



VinciLab

Modern Data-logger for Science



VinciLab is an advanced mobile graphic data acquisition system. It is a handheld Linux device equipped with two processors and 4GB memory. Its 5" capacitive color touch screen offers easy control of the device. For wireless connectivity VinciLab is equipped with Wi-Fi and Bluetooth. VinciLab can be used standalone and with a computer, in the classroom and in the field.



Operating System	Linux
Display	5" (800 x 480 pixel) capacitive color touch screen
Processors	Two: main (ARM 720 MHz) and measurement
Memory	4 GB, of which 1.5 GB user memory in the 'My Files' folder Expandable with a USB flash drive
Power	Rechargeable battery Li-ion 3.7 V, 4000 mAh USB Power Adapter (100-240 V AC, DC 5V/2A) included
Connectivity	Wi-Fi 802.11 b/g/n Bluetooth® 2.1 + EDR
Computer connection	Mini USB port also used for powering
USB port	Full USB for USB peripherals
Other ports	Audio In/Audio Out
Sensor inputs	4 analog BT (right-hand) inputs and 2 digital BT (left-hand) inputs. Each analog input can work as a counter
Built-in sensors	Sound sensor, max. frequency 44 100 Hz 3-axis Accelerometer (2g, 4g, 8g), max. frequency 400 Hz
ADC resolution	12 bits
Sampling frequency	Max. 1 MHz, simultaneously on 2 analog inputs
Outputs	Via digital sensor inputs Eight 1-bit or two analog outputs
Software on board	Dedicated Desktop Applications Coach 6 Application for data collection, graphing and analysis



CMA Centre for Microcomputer Applications
www.cma-science.nl



VinciLab Desktop Applications

The dedicated desktop applications, installed on VinciLab, offer tools for collecting data, managing user files, setting up the device and its wireless connection, browsing the web, watching video files, playing audio files, etc. All applications can be easily upgraded via the VinciLab Update server available via a Wi-Fi connection.

-  **Coach 6**
Collecting, graphing and processing data
-  **My Files**
Managing user files on VinciLab
-  **Settings**
Configuring the device to your preferences
-  **Connections**
Configuring the wireless connections
-  **Web Browser**
Accessing the Internet
-  **Images**
Browsing and displaying images
-  **Media Player**
Playing audio and video files
-  **Calculator**
Performing simple mathematical calculations



Sensors for VinciLab

For connecting sensors VinciLab has four analog BT (right-hand) sensor inputs with a high sampling rate of 1 MHz, and two digital BT (left-hand) sensor inputs. The digital sensor inputs can also be used as control outputs for control of eight 1-bit or two analog outputs. Two additional sensors, an internal microphone and a 3-axis accelerometer, are built-in.



CMA BT sensors can be directly connected to VinciLab sensor inputs.



Included with VinciLab:



Coach 6 Application

The powerful Coach 6 Application installed on VinciLab offers live sensor data displays, real-time graphing, tools for data

processing and possibilities to create new or open ready-to-go student activities enriched with texts, images and web-pages.

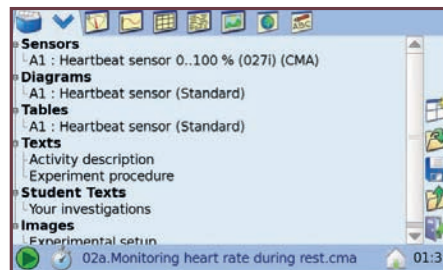
Coach 6

The Coach 6 Application start-up screen



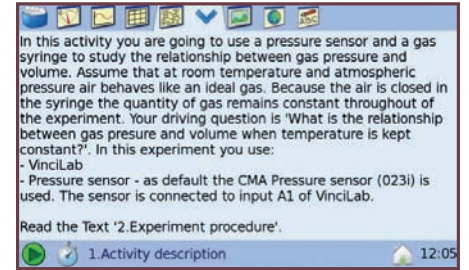
Activity Screen

to display elements of Activity or Result



Texts Screen

to display texts (not editable by students)



Sensors Screen

to live display the measured values



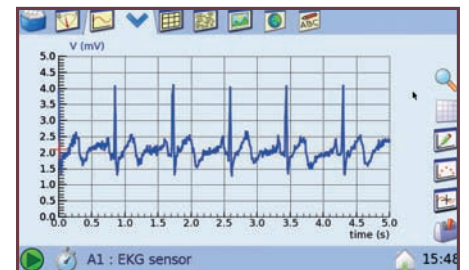
Images Screen

to display images



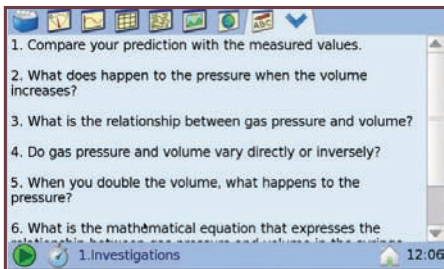
Diagrams Screen

to display data in diagrams



Student Texts Screen

to display student texts



Tables Screen

to display data in tables

time (s)	I (%)	
728	7.27	27
729	7.28	27
730	7.29	27
731	7.30	27
732	7.31	27
733	7.32	28
734	7.33	28
735	7.34	29
736	7.35	29

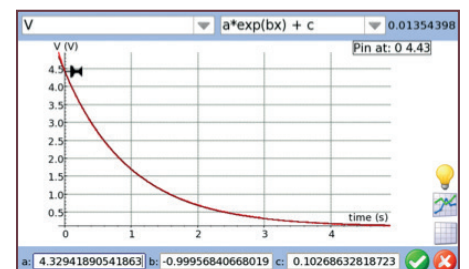
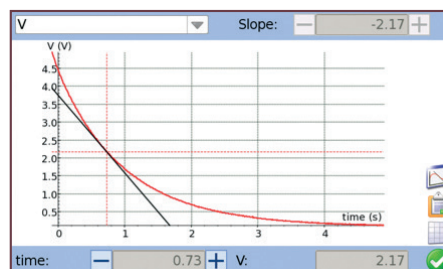
Web-pages Screen

to display web pages



Data processing

Data collected from sensors can be processed and analyzed with many tools like smoothing graph, determining a slope, determining an area under a graph, finding a function to fit the measured data, calculating a derivative or integral graph.





Using VinciLab with a computer



Data collection with the Coach 6 program

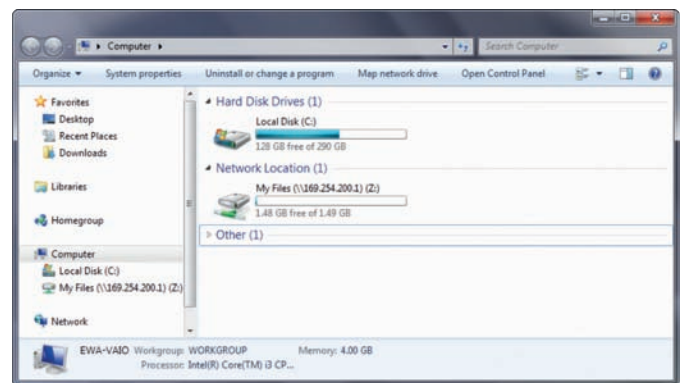
Coach 6 and Coach 6 Lite (version 6.5 or newer) support measurements with VinciLab. During such measurement VinciLab is connected to the computer via a USB port or communicates via a Wi-Fi connection, and is controlled by Coach 6 running on the computer. The collected data are transferred in real-time to the computer and the measurement can be followed directly in Coach 6.

The PC version of Coach 6 extends the features of the Coach 6 application and allows among others to:

- create new Student Activities or modify the existing ones
- further analysis of Student Results on the PC, for instance at home
- synchronize a video, recorded during the experiment, with experimental data
- compare measured data with a dynamical model describing the phenomena
- enrich the measured data by adding an animation visualizing the experiment.

Transferring files between VinciLab and a computer

VinciLab can be used with a Windows computer for transferring files between the computer and the 'My Files' folder on VinciLab.



Displaying VinciLab's screen on any computer or mobile device

By using the wireless connectivity and the Virtual Network Computing (VNC) protocol the VinciLab's screen can be remotely viewed and controlled from any computer or mobile device connected to the same network. To allow this a VNC Viewer program needs to be installed on the controlling device and remote connection has to be established between the two devices.

