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DATA PiXX2 Full (VPX-DPX-1003C)

DATA PiXX2 Lite (VPX-DPX-1002A)

User Manual

Version 1.0



Vision Science Solutions

www.vpixx.com



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For more information about our company and products, visit our Web site at www.vpixx.com

For information, comments or suggestions, please contact us by e-mail at support@vpixx.com

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Version History of this document

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1.0	2014/10/30	P.Kakos	v1.0 release

Document Icons

The use of icons emphasizes helpful, caution or warning notes. Below is a list of the icons available.




Icon	Type	Description
	Helpful Hint	<i>Information to help out during assembly, installation or usage</i>
	Caution Notice	<i>Important Information to prevent misuse and/or damage to equipment</i>
	Warning	<i>Critical information to prevent damage to equipment and/or personnel</i>

Table of Contents

Table of Contents	2
Table of Tables	4
Table of Figures	4
Overview	5
WARNING - SAFETY INFORMATION & PRECAUTIONS	5
Safety precautions	5
Compliance Information	6
For European Countries	6
For the United States of America	7
For Canada	7
Declaration of RoHS Compliance	7
General specifications	8
Video processing	8
Analog to digital converter	9
Digital to analog converter	9
Audio CODEC	9
Digital input	9
Digital output	10
Power	10
Software	10
Rear Panel Connectors	10
DATAPixx2 installation	11
Installation precautions	11
Cable installation	11
Device detection	11
Software Installation Instructions for Mac OS X	11
Driver and Software Installation Instructions for Windows	12
I/O connector descriptions	13
Analog I/O connector	13
VESA 3D connector	13
Digital output connector	14

Digital input connector	14
Audio In / MIC In / Audio Out	15
Software support	16
Psychtoolbox.....	16
Python.....	17
Low-level ANSI C API.....	17
DATAPixx2 firmware update.....	18
Theory of operation.....	19
Video Pipeline	19
Dual link DVI output; Testing Display / Console Display.....	19
Analog output interface.....	20
Analog input interface	20
Digital interface	20
Audio interface	20
vputil software tool	21
Maintenance and Calibration	22
Cleaning the DATAPixx2.....	22
Warranty.....	23

Table of Tables

TABLE 1 ANALOG I/O PIN ASSIGNMENT.....	13
TABLE 2 VESA 3D PIN ASSIGNMENT.....	13
TABLE 3 DIGITAL OUTPUT PIN ASSIGNMENT	14
TABLE 4 DIGITAL INPUT PIN ASSIGNMENT.....	14
TABLE 5 AUDIO IN PIN ASSIGNMENT	15
TABLE 6 AUDIO OUT PIN ASSIGNMENT.....	15
TABLE 7 MIC IN PIN ASSIGNMENT.....	15

Table of Figures

FIGURE 1 DATAPIXX2 UNIT.....	8
FIGURE 2 DATAPIXX2 REAR PANEL CONNECTORS	10
FIGURE 3 VPIXX TOOLS SETUP WIZARD	12
FIGURE 4 VPUTIL APPLICATION MAIN SCREEN	21

Overview

This manual provides installation, usage and maintenance information for VPixx Technologies Inc.'s DATAPixx2 system.

For technical questions or product support information, do not hesitate to contact the VPixx support team by sending an E-mail at support@vpixx.com or by phone.



By creating your *MyVPixx* account on the VPixx Technologies website, you will have access to additional product documentation, demos, source code examples and the latest firmware and software drivers.

WARNING - SAFETY INFORMATION & PRECAUTIONS

Safety precautions

- Do not open the cabinet. There are no user serviceable parts inside.
- Use only the power cable provided.
- Ensure that the power outlet includes a Ground connection, as this equipment **MUST** be grounded.
- Do not expose the DATAPixx2 to rain or moisture, and do not place any liquids on its top surface.
- Unplug the system before cleaning, and use a damp (not thoroughly wet) cloth.
- Handle the power cable carefully and avoid sharp bends. Do not use a damaged power cable.
- Do not cover or obstruct the ventilation outlets or inlets.
- Ensure that the total ampere rating of the products connected to the outlet does not exceed the current rating of the electrical outlet, and that the total ampere rating of the products connected to the power cord does not exceed the rating of the power cord. Look on the power label to determine the ampere rating (Amps or A) for each device.

Compliance Information

For European Countries



DECLARATION OF CONFORMITY

Manufacturer's Name: VPixx Technologies Inc.

Manufacturer's Address: 630 Clairevue West suite 301
Saint-Bruno, Qc
Canada, J3V 6B4

Product Name: DATAPixx2 and DATAPixx2 Lite

Part Numbers: VPX-DPX-1003C, VPX-DPX-1002A

Product Options : All

Application of Council Directive:


2004/108/EC	-Electromagnetic Compatibility directive
2006/95/EC	-Low Voltage directive
2002/95/EC	-RoHS directive
2012/19/EU	-Waste Electrical and Electronic Equipment directive

The following harmonised standards have been used:

EN 61326-1:2013	-Electrical equipment for measurement, control and laboratory use.
• IEC CISPR 11	-Radio frequency disturbance characteristics (Class A)
• IEC 61000-3-2	-Limits for harmonic current emissions (Class D)
• IEC 61000-3-3	-Limitation of voltage changes, voltage flicker ($\leq 16A$ per phase)
• IEC 61000-4-2	-Electrostatic discharge immunity test (Level 2 contact, air) (Perf Criteria B)
• IEC 61000-4-3	-Radiated, radio-frequency, electromagnetic field immunity test (Level 2, Perf Criteria A)
• IEC 61000-4-4	-Electrical fast transient/burst immunity test (Level 2, Perf Criteria B)
• IEC 61000-4-5	-Surge immunity test (Level 2, Perf Criteria B)
• IEC 61000-4-6	-Immunity to conducted disturbances, induced by radio-frequency fields (Level 2, Perf Criteria A)
• IEC 61000-4-8	-Power frequency magnetic field immunity test (Level 2, Perf Criteria A)
• IEC 61000-4-11	-Voltage dips, short interruptions and voltage variations immunity tests (Perf Criteria B and C)

Supplementary Information:

To remain CE compliant, only CE compliant parts should be used with this product. Maintaining CE compliance also requires proper cable and cabling techniques. VPixx Technologies will not retest systems or components that have been modified by customers.

Signature: 

Printed name: Jean-François Hamelin, Eng

Title: Vice President

The following information is only for EU member states:

The mark shown to the left is in compliance with the Waste Electrical and Electronic Equipment directive 2012/19/EU (WEEE).



The mark indicates the requirement NOT to dispose of the equipment as unsorted municipal waste. For more information call VPixx Technologies Inc. or email us at support@vpixx.com

For the United States of America

This device complies with part 15 subpart B of FCC rules. Its operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 subpart B of the FCC rules.

For Canada

This Class A digital apparatus complies with Canadian ICES-003.

Declaration of RoHS Compliance

RoHS This product has been designed and manufactured in compliance with Directive 2002/95/EC of the European Parliament and the Council on restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive).

General specifications

The DATAPixx2 is a complete multi-function data and video processing USB peripheral for vision research. In addition to a dual-display video processor, the DATAPixx2 includes an array of peripherals which often need to be synchronized to video during an experiment. These include a stereo audio stimulator, a button box port for precise reaction-time measurement, triggers for electrophysiology equipment, and a complete analog I/O subsystem. Because the video controller and peripheral control are implemented on the same circuit board, you can now successfully synchronize all of your subject I/O to video refresh with microsecond precision.

As with all VPixx Technologies Products, the DATAPixx2 is field upgradable. If you need a new feature in order to follow some exciting new direction in your research, we are able to develop your functionality in our labs, and provide you with an update for your DATAPixx2 via email.



Figure 1 DATAPixx2 unit

Video processing

- DVI input: Dual-link on DVI-D connector
- DVI input frequency: 25 MHz to 330 MHz
- DVI output channels: Dual-synchronized, dual-link DVI
- Video output format: Mirror or haploscope mode
- Maximum video output resolution:
 - 1920 x 1080 @120 Hz (mirror mode)
 - 1920 x 1080 @60 Hz (haploscope mode)

Analog to digital converter

- Number of channels: 16 (or 8 differential), on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 200 kSPS per channel
- Frequency programming modes:
 - Samples per second
 - Samples per video frame
 - Nanoseconds per sample
- Simultaneous sampling across all channels
- Input range: ± 10 V
- Input impedance: $1.6 \cdot 10^8 \Omega // 3$ pF
- Absolute maximum input tolerance: ± 12 V

*ADC functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

Digital to analog converter

- Number of channels: 4 on DB-25 connector
- Converter resolution: 16 bits
- Maximum sampling rate: 1 MSPS per channel
- Frequency programming modes:
 - Samples per second
 - Samples per video frame
 - Nanoseconds per sample
- Simultaneous output updates
- Output range: ± 10 V
- Drive capability: ± 25 mA, 250 mW per channel

*DAC functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

Audio CODEC

- Audio line in, microphone in, speaker out, on 3.5 mm jacks
- Stereo microphone input amplifier resistance: 20 k Ω
- Microphone sampling rate: 96 kHz
- Programmable microphone bias voltage range: 2.0 V to 3.1 V
- Stereo DAC sampling rate 96 kHz

*Audio CODEC functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

Digital input

- Number of digital inputs: 24 on db-25 connector



- Input termination: >20 k Ω pull-up to 3.3 V
- Input tolerance: 5 V

Digital output

- Number of digital outputs: 24 on db-25 connector
- Output drive stage: 5 V through 25 Ω series resistor
- Maximum output current:
 - Source: 15 mA
 - Sink: 12 mA

Power

- Power consumption: 30 W
- Input voltage: 12 VDC – 2.5 A
- International AC adaptor input: 90 VAC – 264 VAC (47 Hz – 63 Hz)

Software

Software support includes a low-level ANSI C API as well as PsychToolbox MATLAB / Octave and Python libraries for Mac OS X, Windows XP, Windows 7, Windows 8 and Linux. In addition, the DATAPixx2 is directly supported by the VPixx high-level application.

Rear Panel Connectors

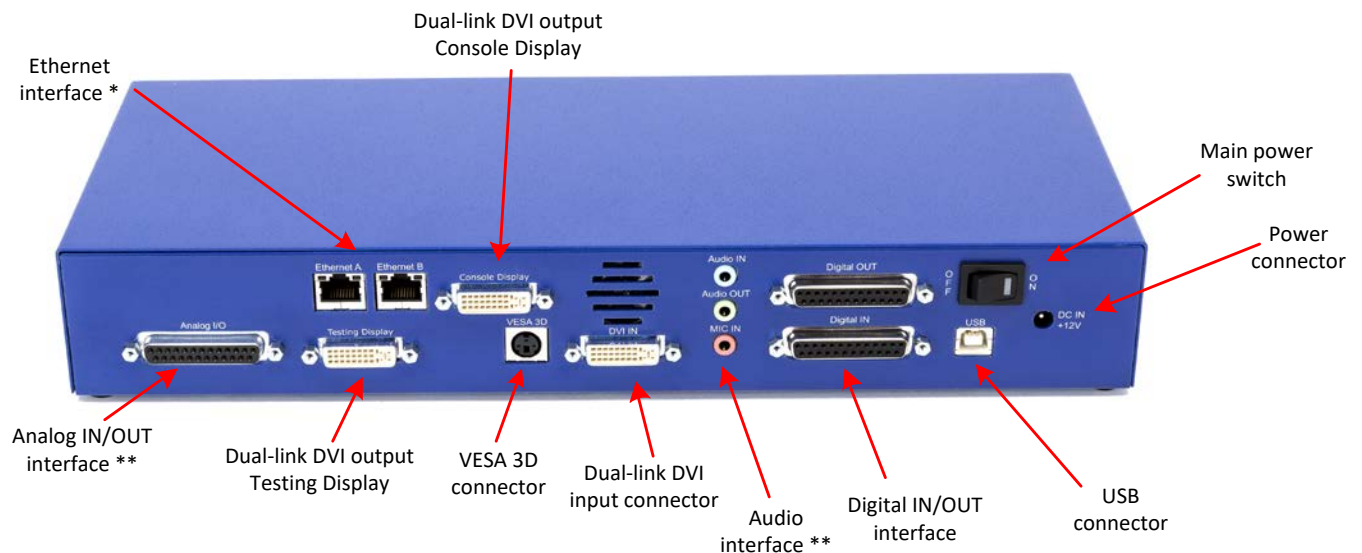


Figure 2 DATAPixx2 rear panel connectors

* For future use

** Analog I/O and audio functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

DATAPixx2 installation

Installation precautions

Make sure the location where you will place the device meets the following requirements:

- The DATAPixx2 vent is not blocked
- There is enough room behind the DATAPixx2 to allow for a good airflow
- While manipulating the system, do not drop the DATAPixx2 or place it on an unstable surface
- Keep the DATAPixx2 in a well-ventilated area, away from excessive light, heat, or moisture
- For rack-mount installations, refer to the associated user manual and use the optional bracket
- All cables (eg: DVI, analog or digital interface) should be screwed onto the DATAPixx2

Cable installation

1. Connect the USB cable between the DATAPixx2 and your computer
2. Connect the DVI cable between the DATAPixx2 and your computer. Be sure to use the **DVI IN** connector on the DATAPixx2
3. Connect the DATAPixx2 power cable to the wall outlet

Device detection

After toggling the DATAPixx2 power switch to ON, your computer should detect the DATAPixx2 and prompt you for the installation procedure. On a Mac OS X system, no driver is required; under Microsoft Windows, a driver must be installed for the DATAPixx2.

Software Installation Instructions for Mac OS X

As a first step, ensure that the DATAPixx2 is turned OFF. Then, insert the CD labeled “**VPixx Technologies Software/Documentation**” in your CD/DVD reader and copy the *Software Tools for MAC* folder into the OS X or Linux user folder.

In the *Software Tools for MAC* folder can be found documentation, drivers, libraries and low level C API. By using the *vputil* application you can configure and operate your device on a basic level.



*For more information on VPixx software tools, please refer to the **VPixx Software Tools user manual**.*

Driver and Software Installation Instructions for Windows

These instructions are for Windows 7. Installation under Windows Vista, XP or Windows 8 is similar, but not necessarily identical.

As a first step, ensure that the DATAPixx2 is turned OFF. Then, insert the CD labeled “**VPixx Technologies Software/Documentation**” in your CD/DVD reader. In *Software Tools for Windows*, run the *setup.exe* application. When the following box appears, click *Next* and follow the instructions.



Figure 3 VPixx Tools Setup Wizard

When finished, you can toggle the power switch to the ON position and your device is ready for use.

A shortcut of *vputil.exe* is copied on the *Windows desktop* as well as the *Program Files*, in the *VPixx Technologies* folder; documentation, drivers, libraries and low level C API folders are copied. By using the *vputil* application you can configure and operate your device on a basic level.

Once the installation is complete, the *VPixx Technologies* folder is located under *C:\Program Files*



*For more information on VPixx software tools, please refer to the **VPixx Software Tools user manual**.*

I/O connector descriptions

Analog I/O connector

The following table shows the analog I/O pin assignment. If you use the analog breakout cable, refer to the associated user manual interconnection.

*Analog I/O functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

Table 1 Analog I/o pin assignment

Pin	Description	Pin	Description
1	ADC0	14	ADC1
2	ADC2	15	ADC3
3	ADC4	16	ADC5
4	ADC6	17	ADC7
5	ADC8	18	ADC9
6	ADC10	19	ADC11
7	ADC12	20	ADC13
8	ADC14	21	ADC15
9	REF0	22	REF1
10	GND	23	+5 VDC **
11	DAC0	24	DAC1
12	DAC2	25	DAC3
13	GND	Shield *	

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

** Current limited (400mA).

Connector type: D-SUB, 25 pins

Gender: Female



VESA 3D connector

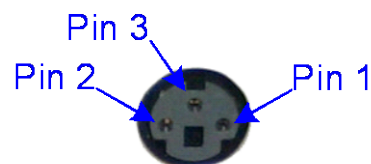
Use this interface when using your VESA 3D glasses. The following table shows the VESA 3D pin assignment.

Table 2 VESA 3D pin assignment

Pin	Description
1	+5 VDC **
2	GND
3	VESA_LR (+5 VDC)
Shield *	

Connector type: Mini-DIN, 3 pins

Gender: Female



* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

** Current limited (400mA).

Digital output connector

The following table shows the digital output pin assignment.

Table 3 Digital Output pin assignment

Pin	Description	Pin	Description
1	Digital Out 0	14	Digital Out 1
2	Digital Out 2	15	Digital Out 3
3	Digital Out 4	16	Digital Out 5
4	Digital Out 6	17	Digital Out 7
5	Digital Out 8	18	Digital Out 9
6	Digital Out 10	19	Digital Out 11
7	Digital Out 12	20	Digital Out 13
8	Digital Out 14	21	Digital Out 15
9	Digital Out 16	22	Digital Out 17
10	Digital Out 18	23	Digital Out 19
11	Digital Out 20	24	Digital Out 21
12	Digital Out 22	25	Digital Out 23
13	GND		Shield *

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

Connector type: D-SUB, 25 pins

Gender: Female



Digital input connector

The following table shows the digital input pin assignment.

Table 4 Digital Input pin assignment

Pin	Description	Pin	Description
1	Digital In 0	14	Digital In 1
2	Digital In 2	15	Digital In 3
3	Digital In 4	16	Digital In 5
4	Digital In 6	17	Digital In 7
5	Digital In 8	18	Digital In 9
6	Digital In 10	19	Digital In 11
7	Digital In 12	20	Digital In 13
8	Digital In 14	21	Digital In 15
9	Digital In 16	22	Digital In 17
10	Digital In 18	23	Digital In 19
11	Digital In 20	24	Digital In 21
12	Digital In 22	25	Digital In 23
13	GND		Shield *

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

Connector type: D-SUB, 25 pins

Gender: Female



Audio In / MIC In / Audio Out

Audio equipment may be connected through these jacks with standard 1/8" (3.5mm) stereo plugs. The following table shows the audio pin assignment for each jack.

*Audio IN, MIC In and Audio functionalities are available only with DATAPixx2 full version (VPX-DPX-1003C)

Audio In

Table 5 Audio In pin assignment

Pin	Description
TIP	Audio In left
Ring	Audio In Right
Sleeve	GND
Shield *	

Connector type: Stereo 1/8" (3.5mm)

Gender: Jack (female)

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

Audio Out

Table 6 Audio Out pin assignment

Pin	Description
TIP	Audio Out left
Ring	Audio Out Right
Sleeve	GND
Shield *	

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

MIC In

Table 7 MIC In pin assignment

Pin	Description
TIP	MIC In left
Ring	MIC In Right
Sleeve	GND
Shield *	

* Shield is tied to the GND by a 0 Ohm resistor inside the DATAPixx2.

Software support

Your DATAPixx2 includes a full set of I/Os and can be accessed through the DATAPixx toolbox in our VPixx Software Tools libraries.

VPixx Software Tools include a low-level ANSI C API as well as Psychtoolbox MATLAB / Octave and Python libraries for Mac OS X, Windows XP, Windows 7, Windows 8 and Linux. In addition, the DATAPixx2 is directly supported by the VPixx high-level application.

With the VPixx Software Tools, you can:

- Acquire data on analog IO;
- Acquire an analog signal and convert it to digital;
- Set up audio playback, feedback and stream;
- Set up voltage outputs, synchronize and generate audio using digital to analog convertors;
- Record, monitor and synchronize with a RESPONSEPixx or any digital signal;
- Set up a Gaze Contingent display using a DATAPixx;
- Show 3D Stimuli with perfect synchronization;
- Display stimuli using high-bit precision;
- Record a microphone input;
- Display stimuli at 440 and 1440 Hz using a PROPixx;
- Set up a touchscreen using a TOUCHPixx;
- And much more !

We strongly recommend you create your MyVPixx account by visiting:

<http://vpixx.com/register/>

By registering, you will have access to the latest software versions, demos and user manuals to support all your VPixx products.

Psychtoolbox

All DATAPixx2 I/Os can be accessed through the DATAPixx toolbox library included with the Psychtoolbox. The DATAPixx hardware toolbox is fully supported by the Psychophysics Toolbox (PTB) using Matlab or GNU/Octave under OS X, Windows and Linux.

Once the PTB has been installed, there are several paths to getting information on using the DATAPixx within the PTB. From Mario Kleiner: "All special graphics display functions (stereo, multi-display, mirroring, high precision color and luminance display) are supported via PsychImaging, e.g., demonstrated in BitsPlusCSFDemo, AdditiveBlendingForLinearSuperpositionTutorial and ImagingStereoDemo. The Timestamping functionality and other convenience functions, as well as audio capture and voice keys are available via PsychDataPixx, DatapixxAudioKey and PsychPortAudioDatapixxTimingTest. Refer to the *Help* section of the DatapixxToolbox for more information.

All low-level features are supported via the Datapixx mex file driver". In addition, the DatapixxDemos folder contains a collection of low-level DATA Pixx functional starting points for all of the basic functionalities.

DatapixxToolbox questions may be emailed to support@vpixx.com. General questions whose answers may be useful to other DATA Pixx2 or DATA Pixx users should be posted on the PTB forum.



*For more information on PsycToolbox, please refer to the **DATA Pixx Toolbox for MATLAB user manual** on MyVPixx.*

Python

pypixxlib uses the object-oriented approach and strengths of Python. With pypixxlib, you can get information to and from your devices while using your preferred python packages for stimulus generation. pypixxlib converts your physical device into python objects with attributes matching the subsystems included in VPixx devices. This guarantees everything you attempt is executed on the subsystem you intended. We also offer a functional approach with the versatility of Python; pypixxlib includes a wrapper for our ANSI C API.

Complete with full documentation and demos, pypixxlib is therefore very easy to use.



*For more information on Python, please refer to the **DATA Pixx Toolbox for Python user manual** on MyVPixx.*

Low-level ANSI C API

Insert the CD labeled “**VPixx Technologies Software/Documentation**” in your CD/DVD reader and browse it. The “**Low Level C API\libdpx\src**” folder in the **Software** folder contains the ANSI C APIs, which are compatible with Windows, MAC OS X and Linux. Do not forget that I/Os are named as DATA Pixx I/Os.



*For more information on low level ANSI C API, please refer to the **DATA Pixx Toolbox low level ANSI C API user manual** on MyVPixx.*

DATAPixx2 firmware update

For a firmware update, log on to your MyVPixx account and select the proper software tools package for your operating system under the UPDATES tab.

For Windows :

Download and install the *setup.exe* application and follow the instructions. When finished, run the *vputil.exe* application located under the following path C:\Program Files\VPixx Technologies\Software Tools\vputil\bin\win32\

At the command line prompt, type `fw_update`. Your DATAPixx2 will be updated with the latest firmware.

For MAC OS X or Linux :

Download the *VPixx Software Tools package* and copy the *Software Tools for Mac* folder into the OS X or Linux user folder. When finished, run the *vputil.app* application located under the following path in your user folder: `VPixx_Software_Tools/vputil/bin/macosx/`

At the command line prompt, type `fw_update`. Your DATAPixx2 will be updated with the latest firmware.



*For more information on firmware updates, please refer to the **VPixx Software Tools user manual**.*

Theory of operation

Video Pipeline

A video signal contains all the pixels for every frame. The resolution determines the amount of pixels: for example, 1920 x 1080 means 1920*1080 pixels on your screen. Each of these pixels contains the color information it will show on screen.

Colors are described using the RGB (Red-Green-Blue) format. For every video frame, each pixel has access to 24 bits of color information (8 bits per color). This means, for example, that red can take values from 0 to 255 and consequently that 256 different shades of red are possible. Red 0 signifies no red, while red 255 signifies 100% red color. All of the three colors (RGB) have 8 bits, which creates 16 777 216 different possible colors. RGB colors are usually represented as (R,G,B), where R, G and B are the respective color values [0-255].

A color is usually described with 8 bits of information. 8-bit information can be seen as $R_7R_6R_5R_4R_3R_2R_1R_0$, which is a binary representation of the color (in this example, R for Red). Every bit (R_i) can take the value 0 or 1, and the final value will be a sum:

$$Red = \sum_{i=0}^{i=7} 2^i * R_i$$

The color red 255 would be represented as 0b11111111, whereas red 16 would be 0b00010000. Since 255 represents every bit at a value of 1, it is the maximum value for an 8-bit number.

Dual link DVI output; Testing Display / Console Display

The DATAPixx2 will transmit the video signal coming from the DVI input interface to both DVI outputs without buffering or rescaling. When DATAPixx2 is configured in mirror mode, the Console Display is a copy of the testing display with the same resolution and refresh rate. In this mode the maximum output resolution is 1920 x 1080 @ 120 Hz.

For the haploscope mode, maximum output resolution on each display is 1920 x 1080 @ 60 Hz. By using the screen resolution control panel in the operating system, you can send a resolution of 3840 x 1080 @ 60 Hz and the DATAPixx2 will automatically split the resolution in half allowing a resolution of 1920 x 1080 @ 60 Hz on each monitor.

To enable haploscope mode, follow these steps:

1. In vputil, run the *edid* command and set video resolution to 3840 x 1080 @ 60 Hz
2. Toggle the power switch On-Off-On
3. In vputil, set the *vsplit* command to ON
4. configure the screen resolution control panel in the operating system for 3840 x 1080 @ 60 Hz resolution

You can also configure this feature using low-level ANSI C API, MATLAB/Octave and Python libraries.



*For more information on firmware updates, please refer to the **VPixx Software Tools user manual**.*

The recommended resolution input that the DATAPixx2 shows in your operating system by the DVI edid register is 1920 x 1080 @ 120 Hz. If you want a different recommended resolution or a non-standard resolution/refresh rate the vputil application should be used to update your DATAPixx2 with your desired settings.



*For more information on edid command, please refer to the **VPixx Software Tools user manual on MyVPixx**.*

Analog output interface

The DATAPixx2 analog subsystem contains four DAC (Digital-to-Analog-Converter) channels, with 16-bit precision and ± 10 V output swing. The maximum update rate is 1 MSPS, and all 4 channels update simultaneously. DAC update rate can be specified in samples per second, samples per video frame, or nanoseconds per sample, and waveform onset can be synchronized to video refresh with microsecond precision.

Analog input interface

The DATAPixx2 analog subsystem includes sixteen ADC (Analog-to-Digital Converter) channels, with 16-bit precision and ± 10 V input range. The maximum sampling rate is 200 kSPS, and all 16 channels are simultaneously sampled for evoked potential and other applications sensitive to sampling phase. The ADC sample rate can be specified in samples per second, samples per video frame, or nanoseconds per sample and sampling can be synchronized to video refresh with microsecond precision.

Digital interface

The DATAPixx2 contains 24 TTL inputs and 24 TTL outputs. Inputs are pulled up, so simple response boxes can be read with no additional hardware. TTL input transitions are time tagged enabling response-time calculation with microsecond precision. Similarly TTL outputs can be scheduled to transition at a specified point within a video frame, enabling simple triggering of external testing hardware.

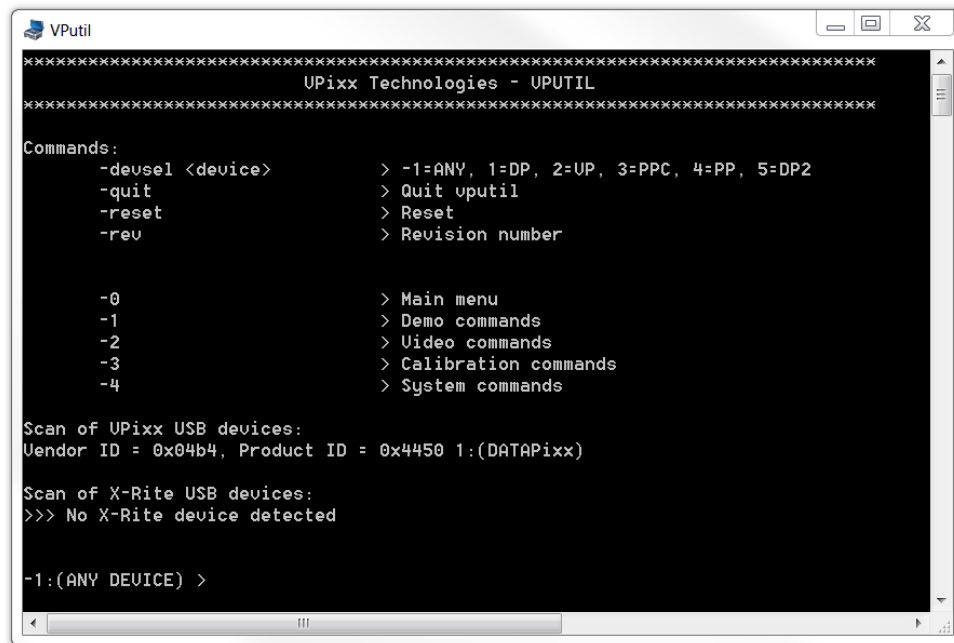
Audio interface

The DATAPixx2 contains a stereo audio CODEC which can bias and convert a stereo microphone input. The CODEC can also drive a 96 kSPS audio stimulus directly into headphones. Stimulus phase between audio-left, audio-right, and video refresh can be controlled with microsecond precision for cross-modal research.

vputil software tool

The vputil tool can be run from the main VPixx Technologies directory under the “Software Tools\vputil\bin” folder. This utility allows the user to control some of the VPixx equipment features. It can also be used for generating built-in test patterns from the equipment.

1. Toggle the power switch to the ON position
2. Run the vputil application



```
VPUtil
UPixx Technologies - UPUTIL
Commands:
  -deusel <device>      > -1=ANY, 1=DP, 2=UP, 3=PPC, 4=PP, 5=DP2
  -quit                 > Quit vputil
  -reset                > Reset
  -rev                  > Revision number

  -0                    > Main menu
  -1                    > Demo commands
  -2                    > Video commands
  -3                    > Calibration commands
  -4                    > System commands

Scan of UPixx USB devices:
Vendor ID = 0x04b4, Product ID = 0x4450 1:(DATAPixx)

Scan of X-Rite USB devices:
>>> No X-Rite device detected

-1:(ANY DEVICE) >
```

Figure 4 vputil application main screen

The vputil tool automatically detects all VPixx Technologies hardware connected to the computer. The main menu of the application can be displayed by using the help command.



*For more information on vputil software tools, please refer to the **VPixx Software Tools user manual** on MyVPixx.*

Maintenance and Calibration

The DATAPixx2 does not require periodic calibration activities.

Cleaning the DATAPixx2

Clean the surface of your DATAPixx2 as required and depending on usage.



Do not use cleaners that contain any petroleum-based materials such as benzene, thinner, or any volatile substance

Warranty

The DATAPixx2 is warranted against manufacturing defects in materials and workmanship for two years for parts and labor from the date of purchase.