

# PROJECTOR CONTROLLER Version 4.0

# **USER MANUAL**



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#### OVERVIEW

# Overview

Projector Controller enables you to monitor and control all projectors connected to your computer via LAN or Serial Port.

From a single screen layout you can view all projectors and access settings for an individual projector or for a group of projectors.

The software allows you to:

- Create groups of projectors which can be controlled simultaneously
- View essential information, such as model, name, ON/OFF status and lamp status, about all projectors on the network at a glance
- View logs containing all interaction between the software and the projectors on the network
- View network information such as IP and MAC address
- Switch power on and off, open and close the shutter
- Add and remove projectors within the network
- Edit and control an array of settings, including:
  - Inputs and test patterns
  - Lens, image, color and geometry
  - Edge Blend and PIP settings
  - Plus many more

The software allows rapid network setup and discovery of projectors when using UDP mode.

## **Product revision**

Because we at Digital Projection continually strive to improve our products, we may change specifications and designs, and add new features without prior notice.

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	software, visit
	www.digitalprojection.com.

# Quick-Start Guide

### **Projector Controller software installation**

The software can be installed within an existing network or you can build the network after the installation. Provided the network setup is correct, Projector Controller will automatically detect available projectors as soon as you start the application.

- 1. Ensure you have Microsoft .NET 2.0 framework installed on your computer.
- 2. Start the installer, *DPProjectorControllerSetup.exe*, and follow the instructions of the wizard.

The setup creates a Start menu shortcut at the following location:

- All Programs > Digital Projection > Projector Controller > Projector Controller X.X.X.X (Windows Vista and above).
- Programs > Digital Projection > Projector Controller > Projector Controller X.X.X.X (Windows XP).

This section details the most straightforward setup via LAN using a UDP network. If you wish to use a serial connection or a LAN connection with TCP/IP, see Advanced Network Setup. QUICK-START GUIDE

### **Basic LAN setup**

Use a small dedicated local area network using UDP as shown in *Fig. 1*.



3

2 Computer

Projectors

- 1. Connect each projector to the LAN network using the following projector port:
  - Use the Update port on most models.
  - On HIGHlite 660 3D, HIGHlite Laser or M-Vision 930, use *the LAN port*.

To locate the relevant LAN port, refer to your projector manual (see the chapter called *Connection Guide*).

- Make sure DHCP is switched off on each projector in the network. You can switch off DHCP from the Setup > Network > Control menu.
- 3. Run Projector Controller. The software will automatically find all the projectors on the network and allow them to be controlled with no further network setup.



Fig. 1: A small dedicated local area network (example)

Notes

This section details the most straightforward setup via LAN using a UDP network. If you wish to use a serial connection or a LAN connection with TCP/IP, see Advanced Network Setup.

#### WORKING WITH INDIVIDUAL PROJECTORS

# **Working With Individual Projectors**

#### Tabs

1

2

3

4

6

6

67

The **Projectors** tab shows all projectors in the workspace. You can edit settings of one projector at a time.

The **Groups** tab allows you to work with several projectors simultaneously.

The **Warp Config** tab is used for creating and editing warp maps for projection onto uneven surface

#### Currently selected projector

The currently selected item has a different background. Click on a projector to select it.

Projector model and serial number

#### **Projector name**

When a projector is added to the network, the software assigns a default name. You can edit this text and assign a name of your choice by right-clicking it.

#### Quick controls

The ribbon at the top of each item allows you to:

- switch the projector on and off;
- open and close the shutter;
- view lamp status.

#### Disconnected projector

A disconnected projector will remain visible until removed.

#### Information bar

This area provides information about the currently selected projector: name, serial number, IP and MAC address.



Notes You can select multiple projectors in order to copy them into a group. To do so, hold the SHIFT key down and click on each projector you wish to copy. To work with multiple projectors, see <u>Using Groups</u> further in this guide.

# Adding and removing projectors

To add a projector,

• Simply connect the projector to the network. The software will detect the new projector and add it to the view automatically.

To remove a projector:

- 1. Disconnect the projector from the network.
- 1. Select the disconnected projector 1.
- 2. On the Connections menu, click Remove 2.

🔍 🛛 Home 🔪 Log	ging	
	Virtual Re	-move
- Copy	× ×	
Clipboard	Connections	Proje
🔯 Projectors 🛛 🛲 Grou	ps 🔛 Warp Config	
Arrange 🚺 🔶 🔶	. ×	
HIGHlite660	HIGHlite660	HIGHlite660
DP09188 Projector000	DP09190 Projector001	#DP8675 Projector002
() () 🔋 🕈	🕘 🕲 🕈 🕈 🕈 🖉	0 0 7
≥ O		
	FunarOund	HTCHIHAI STAT
	#DP7255	#DP3477
Projector003	Projector004	Projector005



# **Quick projector controls**

The **Quick Controls ribbon** 1 at the top of each projector allows you to switch a projector on and off, open and close the shutter, and monitor lamp status.

#### **ON/OFF** button

Color		Meaning
Red	$\bigcirc$	The projector is switched off.
Green	0	The projector is switched on.

Click this button to switch the projector on and off.

#### Shutter ON/OFF button



Meaning



The shutter is closed.



The shutter is open.

Click this button to open and close the shutter.

#### Lamp status

Each lamp is represented by a lightbulb symbol. Lamp status is indicated by the color of the lightbulb, as follows:

Color		Meaning
Gray	$\bigcirc$	The lamp is switched off.
Green		The lamp is switched on and working at 100% power.
Green (flashing)	*	The lamp is switched on and warming up.
Amber (flashing)	- <b>X</b> -	The lamp is cooling down.
Amber	$\bigcirc$	The lamp is switched on at less than 100% power.
Red	•	An error.



# Editing projector settings

Projector settings are accessible from the following locations:

- Select an item to edit from Menu > Tasks 1.
  - or
- Select an item from the Task pane 2.

Depending on the projector model and existing configuration, some settings may be unavailable.



Notes

projector settings, refer to the

**Operating Guide** section of the

For further information about

projector manual.

# Locking projector settings

Lock a projector to ensure that the settings cannot be changed locally. This is useful once a projector has been set up to prevent accidental changes.

To lock one or more projectors:

- 1. Select the projectors you wish to lock in the *Projectors* tab or from within a group. To select multiple projectors, hold down **SHIFT** as you click on the projectors.
- 2. From the Projector menu, click Lock

Locked projectors appear with *a padlock symbol* 1 in the corner.

To unlock a projector,

• From the Projector menu, click Unlock





#### Backing up projector settings (continued)







# Identifying a projector

To identify a projector in the array, select the projector in the *Projectors* pane and click **Home menu tab > Projector > Identify** A Identify.

The following will then occur to allow identification:

- The keypad lights on the selected projector will flash for 10 seconds.
- The image projected by the selected projector will be replaced by a test pattern for 10 seconds.

#### **Using Groups** Notes Groups enable you to edit settings for several projectors simultaneously, without the need to open each projector. You can have a number of groups and each projector can be added to any group. A projector can be added to more than one group. You can delete and rename groups as needed. To use groups, open the **Groups** tab **1**. The **Groups** menu **2** is now enabled. Individual groups appear as tabs 3. The first group, *Default*, is automatically added by the application. You cannot delete or rename it. Group names cannot contain spaces Within a group you can still change settings for individual projectors as normal, or you can work with the whole group. To do so, enable group or special characters. settings by doing the following: • On the Tasks menu, click Group 4. 3 61 2 Projector Controller v4.0.2 - MyWorkSpace x -DP 🔊 Select H Щ 6 8 🚠 Delete Rename Groups Tasks 😸 Select Task (a) 🌃 Projectors 🛛 🟯 Groups 🛛 🎬 Warp Config 📇 Default 🛛 🗮 Group1 🛛 🟯 Group2 🛛 < Input Source Arrange M Input Config 3 .... 💶 Image Color ColorMax Geometry Size and Position Projector002 Warp Mode



Adding a projector to a group	Notes
<ol> <li>Select the projector in the <b>Projectors</b> tab or in another group and copy it using <b>Copy</b> from the <b>Clipboard</b> menu, or <b>Ctrl+C</b>.</li> <li>Paste the projector into the destination group using <b>Paste</b> from the <b>Clipboard</b> menu, or <b>Ctrl+V</b>.</li> </ol>	<b>Cut</b> works in groups only.
To move a projector from one group to another, use <b>Cut</b> ( <b>CtrI+X</b> ) instead of <b>Copy</b> .	
Removing a projector from a group	
<ol> <li>Select the projector within the group.</li> <li>On the Arrange toolbar, click Delete .</li> </ol>	
The projector disappears from the group but remains in the workspace. You can access it from the <b>Projectors</b> tab, or from any other groups it has been added to.	
Adding and removing multiple projectors	
To add or remove several projectors at the same time, hold down the SHIFT key while selecting the projectors.	

USING GROUPS

# Editing group settings

- 1. Open the group you wish to edit.
- 2. If group settings are not displayed, click **Group** 1 in the *Tasks* menu.
- 3. Edit the settings as required.
- 4. To exit group settings, select an individual projector.



Only a subset of settings are available in Group Mode.
 Initially all group settings appear blank. When you edit a setting, the Group Tasks pane shows the new group value.

GAMUT

# Gamut

### **Gamut Tool**

**The Gamut Tool (Fig. 1)** allows you to edit target gamut coordinates and load the edited gamut into one of two target gamut tables supported by the projectors.

To open *Gamut Tool*,

• On the Gamut menu, click Gamut Tool 1.

0.900

0.800

0.700

0.600-

0.500-

0.400-

0.300

0.200

0.100

0.000 <del>- |-</del> 0.000

515nm



# 

Fig. 1: Gamut Tool



• use Gamut Editor. See <u>Gamut</u> Editor further in this section.

#### Gamut Tool (continued)

The yellow triangle represents the current red, green and blue gamut coordinates that will be sent to the user table of choice. The white triangles visualize the measured data for each projector on the network.

Edit the yellow triangle by dragging its corners within the grid. Make sure the yellow triangle occupies as much space as possible while at the same time being completely within each and every one of the white triangles. Use the zoom buttons to pinpoint the exact position of the red, green and blue coordinates. Use **Reset** to zoom out.

#### **Applying edited TCGD data**

Click Download to send gamut coordinates to the projectors. From the dropdown, select TCGD Table 1 or TCGD Table 2.





GAMUT

#### **Gamut Editor**

Gamut Editor (Fig. 1) allows visual editing of both MCGD and TCGD data for the selected projector.

To open Gamut Editor,

On the Gamut menu, click Gamut Editor 1. •

The yellow triangle represents the MCGD table. The two white triangles represent the TCGD tables.

Edit any triangle by dragging its corners within the grid. Make sure the yellow triangle occupies as much space as possible while at the same time being completely within at least one of the white triangles. Use the zoom buttons to pinpoint the exact position of the red, green and blue coordinates. Use **Reset** to zoom out.





which can be applied to any number of projectors. See Gamut Tool earlier in this section.

Tool allows editing TCGD data

Notes

and MCGD data for a single projector. In comparison, Gamut

Some projectors, for example HIGHlite Laser, only support one user-defined gamut table.

#### Import gamut data

- 1. Select the table where you wish to import new coordinates.
- 2. Click **Import MCGD/TCGD** the name of the button will vary depending on the selected table.
- 3. Navigate to the location where the data is stored, select the data file and click **Open**.

#### **Export edited gamut data**

- 1. Select the table you wish to export.
- 2. Click **Export MCGD/TCGD** the name of the button will vary depending on the selected table.
- 3. Navigate to the location where you wish to store the data, enter a file name and click **Save**.

#### Download edited gamut data to the projector

- 1. Click **Download** to send the gamut coordinates to the projector.
- 2. From the dropdown, select **TCGD Table 1** or **TCGD Table 2**.



Notes Gamut Editor manipulates TCGD and MCGD data for a single projector. In comparison, Gamut Tool allows editing TCGD data which can be applied to any number of projectors. See Gamut Tool earlier in this section.

Some projectors, for example HIGHlite Laser, only support one user-defined gamut table.

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GAMUT

WARP

# Warp

The *Warp Config* tab is used for creating and editing warp maps for projection onto uneven surfaces.

To create and edit warp maps:

- 1. Copy one or more projectors from the Projectors tab or from within a group.
- 2. Open the **Warp Config** 1 tab.

Each cell within the grid is a placeholder for a projector. The default grid contains three cells in a single row. You can edit the grid at this stage or later by adding or removing rows or columns. Use the *Grid Height* 2 and *Grid Width* 3 drop-down lists.

3. Paste the copied projectors in the grid. You can arrange the projectors within the grid using *the arrows* **4**.



Not all projector models support Warp. Refer to the projector manual for details.



WARP



7. In the warp map editor for the selected projector, use the controls under **Evaluator** Controls 1 and Grid Designer 2 to edit the warp map.



WARP

Notes Not all projector models support 8. To send the warp map to the projector, select **Evaluator Controls** 1 a slot in the projector memory from Save Warp. Refer to the projector manual Warp to Slot 3, and then click Send 4. -Send Warp for details. Save Warp to Slot SEND 2 2 -Warp Status... Time taken to generate file = Oms Time taken to send warp file = 702ms -Grid Editing -Point Edit Control Rotation(clockwise) Move Row Move Column 0 Rotate 9. To exit the warp map editor, click **Close** 1 in Grid Designer Grid Designer. Fine Positioning This will close the map editor and allow you 音 🗙 🔊 3 t 0.7 💌 to access the main Projector Controller Ŧ. # ⊞ ⊞ ≃ window again. PRESETS > Changes to your map will be lost unless you 3x3 Curvature Y 3x3 Curvature X send the map to the projector beforehand. 1 1 W Rev F July 2015

Notes 10. Back in the main *Projector Controller* window, to disable warp grid editing, click **Reset Warp** Not all projector models support Warp. Refer to the projector manual 1 for details. 📧 Projectors 🛛 🛲 Groups 🛛 🎬 Warp Config N/A 📲 1 🔍 🝟 3 🔍 🍢 Overlay + 🌉 Freeze + 🚿 Apply Warp 🚿 Reset Warp 📃 Arrange 🛧 🤳 o 🕲 🕫 🕫 🔊 (i) (i) 🙂 🔮 (ii) Projector004

#### VIEWING LOGS

# Viewing Logs

The **Logging** menu tab consists of the following commands:



**View Log** shows a record of interaction between the software and the available projectors logged within the current session.

The Log View 1 appears underneath the main workspace.

Choose from the following views:

- Click **Comms** to view all communication between Projector Controller and the projectors. Log entries are grouped by projector.
- Click Errors to view communication errors within the network.
- Click **Diagnostics** to see low level diagnostic messages, including errors, sent by the projectors.
- Use the **Filter** drop-down list to view only log entries for a particular projector.
- Click **Reset** to remove the applied filter.
- Click **Clear** to clear the log.

#### **Clear Log** deletes the current record.

**Comms Log** opens a text file containing all communications for the current session.

This log is identical in content to the **Communications** tab.

- **Error Log** opens a text file containing all error messages logged during the current session.
- This log is identical in content to the **Errors** tab.



**Status Log** opens a text file containing all status messages logged during the current session.

This log is identical in content to the **Diagnostics** tab.



**Log Folders** opens the location on your computer where log files COMMS.LOG, STATUS.LOG and ERROR.LOG reside. In addition, you can view past logs automatically archived by the application in subfolders by date.



You can set up Projector Controller to send the status log periodically to an email address of your choosing. For further information, see <u>Email</u> <u>Alerts</u> further in this guide.

# **Application Settings** Bypassing the projector ON / OFF confirmation dialog Projector Controller asks for confirmation when you switch a projector on or off. To bypass the confirmation dialog: 1. Open the *Application Settings* dialog: click *the DP icon* 1 at the top left corner of the window Projector Controller window, then click Recent Workspaces Options 2 MyWorkSpace.workspace Application Settings 2. On the General tab, deselect Warn user before powering on/off projectors 3. Warn user before powering on/off projectors (3) OUse UDP Protocol OUse TCP/IP Protocol 3. Click **OK** 4 to close the *Application Settings* dialog. $\gg$ Ok

### APPLICATION SETTINGS



You can customize the software by applying different themes.

To apply a theme:

- 1. Click *the DP icon* **1** at the top left corner of the Projector Controller window.
- 2. Click **Options 2**.
- 3. On the **General** tab **3**, select a theme from the drop-down list under **Application UI theme 4**, then click **OK 5**.



#### Applying themes (continued)

#### Select from the following themes:



Office Blue



Office Silver



Office Black



Professional Black (default theme)





### **Email alerts**

The *Email Alerts* feature, when enabled, periodically emails the status log to an email address of your choice.

The status log contains low level diagnostic and error messages that the projectors emit, for example :

23:46:35 : ERROR: Verify Lamp Timer ROM 1 failed

To set up email alerts:

- 1. Make sure the computer is connected to the internet.
- 2. Open the *Application Settings* dialog: click *the DP icon* 1 at the top left corner of the window Projector Controller window, then click **Options** 2.





#### APPLICATION SETTINGS



2. On the *Lens* tab:

•



Projector Controller allows you to control lens movement speed as well as step size when executing a Nudge command.

To configure lens movement speed and nudge step size:

- 1. Open the *Application Settings* dialog: click *the DP icon* 1 at the top left corner of the window Projector Controller window, then click Options 2
- \_\_> DP Recent Workspaces MyWorkSpace.workspace Application Settings 3 ->> Lens Calibration-4 Lens Movement

Ok

Under Lens Movement 4, select lens movement speed (Slow, ۰ Medium, Fast and Very Fast) and nudge step size (Tiny, Small, Medium and Large)

Under Lens Calibration 3, select which actions should be

performed by the Tasks > Lens > Calibrate command (where

applicable): Calibrate focus, Calibrate zoom and Centre lens.

- 3. Click **OK 5** to close the *Application Settings* dialog.

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Notes

options are applied to all projectors.

Lens movement and calibration

# Advanced Network Setup

Projector Controller supports the following types of network connection:

- LAN using UDP (recommended)
- LAN using TCP/IP
- Serial

You can also add virtual projectors to your network, for testing purposes.

Connection types can be combined. For example, you can control projectors via LAN and RS232 at the same time.

Typically, Projector Controller will automatically detect all connected projectors. If necessary, you can set up a network connection manually using the **Connections** menu.

# **Setting up LAN connections**

You can choose between UDP and TCP/IP:

- 1. On the **Connections** menu, click **Network**.
- 2. Select UDP or TCP/IP.

Using UDP is straightforward and requires no further setup. If using TCP/IP, you may need to edit IP addresses manually to ensure the correct IP is assigned to each projector in the network.



Notes

See Changing the IP address of a

more information.

projector further in this section for

## **Setting up serial connections**

You can connect one or more projectors using RS232, depending on your available ports.

Use a null-modem cable to connect a projector directly to your computer, or a straight cable to use a modem.

- 1. On the **Connections** menu, click **Serial** (*Fig.* 1).
- 2. Select the COM port used by the projector (Fig. 2).

#### ADVANCED NETWORK SETUP



**Computer with four USB ports** Projector Controller will run on this computer.

#### USB to Serial adaptor cables

These transform the USB ports into Serial ports.

#### Serial connections

0

2

3

4

The **Connections** menu will list them as COM ports.

#### Connected projectors

When setting up the serial connections, make sure you assign the correct COM port to each projector.

# ADVANCED NETWORK SETUP

### Adding a virtual projector

Virtual projectors can be added to any network.

- 1. On the **Connections** menu, click **Virtual**.
- 2. Select a projector series and model from the list.



#### **Recognizing virtual projectors in the workspace**

Virtual projectors are denoted by a *green lens* 1 and by *a hash symbol* # 2 preceding the serial number.

In the illustration, the projector on the left is a virtual projector.

# Changing the IP address of a projector

To change an IP address:

1. On the Projector menu, click Change IP 1.

The Change IP window opens 2.

2. Type the new IP address in the **New IP** field **3** and then click **OK 4** to close the **Change IP** window and return to Projector Controller.



Notes All IP addresses in your network must be identical up to the third octet: each IP address must have a unique last octet. J.S. All IP addresses within a network share the same subnet mask. You cannot edit the subnet. Jan Each MAC address is unique. MAC addresses are assigned automatically and cannot be edited.

# Workspace Reference

#### Menus

0

2

3

4

Sets of menus in two menu tabs, Home and Logging.

#### Main workspace split in tabs

Monitor the projectors in your network and change settings. Switch between the following tabs:

- Projectors view all projectors at once and work with one projector at a time.
- Groups view and work with groups of projectors.
- Warp Config create, edit and apply warp maps.

Use the **Arrange** buttons to change the order of the projectors.

#### Individual projector

View model, name, lamp status and configuration, and whether the projector is powered on. The currently selected projector has a darker background. Click a projector to select it. On the **Projectors** tab all commands work only on the currently selected projector.

#### Task pane

All settings for the currently selected projector can be controlled from this area.





# Saving and opening workspaces

You can save your workspace for future use. Projector Controller records the current projectors, their order in the workspace, as well as any groups and the projectors they contain.

When you open a saved workspace, it replaces your current workspace.

Unavailable projectors are also added to the workspace.

Workspaces are saved with the **.workspace** extension. The default location for your saved workspaces is *My Documents\Digital Projection\Projector Controller\Workspaces*. You can save your workspaces to any location of your choice.

To save a workspace or open a saved workspace:

- 1. Click *the DP icon* 1 at the top left corner of the Projector Controller window.
- 2. Choose from the following actions:
  - **Open** a previously saved workspace **2**
  - Open a *recent workspace* 3
  - Save the current workspace 4
  - *Exit* Projector Controller **5**.



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# Arranging projectors in the workspace

To change a projector's position within the workspace,

- 1. Select the projector.
- 2. Use the **Arrange** toolbar:
  - Move to the beginning 1
  - Move toward the beginning, one step at a time 2
  - Move toward the end, one step at a time 3
  - Move to the end 4





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114-487F Projector Controller User Manual