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TB

**RAILWAY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

TB/T 3396.3-2015

**Test methods for fastening systems of high-speed railway - Part
3: Determination of static stiffness for fastening assembly
(English Translation)**

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1 Scope

This part of TY/T1001 specifies the definition, classification, use requirements, inspection methods, qualification judgment rules for LED display screens for sports fields.

This Part is applicable to LED display screens in track and field stadiums, comprehensive gymnasiums, swimming pools, diving halls. Other sports fields can refer to it for implementation.

This Part does not include display screens in timing and scoring systems and display screens for guiding directions in sports fields.

2 Normative references

The clauses in the following documents become clauses of this Part through reference to this Part of TY/T 1001. For any dated referenced document, all subsequent amendments (excluding corrections) or revisions are not applicable to this Part.

However, parties that reach an agreement based on this Part are encouraged to study whether the latest versions of these documents can be used. For any undated referenced document, its latest version applies to this Part.

GB 4208-1993 Degrees of protection provided by enclosure (IP code) (eqv IEC 600529.1989)

GB 6593 Quality inspection provisions for electronic measuring instruments

GB 50168 Code for construction and acceptance of cable levels electric equipment installation engineering

GB 50171 Code for construction and acceptance of switchboard outfit complete cubicle and secondary circuit electric equipment installation engineering

GB 50303 Code for acceptance of construction quality of electrical installation in building

SJ/T 11141-2003 General specifications for LED panels

SJ/T 11281-2003 Test methods of LED panels

When the display screen displays text content, it continuously updates the entire screen or part of the content, until all the content is displayed.

3.1.19

Manual switch

Change of content displayed on the display screen by manual operation.

3.1.20

Automatic switch

Change of content displayed on the display screen by program control.

3.2 Abbreviations

The following abbreviations apply to this Part of TY/T 1001.

3.2.1

LED. Light emitting diode

4 Classification

4.1

According to the use environment, it is divided into.

The display screen is divided into indoor screen (for gymnasium) and outdoor screen (for stadium), according to the different places of use.

4.2

According to the composition of pixels, it is divided into.

Monochrome. Pixels are composed of LEDs of one color.

Dual color. Pixels are composed of LEDs of two different colors.

Tricolor (full color). Pixels are composed of LEDs of red, green, blue, which can achieve standard white field.

4.3

According to function, it is divided into.

Sports stadium display screens can be divided into graphic information display screens and video display screens, according to different use functions.

4.4

According to installation structure, it is divided into.

Sports stadium display screens can be divided into flat display screens, bucket-shaped display screens, ring-shaped display screens, according to different installation structures.

5.1 Installation location and number of display screens

5.1.1

Except for special circumstances, it is advisable that more than 95% of the audience with formal fixed seats in the venue meet the maximum viewing distance requirements.

5.1.2 Athletes, coaches, referees at the competition site (except for on-site scoring

referees in diving competitions) can all easily and clearly see the contents displayed on the screen.

5.2.1.1 The display screen used in a comprehensive gymnasium for scoring events

(gymnastics, martial arts routines, figure skating, etc.) can display at least 12 lines of 16-dot Chinese characters, with a line spacing of not less than 1/10 of the characters, and at least 27 Chinese characters per line.

5.2.1.2 The display screen used in a comprehensive gymnasium for ball games can display at least 8 lines of 16-dot Chinese characters, with a line spacing of not less than 1/10 of the characters, and at least 16 Chinese characters per line.

5.2.2 Track and field stadium

5.2.2.1

The display screen can display at least 13 lines of 16-dot Chinese characters, with a line spacing of no less than 1/10 of the character, and at least 26 Chinese characters displayed in each line.

5.2.2.2

Each character has a flashing function.

5.2.3 Swimming pool

5.2.3.1

The display screen can display at least 13 lines of 16-dot Chinese characters, with a line spacing of no less than 1/10 of the character, and at least 25 Chinese characters displayed in each line.

5.2.3.2

Each character has a flashing function.

5.2.4 Diving hall

The display screen can display at least 12 lines of 16-dot Chinese characters, with the line spacing not less than 1/10 of the character, and each line can display at least 13

When the background illumination is less than 20 lx, the contrast of the display screen shall be able to reach 100:1.

5.4.4 White field chromaticity coordinates

The white field chromaticity coordinates can be adjusted within the color temperature of 5000 K ~ 9500 K according to the use environment. According to the CIE 1931 colorimetric system, the tolerance is $|\Delta x| \leq 0.030$, $|\Delta y| \leq 0.030$.

5.4.5 Brightness uniformity

The non-uniformity of the display screen in the stadium shall be less than 10%.

5.5 Display control

5.5.1

The running time of the game can be displayed in real time.

5.5.2

The rolling display of game results can be displayed.

5.5.3

The game results can be displayed by turning pages.

5.5.4

The text content displayed can be switched automatically or manually.