# Standards - ISP-EFX

Effects have been an important part of laser shows since their beginnings. Many early laser lightshows consisted mostly of effects with little or no scanned imagery. There are many visually stunning patterns and textures that can be produced with laser effects which are not achievable in other mediums. Due to their unique nature, this type of effect will always remain an important tool in the laserist's repertoire.
Effects are anything placed in to a laser beam to produce diffraction, refraction, reflection or diffusion of the beam. Examples of common effects are lumia and diffraction gratings.
This portion of the ISP specification defines default effects for the ILDA Standard Projector and provides mechanical definition of effects to allow interchangeability and control

## Lumia Effect

The ILDA Standard Projector shall have at least one rotating lumia of medium angle and generic texture.

- The lumia shall operate independently of image scanning, so as to be used simultaneously with scanning images.
- Lumia brightness is controlled by DMX channel 5. A value of zero on DMX channel 5 indicates no light.
- Lumia rotation speed shall be controlled by DMX channel 6. A value of zero on DMX channel 6 indicates no rotation.

## Scan-Through Effect

The ILDA Standard Projector shall have at least two insertable rotating scan-through effects. These scan-through effects are to be located on the primary image scanners.

Although show designers can install any effect disk into any effect location, the default scan-through effects shall be:

- 1. Eight-point burst diffraction grating;
- 2. Small-angle fuzz (2-3 times the normal beam diameter).

Lumia and scan-through effects shall be circular disks with a diameter of 100mm (+0mm, -1mm).

Lumia and scan-through effects devices shall be designed to accept and adequately mount effects disks from less than 1mm to at least 5mm thickness.

Effects disks shall have bare edges without frames or other obstructions which would cause shadowing or interruption of light when inserted into an active image. This is a requirement

of the actual effect disks, however this is not required of the effects insertion device. The insertion device may entirely encircle the effect for support and rotation.

Mounting and rotation to be accomplished from the outer edges of the disk. It is intended that the entire area of the disk is available for scanning. (The disk is not mounted from a center hub.)

Effects devices shall be designed to allow regular, quick and easy interchange of effects disks at any time.

- Effect #1 insertion is controlled by DMX channel 7.
- Effect #1 coarse speed is controlled by DMX channel 8.
- Effect #1 fine speed is controlled by DMX channel 9.
- Effect #2 insertion is controlled by DMX channel 10.
- Effect #2 coarse speed is controlled by DMX channel 11.
- Effect #2 fine speed is controlled by DMX channel 12.

A value of zero on DMX insertion channels indicate effect fully removed from the scanning image path.

A value of zero on DMX coarse rotation speed channels indicates no rotation.

Implementation of the fine rotation speed channels is optional. The DMX fine speed control channels, where implemented, shall function as a vernier adjustment of the coarse speed control. It shall provide 255 levels of fine adjustment between each of the coarse speed control's 255 levels. In this manor, systems which do not implement the fine speed control will still reasonably reproduce intended speeds.

Scan-through effect insertion can be accomplished with multiple insertion devices, or by a single ring with multiple effects apertures. If a single ring is used, only one scan-through effect can be inserted into the scanned image at a time. If there is a conflict, where the DMX signal is indicating that both scan-through effects should be inserted, then the lowest numbered scan-through effect indicated shall be used.

Effects devices shall provide visible identification of all effect positions to facilitate proper insertion of effects. i.e., "effect #1", "effect #2" etc.

Additional scan-through effects may be implemented at the projector manufacturer's will. These shall be designated #3, #4, etc. Additional scan-through effects shall utilize insertion and rotation controls in the same fashion as effects #1 and #2.