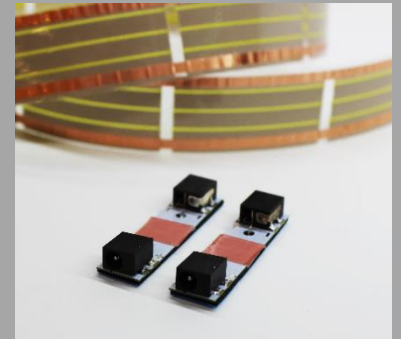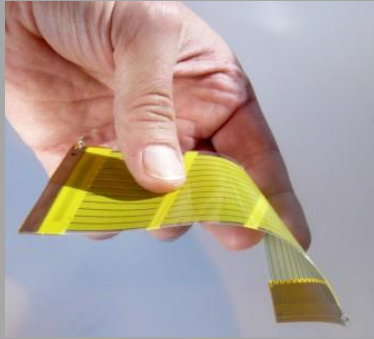# Nth-Light® Demo Kit

PRINTING THE IMPOSSIBLE™

Introducing a revolutionary, printed LED panel, ideal for low-profile lighting applications. The Nth-Light® can be safely and easily cut to length for in-field customization and design. The simple addition of Nth-Connectors, a standard interconnect cable, and a plug-in power supply creates a brilliant, energy-efficient, lighting solution, perfect for even the most unique locations!

***Proof of Concept Samples – Not Intended for Long Term Environmental Testing
(Nth-Light 25' Reels and individual Inspired LED Nth-Connectors coming late 2015)**
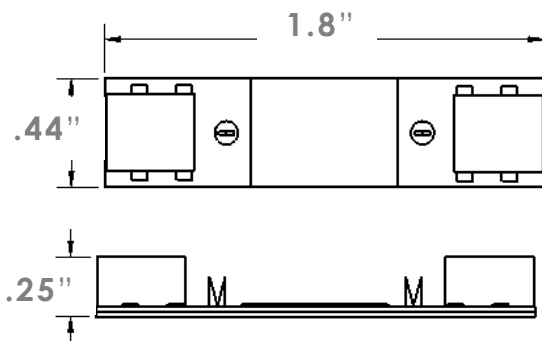
Demo Kit Includes:

(1) 24" Nth-Light® Strip
(2) Inspired LED Nth-Connectors
(1) 1AMP 10V Power Supply
(1) 12" Cable 3.5 x 1.3mm barrels

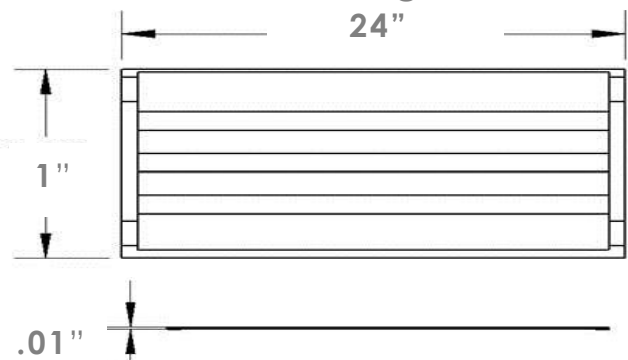### Preliminary Specifications:

Power Req.	10V DC
LEDs/ ft.	~1,200
Luminous Efficacy	~30 lm/Watt
CRI	~73 CRI
Color Temp.	~5000 K

Inspired LED Nth-Connectors

1.8"
.44"
.25"
M   M

Nth-Light®

24"
1"
.01"

Nth-Light® Demo Kit

PRINTING THE IMPOSSIBLE™

The Nth-Light® is an extremely lightweight, flexible, printed LED sheet which opens a whole new world of energy efficient lighting opportunities. Inside this demo kit, you'll find all the components you will need to start lighting the impossible…

1. The Nth-Light® is designed to be cut using a simple pair of scissors along the clear gaps of the strip.

2. Positive polarity of the Nth-Light® is indicated by yellow text on back side of flex.

3. Polarity of the Inspired LED Nth-Connector is indicated by +/- markings.

4. Peel adhesive backing from the center of Nth-Connector and align Nth-Light® anywhere along the top.

5. Press down until Nth-Connector spikes have pierced the flex, then bend back the tips to ensure a secure connection.

6. Repeat steps 1-5 as needed with additional segments and connectors.

7. Use standard 12" cable to wire from one completed Nth-Light® to another.

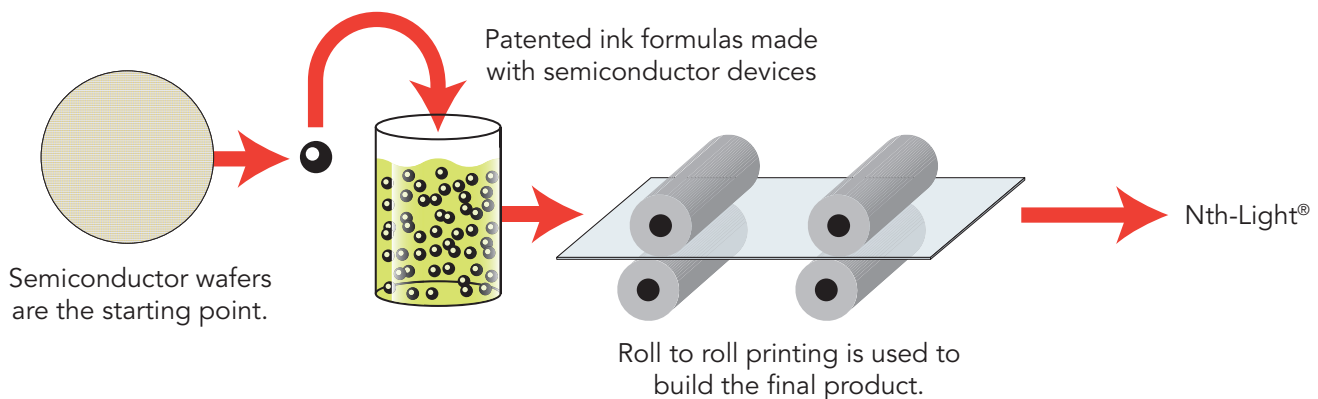8. Provide power to your system by plugging in the 10V power supply, and connecting to the first light in series.

NthDegree Technologies Worldwide Inc

Printing
the
Impossible™

NthDegree Technology (Nth) is bringing to market an innovation in the manufacturing of semiconductor products. Our process is based upon unique semiconductor ink formulations which can be printed on standard high speed printing equipment.

Nth's printed materials can currently address lighting. These devices are printed in three basic processes.

- Nths printed materials start with a standard LED wafers.

- The respective wafers are cut into micro LEDs devices that are the same size as ink particles and are suspended into inks for printing.

- The inks are printed on commercial printing presses producing the end product: Nth-Light® printed lighting goods.

Patented ink formulas made with semiconductor devices

Semiconductor wafers are the starting point.

Nth-Light®

Roll to roll printing is used to build the final product.

Nth's printed lights are moving to commercial availability. Our lights are printed on either a flatbed screen press or a high speed roll-to-roll printing press. The high speed press can produce over 6 miles per day of 12 inch wide rolls of printed lights. They are ultra thin, flexible and lightweight with a cost and form factor that is unique in today's marketplace.

The ability to print light at high speeds on low cost printing presses dramatically changes the reliability, cost structure, and cost of installation as well as the performance of the products themselves. In lighting this is opening new market venues not available with existing lighting technology. Nth has prototype lights for several segments including retail lighting, automotive, computers, consumer goods and advertising. To take advantage of printing press volumes, the Nth business model forms partnerships with established companies in each segment as the go-to-market vehicle.

NthDegree Technologies Worldwide Inc

1320 West Auto Drive
Tempe, Arizona 85284
www.ndeg.com

Backlighting

Nth-Light® 1.5" Strips

Traditional LEDs

Nth-Light®

Nth-Light® ATTRIBUTES

UNIQUE FORM FACTOR:

1.   Nth-Light is exceptionally lightweight, thin and flexible.
   - This facilitates the design of lighting fixtures with both traditional and non-traditional form factors that are a fraction of the weight and volume of traditional lighting fixtures.
2.   Nth-Light is very robust and can absorb more shock and abuse than traditional lighting.
   - The Nth-Light contains no breakable glass or brittle plastics.
   - It's flexible, so it bends instead of breaks.
3.   The robustness of the Nth-Light opens many design possibilities, such as eliminating the need for replaceable components like the "bulb" in old traditional lights. The Nth-Light itself becomes one with the fixture. For example:
   - A ceiling tile might have an integrated Nth-Light lighting panel.
   - Nth-Light panels may be integrated into the bottom of a shelf for under-shelf lighting.
   - A lamp shade may have any integrated lamp that can connect to a traditional Edison bulb electrical base.
4.   Nth-Lights are flat, but need not be square. Nth-Lights can be printed in a variety of shapes. Alternatively, since Nth-Lights are flat, a blocking mask may be installed over the lamp to produce the desired lit shape. If the light must still be flexible, the blocking mask may be as flexible as the Nth-Light substrate.
   - Features like graphics or colored fluoresors can be cost effectively added to the lights as translucent overlays or even directly printing on the light.
5.   Nth-Lights are very attractive for shelf lighting
   - Brand colors will not be impacted.
   - Light can be curved for a shaped shelf.
   - Easy to install.
   - Reduced heat.
   - Not likely to be damaged in the product restocking process.
   - No dead spots associated with LED failure.
   - The simple build (little electrical infrastructure) allows for easy inventory control.
6.   Nth-Light's unique attributes open up opportunities for designers and architects they have never considered as even possible before.
7.   The Nth-Light may be laminated to a radius surface or other customized surfaces or shapes.
8.   Intelligent lighting control technologies, such as motion/occupancy detection and light harvesting, may be easily integrated into Nth-Lights.
   - Nth-Lights are readily dimmable using a variable current power supply.

DISTRIBUTED LIGHT SOURCE:

9   Nth-Light is a distributed light source.
- Traditional bright LEDs are point sources that produce blindingly bright narrow beams of light. NthLight light is spread out over the entire surface of the printed lamp to provide the same amount of light as a point source LED, but with a tunable surface brightness from 10s of candela/m2 to as much as 10,000 candela/m^2.
- Nth-Light prints hundreds of micro-LEDs to provide the equivalent light of a single high brightness LED.
- Native color of the Nth-Light is 450nm centered blue light. Other colors or white light in a range of warm to cool colors are available using an additional phosphor overprinted on the Nth-Light.

10   Nth-Light is volumetric.
- Because Nth-Light's tiny light sources are spread across large surfaces, the light readily fills the volume of space in front of and adjacent to the lamp with a soft, diffuse, low glare light.

11   Nth-Light naturally emits Lambertian light from its surface to produce appealing uniform light.
- This enables Nth-Light ceiling fixtures to fill a room with light all the way to the top of a wall, effectively using all the wall surfaces in a room as reflectors to increase lighting uniformity by reducing shadows, while keeping the Nth-Light itself razor thin.
- Traditional LED and fluorescent lighting fixtures sources need elaborate, thick, heavy and bulky reflectors to achieve the same desirable effect.

12   Because the micro-LED light sources are distributed over the entire surface of the lamp, there is very little heating at the lamp surface.
- This eliminates the need for heat sinks, which are required in traditional LED lighting systems.

13   A lit un-insulated, bare Nth-Light panel may be touched without concern for shock or burn. Nth-Lights operate at safe class 2 voltages.

LOWER TOTAL COST OF OWNERSHIP:

14   Because Nth-Light lamps are almost always smaller and lighter than existing equivalent fixtures, designing of retrofit fixtures is made easy by using Nth-Light technology.
- Compact and light-weight retrofit designs result in simplified logistics when retrofitting because of easy and quick handling and installation.
- Less down time in busy work place areas or where advertising is critical such as duty free stores or fast food outlets.

15   Nth-Light is exceptionally lightweight, thin and flexible.
- The low mass and volume of Nth-Light translates into cost savings in both handling and installation costs of Nth-Light based lighting fixtures. Multiple Nth -Light panels can be transported in the same space required to transport a single traditional fixture.

16   The Nth-Light does not require a rigid support, unlike traditional LEDs that require a rigid PCB. With less to design around, there are more degrees of freedom to design.

17   Nth-Light offers the possibility of eliminating at least one BOM.

18   Any number of materials may be easily applied with adhesives to the back of the Nth-Light flexible substrate, such as laminates, foil backing or even flexible magnet tapes.

19   The amount of packaging required for the light is only a fraction of existing lights. This saves space and reduces shipping costs and waste disposal of the packaging.

20   The component parts are capable of being recycled.

21   The Nth-Light is single sourced, unlike other forms of lighting, which come from multiple sources and may have unequal quality levels.

Nth-Light®

PRINTING THE IMPOSSIBLE™

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Inspired LED:

  3681