

DIGITAL TEAM FOUL MARKERS

TECHNICAL SPECIFICATION

1. Scope

This technical specification covers the minimum requirements for desktop electronic indicators to be placed on the right and left of the scorer's table during basketball games, displaying the team foul counts of both teams.

2. System Definition and Functional Features

- The indicators must operate **synchronously with the main control console**, and also be operable in **independent (stand-alone) mode** when required.
 - Displays must be easily readable by spectators, referees, and players.
 - Must be usable with a **FIBA-approved control console**.
 - Indicator color must be **red**.
 - Digit dimensions: **minimum height 25 cm, minimum width 12.5 cm**.
 - Foul display: Up to the 4th foul, numbers must be shown; after the 4th foul, once play resumes, the entire screen must appear completely red.
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3. Mechanical and Structural Features

- The housing must have an **aluminum body**. No sharp edges are allowed.
 - External dimensions: **height ≥ 35 cm, width ≥ 20 cm, thickness ≤ 20 cm**.
 - Front protection: **anti-reflective (reflex/lexan type) transparent plexiglass** must be used to prevent light reflection.
 - Connectors must be **easy to attach/detach** and resistant to **moisture**.
 - Internal cabling must not be cut or spliced; proper socketed connections must be used for safety, technical service, and maintenance.
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4. Electronic, Optical, and Drive Features

- Display technology: **SMD LED**.
 - For camera recording clarity, all indicators must use **static drive technology**.
 - LED failure resistance: The malfunction of one or more LEDs must not cause the entire segment to go dark.
 - Driver boards must be **protected against short circuits**.
 - Component brands: Integrated circuits and processors must be from **ST, Toshiba, Texas, NXP, or Green Micro**.
 - LED lifetime must be at least **50,000 hours**.
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5. Environmental Conditions

- Operational temperature range: **-40 °C to +55 °C**.
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6. Compliance and Certifications

- The product must comply with **CE and RoHS requirements**.
 - Power supplies used must be **CE-certified**.
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7. Manufacturer Qualifications and Experience Requirement

- The manufacturer must hold an **ISO 9001 Quality Management System certificate**.
 - **Experience requirement (mandatory):** The proposed brand's timing, videoboard, or scoreboard systems must have been used in at least **five major international events**, such as **EuroLeague, EuroCup, AfroBasket, BAL (Basketball Africa League), and the World Championship**. Official documentation of such references is required.
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8. Documentation and Delivery

- A **user manual** and a **warranty certificate** must be delivered together with the product.
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9. Warranty

- The system must have a warranty of at least **2 years**.

SUMMARY TABLE – System-Wide (Key Mandatory Features)

Item	Requirement
Digit Color	Red
Digit Size	Height ≥ 25 cm; Width ≥ 12.5 cm
Body Dimensions	Height ≥ 35 cm; Width ≥ 20 cm; Thickness ≤ 20 cm
Housing	Aluminum body; no sharp edges
Front Protection	Anti-reflective plexiglass (reflex/lexan)
Operating Modes	Synchronous with main console + stand-alone
Warning Mode	After 4th foul and play resumes, full screen red
LED Technology	SMD LED; static drive (camera-friendly)
Failure Tolerance	Segment not fully off on single LED failure
Driver Safety	Short-circuit protected driver boards
Component Brands	ST / Toshiba / Texas / NXP / Green Micro
Power Supply	CE-certified
Compliance	CE, RoHS; FIBA-approved
Environmental	-40 °C ... $+55$ °C
Manufacturer Quality	ISO 9001 certificate
Warranty	≥ 2 years
Experience	Brand used in ≥ 5 major events (EuroLeague, EuroCup, AfroBasket, BAL, World Championship)