Image2K
Image4K

User Guide

Four Channel PCI Express Graphics

Engineering the **world's best** visual solutions

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EXCELLENCE BY DESIGN

CONTENTS

FCC COMPLIANCE IMAGE2K/IMAGE4K

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

■ **This device may not cause harmful interference.**

■ **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 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial, industrial or business environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

■ **Re-orient or relocate the receiving antenna.**

■ **Increase the separation between the equipment and the receiver.**

■ **Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.**

■ **Consult the dealer or an experienced radio/TV technician for help.**

⚠ **Warning! Any changes or modifications to this product not expressly approved by the manufacturer could void any assurances of safety or performance and could result in violation of Part 15 of the FCC Rules.**

Reprinted from the Code of Federal Regulations #47, part 15.193.1993. Washington DC: Office of the Federal Register, National Archives and Records Administration, US Government Printing Office.

DECLARATION OF CONFORMITY

Per FCC Part 15.107 and 15.109 Class A

Responsible Party Name:	Datapath Limited
Address:	Bemrose Park, Wayzgoose Drive, Derby
Phone:	+44 (0) 1332 294 441
Hereby declares the products:	Image2K and Image4K
Product Name:	Four Head PCIe Graphics Card
Model Number:	Image2K (DGC223 Image4K (DGC215))
Conforms to the following specifications:	
FCC Part 15.107 and 15.109	Class A Digital Device
Supplementary Information:	

This device has been shown to be in compliance with and was tested in accordance with the measurement procedures specified in the Standards & Specifications listed above and as indicated in the measurement report number: TRA-045972-44-00A.

Representative Persons Name: Tony Jones, Operations Director.

INTRODUCTION

The Image2K/Image4K is based on a single, powerful graphics processor that is complemented by fast memory and high pixel transfer bandwidth over its 16-lane second generation PCI Express interface. Up to six Image4K cards can be supported by the Datapath display driver, providing flexible system configurations up to 32/24 screens.

Specification:

Card format	PCI express Gen 3, x16 Mechanical, x8 Electrical
Card size	110mm x 177mm (incl heat sink)
Connectors	4 x HDMI 2.0
Max output resolution	Image4K - 4 x 3840 x 2160 @ 60Hz (max 594 Mpixels/s) Image2K - 4 x 2560 x1600 @ 60Hz
Max colour depth	8-bit per component
Max number of cards per system	Image4K - 6 (24 x 4K or 96 x HD display channels) Image2K - 8 (32 x HD display channels)
Graphic card memory	Image2K - 2GB Image4K - 8GB
Max current at +3.3V	0.6A
Max current at +12V	4.0A
Max power	Image2K - 32 Watts Image4K - 50 Watts
Operating temperature	0 ºC to 35 ºC / 32 ºF to 96 ºF
Storage temperature	-20 ºC to 70 ºC / -4 ºF to 158 ºF
Relative humidity	5% to 90% non-condensing
MTBF	Over 80,000 hrs
Warranty	3 years (Optional 5 years)

IMAGE2K/4K CARDS

Designed for professional, multi-screen and video wall installations, the Image cards are highly scalable graphics cards delivering upto full 4K60 4:4:4 content (Image4K) and over four HDMI 2.0 outputs.

- Gen 3, x8 lane PCI express graphics card.

- Image4K - Digital outputs 4 x 3840 x 2160 at 60Hz (Max 594 Mpixels/s).

- Image2K - Supports mixing of HD and 4K outputs at 60Hz. Configure as two 4K (3840x2160@60) outputs or one 4K and three HD outputs.

- Low power.

- High performance 2D and 3D graphics.

- High performance DMA image load (up to 6GB/s).

- Support for Windows® 10 and Windows Server 2019.

- RGB, SD and HD video window support by adding the Datapath Vision range of capture cards.

- HDCP 2.2 supported when using Datapath capture cards.

- Support for up to 8 Image2K providing 32 x HD display channels or 6 Image4K cards providing 24 x 4K or 96 x HD display channels in a single system.

- Fully compatible with Datapath's Display Driver Configuration Tool (DDCT) and Diagnostic Suite.

INSTALLATION

This section deals with installing Image cards and spreading the Windows desktop across all the screens. If you are intending to use the Image cards with other Datapath products, you should follow this section to get the Windows desktop working correctly first.

System Requirements

- A Pentium PCI Express bus computer with sufficient free PCIe slots.

- At least 8GB of RAM, up to 16GB for multiple cards.

- Support for Windows 10 and Windows Server 2019.

Unpacking

Your packing box should contain the following:

- The Image2K/Image4K PCIe plug-in card.

It is recommended that all Image cards and any Vision cards are installed in the system prior to installing the drivers. Otherwise, as cards are installed, the drivers may need to be reinstalled as the card's PCI bus numbers change.

Note: All plug-in cards are static sensitive and packed in antistatic materials. Please keep the card in its packaging until you are ready to install.

It is recommended that you do not discard the packing box until you are completely satisfied with the Image card and it is fully installed and working correctly. We also recommend that you make note of the serial number of the card in a prominent place before you plug the card into the computer. This should hasten any query should you need to contact our Technical Support Department. The serial number is displayed on the card and the box label.

1. Power down the PC (including peripherals).

Switch off at the mains and disconnect all the cables connected to the computer, noting the positions for accurate reconnection. Remove the PC cover.

2. Locate a vacant PCIe slot for the Image card on the motherboard and remove the backing plate (retain all screws).

3. Remove the card from its packaging and secure it firmly into the empty PCIe slot. Extreme care should be taken when securing the card into the slot as some motherboards may have components that impede the siting of the card.

4. Screw the card bracket to the back panel of the PC and replace the cover.

5. Connect screens to all the outputs from the card. If there are other graphics devices in the system, connect screens to them (even if you do not intend to use all the outputs in your final configuration).

6. Switch all the screens on then switch the machine on. You should see the boot messages on one of the screens. The screen on which the system will boot is dependent on the configuration of both the system and the motherboard BIOS. It is not possible to control which of the Image card outputs the system will boot on.

Installing the Display Drivers

Once the Image card has been installed and the boot messages are appearing on the monitor, you can start Windows.

The **"Found New Hardware Wizard"** will announce that new hardware has been found. Do not use the Found New Hardware Wizard to install the Image drivers. Install the latest display driver from the Software Installation Media supplied with the Image card.

1. If your final configuration has less than four screens, select the number of screens required. Otherwise select four screens.

2. Restart the machine.

When Windows starts up, the desktop should be spread over all the screens connected to the Image2K or Image4K.

Note: The Image card requires the Datapath Display Driver Install V5.0 or later.

Multi-screen Drivers

Datapath's multi-screen display driver is engineered specifically for use with Windows 10 64-bit. The display driver unifies multiple Image4K cards to present a single desktop canvas to the Windows operating system, allowing each video wall to display hundreds of output windows with full support for picture-in-picture and overlaps.

The Datapath multi-screen display driver currently provides support for up to eight Image2K or six Image4K cards (32 or 24 display outputs respectively) in a single system.

Installing Additional Image Cards

As the number of required screens increase, the likelihood of reaching a system limitation or encountering a problem increases. The system limitations are the amount of address space available and the capacity of the power supply.

Please consult Datapath support if you have any problems installing multiple cards.

Power

The amount of current a power supply can deliver on each voltage rail is limited. Often there is also a limit on the total power.

Each Image4K card requires 0.6A at +3.3V and 4.0A at +12V.

You can calculate the amount of current and the amount of power required for the Image4K cards. For example, the requirements for a 16-screen system of Image4K cards is calculated as follows:

Current

+3.3V 4 x 0.6A = 2.4A

+12V 4 x 4.0A = 16.0A

Power

(3.3V x 2.4A) + (12V x 16.0A) = 199.9W

These are just the requirements for the Image4K cards; you must take into account the requirements of all the other devices in the system.

HDMI Outputs

The Datapath Image cards have four HDMI connectors capable of driving next generations displays.

The outputs are numbered as follows:

Output 1

Output 2

Output 3

Output 4
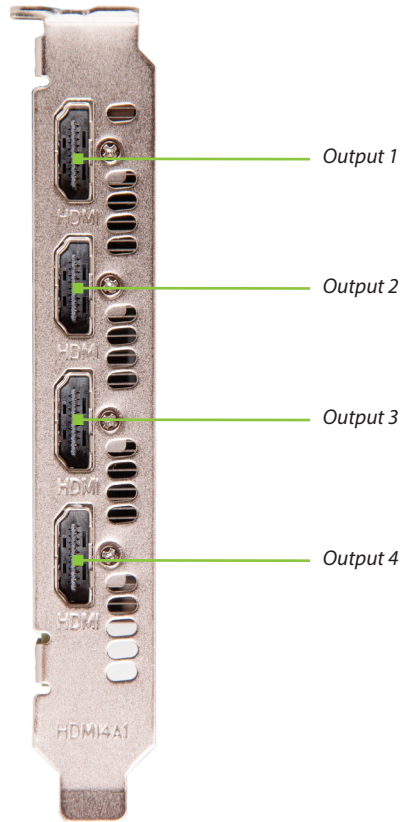
DISPLAY DRIVER CONFIGURATION TOOL (DDCT)

The DDCT Is a configuration tool designed to guide you through the design and creation of your video wall. The DDCT is installed automatically as part of the driver install.

To access the DDCT, right click on your desktop, select Display Driver Configuration Tool then select the Set Up Wizard.

Alternatively select:

Start | Programs | Datapath Drivers | Display Driver Configuration Wizard
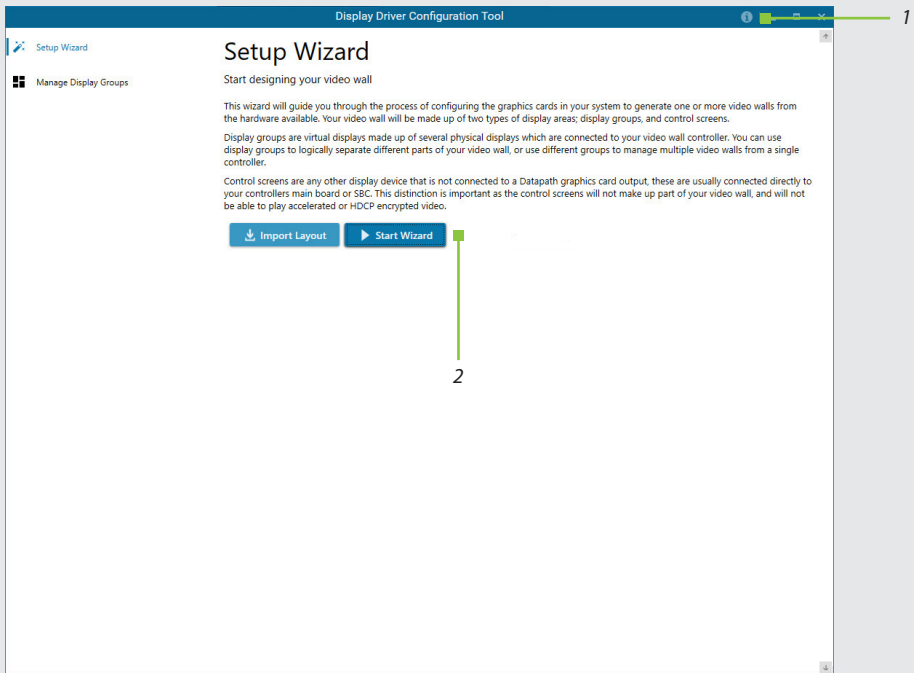
It is recommended that you read the information on each page carefully A detailed help file is available by clicking the book icon on the application title bar.

| 1	Click on the **'Information Icon'** to open a sliding window which gives version details and copyright information. The latest version of the DDCT is available to download from the Datapath website.
2	To commence your wall configuration, click on **'Start Wizard'. 'Import Layout'** is covered later.
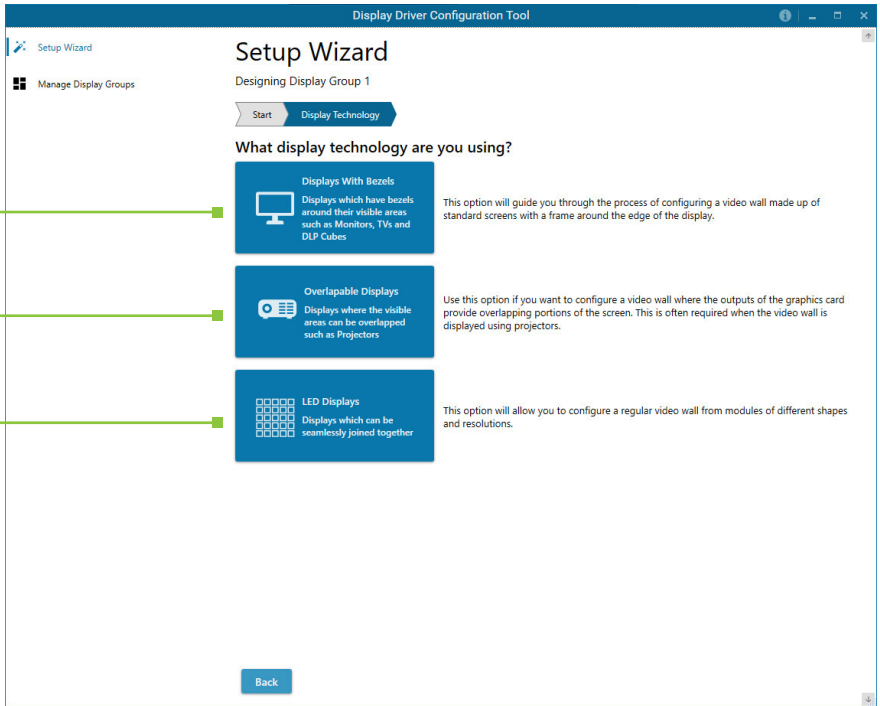
Display Technology

Select the type of displays being used on your wall:

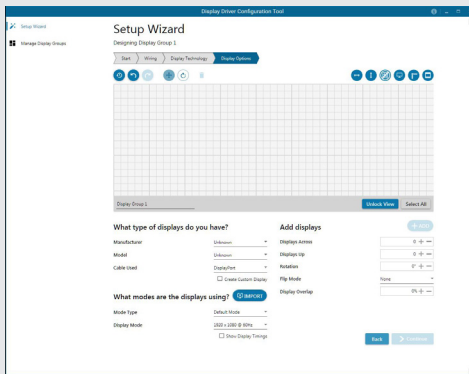|	
3	*Displays With Bezels – Monitors, TV's and DLP Cubes.*
4	*Overlapable Displays – Projectors*
5	*LED Displays.*

Click on **'Continue'.**

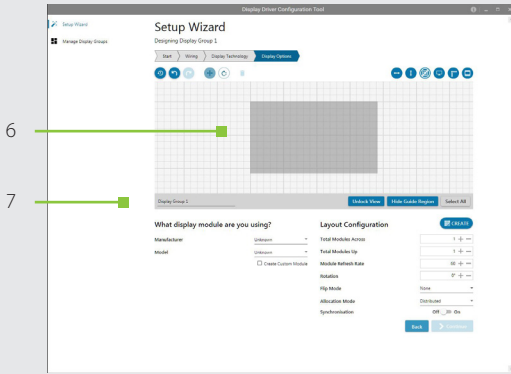The tool will then display a configuration page for the type of display you selected.

Displays with Bezels
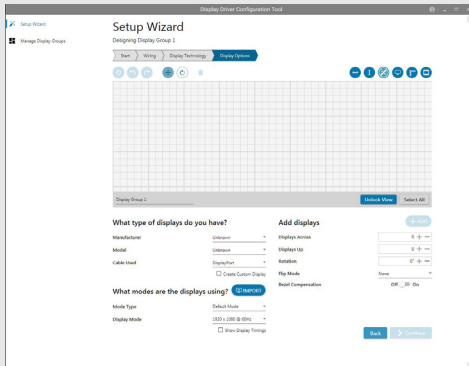
Overlapable Displays

LED Displays

Application Tools

The application tools enable the user to manipulate the design of the wall.
The table below describes the functionality of each tool.

Undo All – Undo all commands made on this page.

Undo – Undo the last command.

Redo – Redo the last command.

Move Displays – When selected, move the displays by clicking on and dragging the displays around the representation.

Rotate Displays – When selected click on a display and drag the cursor up or down, left or right to rotate the display. The display can be rotated 90, 180 or 270 degrees.

Delete Displays/Display Groups – Select the displays you wish to remove from the layout then click on the delete button to delete all those selected.

Enable X Axis – Enables the display to be moved from left to right, and right to left.

Enable Y Axis – Enables the display to be moved up and down.

Snap to Grid – When selected, if a display is dragged and released it will snap and position itself to the nearest grid line.

Snap to Displays – When selected, if a display is dragged close to another display and released, it will snap and position itself to the display.

Snap to Guides – When selected, if the display is dragged and released near to the axis of another display it will position itself on the same axis.

Show Display Bezels – Select to show or hide the bezels on all the displays in the representation.

Configure Outputs – Available in the 'Manage Display Group' dialogue. Select an output and configure its properties.

Add Button – Used to add displays to your group or to create a new group.

Layout Configuration – Used to add LED modules to your group or to create a new group.

Edit – Used to edit a selected Display Group.

Primary Display – Indicates which display within the Display Group is the primary display/boot screen. If more than one group is available, the Primary Display can be assigned to either group.

Representation

6	*The representation grid displays the physical arrangement of the wall as it is being created. Displays can be arranged as required by clicking and dragging them to their required positions using the application tools.*

Wall Naming

7	*Click on the **'edit box'** to allocate a name to your wall (optional but recommended). This will be used if you choose to export your layout in the future.*

Unlock View

When unlocked, the wall representation can be dragged to a preferred position using the mouse. Use the mouse wheel to zoom in and out of the representation.

Select All

Choosing 'Select All' enables the user to select all the displays on the representation to apply common attributes to all displays.

Add Displays

Add Displays is available for displays with bezels or overlapable displays. It enables you to configure the layout of your wall or display group. Use the 'Displays Across' and the 'Displays Up' to create a plan of your layout. Once your layout has been created you can then configure the displays using 'What Type of Displays Do You Have?' When using overlapable displays 'Display Overlap' becomes available, enabling you to select a percentage of overlap between displays.

What Type of Displays Do You Have?

Displays with Bezels and Overlapable Displays.

The first step to creating your wall is to select the type of displays you have. Use the 'Manufacturer' and 'Model' dropdown lists to select each display you are using on your wall. The DDCT has an extensive database of displays, however if your display is not contained in the list, you can input its details manually by selecting 'Create Custom Display'.

What type of displays do you have?

Manufacturer	Unknown
Model	Unknown
Cable Used	DisplayPort ▾
	☑ Create Custom Display
Display Area Width	192 cm + −
Display Area Height	108 cm + −
Left Bezel	0 cm + −
Right Bezel	0 cm + −
Top Bezel	0 cm + −
Bottom Bezel	0 cm + −

DATAPATH LIMITED

Datapath has a long and very successful history in the computer graphics industry. Datapath has been designing and supplying high performance, high quality graphics display systems to the world's largest and most demanding companies and institutions since 1982. Datapath was one of the founding companies of multi-screen windows acceleration using single and multi-board solutions. Now using the very latest display technology. Datapath offers some of the world's leading multi-screen graphics accelerators for the most demanding applications.

As new technology advances, we at Datapath improve the performance and functionality of both our hardware and software to give our customers more. Following a continuous development program, we pride ourselves on our support and responsive nature towards all our customers and their changing needs. As more sophisticated equipment and techniques become readily available, we are there to exploit the power and potential that this technology presents.

Technical Support

Registered users can access our technical support. Please see our website support page for contact information. Responses should be received within 24 hours (excluding weekends).

Via Email

Send an email to **support@datapath.co.uk** with as much information about your system as possible. To enable a swift response we need to know the following details:

■ Specification of the PC - including processor speed

■ Operating System

■ Application Software

■ Datapath Hardware / Software

■ The exact nature of the problem - please be as specific as possible

Please quote version and revision numbers of hardware and software in use wherever possible.

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