Illuminating Curved Luminaires: A Reference Design Guide by LUXTECH

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Traditional methods of illuminating curved luminaires are labor and SKU intensive

There are several common methods of illuminating fixtures with curves, and each presents unique challenges to luminaire manufacturers.

Radius boards are a great way to have the perfect module fit and reduce the number of PCBs needed to be installed. Unfortunately, the fixed radius boards are not versatile to be used with other radii and fixture sizes. This results in needing to hold dozens of module SKUs, which adds component and stocking costs. Additionally, the poor PCB utilization of radius boards in manufacturing leads to increased module prices.

Implementing small linear boards is a great way to increase module versatility so the same PCBs can be used in a wide variety of fixtures. This is a tradeoff with the labor-intensive installation process of wiring together each individual board with connectors or solder. The extra assembly time required still leads to higher fixture costs and reduced throughput.

Another common product type for in-plane bending are LED flex tapes that contain PCB geometry to let them be more easily folded and bent. While these flexible tapes do reduce module SKU counts and wiring, they don't always function properly with differing radii, and still often require soldering for power feeds. Many solutions reduce the PCB width to allow the PCB to fold, but this is more likely to create voltage drop and reduce achievable run lengths. As a designer of curved fixtures, when selecting an LED source, it can feel like between versatility, installation labor, and robust quality, you can only choose 2. LUXTECH has developed a product to achieve all 3 – LUXlink.
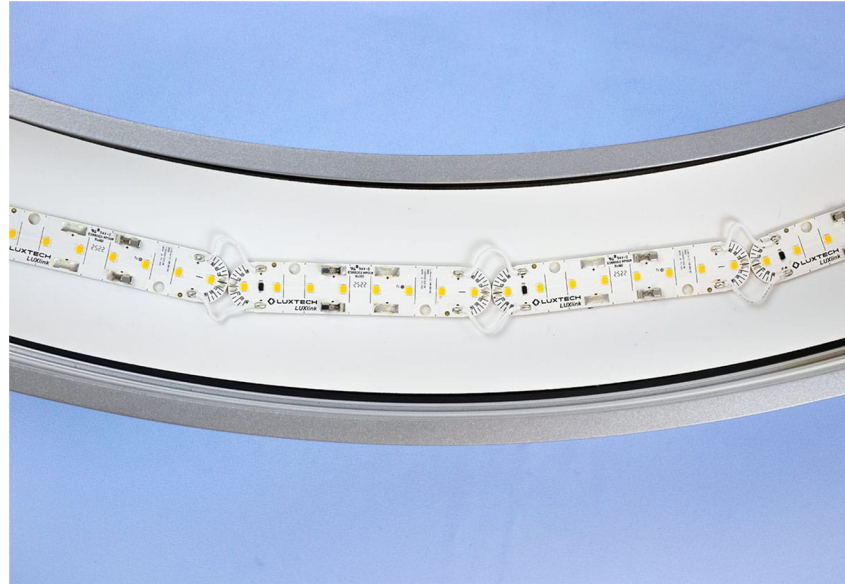
LUXlink broadens the possibilities of fixture design:

Our goal is to provide luminaire designers with the tools to allow them to design fixtures more freely and creatively. By removing the design bounds of conventional LED modules, fixtures with LUXlink can include variable radiuses, curves, and organic shapes. Additionally, it is compatible with LUXTECH linear modules including LUXroll and ONECUT, so designs can easily integrate both curves and linear runs in the same fixture.

With LUXlink, fixtures can be built to any size and shape so the same module can be used across all fixture variations for both standard and customizable product offerings.
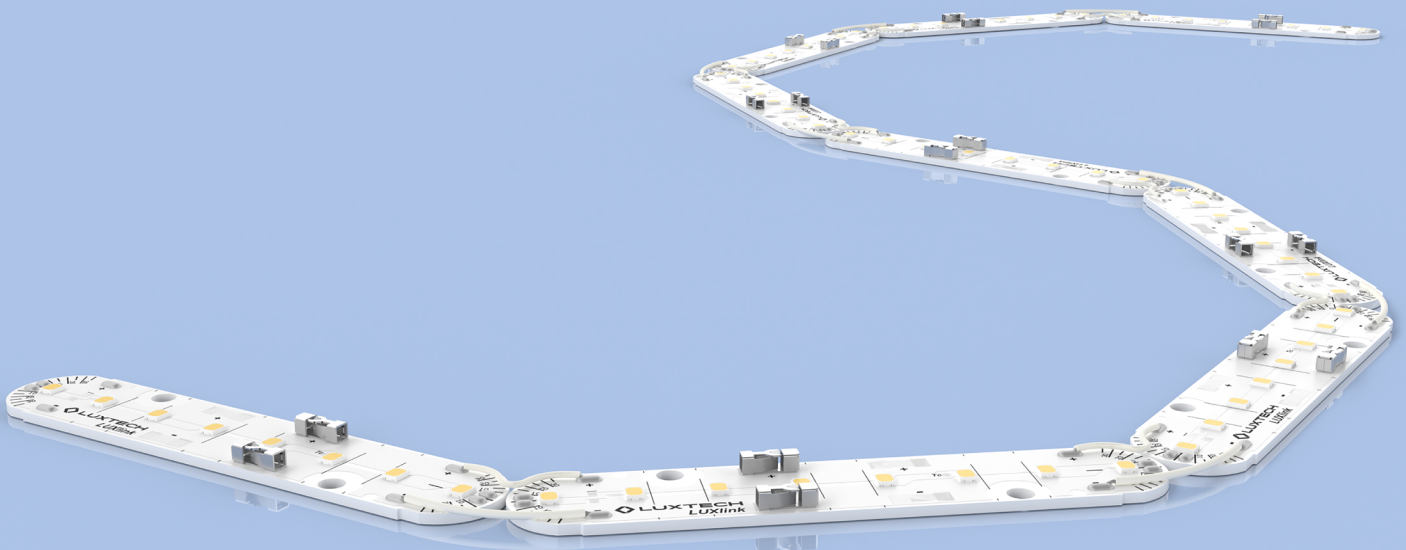The single product SKU gives fixture OEMs the ability to reduce luminaire costs and lead times and allow for more responsiveness to changes in demand for different fixture shapes and sizes.

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Performance:

40K, 80 CRI, 25°C

Per Foot				
Flux (lm/ft)	400	800	1200	1600
Current (mA)	70	141	214	290
Voltage (V)	31.9	32.7	33.5	34.2
Efficacy (lm/W)	179	174	167	161

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## Simplifying the Assembly Process:

LUXlink is engineered to simplify the luminaire lifecycle, from conceptualization through to installation, service, and end of life.

The flexible wire connection joining boards make installation and wiring a breeze, while providing a robust, flexible joint between boards. While unform illumination is often tricky using discreet boards in a curved fixture, the wire joint also maintains optimal separation between boards for even illumination.

With poke-in connectors on each 4" PCB segment you can easily extend the run length or integrate into a linear section without soldering.
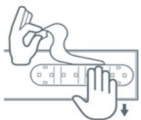
Installation is as simple as:
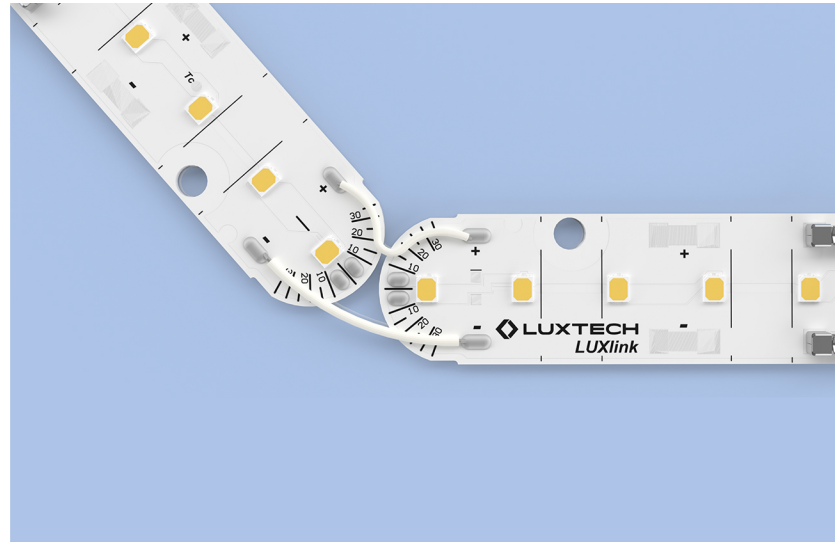
1. Measure LUXlink length needed
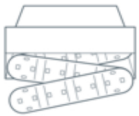
2. Cut module to the nearest inch

3. Install with the adhesive backer or screws. Reference the LUXlink Performance Calculator to determine required drive current.

4. Connect power via the on-board poke-in connectors

Summary:

LUXlink makes it easier than ever to fill bends and curves. Designers and engineers have more freedom with fixture design, manufacturers can save costs during assembly and integration, and fixture OEMs can consolidate LED Module inventory for luminaires of any curve.

LUXlink Reference Design Resources:

- Data Sheet
- Performance Calculator
- Installation Guide
- Application Guide
- Installation Video
- Product Overview Video

QR Code | SCAN to View Design Resources & Request Samples

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About LUXTECH:

LUXTECH designs & manufactures versatile, specification-grade LED modules for architectural lighting manufacturers.

"We are a collection of engineers, designers and researchers based out of Philadelphia, PA and proudly work with architectural fixture manufacturers and teams around the world. Besides being inquisitive and inventive thinkers, we are also personable – we make sure our customers' needs are heard and their expectations exceeded. We believe lighting has the power to define our world: it can elicit a mood, improve appearances, enhance performance, and influence our behavior. By pushing the latest lighting technology and manufacturing exceptionally built modules with the utmost customer care, we believe we can elevate illumination to foster a better world."

-Graham Merrifield, Senior Applications Manager

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