AcquiFlexCM
User Manual

For CM / XM Series

Ref: AcquiFlexCM
V1.0

www.acquitek.com

Acquitek, 12 Avenue des Prés, 78180, Montigny le Bretonneux, France

Contacting ACQUITEK

Phone: +33 1 67 37 32 11
Fax: +33 1 67 37 32 13

Address: ACQUITEK SAS.
12 Avenue des Pres
78180 – Montigny le Bretonneux

Web site: www.acquitek.com

Support
Email: info@acquitek.com

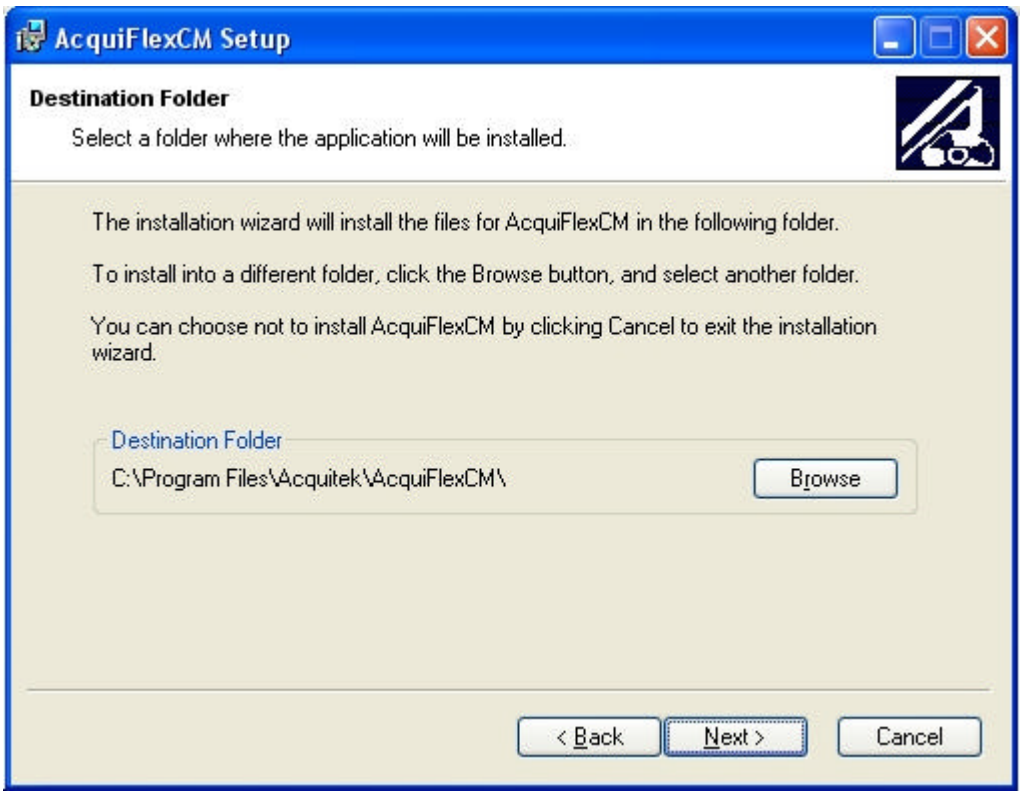
1 Introduction

This manual contains operating information for AcquiFlexCM Software Toolbox.

The manual consists of the following chapters:

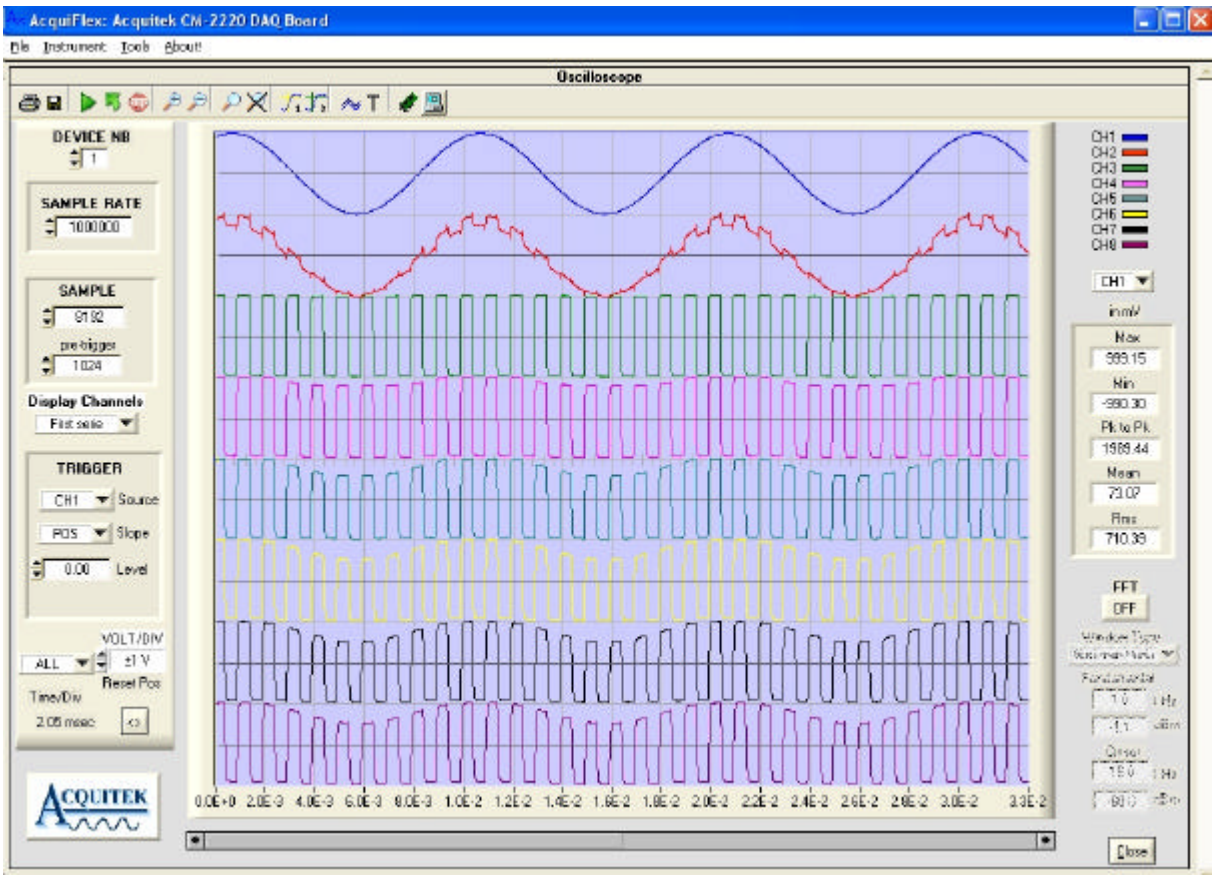
2 Installation

Please report to the CM or XM User Manual for hardware installation. Once done, just click on the setup file and follow the process.



3 Operating AcquiFlexCM

3.1 Oscilloscope control

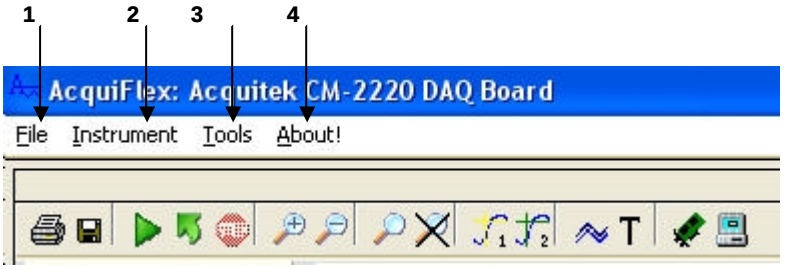


This figure shows the main Oscilloscope screen.

A maximum of eight channels are display at the same time. User can choose the next series of eight channels (if any) by selecting the “Display Channels” ring control.
An information of the current channel number is given at the right top of the screen.

User can move each curve by moving the zero line of the selected channel. To rearrange all the curves just click on the “Reset Pos” button.

3.1.1 Menu



1: File

Exit: Exit from AcquiFlexCM
Load Setup: Load parameters of Oscilloscope, Generator and logical Analyzer previously save in a *.ini file
Save Setup: Save parameters of Oscilloscope, Generator and logical Analyzer in .ini file

Note: Each new session of AcquiFlexCM reload the last initialization file , named AcquiFlexCM.ini and located under [Windows] directory.

2: Instrument

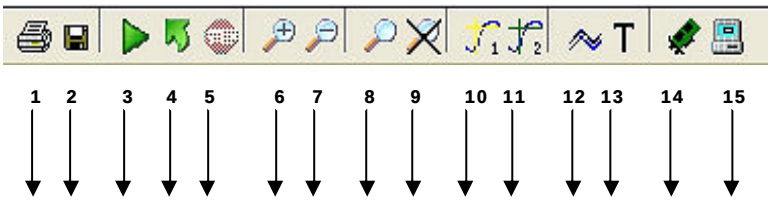
Oscilloscope: Show Oscilloscope display
Waveform Generator: Show Waveform Generator display
Logic Analyzer: Show Logic Analyzer display

3: Tools

Autosave mode**:** See page 15 for details

4: About: Show Version and Serial Number

3.1.2 Toolbar



1:  , Print Screen

2:  , Saving selected channel

3:  , Single shot acquisition

4:  , Continuous acquisition

5:  , Stop acquisition

6:  , Horizontal Zoom IN

7:  , Horizontal Zoom OUT

8:  , Zoom Display ON

9:  , Zoom Display OFF

10:  , Cursor 1 ON/OFF

11:  , Cursor 2 ON/OFF

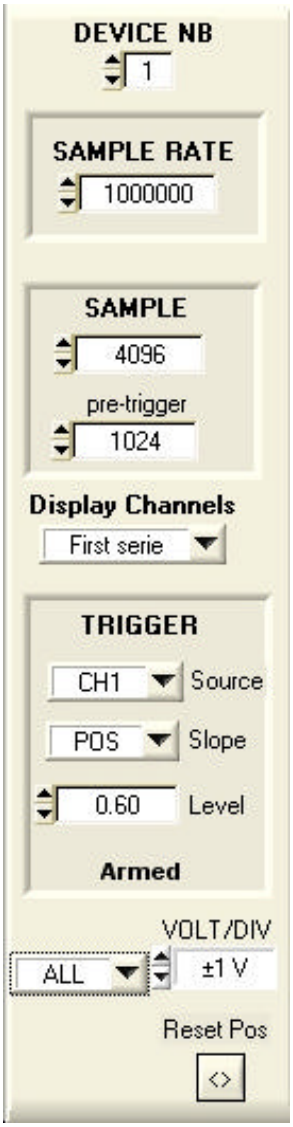
12:  , Persistence Mode

13:  , Trigger Line ON/OFF

14:  , Advanced Scope Setting

15:  , Input Parameter Setting

3.1.3 Horizontal Selection



Device Nb: User can select the logical device number of his board assigned by Acquitek Control Center software.
Default value = 1

Sample rate programmable from 1S/s up to 1MS/s aggregate , 1Hz resolution. There is one A/D converter. If 16 channels are active, the maximum resulting sampling rate is 1MHz /16 = 62500 Hz

Sample size from 2048 samples up to 7999488 samples, modulo 2048 samples.

Pre-trigger mode from 0 up to 32768. T icon available to display trigger position (ON/OFF). Pre-trigger mode is only available when Trigger source is an input channel (CH1,...CHn). No pre-trigger available using Free running mode or External triggering.

3.1.4 Display Channels

Select the eight channel series to display.

3.1.5 Trigger Selection

Select Trigger source, EXT trigger, CH1, CH2, ... CHn
NONE means run immediately.
Select Slope Positive or Negative

Select trigger Level

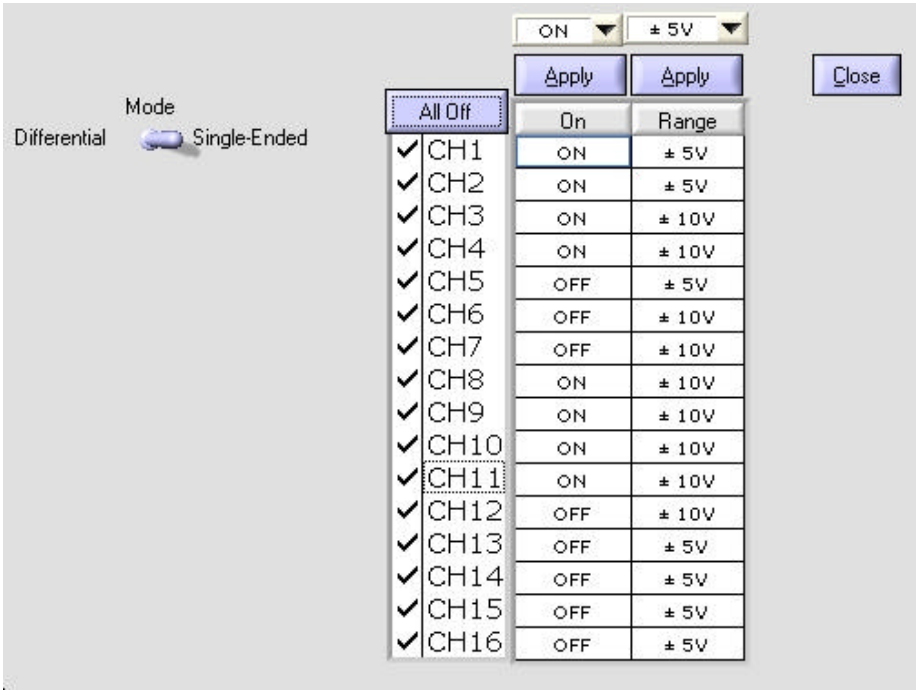
Information on the Trigger Status (Armed, Triggered or Ready)

3.1.6 Vertical Scale Selection

Select Volt per division on all or Selected channel

Reset channel position to default position

3.2 Input Setting Parameter



3.2.1 Input Mode

Click on binary switch to select the input mode: Differential or Single-Ended

3.2.2 Active Channel

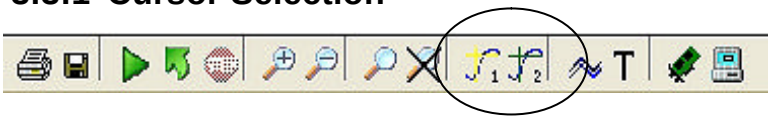
In order to enable/disable channel, user must check the channel item. For those selected item, click on the ON/OFF binary switch control and press Apply.

3.2.3 Input Range

In order select input range, user must check the channel item. For those selected items, click on the input range ring control and press Apply. Repeat same process for other selection.
Depending of CM model, the Vertical Range programmable for each channel is
± 10mV, 0-10mV, ± 100mV, 0-100 mV, ± 1V, 0-1V, ± 10V, 0-10V
Or
± 1.25V, 0-1.25V, ± 2.5V, 0-2.5V, ± 5V, 0-5V, ± 10V, 0-10V

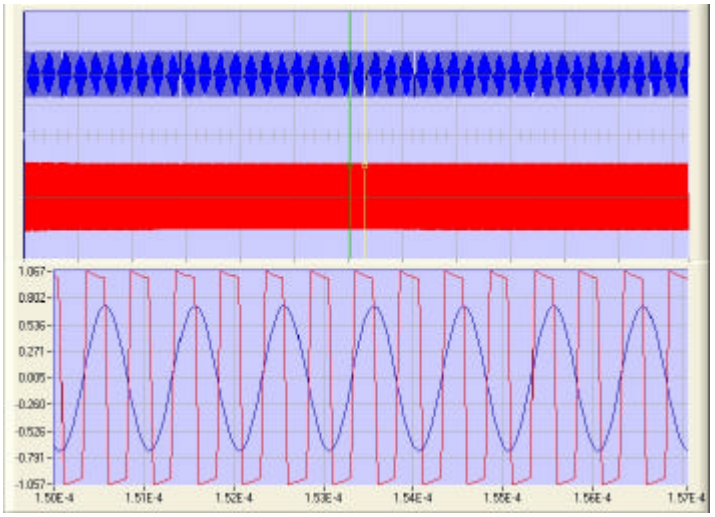
3.3 Oscilloscope Display Control

3.3.1 Cursor Selection



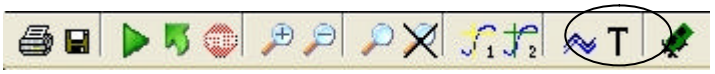
Two horizontal cursors are available, attached to the first channel only. The difference between both cursors is given at the right top corner in black color.

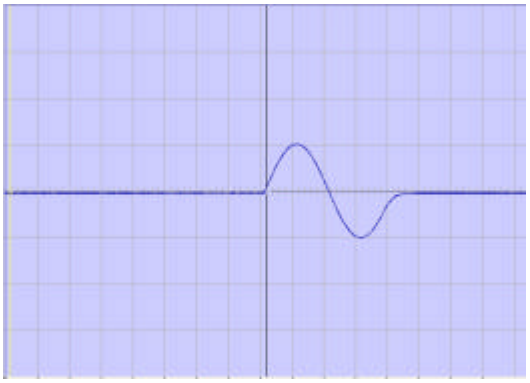
3.3.2 Zoom Selection



A zoom display is available, cursor 1 and 2 define the portion of curves displayed.

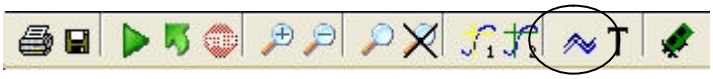
3.3.3 Trigger Line Selection

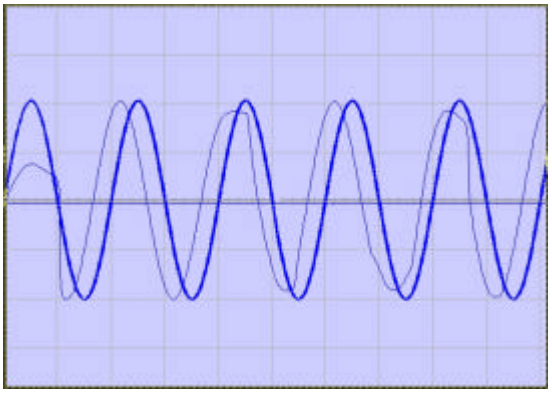




T Icon allows the trigger position to be displayed

3.3.4 Persistence Selection

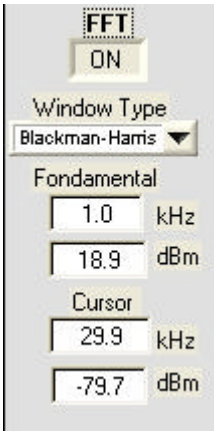




The Persistence setting allows the user to control the infinite persistence of the signal display in the display Window

Persistence mode allows signal monitoring and capture of erratic events

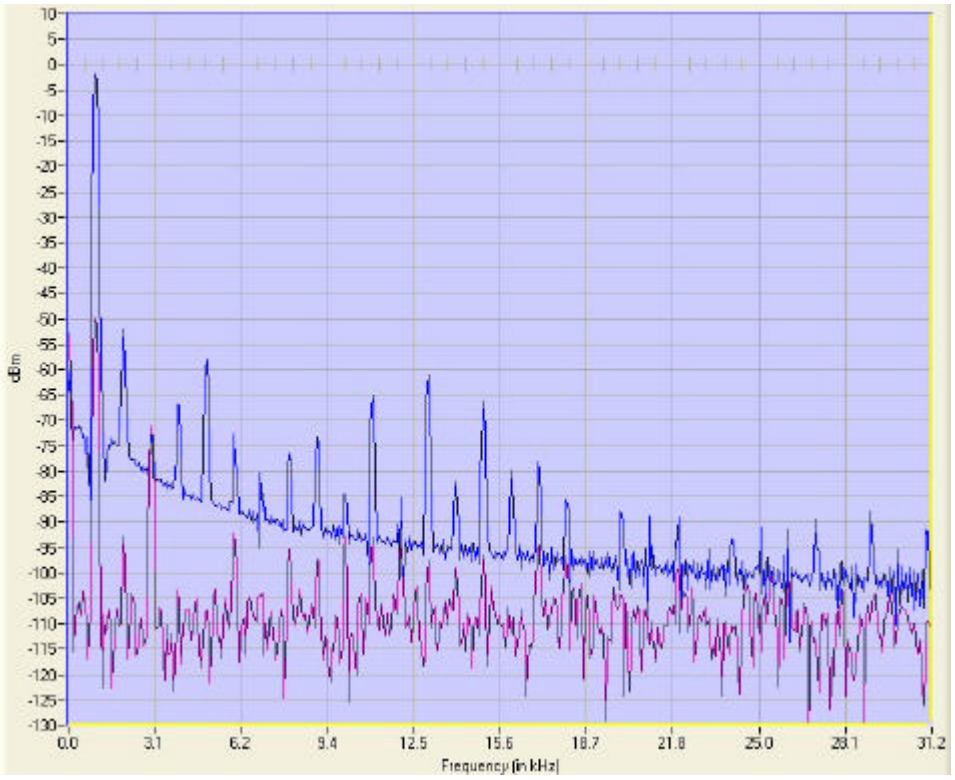
3.3.5 FFT Selection



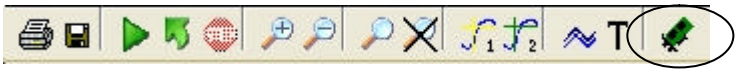
FFT ON brings up the multi-channels FFT display.
Display is in dBm

A choice of Windows is included:
Rectangular, Blackman-Harris, Hanning, Hamming, Exact Blackman, Blackman, Flat top

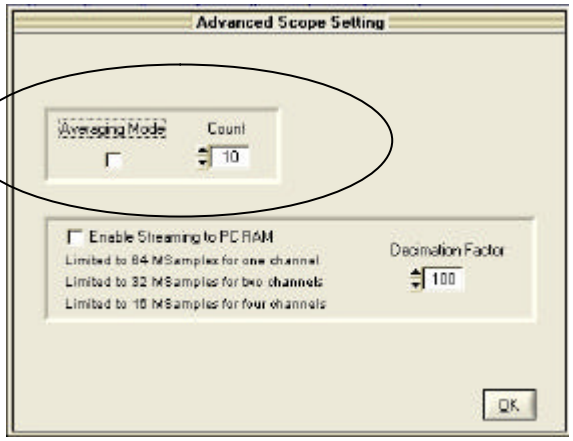
A cursor allows extracting the frequency and magnitude of a specific harmonic



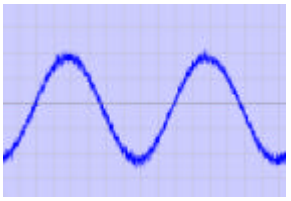
3.4 Advanced Oscilloscope Control

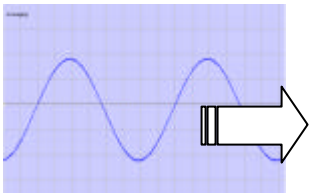


3.4.1 Averaging Control

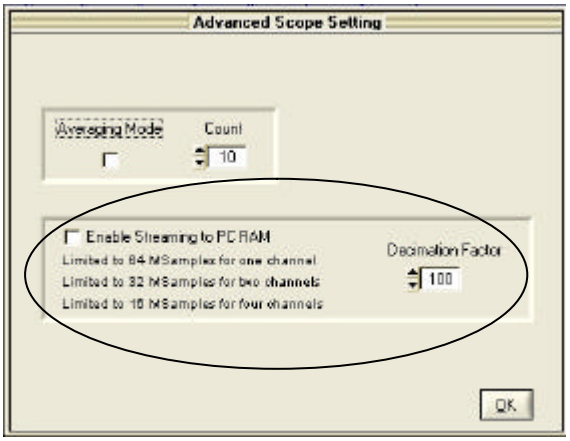


The averaging control allows the user to capture many records, up to 256 and average them for display, default 10 counts





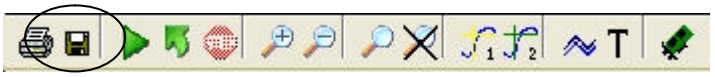
3.4.2 Streaming to PC RAM control



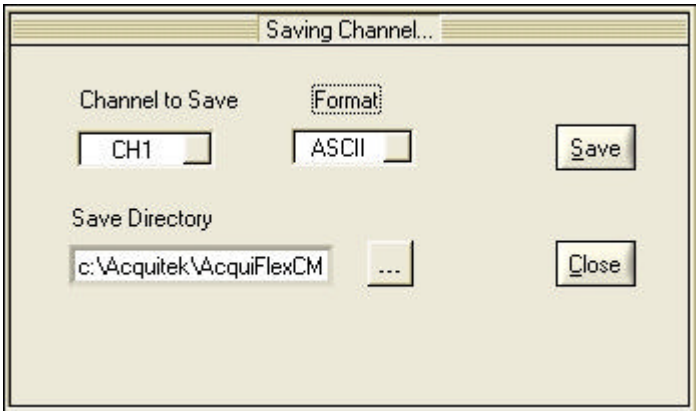
The Streaming control allows capture of very long stream of data, up to 64MS.
The total number of sample per channel is 64MS/ NumActiveChannel (64MS for one channel, 32MS for two channels, 8MS for 8 channels and so on).
Decimation factor allows quick display of a large amount of data
Decimation factor range from 1 to 1000
You can save all data in binary format only

Note that you cannot perform averaging while streaming mode is active.

3.4.3 Waveforms saving Control



Click on Diskette to enable channel saving mode



Select Channel to be saved and click on save button. You can save all channels in one time by selecting ALL.

The three formats available are asc, dat and awg

***.asc:** ASCII
The ASCII file content header with acquisition parameters:

Acquisition on CH1
Date: 11/1/2005 at 16:49:16
Sampling rate: 10000000
Input Range: 10.00
Total Number of Samples: 4096
Number of Pre-Samples: 1024
-0.806641
-0.776367
-0.445312
0.051758
0.532227
0.809570
0.774414
0.443359

***.dat**: Binary
Header information is available at the top of the file, following by the raw data
Information Structure of the Header

```
{
        int Day;              // 4 bytes
        int Month;            // 4 bytes
        int Year ;            // 4 bytes
        int Hour ;            // 4 bytes
        int Min ;             // 4 bytes
        int Sec ;             // 4 bytes
        double iClockRate ;   // 8 bytes
        double Range ;        // 8 bytes
        int Samples ;         // 4 bytes
        int pre_Samples ;     // 4 bytes
} Header ;
```

Header size = 48 bytes

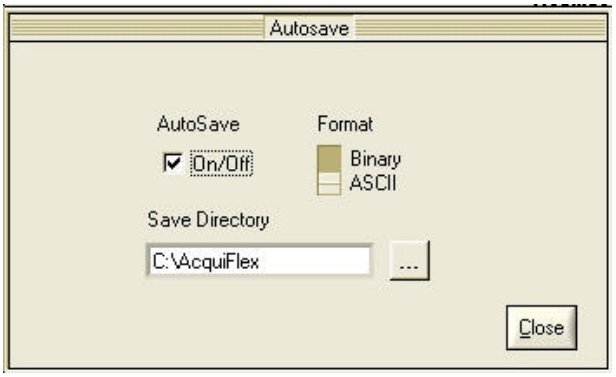
Raw data are signed 16-bit integer. It can take values between –32768 to 32767

-32768 ➔ Minimum value of the current input range
0 ➔ 0V
32767 ➔ Maximum value of the current input range

This binary format is the only one available in Streaming capture.

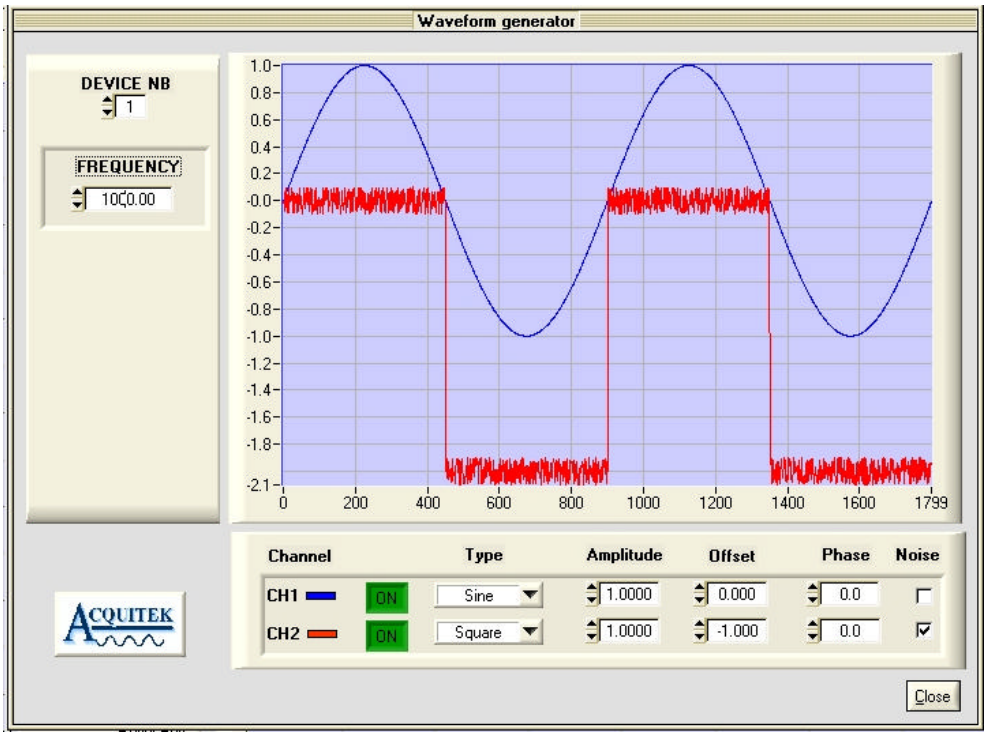
***.awg**: ASCII
Two columns, one column as time information, second column as voltage. This file is straight compatible with the waveform generators.

3.5 Autosave Mode

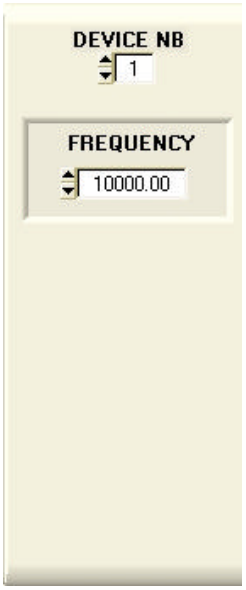


Autosave is a very powerful tool for data transient signals acquisition. It allows signals monitoring and data capture to disk with time and date stamping on the trigger occurrences. The channels are saved to file using the current hardware configuration defined in the Oscilloscope instrument.
Waveforms are saved automatically on the disk in binary or ASCII format, user selection.
The dialog box allows selection of the target directory

3.6 Waveform Generator



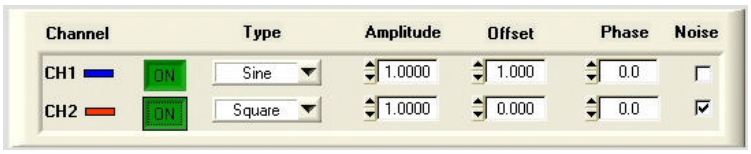
3.6.1 Device & Frequency Control



Device Nb: User can select the logical device number of his board assigned by Acquitek Control Center software.
Default value = 1

Output frequency is programmable from 0.01Hz up to 500kHz

3.6.2 Functions control

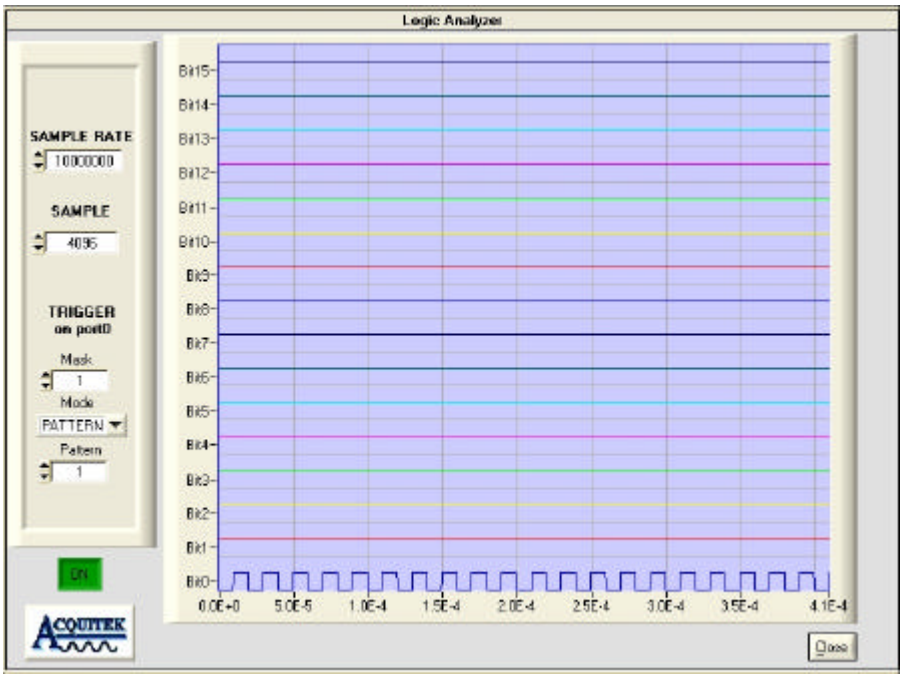


Type: Sine, Square, Triangle, Sawtooth, White Noise, DC and arbitrary Waveform File
Amplitude: Output amplitude is +/- selected value into 50 Ohms, +/-5V maximum, 1V default
Offset: DC value, +/- 5V maximum, 0V default
Phase: -360° to +360°, 0° is the default value
Noise: Add 10% of selected amplitude with white noise

When File wavetype is chosen, selects the file containing waveform data. Each line of the file should contain a time offset value followed by a tab, then the sample value in volt and a carriage return. The number of samples must be a multiple of 32.

Press the ON button of the selected channel to generate the waveform. Press OFF to stop.

3.7 Logic Analyzer



3.7.1 Horizontal Selection

Device Nb: User can select the logical device number of his board assigned by Acquitek Control Center software.
Default value = 1

Sample Rate is programmable from 1Hz up to 1 MHz
Default value, 1 MHz

Sample size from 2048 samples up to 1MSamples, modulo 2048 samples.

Logic Analyzer cannot be use in the same time as the oscilloscope