

## CRMX Outdoor™ – Outdoor wireless DMX, RDM & DALI distribution for Entertainment & Archtainment

CRMX™ represents the future of wireless DMX, RDM & DALI distribution. CRMX stands for Cognitive Radio Multiplexer. It is the first automated and adaptive wireless technology specifically tailored for the lighting industry. CRMX Outdoor is an adaptation of the CRMX Nova™ product for outdoor use and is compatible with other CRMX DMX/RDM products. CRMX Outdoor is the first wireless DMX/RDM system that also features DALI support and integrated DMX to DALI conversion.

### Key CRMX Outdoor innovations and advantages are:

- 1. Automated Cognitive Coexistence.** CRMX wireless transmissions never disturb, or are disturbed by, other wireless equipment. This fully automated feature offers unrivaled convenience and peace of mind during operation.
- 2. Synchronization, error correction and low latency.** Precision timing mechanism guarantees synchronized frame delivery. Advanced algorithms recreate corrupt or lost radio packages. Latency is industry best.
- 3. RDM Support.** Compatible with CRMX SuperNova and includes all that is needed to manage and monitor RDM systems.
- 4. DALI support.** First system to offer DALI support and integrated DMX to DALI protocol conversion.
- 5. Security.** 128 bit encryption ensures no hacker intrusion.
- 6. Waterproof.** IP67/IP65 classification ensures long-term use in humid and even underwater environments.
- 7. Upgradeable.** Software and firmware readily available from our distributors or from our website.

### CRMX Outdoor Flex - Available May 2010

- 1. Flex functionality.** Can be configured by user as:
  - a) RDM & DMX Transmitter
  - b) RDM & DMX Repeater
  - c) RDM & DMX Receiver
- 2. Ethernet support.** Streaming ACN Standard and Draft, ETCNet3, ETCNet2, Pathport, Strand ShowNet and ArtNet I & II.
- 3. Power over Ethernet.** Unit can be powered over Ethernet; no additional power cables needed.
- 4. Vandal proof housing.** Discreet and secure metal housing with integrated shock absorption ideal for permanent installations in urban outdoor environments.

### CRMX Outdoor Receiver - Available May 2010

- 1. RDM & DMX receiver with DALI support.**
- 4. Vandal proof housing.** Discreet and secure metal housing with integrated shock absorption ideal for permanent installations in urban outdoor environments.



Outdoor Flex and Receiver

Outdoor Slim

### CRMX Outdoor Slim - Available May 2010

- 1. RDM & DMX receiver with DALI support.**
- 2. Compact enclosure.** Perfect for unobtrusive installations and where space is a premium.

#### Automated Cognitive Coexistence explained:

Wireless DMX distribution systems operate on the same license free frequencies as W-LAN, ZigBee, Bluetooth, some wireless intercoms, etc. Interference between such systems has been a growing problem in the industry with no available solution. CRMX is the first system to continuously scan the radio spectrum and dynamically adapt its frequency hopping patterns. This eliminates interference and maximizes performance of all radio systems in the same radio frequency sphere. In short, it's a smart radio that adapts.

#### Fidelity and Error Correction explained:

DMX/RDM fidelity and error correction ensures that DMX/RDM frames retain the exact same content and properties, including timing parameters, throughout the transmission process. This is important as many systems now employ moving lights, media servers, LEDs; devices that can severely misbehave if they receive DMX frames that in any way are fragmented or corrupt.

#### Synchronization explained:

Synchronization guarantees that the DMX frames are delivered by all receivers at exactly the same time regardless of their location and the presence of other radio systems. This is for example critical to maintain uniformity during color changes in large area LED installations controlled by multiple receivers.

#### RDM Controller explained:

RDM, officially known as "ANSI/ESTA E1.20, Entertainment Technology - Remote Device Management over USITT DMX512" is a bi-directional extension of DMX that allows control and monitoring of RDM devices from an RDM Controller. CRMX RDM products ship with LumenRadio's RDM Controller that allows easy setup, management, and monitoring of even the most complex RDM enabled system. LumenRadio's RDM Controller requires a computer provided by the user. The software is free of charge and the latest version is always downloadable from [www.crmxnova.com](http://www.crmxnova.com).

# CRMX Outdoor™

	CRMX Outdoor Flex	CRMX Outdoor Receiver	CRMX Outdoor Slim
<b>Supported protocols</b>			
USITT DMX-512 (1986 & 1990) and DMX 512-A	Yes	Yes	Yes
Art-Net I & II, ETCNet 2 & 3, Strand ShowNet, Streaming ACN (Draft & Standard), Pathport	Yes	Yes <sup>1</sup>	Yes <sup>1</sup>
RDM ANSI E1.20	Yes	Yes	Yes
Firmware upgrade	Multiple options	TIA/EIA-485	TIA/EIA-485
DMX converted Dali	Yes in receive and repeat mode	Yes	Yes
CRMX SuperNova RDM controller	Yes	Yes, as RDM responder	Yes, as RDM responder

<b>DMX interface</b>			
Number of universes supported	1	1	1
Full DMX fidelity and frame integrity	Yes <sup>2</sup>	Yes	Yes
Error correction and packet recovery	Yes	Yes	Yes
Frame synchronization	Less than 0,01 ms	Less than 0,01 ms	Less than 0,01 ms
End-to-end DMX latency	Less than 5 ms <sup>3</sup>	Less than 5 ms	Less than 5 ms
Auto sensing of DMX frame rate and frame size	Yes	Yes	Yes
Supported DMX frame rates	1 – 830 Hz <sup>4</sup> / 0,8 – 7352 Hz	1 – 830 Hz <sup>4</sup>	1 – 830 Hz <sup>4</sup>
Number of DMX channels supported	0 – 512	0 – 512	0 – 512
Loss of DMX input behavior	DMX driver output will go into high impedance state in receiving and repeating mode. Timeout after 1,25s in transmitting mode	DMX driver output will go into high impedance state	DMX driver output will go into high impedance state
W-DMX™ Compatibility	Yes, in receive mode	Yes	Yes

<b>Power</b>			
High voltage input	85-264VAC / 47-70Hz / 5W	85-264VAC / 47-70Hz / 3W	85-264VAC / 47-70Hz / 3W
Transient protected power input	Yes	Yes	Yes

<b>RF characteristics</b>			
Modes of operation	Transmitter, Receiver and Repeater	Receiver	Receiver
Automated Cognitive Coexistence	Yes	Yes	Yes
Dynamic adaptive frequency hopping	Yes	Yes	Yes
Recoverable Radio Packet Error Rate	30%	30%	30%
Operational frequency range	2402-2480MHz	2402-2480MHz	2402-2480MHz
RF output in high power mode	300mW (25dBm) <sup>5</sup>	300mW (25dBm) <sup>5</sup>	300mW (25dBm) <sup>5</sup>
RF output in normal power mode	100mW (20dBm)	100mW (20dBm)	100mW (20dBm)
RF output in low power mode	50mW (17dBm) or 10mW (10dBm)	50mW (17dBm) or 10mW (10dBm)	50mW (17dBm) or 10mW (10dBm)
RF modulation	GFSK	GFSK	GFSK
Sensitivity at 0.1% Packet Error Rate	-96dBm	-96dBm	-96dBm
Tested link range (Normal power mode using standard antennas in urban area)	500m	500m	500m
Recovery time upon loss of signal	Less than 1s	Less than 1s	Less than 1s

<b>Approvals</b>			
FCC: 15.247&68 Class B; Canada ICES 003	Yes	Yes	Yes
CE; EN 301 489-1; EN 301 489-17; EN 300-328-1; EN 300-328-2; EN 60 950	Yes	Yes	Yes
SRRC (China)	Yes <sup>6</sup>	Yes <sup>6</sup>	Yes <sup>6</sup>
ARIB STD T-66 (Japan)	Yes <sup>6</sup>	Yes <sup>6</sup>	Yes <sup>6</sup>

<b>Environment</b>			
Operating temperature range (ambient)	-20°C to +50°C -4°F to 122°F	-20°C to +50°C -4°F to 122°F	-20°C to +50°C -4°F to 122°F
Humidity	Ingression protection, submerged up to 1m	Ingression protection, submerged up to 1m	Water jets protected

<b>Physical</b>			
Enclosure	IP67 Vandal proof housing	IP67 Vandal proof housing	IP65 PC Plastic
Dimensions (W x H x D) not including antenna and bracket	203 x 235 x 78 mm 8" x 2.3" x 3.1"	203 x 235 x 78 mm 8" x 2.3" x 3.1"	173 x 90 x 40 mm 6.8" x 3.5" x 1.5"
Weight	3kg, 6.6lb	3kg, 6.6lb	0.25kg, 0.55lb

<b>Connectors</b>			
Antenna connector	N female	N female	N female
DMX termination	Pluggable terminal strip, Phoenix® MSTB 2,5	Pluggable terminal strip, Phoenix® MSTB 2,5	Pluggable terminal strip, Phoenix® MSTB 2,5
AC input	10AWG Phoenix® Terminal Block	10AWG Phoenix® Terminal Block	10AWG Phoenix® Terminal Block
Supplied accessories	2dBi RP-TNC antenna, User guide	2dBi RP-TNC antenna, User guide	2dBi RP-TNC antenna, User guide

<sup>1</sup> Converted to DMX  
<sup>2</sup> Not in repeater mode

<sup>3</sup> Latency increased whit Repeater  
<sup>4</sup> Limited by DMX512-A standard

<sup>5</sup> Allowed in North America only  
<sup>6</sup> Pending