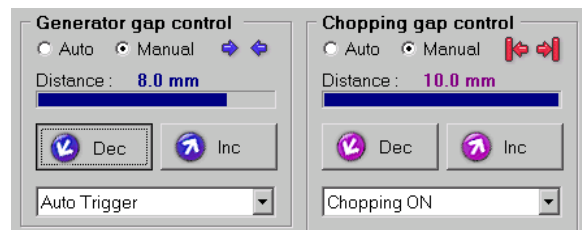
HV status visualization. On one view it's seen where the safety state is, what the charging voltage, the system polarity, the chopping settings etc. are.



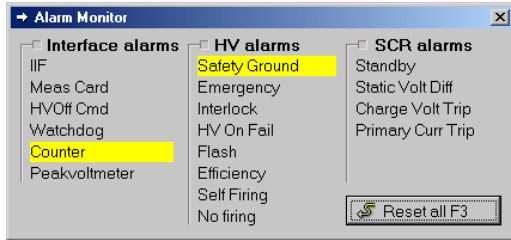
Pop-up message boxes are built in as reminder/warnings for complex settings where misunderstandings could occur. E.g. here an info box about the actual settings while switching high voltage on.



Sphere gap adjustments are visualized with images for gap motor status and actual distance. It can be controlled manual or fully automatic by the software adjusted and calculated by actual conditions.



All system alarms and warnings are collected into one Alarm Monitor. As soon as an event occurs the dialog pops to the front and the actual alarm status is visualized.



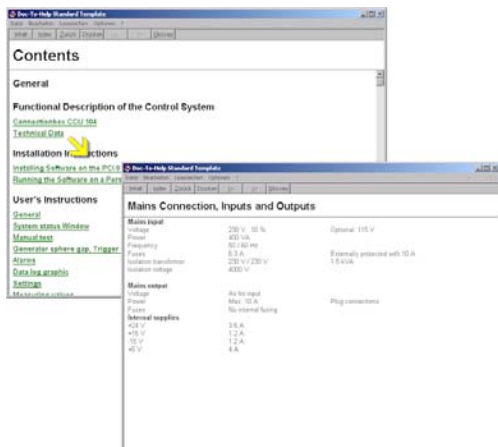
With an external peak voltmeter respectively impulse analyzer (DMI551, DIAS733, HIAS743, etc.) the peak value can be read by the



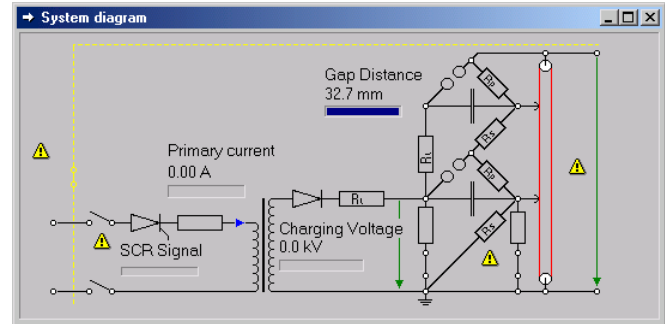
software and will be displayed and used for calculating the efficiency factor and charging voltage to achieve the correct test voltage. Easy integration of your measuring equipment into the control system.



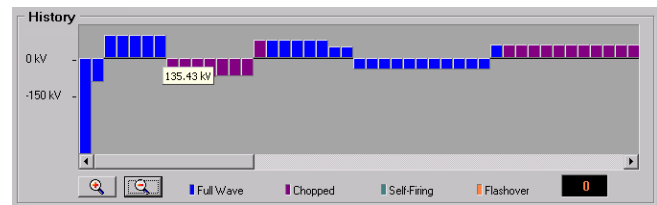
An online help file is accessible. The user is guided through the operating manual by contents and text search.



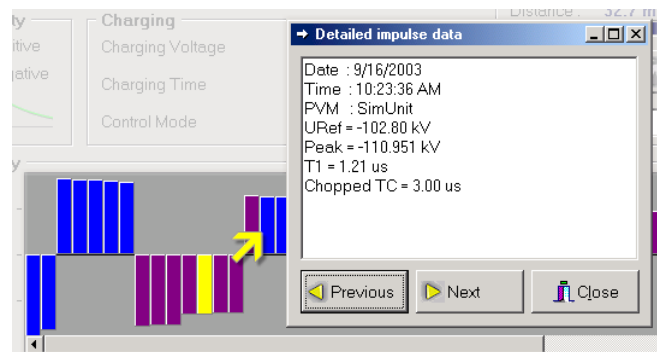
The diagram of the whole impulse system can be shown. All important values, status, switches, safety, earthing, warnings, etc. are visualized at the correct location what helps for debugging the system in fault case.



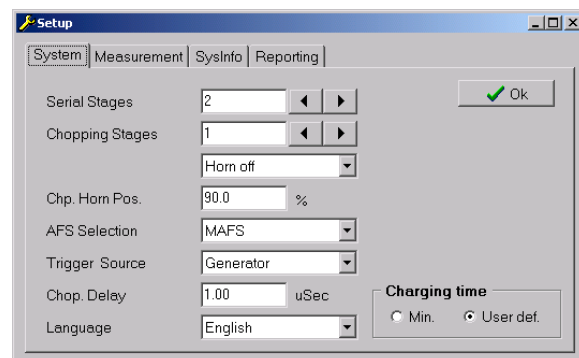
A history window displays a short information about the executed impulses with color information about full, chopped, flash, self-firing and flashover.



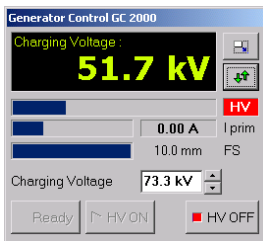
Short impulse data is shown by setting the mouse-pointer on a bar, detailed impulse data is available by double-clicking the desired impulse bar.



All system settings are accessible over defined folders

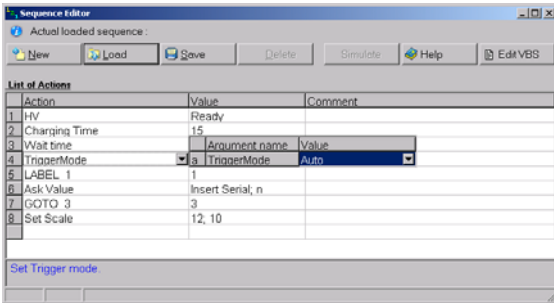


The GC257IMP main software screen can be minimized to have access to the most important data and controls while working on another application on the PC.

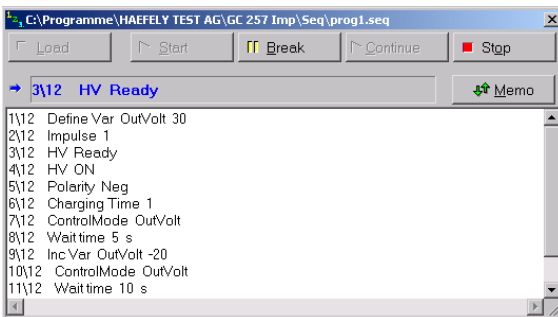


Automation

Sequences can be easily programmed by prepared steps and orders. Just select in the pull-down combo what order shall be executed at that step, define the arguments and values for that order and so on – save – run – test and optimize



When running the sequence a Supervisor window pop up where you can see all the actual step, the order to be executed and the time



Additional features and options



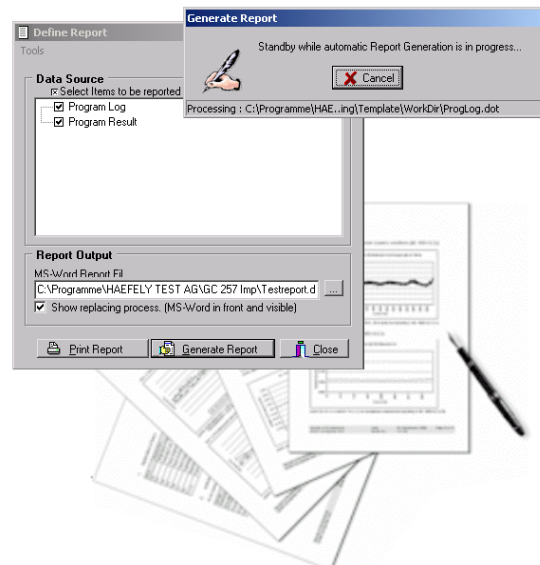
The software also provides a COM (Component Object Model) interface that allows direct access or remote access via local area network (LAN, company network) for other applications (MS-Excel, MS-Word, etc.) to measured data for further processing, central storage and easy export of data.

This software can be bound into a host control software which allows to control the test system with an external customer specific software direct or remote via LAN and DCOM (Distributed Component Object Model)

Remote access e.g. for remote system diagnosis, supervision of actual status from remote locations e.g. for long period tests can be done over an additional modem connection and a link program (PC-anywhere or similar)

Reporting

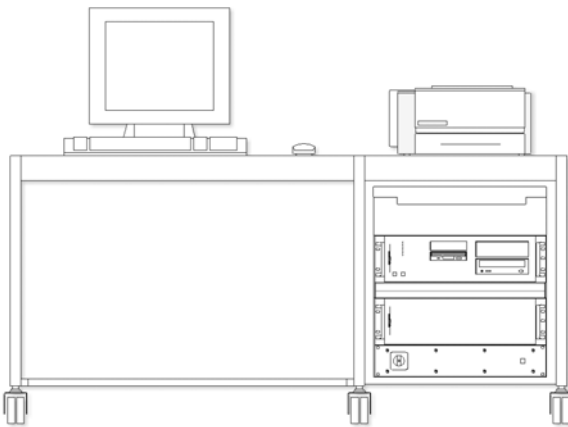
The stored data log entries can be selected and a test report can also be produced directly from the software to the printer.



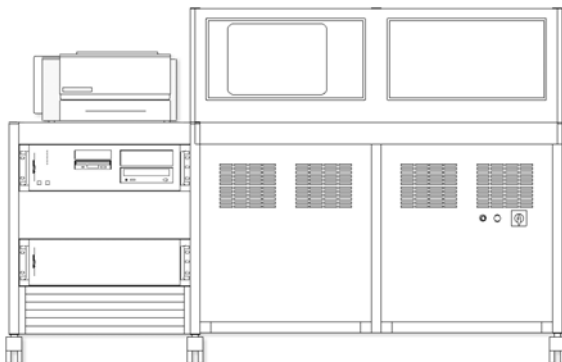
Hardware Design

GC 257 IMP Control system consists of a industrial process computer specifically designed for the needs of HV testing with its peripheral devices as printer, monitor, keyboard and mouse, the back-end interface module insert and a front-end interfacing box to connect the generator parts themselves.

All back-end parts are normally mounted in a desk console with a 12U mini rack, special shielding against EMC disturbances as well as a power supply are included. The complete system hardware has an EMC tested and hardened design for safe use also in the most polluted areas.

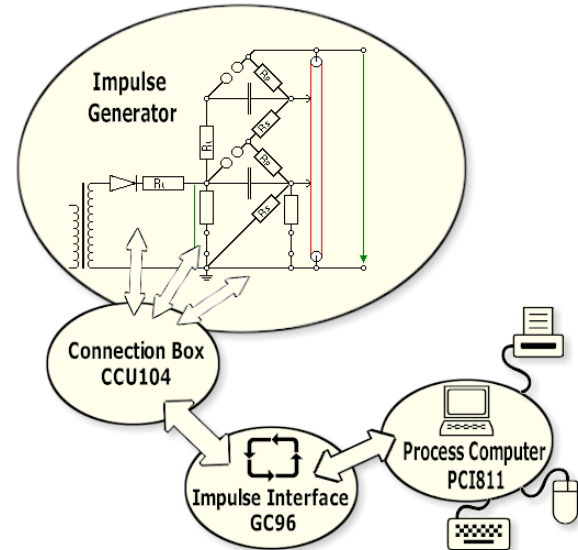


The new standard Haefely desk with mini-rack and electronics inserts. Special desk sizes or racks are available on request.



A modernized older Haefely desk design with new inserts and new software

System Description



The front-end interface *Connection Box CCU104* is the interface to the impulse Generator itself. It is a standalone box situated close to the generator and collects the single control and measurement lines into 2 control cables. The connection box is located at the generator and controls the front-end signals to the system as for gap motors, earthing system motors, LGR polarity motors, etc.

The back-end *Impulse Interface GC96* is normally mounted in the mini rack of the control system. It monitors and controls all warning, safety equipment and all other system parts. All analogue and digital signals from the Impulse Generator are connected to this module. It matches the internal and external signal levels. It also filters the signals and removes interference from them.

Finally the Graphical User Interface (GUI) on the flat screen on the operators desk – powered by the *industrial process controller PCI811* – features a easy, intuitive understandable and useable graphic surface operated and controlled by mouse and ASCII keyboard.

Technical Specifications

Mains input

Voltage	230 V ±10 %	optional: 115 V
Power	400 VA	
Frequency	50 / 60 Hz	
Fuses	6.3 A	ext. protected with 10 A
Isolation transformer	230 V / 230 V	1.5 kVA
Isolation voltage	4000 V	

Mains output

Voltage	As for input	
Power	Max. 10 A	plugged
Fuses	No internal fusing	

Internal supplies

+24 V	3.5 A	
+15 V	1.2 A	
-15 V	1.2 A	
+5 V	4 A	

Digital I/O

Inputs	24 V	
Outputs	24 V	Short protected

Safety interlock and Customer-Specific I/O

EMERGENCY off	9 poles male plug	AMP
Safety interlock	9 poles male plug	AMP
Warning lamps	9 poles male plug	AMP
High voltage measurement	BNC socket	
Auxiliary input	9 poles male plug	AMP

Analogue I/O

Inputs	0 ... 7 V _{RMS} , 0 ... 10 V _P	AC
Inputs	0 ... 10 V	DC
Outputs	0 ... 10 V	DC

Operating Conditions

Operating temperature	0 .. 40°C
Storage temperature	-20 .. 60°C
Humidity	20 .. 80 % r.h. non-condensing
Vibration	3g (IEC 68-2-6 xyz axis 10-150Hz)
Shock	10g (IEC 68-2-27 11ms half sine)

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Ordering Information

System

Control system including:	GC 257 IMP
<ul style="list-style-type: none"> ▪ PCI 811 industrial computer ▪ GC96IMP back-end interface ▪ CCU104 connection box ▪ All connection cables ▪ Mini rack 12U ▪ Operator desk ▪ Emergency switch box and interlock ▪ 15" TFT colour monitor ▪ ASCII keyboard and mouse ▪ Manual & Spare Part Set ▪ Basic control software package (installed) 	

Options

Software tool "SEQUENCE" (programmable test sequences)	GC 257 ISWS
Software tool "REMOTE" (operation from a host PC)	GC 257 ISWR
Laser Printer	GC DRU

Modernizations

For upgrading or modernization of your impulse generator system please contact us for an offer and further details

