Multiverse: Expanding the World of Wireless DMX

After 16 years of pioneering wireless DMX and RDM for entertainment and architectural lighting, City Theatrical is presenting its new Multiverse® wireless DMX system broadcasting as many as 10 universes of DMX data from a single transmitter, with the ability to use less radio energy than present-day single universe systems.

Multiverse marks our fifth generation of engineering development. All previous wireless DMX control systems have suffered from a basic limitation: they are only able to transmit and receive a few universes of DMX data before their radio energy overpowers the spectrum and prevents their signals, and the signals of other devices in the venue, from accomplishing their mission. With this constraint, large scale multiple universe wireless systems simply have not been possible to achieve. In addition, the broadcast spectrum in which DMX systems operate has become overcrowded with other radio signals causing additional interference issues.

Faced with these challenges, we began to plan a new system of wireless lighting control that could be scaled up to unprecedented levels without overpowering the spectrum. Our mission therefore was to be able to deliver more data using less radio energy.

Solution: Multiverse Module
We achieved our goal with the creation of our Multiverse Module. Every product in the Multiverse wireless DMX system is built around these tiny circuit board mounted devices, as an embodiment of this breakthrough technology.

Key Features and Benefits

Flexibility & Scalability
Multiverse components can be set up as single or multiple universe configurations. Using our plug and play wireless Multiverse SHoW Baby or Multiverse Nodes, single universe systems can be created quickly and easily. Using a single Multiverse Transmitter, you can create a system of up to 10 universes.

Ease of Use
Components are easily set up and users can configure their system and then control its fixtures using Streaming ACN or Art-Net, or convenient smartphone based interfaces such as our DMXcat® Bluetooth app or other Wi-Fi controllers, like Luminair.

2.4GHz & 900MHz Operation
2.4GHz operation is usable worldwide, and for the first time, Multiverse users in North America can use a combination of 2.4GHz and 900MHz frequencies. (Note: 900 MHz is not licensed for use outside of North America.)

Backwards Compatibility
Multiverse SHoW Baby and Multiverse Node can be used seamlessly with highly popular legacy wireless DMX products, including SHoW DMX SHoW Baby®, SHoW DMX Neo®, and SHoW DMX Vero® and SHoW DMX Vero Net®.
Why couldn’t all DMX data be sent wirelessly before Multiverse?

Until now, wireless DMX lighting control systems have suffered from a basic limitation: They are only able to transmit and receive a few universes of DMX data before their radio energy overpowers the spectrum and prevents their signals, and the signals of other devices in the venue, from accomplishing their mission.

Thus, large scale multiple universe installations have not been possible.

Faced with this challenge, City Theatrical set out to create a totally new way of controlling live entertainment equipment that would overcome this hurdle and pave the way for the future of wireless data distribution for entertainment and architectural lighting.

After three years of research, development, and complex engineering, our team of experts has achieved our goal and is proud to offer Multiverse - a visionary breakthrough in technology that delivers much more DMX data while producing less radio energy.

A sample real-life crowded radio spectrum.


designed for oem partners

Multiverse Modules are best suited for lighting equipment manufacturers who are interested in adding wireless DMX to their products. Due to low cost, increased data transport, and ease of design integration, the Multiverse Module marks the first time that the implementation of a wireless DMX chip in every DMX device is possible.

The Multiverse Module is available in two frequency ranges, 900MHz (for use in North America) and 2.4GHz (for use worldwide). Each frequency version can include a PCB trace antenna or not. All versions have a U.FL connector to connect to an external antenna.

OEM Implementation

Multiverse Modules are available on reels for surface mounting. The OEM Implementation Kit includes a detailed guide, equipment, test gear and more.

Contact City Theatrical for more information.
Right out of the box, Multiverse® SHoW Baby® is compatible with all SHoW Babys ever made.

With tens of thousands of units sold since their introduction in 2011, SHoW Baby plug and play transceivers set the standard for ease of use and reliability at an affordable price point. The addition of Multiverse radio technology enhances the performance even more.

City Theatrical's Multiverse SHoW Baby is a wireless DMX transceiver that delivers breakthrough plug and play wireless DMX and RDM transmission. In its default mode, it works like all other SHoW Baby Transceivers with six user selectable SHoW IDs. By connecting an RDM controller, like DMXcat® Multi Function Test Tool, all of the revolutionary new 2.4GHz Multiverse SHoW IDs are accessible. Users can add to their existing SHoW Baby systems, build new single universe Multiverse systems, or use Multiverse SHoW Baby as a receiver on multiple universe systems with a Multiverse Transmitter.

Key Features

- Built-in 2.4GHz Multiverse radio (for worldwide use)
- All SHoW DMX Neo and 2.4 GHz Multiverse SHoW IDs are available through RDM
- In Multiverse mode, compatible with all Multiverse products. In SHoW DMX Neo mode, compatible with all SHoW DMX Neo legacy products.
- Plug and Play selection of Transmitter or Receiver function
- 5 Pin XLR DMX input and output
- 5 to 30VDC power input
- Molded plastic enclosure

What's in the box:

- Transmitter set to SHoW ID 117
- Receiver set to same SHoW ID
- Set SHoW IDs on back of unit

<table>
<thead>
<tr>
<th>P/N</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5900</td>
<td>2.4GHz</td>
</tr>
</tbody>
</table>
The Multiverse® Node is the first building block of the Multiverse system. Each Multiverse Node is a transceiver. As a single universe transmitter, it functions in a similar plug and play manner to our Multiverse SHoW Baby®, but contains two radios (North America version only) and a full user interface. As a receiver, it is the primary single universe stand alone receiver in the Multiverse system, and can be part of a larger multi-universe setup.

**Multiverse Node**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5902</td>
<td>900MHz/2.4GHz</td>
</tr>
<tr>
<td>5903</td>
<td>2.4GHz</td>
</tr>
</tbody>
</table>

**Single Universe Plug and Play Simplicity**

**Key Features**

- Built-in 2.4GHz (for worldwide use) and 900MHz (for use in North America only) radios allow the user to select which single universe to transmit, and which radio band to use via the SHoW ID.
- As a single universe receiver as part of a multi-universe system, users can select which universe to receive.
- A very simple user interface to set SHoW ID and universe.
- Rugged cast aluminum enclosure.
- A single dual band antenna.
- 5 Pin XLR DMX input and output.
- 5 to 30VDC power input via locking barrel connector.

**What’s in the box:**

- Wired DMX from console/controller.
- Wireless DMX from Multiverse Node, Multiverse Transmitter.

**Schematics:**

- **Tx SCHEMATIC**
- **Rx SCHEMATIC**

**Images:**

Pipe Mount, Simple onboard setup, Back of unit.
The Multiverse® Transmitter opens a new world in wireless DMX/RDM. Its Ethernet input allows it to take in Streaming ACN (sACN) or Art-Net and to transmit between eight and 10 user-selectable universes of DMX/RDM, depending on the Multiverse Transmitter used, with the ability to use less radio energy than a present day single universe wireless DMX transmitter.

The Multiverse Transmitter has a Bluetooth radio receiver built in that allows it to communicate with City Theatrical’s multi award winning DMXcat® app from the user’s smartphone. This gives the user smartphone control of any lighting fixture that is part of the Multiverse setup, whether it is a lighting fixture with a Multiverse Module inside, a lighting fixture receiving its data from a Multiverse Node, or any wired fixture downstream of those devices.

The Multiverse Transmitter is Wi-Fi enabled, allowing for communication and control from tablet based Wi-Fi lighting controllers like Luminair.

### Key Features

- Four radios: Bluetooth and Wi-Fi for inputs, and two for Multiverse wireless DMX/RDM output: 900MHz and 2.4GHz (for P/N 5910), 2.4GHz and 2.4GHz (for P/N 5911), and 900MHz and 900MHz (for P/N 5912)
- Ethernet input for sACN and Art-Net
- All setup and user choices made with our free DMXcat app
- Rugged cast aluminum enclosure
- A hanging bracket is included for hanging from a pipe or truss
- Additional user control via DMXcat app or Luminair

### What's in the box:

- Tx CONTROL VIA BLUETOOTH APP (DMXcat)
- UP TO 5 UNIVERSES
- UP TO 4 UNIVERSES
- DMX 2.4GHz
- DMX 900MHz
- sACN / Art-Net
Why Is Multiverse Revolutionary?

Multiverse’s patent-pending wireless DMX/RDM technology enables scalability of wireless lighting data like never before. It allows larger and larger systems to be scaled up without producing harmful amounts of radio energy that could disrupt other wireless systems in the venue.

Top 10 Breakthrough Innovations of Multiverse

More DMX Data, Less Radio Energy
With Multiverse Module technology in every Multiverse product, the Multiverse wireless DMX/RDM system can broadcast up to ten universes of DMX data, depending on the type of Multiverse Transmitter used, while using less radio energy than other single universe wireless DMX transmitters.

Simultaneous Dual Band Operation
Broadcast on the 2.4GHz band and the 900MHz band (900MHz band is licensed for use in North America only) at the same time.

Auto Dynamic Limited Burst
Multiverse can automatically sense which DMX slots are not in the patch and will not broadcast them, thereby reducing unneeded radio energy.

mDMX
mDMX is a form of DMX optimized for wireless broadcast that dramatically reduces data being broadcast, thereby reducing unneeded radio energy.

mRDM
Multiverse is able to broadcast RDM information without disrupting the DMX broadcast. This feature is not available even in wired RDM systems.

SHoW Key Security
SHoW Key is an additional three-digit code that is added to a Multiverse SHoW ID that will prevent another system set on the same SHoW ID from interfering with your system.

Forward Error Correction
Allows the Receiver to detect and correct errors that may occur in the wireless transmission of data.

Lock PIN
When using a smartphone with the DMXcat app, a four-digit PIN can be applied to the Multiverse Transmitter to assure only authorized users can access it.

RDM Integration
When Multiverse radios are implemented by a manufacturer of a lighting fixture, they become an integrated part of that device. Lighting users simply look for the fixture they want to communicate with, not the radio in addition to the feature, for a simpler selection process.

Low Cost Technology
The Multiverse Module is the lowest cost full featured DMX/RDM product ever introduced, making it perfect for manufacturers to incorporate into their lighting fixtures.

Multiverse can change your entire approach to lighting by allowing larger and larger wireless DMX/RDM systems to be scaled up.
## Specifications

<table>
<thead>
<tr>
<th></th>
<th>Multiverse SHoW Baby</th>
<th>Multiverse Node</th>
<th>Multiverse Transmitter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part Number</strong></td>
<td>5900</td>
<td>5902 (900MHz/2.4GHz)*, 5903 (2.4GHz)</td>
<td>5910 (900MHz/2.4GHz)<em>, 5911 (2.4GHz (x2)), 5912 (900MHz (x2))</em>(x2)</td>
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<tr>
<td><strong>Applications</strong></td>
<td>Indoor</td>
<td>Indoor</td>
<td>Indoor</td>
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<tr>
<td><strong>Broadcast Power</strong></td>
<td>2.5mW, 8mW, 25mW, 80mW</td>
<td>3.2mW, 10mW, 32mW, 100mW</td>
<td>3.2mW, 10mW, 32mW, 100mW</td>
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<tr>
<td><strong>Antenna(s)</strong></td>
<td>2dBi omni</td>
<td>Omni broadband, 900MHz/2.4GHz, 2dBi/4dBi</td>
<td>Omni broadband, 900MHz/2.4GHz, 2dBi/4dBi</td>
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<tr>
<td><strong>User Interface</strong></td>
<td>One Button / Indicator Lights</td>
<td>4 Button / Backlit LED Display</td>
<td>DMXcat app</td>
</tr>
<tr>
<td><strong>Broadcast Modes</strong></td>
<td>Adaptive, Full, Low, Mid, High, Max</td>
<td>Adaptive, Full, Low, Mid, High, Max</td>
<td>Adaptive, Full, Low, Mid, High, Max</td>
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<tr>
<td><strong>DMX Burst Modes</strong></td>
<td>Auto Dynamic</td>
<td>Auto Dynamic</td>
<td>Auto Dynamic</td>
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<tr>
<td><strong>Ethernet Protocols</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>802.11 bgn, 100 BASE-T sACN, Art-Net</td>
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<tr>
<td><strong>Hopping Patterns</strong></td>
<td>3</td>
<td>17</td>
<td>17</td>
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<tr>
<td><strong>Show IDs</strong></td>
<td>217</td>
<td>307 (P/N 5902); 217 (P/N 5903)</td>
<td>237 (P/N 5910); 147 (P/N 5911); 90 (P/N 5912)</td>
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<td><strong>Latency</strong></td>
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<td>4ms</td>
<td>4ms</td>
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<td><strong>RF Sensitivity</strong></td>
<td>-95dBm</td>
<td>-95dBm</td>
<td>-95dBm</td>
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<td><strong>RDM Features</strong></td>
<td>RDM Proxy, RDM Responder</td>
<td>RDM Proxy, RDM Responder</td>
<td>RDM Proxy, RDM Responder</td>
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<tr>
<td><strong>Compliance</strong></td>
<td>FCC, IC, CE</td>
<td>FCC, IC, CE</td>
<td>FCC, IC, CE, ETL</td>
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<td><strong>Power</strong></td>
<td>5-30VDC, 1W</td>
<td>5-30VDC, 1W</td>
<td>100-240VAC 50/60Hz, 5-30VDC, POE Class 0, 5W</td>
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<td><strong>Power Connector</strong></td>
<td>5.5mm x 2.1mm, center positive, 9mm mating depth</td>
<td>Locking DC Jack, 5.5mm x 2.1mm, center positive, 12.1mm mating depth</td>
<td>Locking DC Jack, 5.5mm x 2.1mm, center positive, 12.1mm mating depth; powerCON TRUE1 in/thru; EtherCON</td>
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<td><strong>IP Rating</strong></td>
<td>IP50</td>
<td>IP50</td>
<td>IP50</td>
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<tr>
<td><strong>Construction</strong></td>
<td>Injection Molded Plastic</td>
<td>Die Cast Aluminum</td>
<td>Die Cast Aluminum</td>
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<tr>
<td><strong>Dimensions</strong> (L x W x H)</td>
<td>3.625” x 3.0” x 1.8” (92 x 76 x 46mm)</td>
<td>4.05” x 2.36” x 1.44” (102.8 x 60 x 36.47mm)</td>
<td>7.75” x 4.0” x 1.85” (196.9 x 101.5 x 47mm)</td>
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</table>

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Multiverse technology is covered by U.S. Patents #7,432,803 B2, #10,129,964 B1, and other patents pending. See product manuals for complete specifications. Specifications may be subject to change.