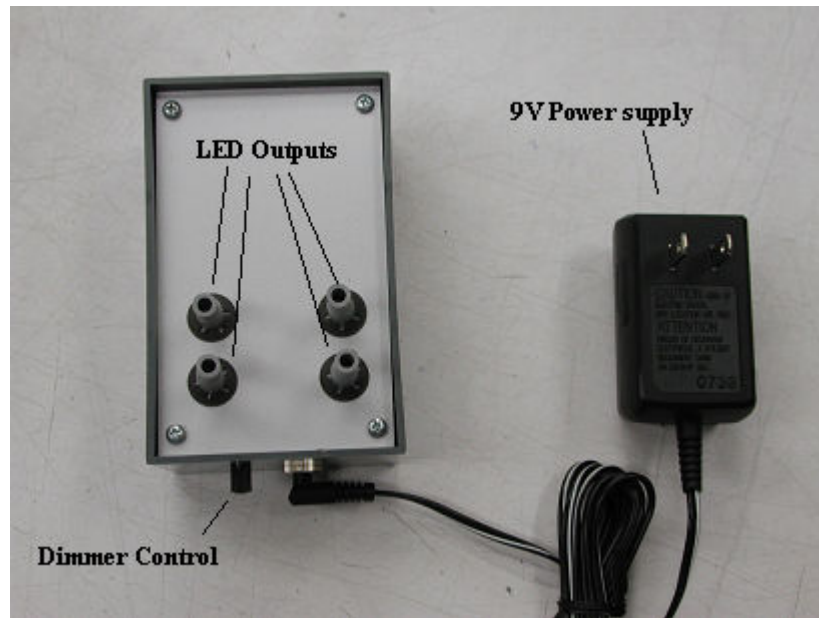


## Twinkle Effect Installations

**Twinkle Installation (Custom Harness System in Drywall):** The twinkle unit will be an independent light source and system separate from the main illuminator and harness system. Locate the LED twinkle controller near the main light source, or in a different location with a standard outlet near the ceiling. The twinkle controller will have 4 LED outputs with gray connectors on each one for coupling to each twinkle harness (See image below).



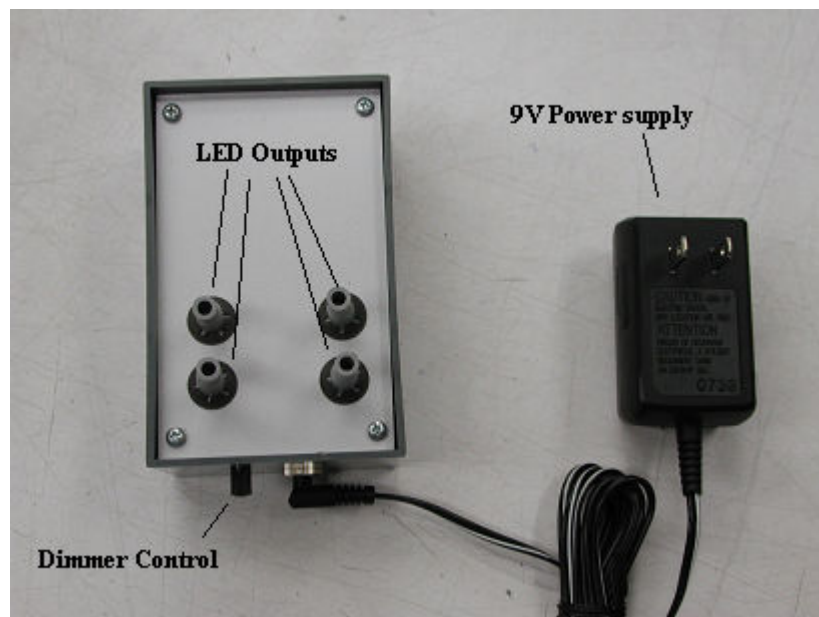
After the star bundles are installed into the drywall panel, and before lifting and fastening the drywall to the joists, drill a few random holes into the panel to accommodate the twinkle harness fibers. It is FTI's recommendation that fibers from one LED output harness should not be placed around the same location of the ceiling. This will cause a blinking effect in these portions of the ceiling. Rather, in each panel of drywall, a couple fibers from each LED output harness should be installed randomly, drawing from each twinkle harness, so as not to group fibers too densely together from a single harness. One recommendation for planning the placement for the twinkle fibers is to create a grid drawing of the ceiling before installation. In the drawing, grid the ceiling into partitions of the amount of drywall panels that will be hung to form the ceiling. Assign a number (1-4) for each of the twinkle harnesses, and on the grid drawing of the ceiling, indicate with the twinkle harness number (1-4) where each twinkle fiber will be located. There are 20 twinkle fibers per harness, and a total of 80 for the entire twinkle system. Again, they should be spaced accordingly, so as not to group too many 1s, 2s, 3s, or 4s in the same area of the ceiling (See diagram below for example).

1	2	1	3	2	1	4	2	1	3
4	3	4	2		3			4	2
2		1		4		4	1	3	4
1	3	2	4	3	2	1	3	4	2
2	4			1		4		3	1
3	1	2	4	3	2		2		3
2	4	3		1		3	1	4	1
		1	2		2	1	4	3	2
3	1	4		3		3		1	4
4	2	3	4	1	4	2	1	3	2

Each square represents a 2' x 2' Area

Like installing the star bundles, drill or poke a hole into each panel for the designated locations, and feed the fiber through, pulling the fiber a few feet through the panel. Twinkle bundles will be either 25 feet long or 50 feet long depending upon ceiling specifications, so there will likely be excess fiber from the twinkle harness.

**Twinkle Installation (Custom Harness System in Drop Ceiling):** Like the twinkle installation for drywall ceilings, the twinkle unit will be an independent light source and system separate from the main Illuminator and harness system. Locate the LED twinkle controller near the main light source, or in a different location with a standard outlet near the ceiling. The twinkle controller will have 4 LED outputs with gray connectors on each one for coupling to each twinkle harness (See image below).



One recommendation for planning the placement for the twinkle fibers is to create a grid drawing of the ceiling before installation. In the drawing, grid the ceiling into partitions

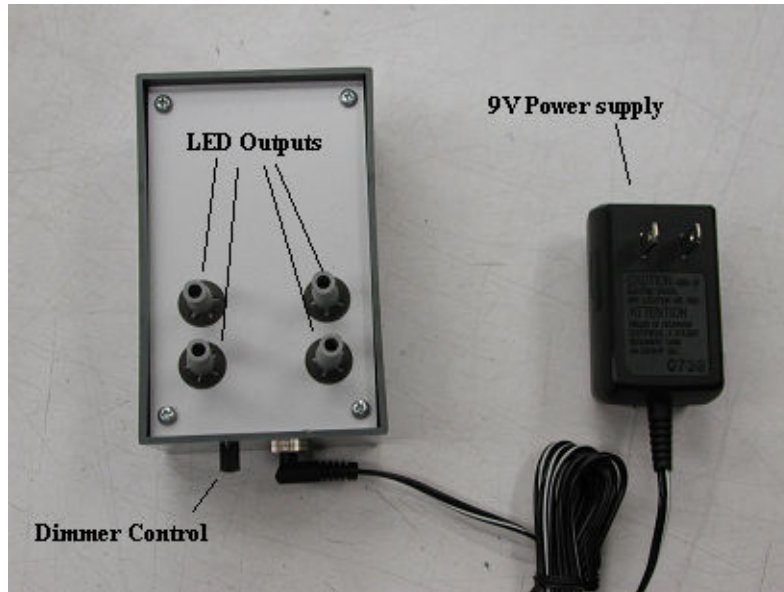
of the amount of drop ceiling panels that will be hung into the track of the ceiling. Assign a number (1-4) for each of the twinkle harnesses, and on the grid drawing of the ceiling, indicate with the twinkle harness number (1-4) where each twinkle fiber will be located. There are 20 twinkle fibers per harness, and a total of 80 for the entire twinkle system. Again, they should be spaced accordingly, so as not to group too many 1s, 2s, 3s, or 4s in the same area of the ceiling (See diagram below for example).

1	2	1	3	2	1	4	2	1	3
4	3	4	2		3			4	2
2		1		4		4	1	3	4
1	3	2	4	3	2	1	3	4	2
2	4			1		4		3	1
3	1	2	4	3	2		2		3
2	4	3		1		3	1	4	1
		1	2		2	1	4	3	2
3	1	4		3		3		1	4
4	2	3	4	1	4	2	1	3	2

**Each square represents a 2' x 2' Area**

Like installing the star bundles, drill or poke a hole into each panel for the designated locations, and feed the fiber through, pulling the fiber a few feet through the panel. Twinkle bundles will be either 25 feet long or 50 feet long depending upon ceiling specifications, so there will likely be excess fiber from the twinkle harness; leave some slack of each twinkle fiber above the ceiling before clipping the twinkle fibers back, in case there need to be future adjustments of the fiber (new paint job, new panel etc.).

**Twinkle Installation (Acoustic Panel System for Existing Ceilings):** The twinkle unit will be an independent light source and system separate from the main power supply. Locate the LED twinkle controller near, or on the same outlet as the main power supply, or in a different location with a standard outlet near the ceiling. The twinkle controller will have 4 LED outputs with gray connectors on each one for coupling to each twinkle harness (See image below).



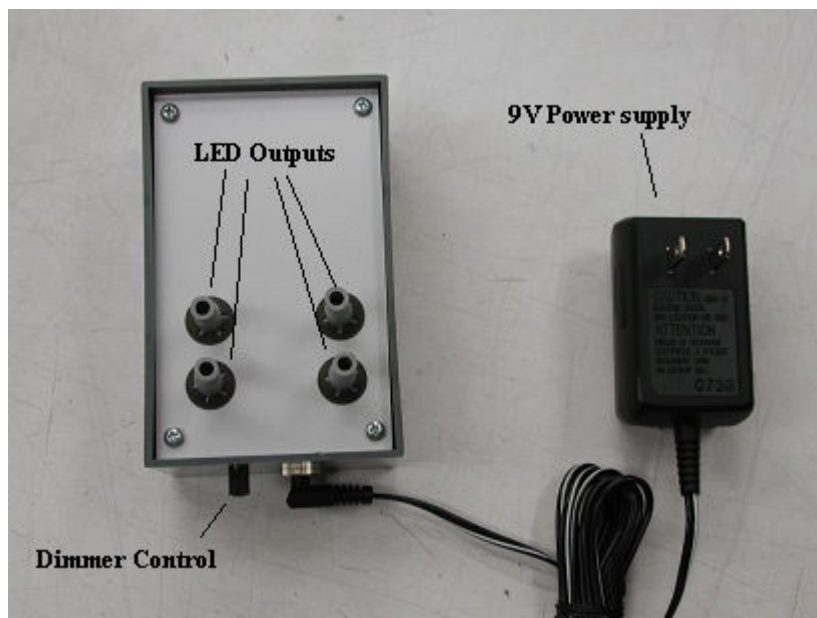
After the Rotofast mounting clips are installed into the acoustic panel, and before lifting and snapping the panels into place on the existing ceiling, poke a few random holes into the panel to accommodate the twinkle harness fibers. It is FTI's recommendation that fibers from one LED output harness should not be placed around the same location of the ceiling. This will cause a blinking effect in these portions of the ceiling. Rather, in each panel of drywall, a couple fibers from each LED output harness should be installed randomly, drawing from each twinkle harness, so as not to group fibers too densely together from a single harness. One recommendation for planning the placement for the twinkle fibers is to create a grid drawing of the ceiling before installation. In the drawing, grid the ceiling into partitions of the amount of drywall panels that will be hung to form the ceiling. Assign a number (1-4) for each of the twinkle harnesses, and on the grid drawing of the ceiling, indicate with the twinkle harness number (1-4) where each twinkle fiber will be located. There are 20 twinkle fibers per harness, and a total of 80 for the entire twinkle system. Again, they should be spaced accordingly, so as not to group too many 1s, 2s, 3s, or 4s in the same area of the ceiling (See diagram below for example).

1	2	1	3	2	1	4	2	1	3
4	3	4	2		3			4	2
2		1		4		4	1	3	4
1	3	2	4	3	2	1	3	4	2
2	4			1		4		3	1
3	1	2	4	3	2		2		3
2	4	3		1		3	1	4	1
		1	2		2	1	4	3	2
3	1	4		3		3		1	4
4	2	3	4	1	4	2	1	3	2

Each square represents a 2' x 2' Area

Poke a hole into each panel for the designated locations, and feed the fiber through, pulling the fiber a few feet through the panel. Twinkle bundles will be either 25 feet long or 50 feet long depending upon ceiling specifications, so there will likely be excess fiber from the twinkle harness. This is why the twinkle fibers should be pulled through the face of the panel, leaving a little slack above the ceiling in case of any future manipulations. The twinkle fibers will be able to run flush between the panel and the existing ceiling, as well as flush between the joists and the panel.

**Twinkle Installation (Acoustic Panel System in Drop Ceiling):** Like the twinkle installation for existing ceilings, the twinkle unit will be an independent lightsource and system separate from the main power supply. Locate the LED twinkle controller near, or on the same outlet as the main power supply, or in a different location with a standard outlet near the ceiling. The twinkle controller will have 4 LED outputs with gray connectors on each one for coupling to each twinkle harness (See image below).



One recommendation for planning the placement for the twinkle fibers is to create a grid drawing of the ceiling before installation. In the drawing, grid the ceiling into partitions of the amount of drop ceiling panels that will be hung into the track of the ceiling. Assign a number (1-4) for each of the twinkle harnesses, and on the grid drawing of the ceiling, indicate with the twinkle harness number (1-4) where each twinkle fiber will be located. There are 20 twinkle fibers per harness, and a total of 80 for the entire twinkle system. Again, they should be spaced accordingly, so as not to group too many 1s, 2s, 3s, or 4s in the same area of the ceiling (See diagram below for example).

1	2	1	3	2	1	4	2	1	3
4	3	4	2		3			4	2
2		1		4		4	1	3	4
1	3	2	4	3	2	1	3	4	2
2	4			1		4		3	1
3	1	2	4	3	2		2		3
2	4	3		1		3	1	4	1
		1	2		2	1	4	3	2
3	1	4		3		3		1	4
4	2	3	4	1	4	2	1	3	2

**Each square represents a 2' x 2' Area**

Poke a hole into each panel for the designated locations, and feed the fiber through, pulling the fiber a few feet through the panel. Twinkle bundles will be either 25 feet long or 50 feet long depending upon ceiling specifications, so there will likely be excess fiber from the twinkle harness; leave some slack of each twinkle fiber above the ceiling before clipping the twinkle fibers back, in case there need to be future adjustments of the fiber (new paint job, new panel etc.).