

**ANSI/INFOCOMM V202.01:2016**

# Display Image Size for 2D Content in Audiovisual Systems

## **InfoComm International Standard**

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## ANSI/INFOCOMM V202.01:2016

### Display Image Size for 2D Content in Audiovisual Systems

#### InfoComm International Standard

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#### Abstract

This Standard determines required display image size and relative viewing positions according to two defined viewing needs: Basic Decision Making and Analytical Decision Making. The Standard can be used to design a new space or to assess/modify an existing space, from either drawings or the space itself. It applies to both permanently installed systems and temporary systems. The Standard applies to the overall system and not the performance or efficiency of any component.

#### Keywords

Analytical decision making; audiovisual; audiovisual standard; AV; AV system performance; basic decision making; contrast; contrast ratio; detail; digital signage; display; farthest viewer; front projection; image contrast; image size; InfoComm; information; informational display; inspection; presentation; projected image; projection screen; rear projection; system contrast ratio; videoconferencing; viewing angle; viewing distance; visual acuity

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## Foreword

The use of displays to convey information is widespread. Displays are essential to the working process in many environments, and viewers depend on the displayed image to convey information in adequate detail. Methods of calculating appropriate image size currently used by audiovisual professionals are not attributable to any particular source and appear to be based on precedent. Therefore, the task group developing this Standard established new methods and metrics to determine image size.

The Standard recognizes that displays are used for different purposes and identifies these purposes according to two viewing categories derived from *ANSI/INFOCOMM 3M-2011 Projected Image System Contrast Ratio* (PISCR). Having determined the categories within which the system will fall, users of this Standard can determine suitable image size or identify suitable viewing locations within existing installations.

When planning a display, audiovisual designers often encounter limitations with dimensions and layout in relation to optimal displayed image size. For instance, a large room size might dictate a large display size that limited ceiling height will restrict. This Standard provides formulas to design and display suitable content.

Displays are available in a wide variety of ever-increasing resolutions. At one end of the scale, viewers may be unable to discern required content due to displays that lack sufficient resolution. At the other end of the scale, high resolutions can negatively affect the viewing experience by rendering objects too small for viewing from typical viewing distances.

This Standard addresses image height, image resolution, and the size of image content as prescriptive elements when determining required image size. The Standard addresses closest and farthest viewing distances, as well as relative horizontal and vertical viewer locations.

Image size requirements for a display are determined by the application, the nature of the content, and the significance of the content to the viewer. Image size is but one element of a system-based approach that includes the display, its resolution, the image size relative to viewing positions, and both the viewing requirements and the visual acuity of the viewer.

The ability to perceive and assimilate visual information (visual acuity) is a defining factor in determining image size. Visual acuity is expressed in subtended arc minutes, which is the metric that describes the perceived size of an object relative to viewing distance. Individual visual acuity varies and decays with age.

Users of the Standard should note that proper display image size will not correct a negative viewing experience if content has unsuitable viewing element height (e.g., font size) or degraded images.

This Standard is limited to displayed image size determination and does not include testing and measurement of related display factors, including display luminance, contrast, display resolution, or other factors relating to the resultant condition of the displayed image.

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## 1. Scope, Purpose, and Application

### 1.1. Scope

This Standard defines the calculations required to determine minimum image size relative to viewing locations in both new and existing installations whether fixed or temporary.

This Standard applies to the overall system and not the performance or efficiency of any component.

This Standard uses two out of four viewing categories defined in ANSI/INFOCOMM 3M-2011, *Projected Image System Contrast Ratio* as further described in the Application section below.

This Standard should be used in conjunction with related standards for displayed images where applicable.

### 1.2. Purpose

This Standard provides measurement and reporting methodologies for the assessment, documentation, and categorization of new and existing audiovisual systems.

The Standard will assist professionals engaged in the design of audiovisual systems determine appropriate displayed image sizes. The Standard provides a calculation/assessment tool for determining proper display image size based upon viewer needs as defined under two main categories.

When planning a display, audiovisual designers often encounter limitations with dimensions and layout in relation to optimal displayed image size. This Standard provides formulas to design and display suitable content.

### 1.3. Application

This Standard can be used to:

- Plan and design new displayed image systems
- Determine image size relative to space and viewing requirements
- Determine Closest and Farthest Viewer Positions
- Determine horizontal angles of view
- Provide metrics for content design

Use of this Standard is intended for display images in fixed and temporary installations.

Exceptions are noted below.

This Standard uses two viewing requirement categories: Basic Decision Making and Analytical Decision Making. These categories are defined in ANSI/INFOCOMM 3M-2011, *Projected Image System Contrast Ratio* and have been expanded. Users select corresponding calculations to determine the required image size and conforming viewing locations. A chart defining both viewing categories in greater detail can be found in Annex 6.3.

### 1.4. Exceptions

This Standard does not:

- Consider quality and aesthetic issues with regard to content (e.g., focus, color, contrast).
- Include factors such as contrast, luminance, color rendition, and video motion rendition.
- Apply to personal viewing displays (e.g., cell/mobile phones and tablets).
- Apply to single-user displays (e.g., computer monitors, laptop screens).
- Apply to 3D images.
- Apply to screens that are not in the vertical plane (e.g., tilted screen).