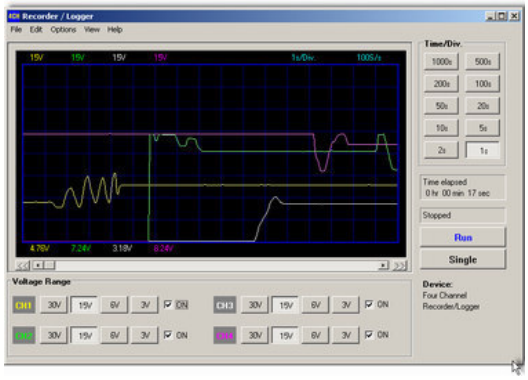
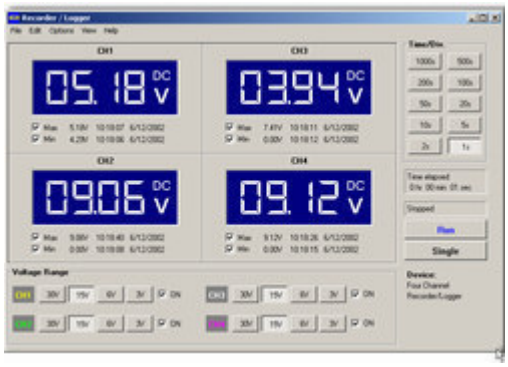
4 CHANNEL USB RECORDER / LOGGER



PCS10 / K8047



User manual

Velleman Instruments

Altough developments in the field of electronics proceed at breakneck speed, we have always been able to create the ideal mix between innovation and durability.
The innovations are mainly expressed in our scopes, which are created with the aid of the latest techniques.

The velleman Instruments team

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1 English

1.1 General

1.1.1 Specifications

Hardware :

- USB connected and powered.
- Four DC-coupled input channels
- Input resistance 1Mohm
- Maximum samples per second: 100
- Four input ranges, 3V / 6V / 15V and 30V
- Sensitivity 10mV
- Accuracy ±3% of full scale
- Maximum input 30Vdc
- Power and recording/diagnostic LED

Software :

- Analogue trace or DVM readout
- 4 simultaneous channels recording
- Minimum / maximum sample hold function for DVM
- From 1 sec to 1000 sec per division
- Storage and recall of screens (full colour) or data
- Automatic recording option for long time recordings
- On screen markers for time and voltage
- DLL included for own development

1.1.2 System requirements

Minimum system requirements :

- IBM compatible PC
- Windows 98SE, ME, Windows 2000, Windows XP.
- SVGA display card (min. 800 x 600).
- Mouse
- Free USB port
- CD-Rom player.

Does not work on WinNT or Win95!

Software updates :

Check our web site www.velleman.be for updates (or just click on "updates").

1.1.3 Safety & Warnings

SAFETY and WARNINGS

Important safety information!

ATTENTION :

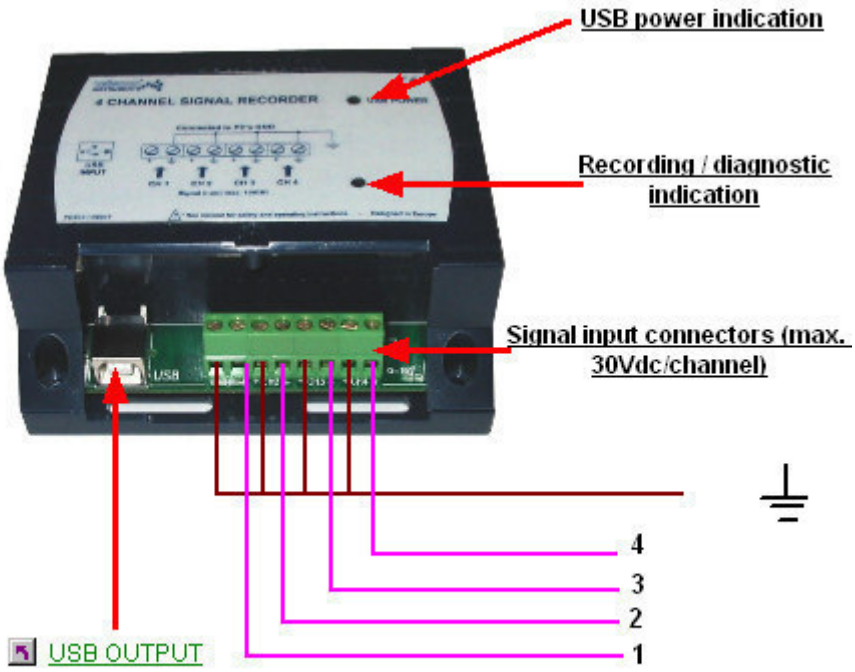
1. The input ground connection is directly connected to the computer earth.
2. The signal ground must NEVER be connected to a potential other than the PC ground.
3. Use only DC components to measure.
4. The maximum input voltage for the connections of the unit stands at 30V (DC)!

Always remember that the ground of **all** the **channels** are interconnected !

1.1.4 Warranty

This product is guaranteed against defects in components and construction from the moment it is purchased and for a period of **ONE YEAR** starting from the date of sale.
This guarantee is only valid if the unit is submitted together with the original purchase invoice. ***VELLEMAN Components*** limits its responsibility to the reparation of defects or, as ***VELLEMAN Components*** deems necessary, to the replacement or reparation of defective components. Costs and risks connected to the transport, removal or placement of the product, or any other costs directly or indirectly connected to the repair, will not be reimbursed by ***VELLEMAN Components***. ***VELLEMAN Components*** will not be held responsible for any damages caused by the malfunctioning of a unit.

1.2 Connections



The unit is connected to the USB port of the computer, using a USB cable.

1.2.1 power led

Indicates that the unit is correctly connected with the computer

1.2.2 diagnostic led

Lights when the unit is recording data.

1.2.3 Signal input

4 input channels enable you to measure 4 signals at the same time.

1.2.4 USB output

USB cable included, type A-male to B-male.

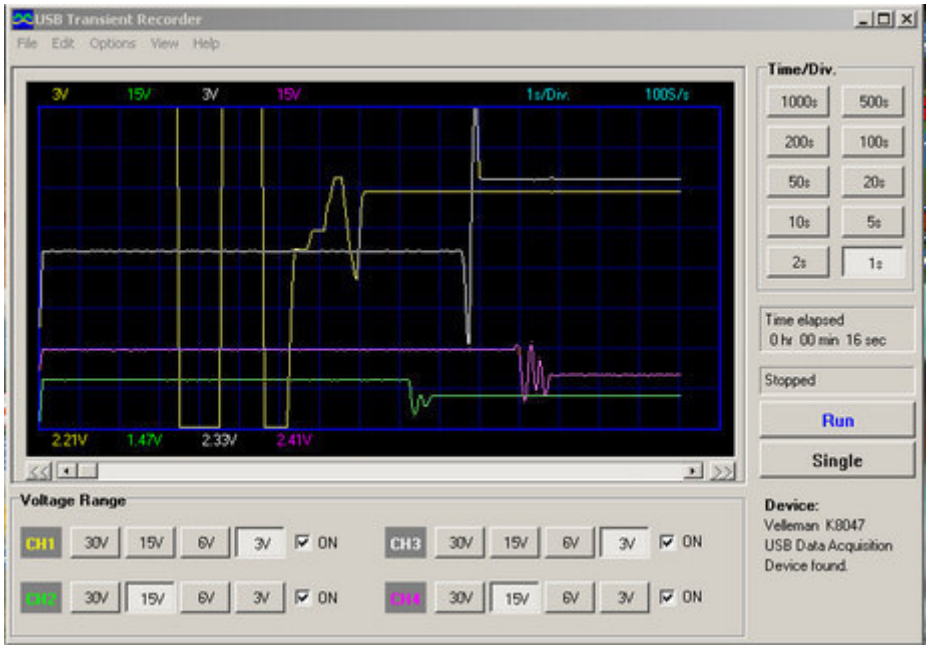
Connect the computer to the USB recorder/logger via the USB cable

Make the connections :

Back

1.3 Readout screens

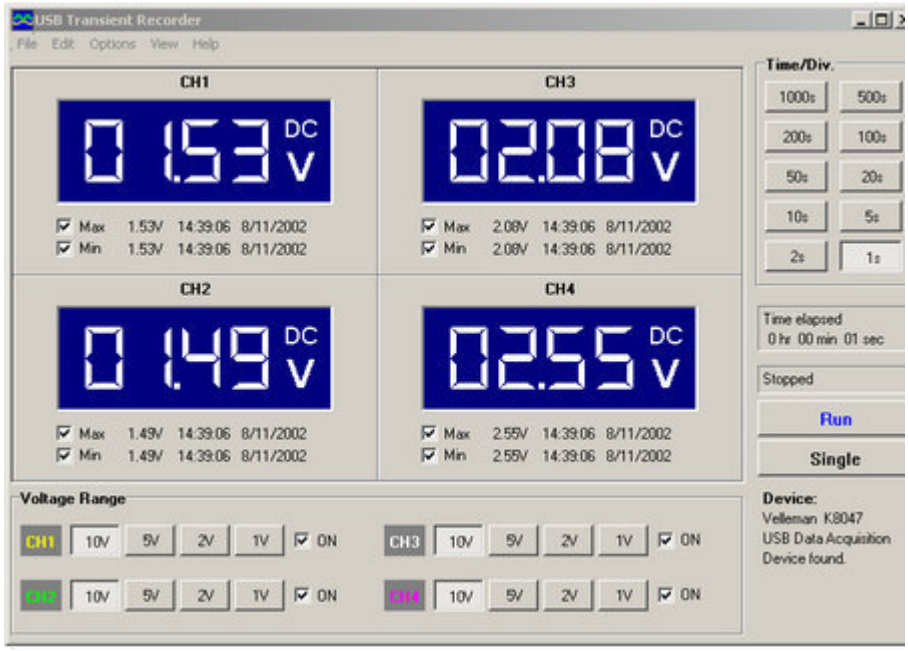
1.3.1 Analog screen



K8047 / PCS10 screenshot

Using this screen the 4 channels can be viewed simultanously as a trace on the screen .

1.3.2 Digital screen



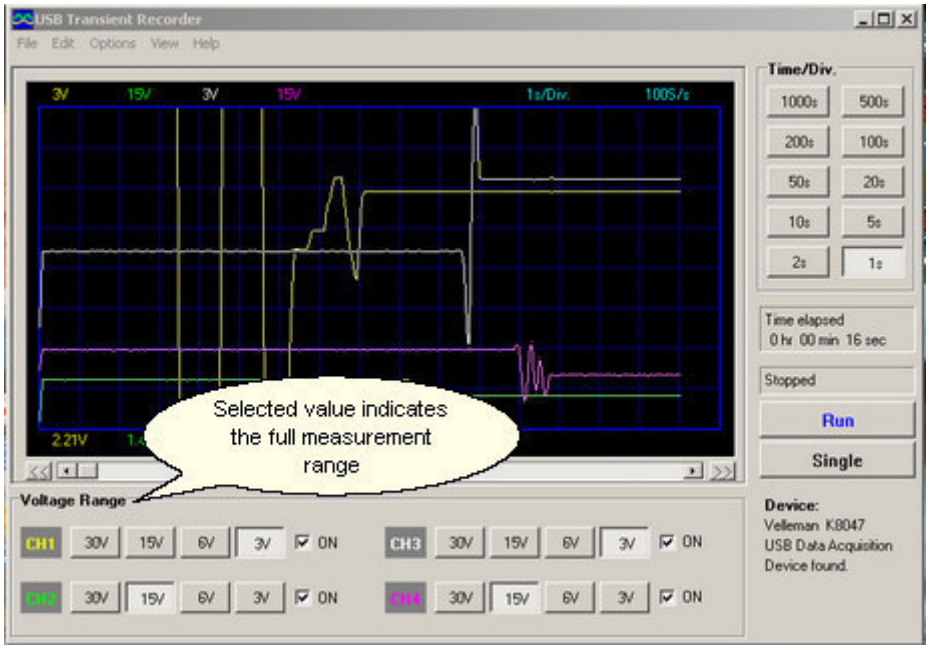
K8047 / PCS10 screenshot

Powerfull feature which allows digital visualisation of the measurements

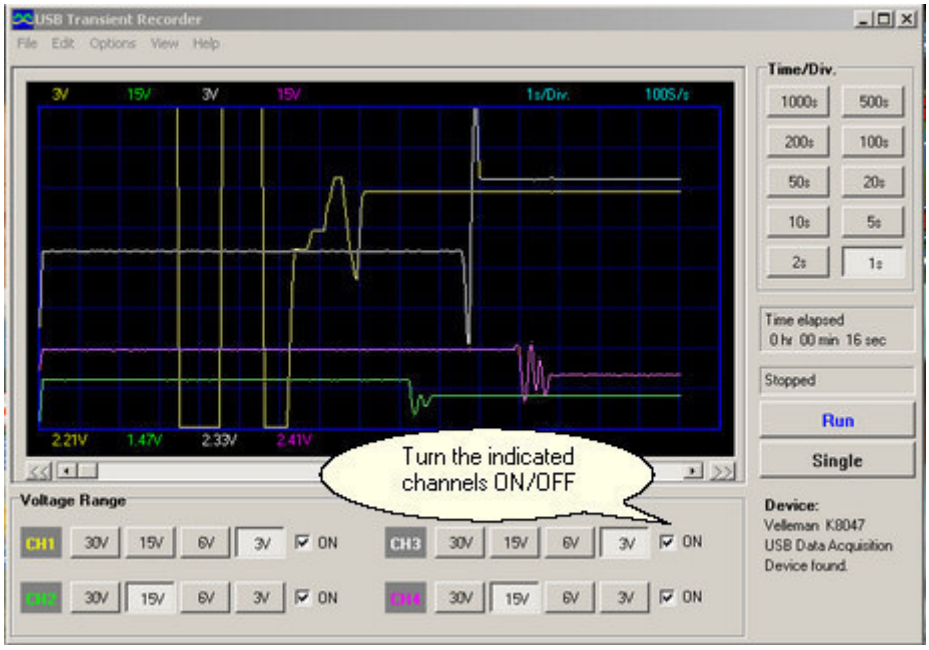
1.4 Software controls

1.4.1 Analog readout

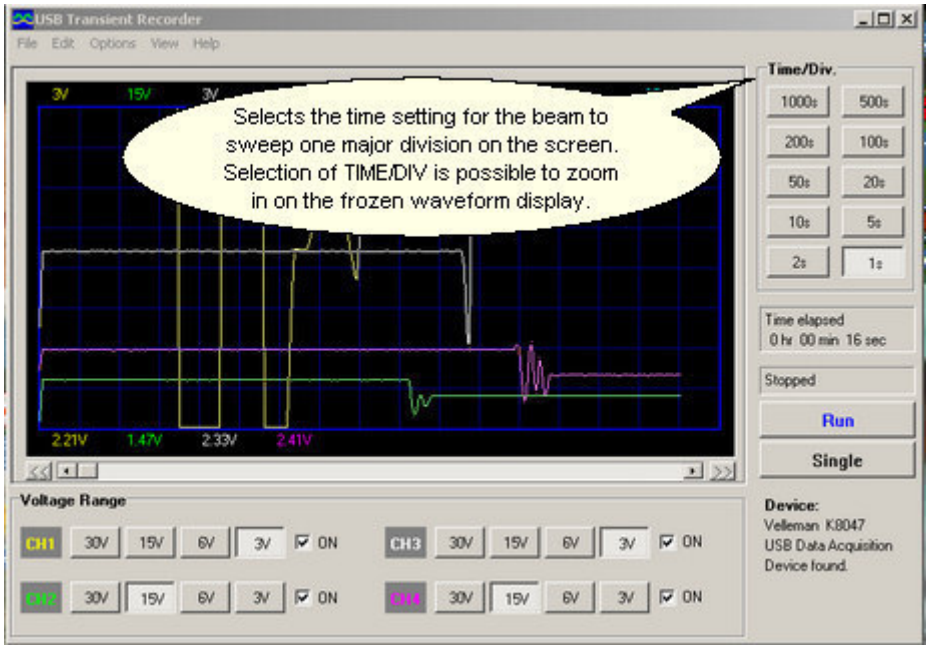
1.4.1.1 Voltage range



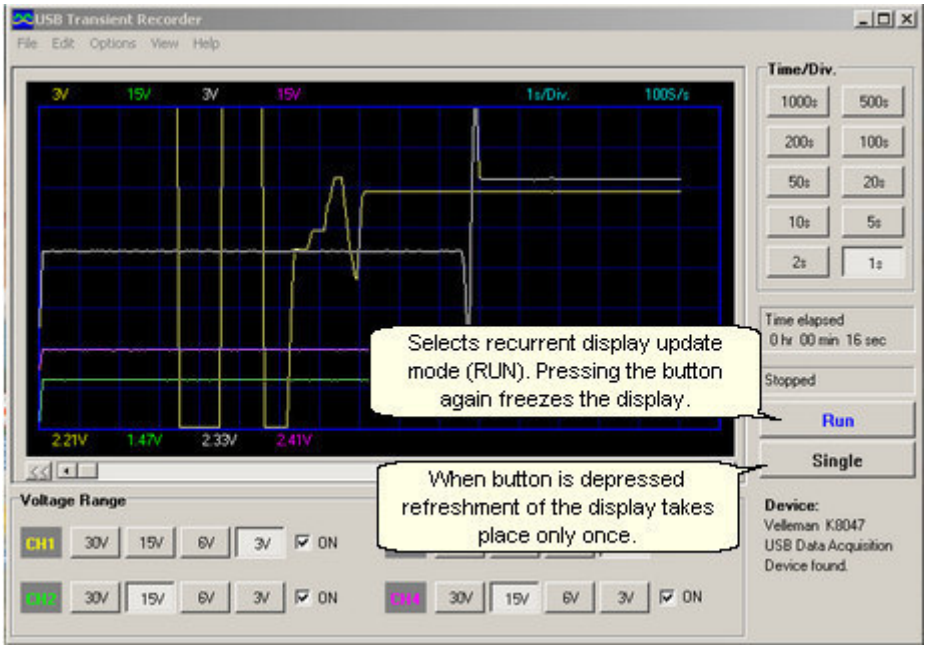
1.4.1.2 Channels



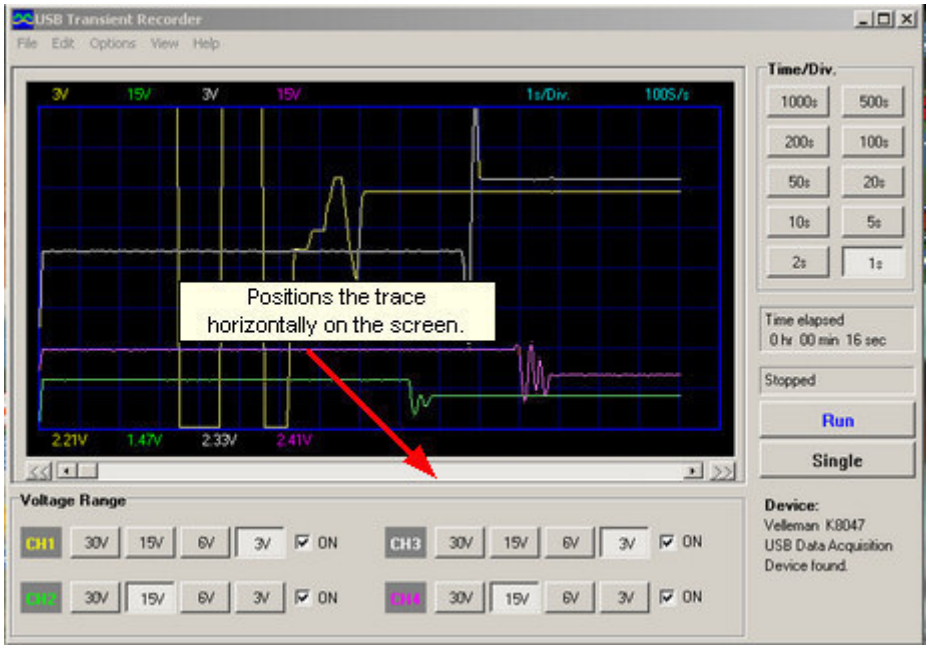
1.4.1.3 Time/div



1.4.1.4 Measuring

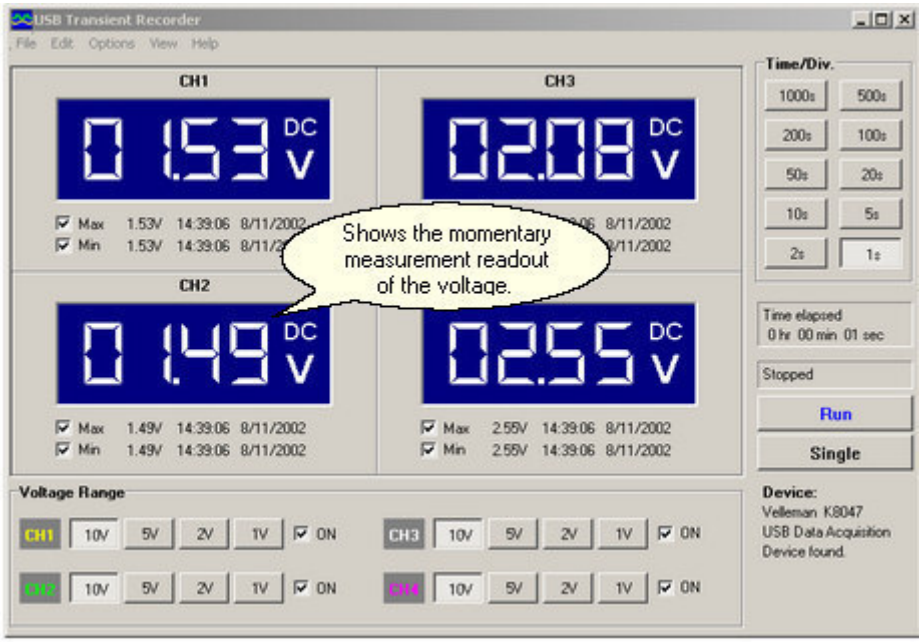


1.4.1.5 Scrollbar

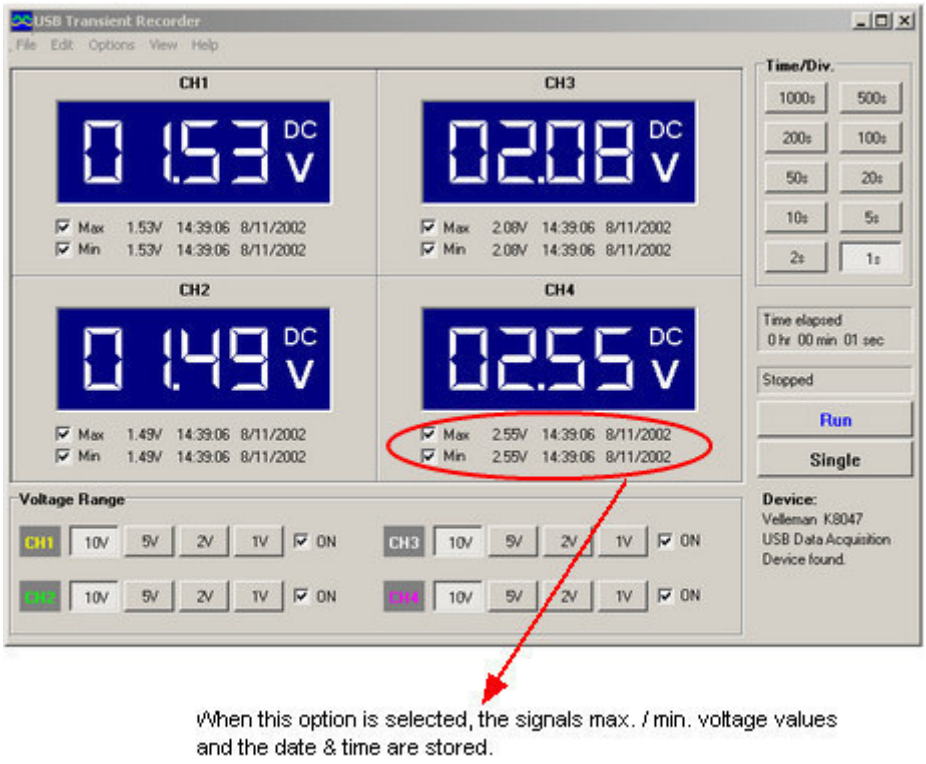


1.4.2 Digital readout

1.4.2.1 Momentary voltage



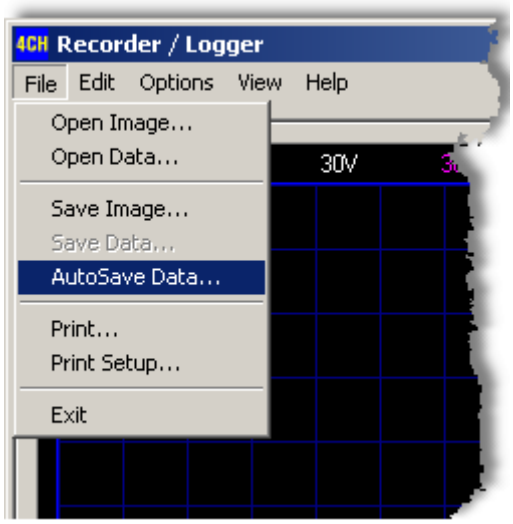
1.4.2.2 Max. & Min. voltage storage



When this option is selected, the signals max. / min. voltage values and the date & time are stored.

1.5 Menu options

1.5.1 File menu



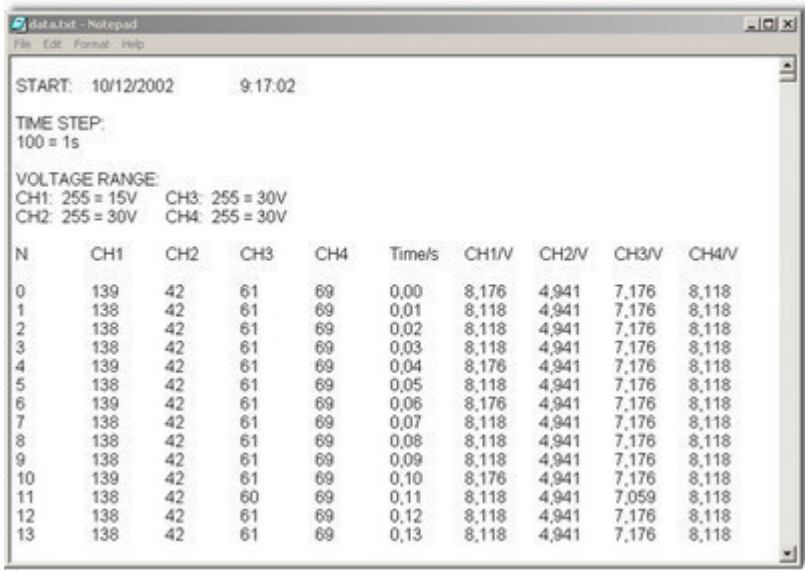
- Open image : Opens a image file and display it on the screen.
- Open data : Opens and displays the waveform data saved in text format using the Save data option.
- Save image : Saves the image to a file in Windows Bitmap (*.BMP) format, (full color).

» Save data : Saves the waveform in text format. only the portion of the data displayed on the screen is saved.

Default subdirectory \DATA for image and data files is created when the program is run the first time.

» AutoSave data : Saves the image and its date to a file during the run of a sample.
» Print : Print the image.
» Print setup : Selects a printer and sets printer options before printing. The available options depend on the printer you select.
» Exit : Teminates the program.

1.5.1.1 Date



data.txt - Notepad

File Edit Format Help

START: 10/12/2002 9:17:02

TIME STEP:
100 = 1s

VOLTAGE RANGE:
CH1: 255 = 15V CH3: 255 = 30V
CH2: 255 = 30V CH4: 255 = 30V

N	CH1	CH2	CH3	CH4	Time/s	CH1/V	CH2/V	CH3/V	CH4/V
0	139	42	61	69	0,00	8,176	4,941	7,176	8,118
1	138	42	61	69	0,01	8,118	4,941	7,176	8,118
2	138	42	61	69	0,02	8,118	4,941	7,176	8,118
3	138	42	61	69	0,03	8,118	4,941	7,176	8,118
4	139	42	61	69	0,04	8,176	4,941	7,176	8,118
5	138	42	61	69	0,05	8,118	4,941	7,176	8,118
6	139	42	61	69	0,06	8,176	4,941	7,176	8,118
7	138	42	61	69	0,07	8,118	4,941	7,176	8,118
8	138	42	61	69	0,08	8,118	4,941	7,176	8,118
9	138	42	61	69	0,09	8,118	4,941	7,176	8,118
10	139	42	61	69	0,10	8,176	4,941	7,176	8,118
11	138	42	60	69	0,11	8,118	4,941	7,059	8,118
12	138	42	61	69	0,12	8,118	4,941	7,176	8,118
13	138	42	61	69	0,13	8,118	4,941	7,176	8,118

Start : start time of the recording

Time step : Timescale setting 100 samples = 1second

Voltage range CH1 : Voltage range channel 1 => measured value 255 corresponds to 15V
CH2 : Voltage range channel 2 => measured value 255 corresponds to 30V
CH3 : Voltage range channel 3 => measured value 255 corresponds to 30V
CH4 : Voltage range channel 4 => measured value 255 corresponds to 30V

1700 measurements values are taken per display, numbered from 0 to 1700. In addition to this, the measured values can be read from channel 1 to channel 4.

Example CH1 :

Point in time : 13 x 1/100 = 0,13s + 9:17:02 = **9:17:02.13**
Voltage : 138 x 15/255 = **8,118V**

Example CH3 :

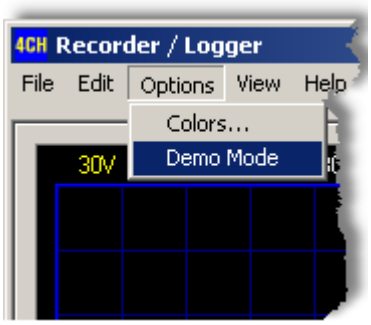
Point in time : 4 x 1/100 = 0,04s + 9:17:02 = **9:17:02.04**
Voltage : 61 x 30/255 = **7,176V**

Print page

1.5.2 Edit menu

- Copy : Copies the image to the windows 'clipboard'.
- Paste : Pastes the image residing in windows 'clipboard' to the screen.

1.5.3 Options menu



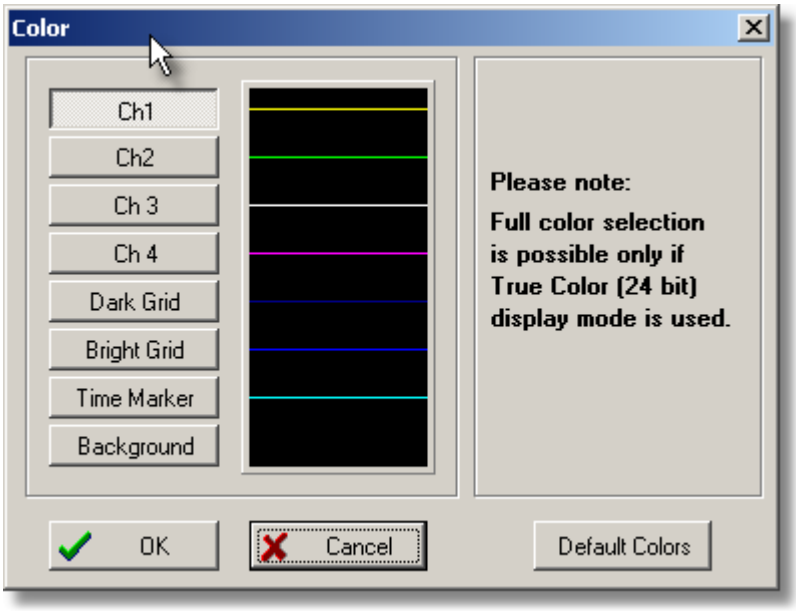
- Colors : Select the color for various items on the waveform display. To change the color of an item, click the corresponding button. This will open a dialog in which you can select a new color.

  Full color selection is possible only if True color (24bit) palette is used. There are restrictions in the color combinations to the default settings.

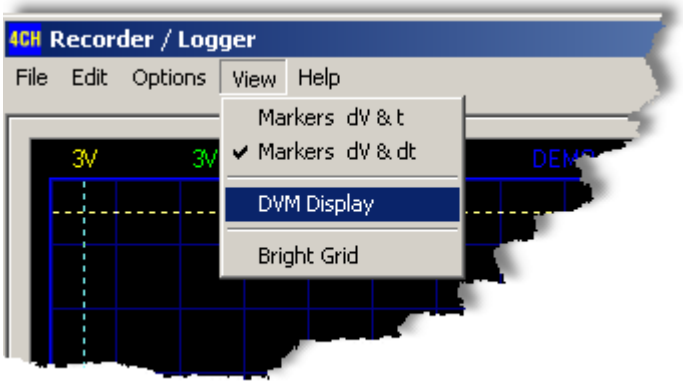
  Click **Default colors** button to resets all colors to the default settings.

- Demo mode : Unit goes into demo mode, several signals are displayed.

1.5.3.1 Colors



1.5.4 View menu



- Markers dV & t : The **absolute time** of the marker position is displayed. **(2)**
  Two horizontal markers for measuring voltage **(1)**
- Markers V & dt : The **time difference** between the two markers is displayed.**(1)**
  Two horizontal markers for measuring voltage **(2)**

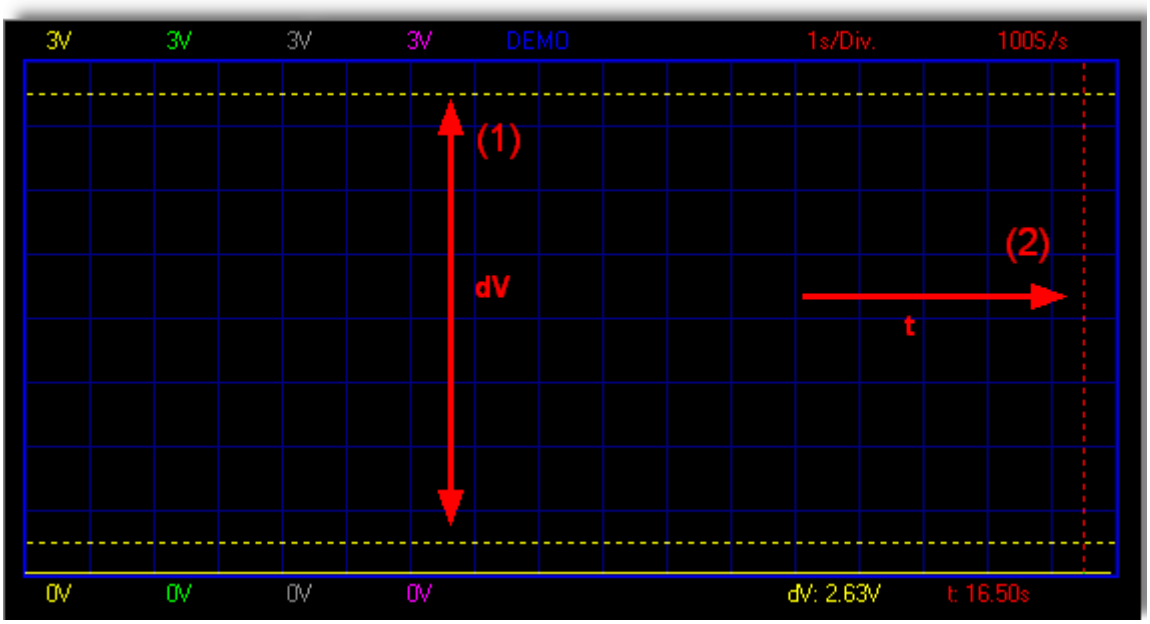
You can move the markers by using your mouse.

- DVM display : Displays the digital screen recorder/logger.
- Bright grid : Brightens the blue grid on the screen.

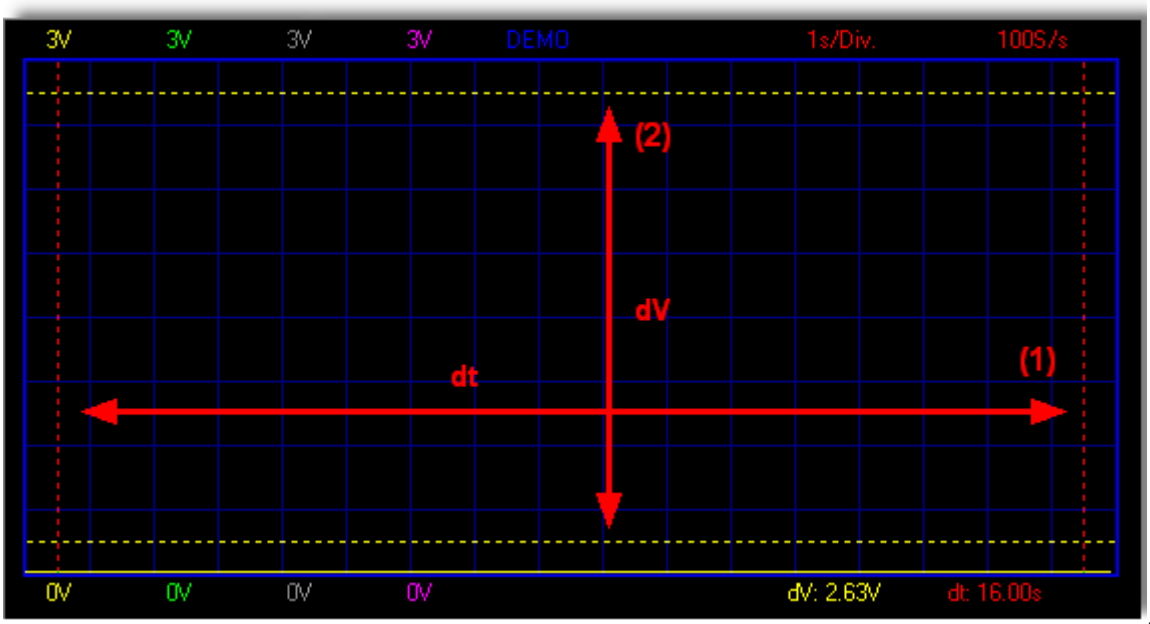
1.5.4.1 Markers

The user can perform measurements on one or 4 signals by using the markers.
This can be useful when measuring the interval between two points of the amplitude.

1.5.4.2 Markers dV & t



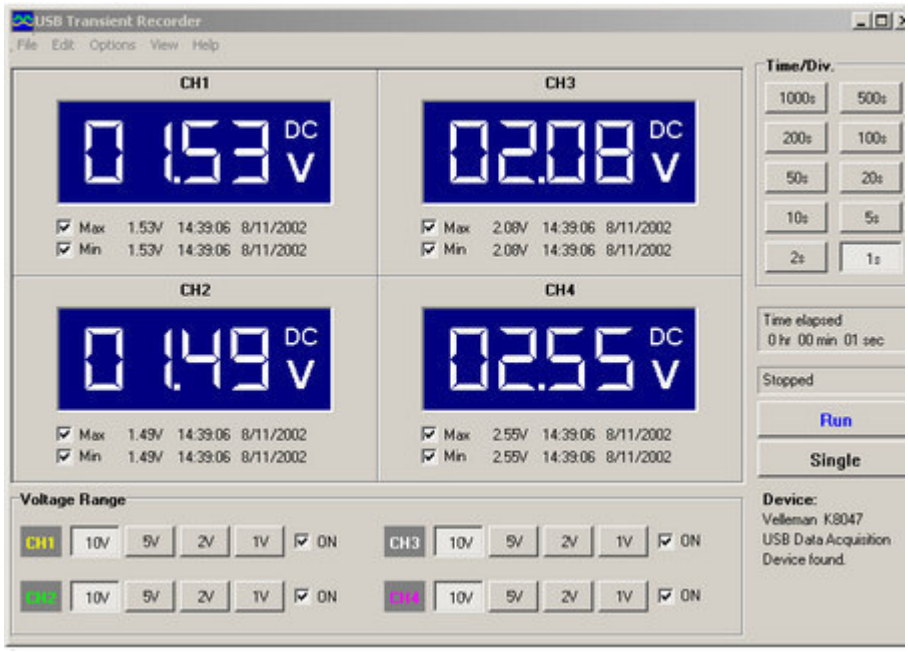
1.5.4.3 Markers V & dt



1.5.4.4 Move the markers

- Place the mouse pointer over a dached marker line.
- Press and hold the left mouse button.
- The marker line turns solid.
- Drag the marker to the approriate position.

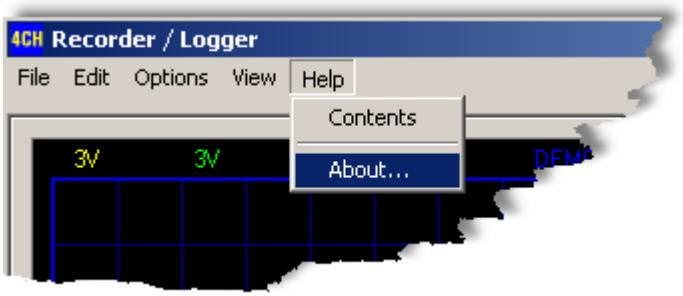
1.5.4.5 Display digital



K8047 / PCS10 screenshot

Unique feature allowing digital visualization of the max. and min. voltage peak during measurements

1.5.5 Help menu



» Contents : Display the help file.
» About : Displays information of the program version.

1.5.5.1 About

1.6 Assistance

1.6.1 Troubleshooting

- If the Record Led of the Recorder/Logger unit is continuously lit at the startup:

- Disconnect and then reconnect the unit to the PC.
- The Record LED should show sequence of three blinks and then stay off until the Run button is depressed.

1.6.2 Product support

E-mail :
Support@Velleman.be

Website :
http://www.velleman.be

1.7 glossary

1.7.1 Administrator

A person responsible for setting up and managing domain controllers or local computers and their user and group accounts, assigning passwords and permissions, and helping users with networking issues. Administrators are members of the Administrators group and have full control over the domain or computer.

1.7.2 DLL

An operating system feature that allows executable routines (generally serving a specific function or set of functions) to be stored separately as files with .dll extensions. These routines are loaded only

when needed by the program that calls them.

1.7.3 Logical printer

The software interface between the operating system and the printer in Windows. While a printer is the device that does the actual printing, a logical printer determines how a print job is processed and how it is routed to its destination (to a local or network port, to a file, ...). When you print a document, it is spooled (or stored) on the logical printer before it is sent to the printer itself.
See also printer; spooling.

1.7.4 Plug and Play

A set of specifications developed by Intel that allows a computer to automatically detect and configure a device and install the appropriate device drivers.

1.7.5 Port

Generally, a connection point on your computer where you can connect devices that pass data into and out of a computer. For example, a printer is typically connected to a parallel port (also called an LPT port), and a modem is typically connected to a serial port (also called a COM port).

1.7.6 Print spooler

Computer software that accepts a document sent to a printer by the user and then stores it on disk or in memory until the printer is ready for it. This collection of dynamic-link libraries (DLLs) receives, processes, schedules, and distributes documents for printing. The term spooler is an acronym created from "simultaneous print operations on line."
See also DLL; spooling.

1.7.7 Printer

A device that puts text or images on paper or other print media. Examples include laser printers or dot-matrix printers.
See also logical printer; Printer; Print spooler.

1.7.8 Spooling

A process on a server in which print documents are stored on a disk until a printer is ready to process them. A spooler accepts each document from each client, stores it, then sends it to a printer when the printer is ready.
See also print spooler.

1.7.9 USB

An external bus that supports Plug and Play installation. Using USB, you can connect and disconnect devices without shutting down or restarting your computer. You can use a single USB port to connect up to 127 peripheral devices, including speakers, telephones, CD-ROM drives, joysticks, tape drives, keyboards, scanners, and cameras. A USB port is usually located on the back of your computer near the serial port or parallel port. Universal serial bus is also called USB.

See also Plug and Play; port.

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