RECORDER USERMANUAL PCSU1000
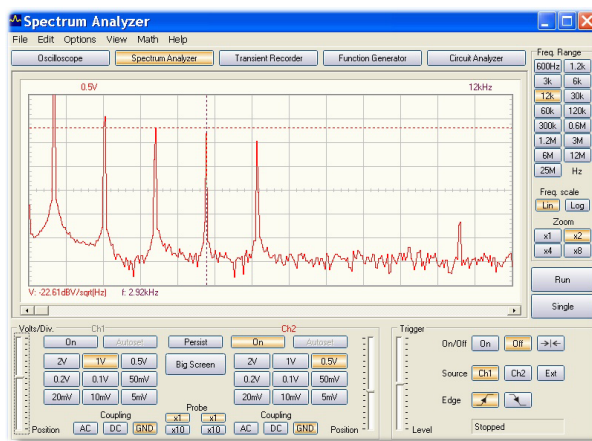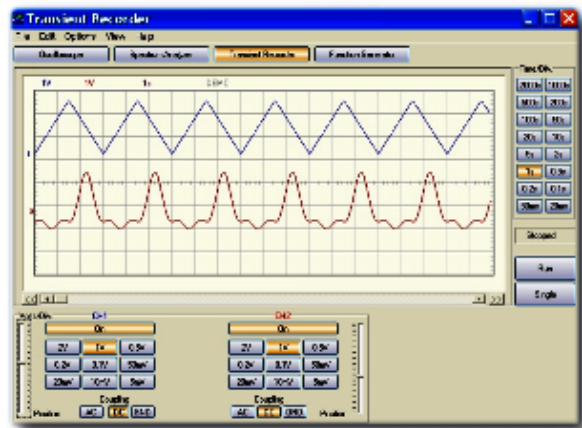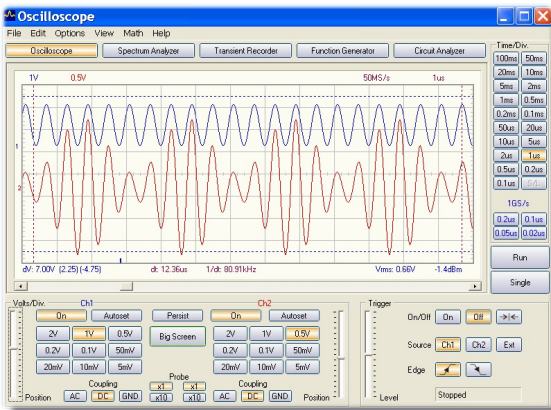
Table of Contents

1 Contents

Operation Instructions for Velleman PC Oscilloscope PCSU1000

TRANSIENT RECORDER

Safety Instructions

Controls

Troubleshooting

Adding comment text in the signal screen

1.1 Safety Instructions

SAFETY and WARNINGS

$$C\hspace{-2pt}\epsilon \triangle\!!$$

Important safety information, see user manual.

> **WARNINGS**
> Instrument grounds are interconnected and connected to PC ground.
> Max. Voltage between probe tip and ground : 30V AC+DC at all times!
> Before performing any measurement, make sure that the circuit is
> galvanically separated from the AC power (mains)!
> If necessary, use a safety isolation transformer.

Before making measurements and for safety reasons, it is important to know some information about the measured unit.

Safe devices are:
· Battery operated equipment
· Equipment supplied via a transformer or adapter.

Do not measure:
· Equipment directly connected to mains.
· Equipment that contains components that are directly connected to mains (dimmers…).
· If necessary to measure above mentioned equipment, use an isolation transformer.

Please remember that the grounds of both channels are interconnected and connected to the PC ground !

1.2 Controls

VOLTS/DIV
Selected value indicates the peak-to-peak voltage required to produce a peak-to-peak deflection of one major division on the screen.

CH1, CH2
Buttons turn the display of the trace ON or OFF. To get the cursor measurements of CH2 voltage

values switch CH1 off.

Coupling

AC: the input signal is capacitive coupled to the input amplifier/attenuator. Only the AC components are measured.
GND: the input signal is broken and the input amplifier/attenuator is connected to earth. Use this position for selecting a reference point on the display.
DC: the input signal is directly connected to the input amplifier/attenuator. Both AC and DC voltage are measured.

Probe x1/x10

Use these buttons to adapt the readouts according to the x1/x10-probe setting.

Position

Position the traces vertically on the screen.

TIME/DIV

Selects the time setting for the beam to sweep one major division on the screen.

TIME/DIV (for zooming)

Selection of TIME/DIV is possible to zoom in on the frozen waveform display.

RUN

Selects recurrent display update mode (RUN). Pressing the button again freezes the display.

SINGLE

When button is depressed refreshment of the display takes place only once.

X-POSITION SCROLLBAR (Below the waveform display)

Positions the trace horizontally on the screen.

1.3   Troubleshooting

Errors in time scale

When recording at short timebase (< 2s/div) the sampling interval is 10ms. This is possible only on fast computers. Anyhow, do not execute other applications during the recording process, it may influence the measuring time scale.

The timebase of the measurements is generated by the internal timer of the computer. This timer can be put on hold by other processes on the computer. This can cause a deviation in the time measurement.

To ensure the precision of the time measurement at short timebase :

- Use a fast computer: Pentium.
- Do not run other applications when recording
- Use highest possible processor speed
- Prevent your computer from going into power saving mode

No signal

- No communication with the computer (check that the cable is connected to the USB port)
- If USB cable is connected, close the program. Disconnect and reconnect the USB cable and run the Pc-Lab2000 program again.

    - RUN button is not ON.
    - The channel concerned is OFF.

- TIME/DIV switch is in the wrong setting, try 1s/div
- TRIGGER is ON, set TRIGGER OFF
- The unit input selection is at GND.
- Y position is wrongly adjusted.
- Input amplitude is too large, adjust VOLTS/DIV setting.

If the above tips have no effect, then test on a different computer or different USB port.
Note. Close the program before disconnecting the USB cable.

1.4   Adding comment text in the signal screen

For explanation and documentation, each measurement can be supplied with a comment text.

This text will be saved together with the waveform data to the disk file.

To enter the text
1.   Right mouse click into the screen.
2.   Text box will open, to write your comment.
3.   Click **Add Text on Screen** or **Remove** to remove previously inserted text.
4.   Right click on the screen to position your text.
5.   Click **Close**.

To make the text transparent with the background, check **Transparent text**.
The text will have the same color as the vertical time/frequency markers.

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2   Menu opties

2.1   File Menu

Note: Default subdirectory (folder) **\DATA** for image and data files is created when program is run the first time.

Open Image
   Opens an image file and displays it on the screen.

Open Data
    Opens and displays the waveform data saved in text format usind the **Save Data** option.

Save Image
   Saves the image to a file in Windows Bitmap (*.BMP) format.

Save Data
   Saves the recorded data in text format to a file.

AutoSave Data
Saves all next screens of data in text format to a file.
The AutoSave function will be activated after the Run button is pressed.
The AutoSave function will be finished after the Run button is pressed again.
Note: Every screen saved takes about **20kB** of disk space

Save Settings
Saves the Oscilloscope, Spectrum Analyzer and Transient Recorder settings to a file. Also
Function Generator settings (frequency, amplitude, offset and duty cycle) are stored to the file.

Recall Settings
Loads a previously-stored settings file to the oscilloscope.

Print
Prints the image.
You can edit the image caption.

Print Setup
Selects a printer and sets printer options before printing. The available options depend on the
printer you select.

Exit
Terminates the program.

2.2   Edit Menu

Copy
Copies the image to the Windows' clipboard.

Paste
Pastes the image residing in Windows' clipboard to the screen

2.3   Options Menu

Colors

- Select the color for various items on the waveform display.
- To change the color of an item, click the corresponding button. This will open a dialog in which you can select the new color.
- Full color selection is possible only if True Color (24 bit) palette is used.
- There are restrictions in the color combinations with other palettes.
- Click either of the **Default Colors** button to resets all colors to the default settings.
- The same color settings will be on the Oscilloscope and Spectrum Analyzer dispaly too.

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2.4   View Menu

Markers
Displays Markers on the screen.

Two horizontal markers for measuring voltage
Note: The voltage markers give preference to channel Ch1 if both channels are being used.

Two vertical markers for measuring time
Marker function for absolute and relative time measurement is provided.

If **V & t** markers are selected the **absolute time** of the marker position is displayed.
If **V & dt** markers are selected the **time difference** between the markers is displayed.

Moving the markers
1. Place the mouse pointer over a dashed marker line.
2. Press and hold the left mouse button. The markerline turns solid.
3. Drag the marker to the appropriate position

Bright Grid
    Brightens the grid on the screen.

Sample Rate
    Displays the sampling rate on the top of the screen.

2.5   Help Menu

Contents
    Displays this help file

About
    Displays information of the program version