

Generator Control: Installation Instructions and Program Description

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Introduction

Generator Control program enables the recording of ultrasonic amplitude, vibration frequency and power consumption as a function of time during the operation of Ultrasonic Generator.

The program works under Windows 7, Windows XP or Windows Vista operating systems. Screen resolution not lower than 1200x800 pixels is recommended. True Color display setting is also recommended.

The program must be installed and run "as administrator". In Windows XP or Vista, this can be done by using the Administrator account. In Windows 7, the installation should be performed by right-clicking on "setup.exe" (see next section) and selecting "run as administrator". When using the program, right-click on the GeneratorControlS icon and select "run as administrator".

To begin

1. Install "plug and play" drivers of usb/com – port

In order to install the drivers, connect the included USB cable to the Ultrasonic Generator port, plug it into your computer's USB port and follow instructions. If the drivers are not installed automatically, they can be installed manually (the drivers can be found in the CDM 2.06 directory on the installation disk). After this step is done, a virtual serial port (COM port) will be created. The number of this port can be determined by right-clicking on the "Computer" icon, going to Properties, bringing up Device Manager and opening the link for the port. For example, if after opening the link you see "USB Serial Port (COM3), the port number is 3.

2. Install Generator Control program

The program is installed by clicking on "setup.exe" in "Package" directory. This step should be done "as administrator". For example, in Windows 7 the installation is performed by right-clicking on "setup.exe" and selecting "run as administrator".

3. Start the program

The program is started by clicking on the "Generator ControlS.exe" file in the directory into which the program was installed or on its corresponding icon. If you see a warning message, "Invalid Port Number", ignore it. After the program opens, input the correct port number into the box: "Port #".

The program starts in the "Monitor" screen. This screen contains an ultrasonic amplitude indicator as well as three windows with Initial settings:

Rec.time – desired time of recording,

Port # - number of the usb/com computer port connected to Ultrasonic Generator,

Cr. Amp - minimum allowed ultrasonic amplitude for a given technological process. If the amplitude for some reason drops below this value, the indicator's color turns from GREEN to RED.

Monitor screen also displays Recording Time and Recording Start Time.

Monitor screen buttons and tabs: File, Start, Stop, Pause, Read/Write and Help

File tab has the following menu items: Open, Save, Print and Exit.

Open – open previously recorded and saved data;

Save – save recorded data. The data is saved in a database located in "Results" folder in the main program directory;

Print – print the recorded data;

Exit – exit the program.

NOTE: File menu items (except Exit) are disabled when the words "Standby Mode" are displayed. In order to enable the menu items, "Stop" button should be pressed.

Start button – puts Ultrasonic Generator and the program in standby mode.

When this button is pressed, the words "Standby Mode" appear on the Monitor screen. When the Start/Stop button located on the front panel of Ultrasonic Generator is pressed, Generator Control starts to record the operating parameter data. The initial working frequency of Ultrasonic Generator is set to the value, R, which can be displayed on the Read/Write screen (see below).

NOTE: Starting Ultrasonic Generator by pressing the Start/Stop button on its front panel erases all unsaved data.

Pause button – puts the program in standby mode and stops Ultrasonic Generator and data recording.

If Ultrasonic Generator is subsequently started using the Start/Stop button on its front panel, it starts to operate at the operating frequency that was current when Pause was pressed.

NOTE: Starting Ultrasonic Generator by pressing the Start/Stop button on its front panel erases all unsaved data.

Stop button – stops Ultrasonic Generator and data recording.

Data recording also stops when Ultrasonic Generator is stopped using the Start/Stop button at its front panel. The recorded data remains on the Graphs screen and is available for analysis and storing in the database.

Read/Write – opens a screen permitting to request and display the values of variables from Ultrasonic Generator's control circuit board and, if necessary, to change these values (see the list of variables below).

The values of variables from Ultrasonic Generator's control circuit board can be requested and displayed by pressing the "Read" button. Three of these variables (R – starting frequency, Gn – horn gain, Amin – starting amplitude) can be changed by users. In order to change any of these variables, the corresponding field on the right-hand side of the screen (highlighted GREEN) is filled with the desired value, the box next to the field is checked and the "Write" button is pressed. The new setting is then written into the corresponding register of Ultrasonic Generator.

NOTE: If a 3-digid number is to be written into the Amin field, the number should be preceded by 0. For example, if the desired number is 300, the number 0300 should be written. The program will be closed if this rule is not observed.

NOTE: Writing the starting frequency parameter, R, takes about 10 - 20 seconds after the Write button is pressed. If this value is read before 20 seconds have passed, the value may be displayed incorrectly.

Pressing the Default Settings button retrieves and displays "factory" preset parameters.

The rest of the variables (highlighted RED) stored in the Ultrasonic Generator's controller cannot not be changed by users. Only Industrial Sonomechanics' personnel or users specifically authorized by Industrial Sonomechanics' personnel in writing may carry out this operation.

Graphs – opens the plotter screen.

If the graphs are not displayed correctly, resizing the Graphs window should be performed. Placing the mouse cursor over a line on a graph and pressing the left mouse button brings up information on the Amplitude, Frequency or Power and Time corresponding to this point on the graph. The point is marked with a red line marker.

Help – opens this manual.

List of variables on the Read/Write screen:

- R – starting resonance frequency of the system (20 – 23 kHz);
- J – frequency shift with respect to that identified by automatic frequency tracking algorithm;
- As – starting amplitude during frequency scanning;
- Ts – time between frequency auto-correction cycles;
- Ba – amplitude sensor signal vertical offset coefficient;
- Ka – amplitude sensor signal slope coefficient;
- Gn – ultrasonic horn gain factor (0.1-9.9);
- dF – downward frequency shift at the start of resonance frequency search;
- dSCAN3 – step size during short frequency scan;
- nSCAN3 – number of steps during short frequency scan;
- MBAAddress – device network address;
- Baud Rate – information transfer rate (4.8 – code 159; 9.6 – code 207; 19.2 – code 231);
- Amin – starting value of amplitude (when system is on resonance) in arbitrary units (> 255);
- Amax – maximum value of amplitude in arbitrary units (< 3392).