CITY THEATRICAL

NEW YORK • LONDON

QolorPIX® Tape Controller, Eight Output
User's Manual
Rev 1.1

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P/N 5850

Multiverse® Transceivers are covered by U.S. Patent # 7,432,803 and other patents pending.

1 Foreword

1.1 Compliance Notice

ETL Listed to UL508A

1.2 Safety Notice

- Warning: No user serviceable parts inside. Service should be performed by qualified personnel only.
- The QolorPIX Tape Controller is designed for use in dry locations only. Exposure to rain or moisture may cause damage to the controller and increase risk of electrical shock.
- Check all external wiring before applying power.
- Devices rigged overhead must include an appropriately rated safety cable.

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2 Compliance

2.1 FCC Compliance Statement (United States)

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

2.2 IC Statement

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et

2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

2.3 CE Mark Conformity

City Theatrical Inc. declares that this product conforms to the specifications listed in this manual, following the provisions of the European R&TTE directive 1999/5/EC:

City Theatrical Inc. vakuuttaa täten että dieses produkt tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien näiden direktiivien muiden ehtojen mukainen.

City Theatrical Inc. déclare que le produit est conforme aux conditions essentielles et aux dispositions relatives à la directive 1999/5/EC.
- EN 301 489-1, 301 489-17 General EMC requirements for Radio equipment.
- EN 62832 Safety
- EN 300 328 Technical requirements for Radio equipment.

CAUTION—This equipment is intended to be used in all EU and EFTA countries. Outdoor use

may be restricted to certain frequencies and/or may require a license for operation. Contact local Authority for procedure to follow.

Note: ESD precautions should be used when attaching or removing the antenna.

Note: Combinations of power levels and antennas resulting in a radiated power level of above 100 mW equivalent isotropic radiated power (EIRP) are considered as not compliant with the above mentioned directive and are not allowed for use within the European community and countries that have adopted the European R&TTEdirective 1999/5/EC. For more details on legal combinations of power levels and antennas, contact City Theatrical Inc.

Do not use this product near water, for example, in a wet basement or near a swimming pool.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

Regulatory Information

Radio Frequency Notifications

Belgique Dans le cas d'une utilisation privée, à l'extérieur d'un bâtiment, au-dessus d'un espace public, aucun enregistrement n'est nécessaire pour une distance de moins de 300m. Pour une distance supérieure à 300m un enregistrement auprès de l'IBPT est requise. Pour une utilisation publique à l'extérieur de bâtiments, une licence de l'IBPT est requise. Pour les enregistrements et licences, veuillez contacter l'IBPT.

France 2.4 GHz Bande : les canaux 10, 11, 12, 13 (2457, 2462, 2467, et 2472 MHz respectivement) sont complétement libres d'utilisation en France (en utilisation intérieur). Pour ce qui est des autres canaux, ils peuvent être soumis à autorisation selon le départment. L'utilisation en extérieur est soumis à autorisation préalable et trèsrestreint. Vous pouvez contacter l'Autorité de Régulation des Télécommunications (http://www.art-telecom.fr) pour de plus amples renseignements.

3 Introduction

City Theatrical's QolorPIX Tape Controller is an innovative approach to pixel control which offers a high level of creativity combined with plug and play usability. Each QolorPIX Tape Controller is preconfigured with personality profiles, which can be combined and tuned to produce thousands of dynamic effects using only a few DMX channels. Chases, fades, scrolls, bursts, and other effects can be created and saved as needed. QolorPIX Pixel Controlled LED Tape connects to the controller using industry standard four pin XLR connectors. Within one minute, the system can be up and running.

3.1   Features

- Supports ANSI E1.11 DMX512-A
- Compatible with City Theatrical QolorPIX Pixel Controlled LED Tape
- Effects engine enables controlling entire length of QolorPIX tape with only 16 or 32 DMX addresses per five meter reel of tape
- Eight output ports individually addressable
- Up to 240 individual pixels on each port
- Firmware is user updatable through micro-SD card slot
- Tape is controllable via DMX512-A, recordable presets, and test routine
- DMX512 control through effects engine, RGB, and pixel address modes
- Can be mounted in a standard 19-inch rack with included mounting accessories. Requires 2U rack spaces.

3.2   What's Included

Figure 1: What's Included

1. QolorPIX Tape Controller
2. Set of Mounting Plates
3. 8' NEMA 5-15p to Neutrik powerCON TRUE1 Cable
4. Antenna, 2 dBi Omni Swivel 2.3"
5. Fasteners (four in total)

3.3   Customer Service

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For additional resources and documentation, please visit our website at: www.citytheatrical.com

4 Specifications

4.1 Specifications

Table 1: Physical Characteristics

Specification	Description
Size	7.8" L(198mm) x 13.6" W (345mm) x 3.45" H (88mm)
Weight	5.75 lbs (2.61Kg)
Connections	- Neutrik powerCON TRUE1 Power in and through 20A - 5-pin DMX512 in and through ports - 8 x XLR 4-pin output ports - RP-SMA female antenna connector
Fuse	3AG type 10A/250V Fast-Blow located on front panel
Input Power	115/230VAC, 3.5/1.8A
Inrush Current	35/70A
Output Power	5VDC, 6A max per port
Output Class	Class 1
Pixels	1 to 240 per port
Storage Temperature	-20° C to 85° C
Operating Temperature	0° C to 40° C

4.2 Mounting

Figure 2: Pipe Mount

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Figure 3: Rack Mount

Figure 4: Surface Mount

4.3   Air Flow

Figure 5: Air Flow
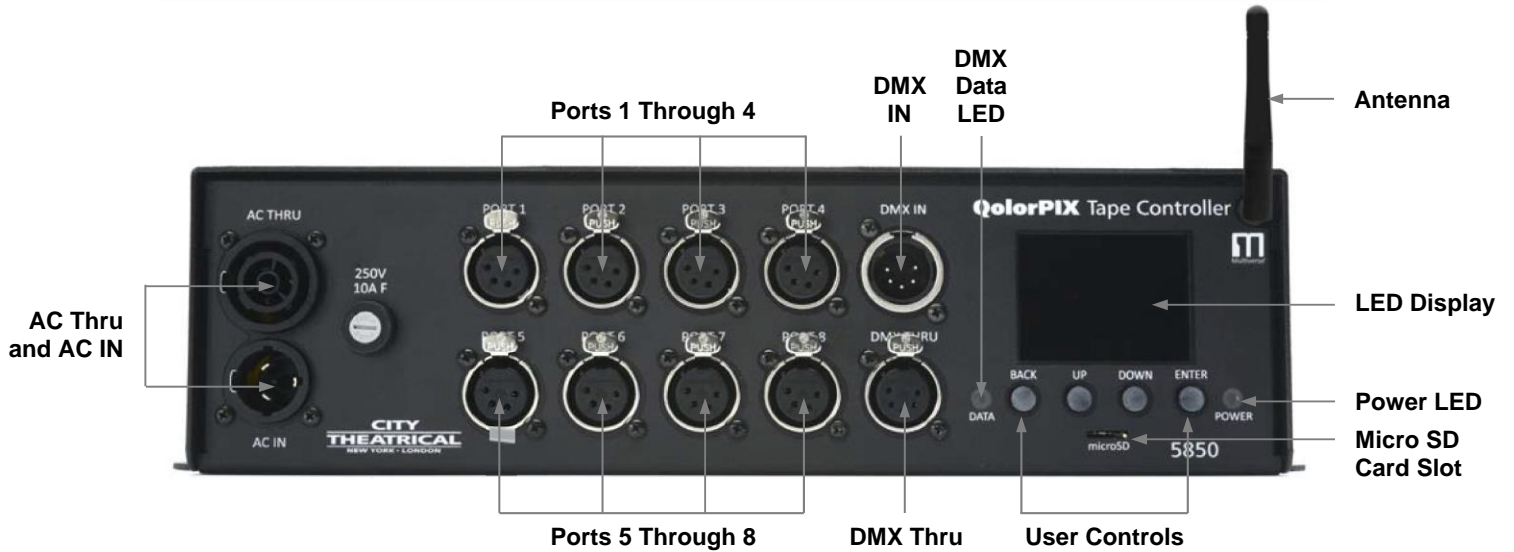
4.4   Face Panel

Figure 6: Face Panel

4.5   Output Port Pinout

The output ports on the QolorPIX Tape Controller use a Neutrik 4-pin Female connector. Pixel tape should be wired with a 4-pin male connector with pin 1 connected to common, pin 3 connected to data, and pin 4 connected to the +5v line. Pin 2 is not currently used. Make sure the wire gauge used for pins 1 and 4 is large enough to avoid dimming due to voltage drop. Typical scroller cable uses 14awg wires on these pins. Double check connections before connecting pixel tape to QolorPIX controller.
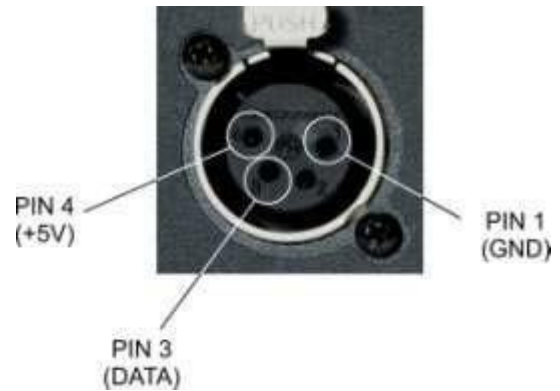
Incorrect wiring can cause permanent damage to the pixel tape or controller port. The QolorPIX Controller pinout is compatible with typical 4-pin scroller cable.

Figure 7: Pinout

5 Configuration

5.1   Installation

The QolorPIX Tape Controller requires standard AC power from 90-260V, 50/60 Hz. The front panel provides an AC in and through connection via Neutrik powerCON TRUE1.

Mounting accessories are included to provide mounting with two c-clamps or in a typical 19-inch rack. The QolorPIX Tape Controller uses 2U mounting spaces.

When unit is installed ensure that the air vents on either side of the box are not covered.

If unit is being controlled via DMX512 ensure that the last unit in the chain is properly terminated with a 120Ω ½ watt resistor between pins 2 and 3. A DMX connector with a built in terminating resistor is available from your local distributor.

5.2   Menu

To lock the menu, press and hold both the "Up" and "Down" buttons for two seconds until "LOCKED" is displayed.

To unlock the menu, press and hold both the "Up" and "Down" buttons for two seconds until "UNLOCKED" is displayed.

5.3   Menu Descriptions

5.3.1   Save

The "Save" menu option will save any configuration changes since last power on.
If configuration changes are not explicitly saved, they will be lost on power off.
Changes made through RDM are automatically saved.

5.3.2   Restore

The "Restore" menu option can be used to reset the device configuration to factory defaults.

5.3.3   Port Settings

The "Port Settings" menu option allows you to configure each port. Changes can be made globally or individually by port. Only changed values are applied. For example, you can change the number of pixels of every port without changing any of the ports' addresses.

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Port Settings Mode

Settings marked in RED have not been saved in persistent memory and will be lost when power is turned off. Use the "Save" menu option to retain these changes.

5.3.3.1   Product

This can be used to select the QolorPIX product to use with the output port. At this time the only choice is "QP48" for standard City Theatrical QolorPIX tape.

5.3.3.2   Pixels

Used to identify the number of QolorPIX connected to the port. This can be any value from 1 to 240.

5.3.3.3   Scale

Scale assigns a single pixel attribute to 1, 2, or 3 consecutive pixels. This allows effects and direct pixel mapping to be scaled up when a larger visible effect is desired.

5.3.3.4   Mode

The QolorPIX Tape Controller can be run in the following modes:

- **16 Channel**
- **32 Channel** (uses two layers of effects)
- **RGB** (3 Channel) Treats entire length of tape as an RGB fixture.
- **MAP** addresses each LED as a 3 Channel fixture starting with the pixel closest to the QolorPIX Tape Controller.
- **(P1-P4)** Playback of pre-recorded presets.

5.3.3.5   Port Address

Set the starting address of the port(s) for DMX controlled modes.

5.3.3.6   Master Dimmer

Set a master dimmer address for the entire port(s). Leave at "0" for none. It does not need to be sequential with the personality address. It can be the same for multiple ports even if they are set to different personality addresses.

5.3.3.7   Fixture ID

Not presently implemented.

5.4.3.8 Direction

Sets which end of the tape the effects originate from. It is helpful if different segments of tape are run in opposite directions.

5.3.4   Create Presets

Create presets allow the user to create up to four presets, which can be arbitrarily assigned for playback to any given port. The menu gives the option to create the presets in two different ways: "Capture DMX" and "Manual Levels." When using "Capture DMX," the QolorPIX Tape Controller takes a snapshot of the incoming DMX channels 1 through 32 and assigns those levels to the selected preset. When using "Manual Levels," the QolorPIX Tape Controller allows the user to manually set the present's channel value directly from the unit's display. Values in "Manual Levels" range from zero to 255 (are not listed as percentages). Presets will not be retained when power is lost unless "Save" is executed from the Main Menu.

Usage example of "Capture DMX":

- Go to Port 1 Settings and set the "Mode" to "32Ch" and "Port Address" to 1. (All presets must be recorded at address 1.)
- Send a DMX signal and adjust channels one through 32 to create and tweak the desired effect. The pixel Controlled LED tape on Port 1 can be used to visually verify the effect being created.
- Go to "Create Presets."
- Select the desired preset.
- Select Capture DMX.
- Assign the created preset to any port by changing the "Mode" option in the Port Settings.

Using example of "Manual Levels":

- Go to Port 1 Settings and set the "Mode" to "P1."
- Go to "Create Presets."
- Select the Preset 1.
- Select Manual Levels.
- Adjust the values of the various channels to create and tweak the desired effect. The changes will be reflected on the pixel tape connected to Port 1.
- Assign the created preset to any port by changing the "Mode" option in the Port Settings.

5.3.5   Test Mode

Test mode allows enabling of the test pattern (alternating blue and yellow wipes) for one or all ports.

5.3.6   Advanced

5.3.6.1   Flicker Finder

Flicker Finder shows current input levels for a full 512 slots of DMX data. Red bars show the maximum received value to assist with visualizing flickering input data. The upper segment shows the incoming DMX refresh rate (number of full DMX frames received per second). The up and down arrows can be used to display information about individual channels. It shows the current DMX value along with the minimum and maximum values seen since Flicker Finder was initiated.

To identify flickering in a DMX line, set the controlling console or tester to a static look and enter the Flicker Finder menu item to visualize unexpected changing values. DMX flicker can be caused by poor or broken cables, misbehaving devices in the DMX chain, or improper DMX termination.

5.3.6.2   Update Firmware

Firmware updates for the QolorPIX Tape Controller are available in the "Downloads" tab of the QolorPIX Tape Controller product page at:
http://www.citytheatrical.com/Products/qolorpix-tape-controller-eight-output

The Update Firmware option will flash new firmware to the QolorPIX Tape Controller from an installed MicroSD card. Copy the new firmware files onto the micro SD card, insert it in the QolorPIX Tape Controller, cycle power on the controller, then select "Update Firmware" from the menu. Press "Enter" when prompted to confirm. The firmware update process will check for valid update files and push them to the appropriate ports of the controller.

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6 DMX Characteristics

6.1 DMX Maps

Table 2: 16-Channel DMX Map

DMX Address	Description	Notes
1	Intensity	
2	Red 1	Background or secondary effect color
3	Green 1	
4	Blue 1	
5	Red 2	Primary effect color
6	Green 2	
7	Blue 2	
8	**Effect Select**	**See Table 3: Effect List**
9	Size	Increases the size of certain effects.*
10	Color Mix	Mixes effect and background colors or increases trough height, depending upon the effect.*
11	Rate 1	Increases the speed of bulb decay for certain effects.*
12	Rate 2	Increases the speed of rotation, sweep, or scan movement, or increases rate of beats or strobe, depending on the selected effect.*
13	Density	Increases the density of bulbs (maximum number of bulbs that can fill the strip at one time) or increases the amount of strobe for certain effects.*
14	Direction	Changes which end of the tape the effect originates from or mirrors the effect in from the ends or out from center for certain effects.*
15	Repeat	Repeats the selected effect pattern by two, four, eight, 16 or 32 times, for certain effects.*
16	Origin Offset	Rotates the starting point of the effect along the pixel tape for certain effects.*

* See Table 3: Effect List, for which effects can be altered using this parameter.

Table 3: Effect List

DMX Address:	8			9	10	11	12	13	14	15	16
				Size		*Rate*					
DMX Value	Pre-Built Effect	Variation		Size	Color Mix	Rate 1	Rate 2	Density	Direction	Repeat	Origin Offset
0	Static Color										
1	One Color Paparazzi	Snap On / Snap Off		Size of Bulb (ranges from 1-13 Pixels)		Speed of Bulb Decay (ranges from slow to fast; faster speeds make new bulbs appear faster)	Speed of Rotation (ranges from slow to fast)	Density of Bulbs (ranges from low to high density; alters maximum number of bulbs that can fill the strip)			Origin Offset (increases the starting point of the effect origin)
2	One Color Paparazzi	Fade On / Fade Off			Color Mix (mixes background into effect color in fade effect)						
3	Two Color Paparazzi	Snap On / Snap Off									
4	Two Color Paparazzi	Fade On / Fade Off									
5	Comet	Uniform Color		Size of Comet (ranges from small to large)	Color Mix (mixes background color into effect color in fade effect)		Speed of Rotation (ranges from slow to fast; faster comets have longer tails)		Direction of Rotation (Forward is 0-62, Reverse is 63-127, Mirror In is 128-191, Mirror Out is 192-255)	Pattern Repeat (2x is 1-63, 4x is 64-127, 8x is 128-195, 16x is 196-254, 32x is 255)	
6	Comet	Uniform Decay									
7	Jockey			Size of Jockey (ranges from 1-31 Pixels)			Speed of Rotation (ranges from slow to fast)				Origin Offset (increases the starting point of the effect origin)
8	Checkers										
9	Color Merge			Size of Merge (ranges from 0-100%)							
10	Wave	Uniform Color		Size of Wave (ranges from 0-100%)	Color Mix (mixes background color into effect color in fade effect)						
11	Wave	Uniform Decay									
12	Sweep	Continuous		Size of Sweep Step (ranges from 1-8 Pixels)			Speed of Sweep (ranges from slow to fast, altering speed at the sweep move)				
13	Sweep	Random Start Delay									
14	Index Wipe			Size of Wipe (ranges from 0-100%)							Origin Offset (increases the starting point of the effect origin)
15	VU	Manual (Solid Color - No Peak Hold)		Peak Height (ranges from 0-100%)							
16	VU	Random Height (Solid Color - No Peak Hold)				Base Height (ranges from 0-100%)	Rate of Beats (ranges from 0-600 BPM)				
17	VU	Height Index (Solid Color - No Peak Hold)		Peak Height (ranges from 0-100%)							
18	Strobe					Rate of Strobe (ranges from 0-10 FPS)		Duty Cycle (ranges from 1-100%; increases amount of time Strobe is on per cycle)			
19	KnightRider	Uniform Color		Size of Scanner (ranges from 0-100%)			Speed of Scan Movement (ranges from slow to fast)		Direction of Rotation (Forward is 0-62, Reverse is 63-127, Mirror In is 128-191, Mirror Out is 192-255)	Pattern Repeat (2x is 1-63, 4x is 64-127, 8x is 128-195, 16x is 196-254, 32x is 255)	
20	KnightRider	Uniform Decay									
21	Police Strobe	Snap On / Snap Off				Rate of Strobe (ranges from 0-10 FPS)					Origin Offset (increases the starting point of the effect origin)

Key: ⬜ = Effect can be adjusted with the selected parameter (by changing the DMX value for selected DMX Address to a value between 0 and 255).
⬛ = Effect cannot be adjusted with the selected parameter.

7 Troubleshooting

Table 4: Troubleshooting Guide

Symptom	Solution(s)	Refer to…
Unit does not power up.	Check that power cable is properly installed and that the Neutrik powerCON TRUE1 connector is turned to its locked position.	Installation
	Test power outlet with another device.	
Pixel tape does not light up.	Run a test routine to see if tape is working properly.	Test Mode
	Check tape for correct pinout.	Pinout
Pixel tape is not responding to DMX.	Is the front panel DATA led solid indicating that data is present?	
Color shift at end of tape.	Try reducing the tape length, as this is typically due to overload.	
Flashing.	Correct overload short, as this is typically due to output port short and active safety circuit protection.	

8 Accessories

Table 5: Accessories

Part Number	Description	
Q5050-5-RGB-48-5-67-2	QolorPIX Pixel Controlled LED Tape, black, with 4-pin XLR – 5 meter reels	
5870	QolorPIX Rack Mount / Pipe Mount Ears with Fasteners	
5840	8' NEMA 5-15p to powerCON TRUE1 Cable	
5729	Antenna, 2 dBi Omni Swivel 2.3"	
5891	Four Pin XLR with three Conductor 6" Tail	
6691	Aluminum Extrusion, 2m, 21mm x 9mm (15mm inside)	
6692	Aluminum Extrusion, 2m, 21mm x 14mm (16mm inside)	
6696	Diffuser, 2m, for 6691 Extrusion	
6697	Diffuser, 2m, for 6692 Extrusion	