

IMCS

Computer Control & Measuring System

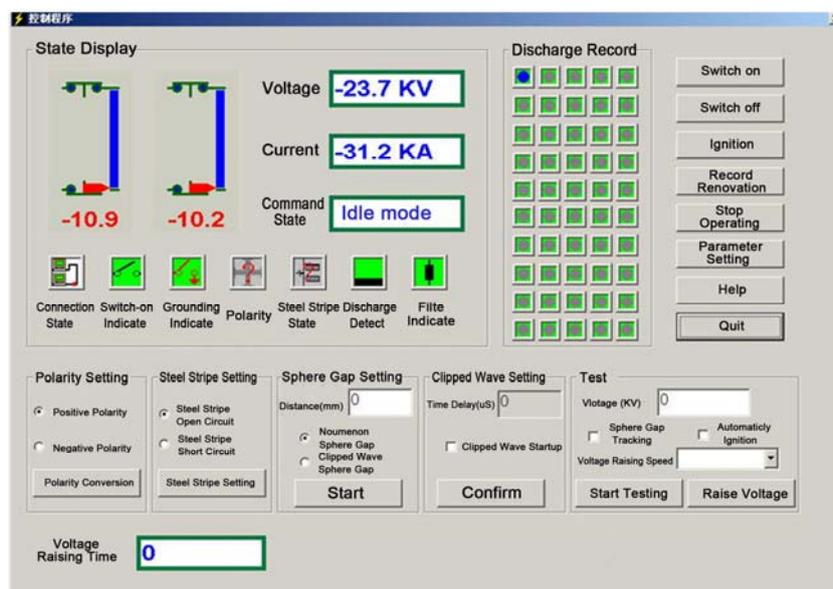


IMCS Impulse voltage control system is automatic information platform unit composed by measurement, control high voltage equipment, its core part is constituted by ultra high speed and high capacity transient collecting data module, programmed -controlled amplifier, lower level processor and executive machine, the whole system full automatic data analyzing process through the industrial controlled computer system. The use of the industrial controlled computer system as information platform permits the impulse voltage generator wide update and expanding opportunity, meanwhile gives to the construction of test laboratory information center a

basic hardware. The above parts are designed and manufactured according to the industry and technology standards, the system is reliable and stable, and insure the accuracy and the operating speed.

IMCS is made for high voltage testing laboratory operating environment, especially considering the impulse test characteristics used as high magnetic resistance interference design, the technology performances indexes meet IEC61083 and IEEE1122, GB/T16896.1-1997/200X, IEC61000 standards requirements.

The operating system is written under VC environment, based on Windows operating system, in order to insure the system compatibility and universality. Simple visual interface, easy operation, see **picture 1**.



Main Characteristics

- Entire observation and control integration; the integration rate is high;
- The high accuracy (12Bit), the high speed data sampling (100MS/s) replace the traditional oscilloscope and peak point meter;
- The system uses lower level processor pattern; and the lower level processors are connected with optical fiber.
- During the testing it displays in real time the waveform and waveform parameters;
- Wave analysis software through IEC1083-2 measurement test compact disc;
- The industry integration design has high stability, excellent outstanding electromagnetic compatibility, does not need any extra shielding system;
- Generate automatically test report and graph;
- Simultaneously displays the testing voltage and tested product current waveform, that makes the analysis comparison easy;
- realize the remote control and the data transmission function through the network, the measure data may real-time sharing;
- The user according to the test content can store and retransfer preinstalled parameters that avoid making repetitiveness tasks;
- To preserve the operating board safety, the lower level processor uses fiber optic isolator;
- The primary and the lower level processor communication are through full duplex mode, using special communication protocol, insuring communication reliability;
- Software two level operation interlock, upper level processor (industrial control computer) can according to the current condition shield act as illegal operation, the lower level processor before executing any operation have to act according to the current condition take the valid decision, then execute.

Control Systems Main Function

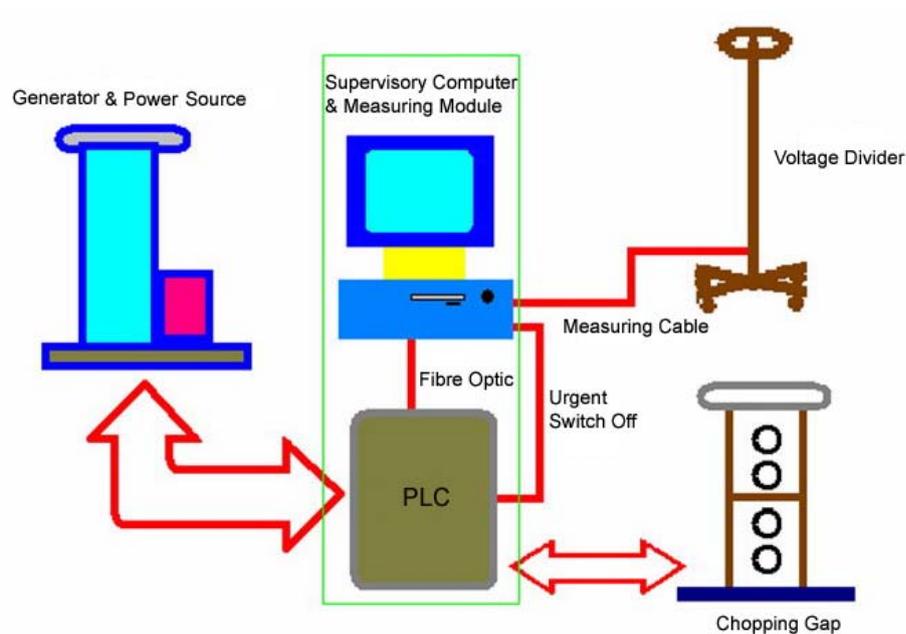
- Automatic charge mode: set automatically each level of voltage charging value and maintenance;
- Manual charge way: Manual adjustment voltage and trimming;
- Synchronize sphere according to the charging voltage setting, automatically adjusts the sphere distance, and display the actual distance value. When sphere limit switch moves, it sends out the instruction; the special sphere distance trimming, makes easy to adjust the sphere distance;
- The charge speed choice, the user may according to test the need, divides 5 levels charges speed choices;
- Standard waveform editing system, the setting of measurement can complete by mouse, also may conveniently zoom the waveform;
- Automatically change charging voltage polarity, and display it on the screen;
- Automatic grounding to protect against over voltage, over current;
- Automatic ignition: According to the setting parameters, including setting voltage value and setting time value, the system completes automatically voltage upgrade, protection and ignition process;
- It can each time display institutionally discharge condition, including discharge voltage value, regular discharge or self-discharge;
- Emergency partial brake, is different with the manual partial brake, the emergency partial brake directly shuts off the main circuit supply source through a button, used in abnormal situation, like control room power failure, etc.

Technical Parameter

Number of measuring channel:	2 channel
Sampling Rate:	100MS/s/200MS/s
Amplitude Resolution:	12Bits
Amplitude Error:	<1%
Display Screen:	17" LCD, 1024×768
Upper Level Processor:	Intel P4 2.4GHz processor as the core integration platform for workstations
Lower Level Processor Control Unit:	Based on 51 core MCU master control unit as processor
Chopped Wave Ignition Control Impulse Delay:	0 to 6553.6μs tunable, regulation accuracy 0.1μs
Withstand Voltage Intensity of Insulation Unit:	>2500V/RMS, 1min
Lower Level Processor AD Sampling Resolution:	12Bit
AD Non Linear Error:	<1LSB
AD Sampling Time:	<10us
AD Sampling Channels:	8
Digital Channel:	16 inputs, 16 outputs

Systems Structures

See picture for system plane structure:



Picture 2: System Structure Schematic Plot

Picture 2: the green cable and all the bounding parts are measurement and control all-in-one system. The lower level processor , the impulse voltage generator 、 power and sectional wave device are directly linked, all the under layer operations such as relay retractable are controlled by the lower level processor, the upper level processor is link with the lower level processor through optical fiber, and delivery the command to lower level processor to start the generator、 power source and Chopping Gap, the lower level processor collects continuously data, acquiring the current situation meanwhile continuously transmit the collected data to the upper level processor, voltage divider voltage current signal is linked to the upper level processor through collecting module.

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