

PROFESSIONAL SCOREBOARD SYSTEM

TECHNICAL SPECIFICATION

(With Penalty Display, Multi-Purpose Hall Use)

1. Scope and Purpose

This technical specification defines the binding technical and functional provisions regarding the supply, installation, and operation of a professional scoreboard system with a penalty display to be used in basketball, volleyball, handball, futsal, water polo, and various hockey disciplines.

2. Compliance and Approvals

- The scoreboard system shall have **FIBA Level 2** approval.
 - The system shall comply with **IHF (handball)** and **FIVB (volleyball)** rules of the game.
 - It shall operate with the **FIBA Whistle System** and provide data output suitable for live broadcast channels via the **FIBA Data Protocol**.
 - **International reference usage:** Documentation shall be provided proving that the proposed brand's timing, videoboard, or scoreboard systems have been used in at least five major organizations: **EuroLeague, EuroCup, AfroBasket, BAL (Basketball Africa League), FIBA Basketball World Cup**.
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3. Disciplines and Game Modes

Disciplines: **Basketball, Volleyball, Handball, Futsal, Water Polo, Field Hockey, Indoor Hockey, Hockey 5s, Ice Hockey, Underwater Hockey, Rink Hockey, Roller Inline Hockey.**

Supported basketball game modes: **FIBA, EuroLeague, NBA, and 3x3.**

4. System Architecture and Communication

- The control console shall operate on an **embedded architecture without an operating system**.
- Independent of Android / iOS / Windows → provides high responsiveness and low latency.

- **Team name:** ≥12 characters, ≥16 cm, yellow. Input via console or external keyboard.
- **Score:** 3 digits/team (0–199), ≥30 cm, white, unused positions dim.
- **Game time:** 4 digits (MM:SS), 00:00–99:59, up/down count, tenths in last 60s, ±0.1s/100 min, ≥30 cm, yellow, buzzer at end.
- **Timeout indicators:** 3 squares/team (≥5 cm).
- **Timeout duration:** 2 digits (0–99), ≥20 cm, countdown, buzzer at start/end/pre-warning, flashing indicators, optional on 24s device.

6.2 Period, Team Foul, Attack/Service and Exclusion Time

- **Period/Set:** 1 digit (0–9), ≥20 cm, white, overtime = “0”.
- **Team foul:** 1 digit/team (0–9), ≥23 cm, red, auto increment/reset, square after 4th foul.
- **Ball Possession Arrow:** 1/team, red, shows attack/serve.
- **Exclusion time:** Max 2 players/team, jersey (2 digits, 0–99) + time (0:00–9:59), ≥16 cm, jersey yellow, time red, synced to game clock. In basketball, foul number flashes 10s.

6.3 Player Name Panels

- 12 names/team, ≥12 cm, yellow, dim empty rows.

6.4 Player Information Panels

- Jersey No: 2 digits (00–99), ≥12 cm, yellow.
- Player Foul: 1 digit (0–9), ≥12 cm, red, max 5 basketball, max 3 handball, flashes 3x.
- Player Score: 2 digits (0–99), ≥12 cm, white, auto increments team score, flashes 3x.

6.5 24–14 Second Shot Clock Devices

- **FIBA Level 2 approved**, mount above backboard.
- Game time ≥13 cm, yellow; shot clock ≥25 cm, red.
- Shot clock 0–99s, buzzer at end.
- **Backboard Lights:** red ≥2s (game), yellow ≥2s (shot).
- Different tones for shot/game, ≥120 dBA.

6.6 Control Units

- **Main Console:** Supports all sports, FIBA/EuroLeague/NBA/3x3, RF+RS485, 100 brightness levels, accuracy <0.05s, remote updates, aluminum IP54.
- **Shot Clock Controller:** Sync with console, 24s/14s/Start/Stop, auto off, ABS IP54, <0.5 kg.
- **Game Time Controller:** Start/Stop + buzzer, ABS IP54, <0.5 kg.

6.7 Ball Possession Arrow Indicator

- Arrow-shaped, SMD LED, red, ≥11 cm, 12 V, FIBA approved, rear indicator, switch control.

6.8 Digital Team Foul Markers

- At scorer's table, independent/sync, FIBA approved, red, ≥25 cm, width 12.5 cm, aluminum, full red after 4th foul.

6.9 Coach Timeout Button (Handball, Water Polo)

- Stops game time, starts timeout countdown, ≥1 m above floor, ≥5 m cable, no sharp edges.

7. General Technical Matters

- Main panel aluminum, ≥190×545×≤8.5 cm.
- SMD LED + 7-segment, static drive.
- Plexiglass anti-glare front.
- CE power supplies, LED ≥50,000 h.
- Processors: ST, Toshiba, Texas, NXP, Green Micro.
- Temp: -40...+55 °C.
- Broadcaster data output.
- Suspension with ≥500 kg hoist, ≥2 points.

8. Certification, Delivery and Warranty

- Manufacturer ISO 9001 certified.

- Product RoHS + CE certified.
- User manual + warranty certificate delivered.
- Warranty period: **2 years**.

9. SUMMARY TABLE – Visual Indicators

Sub-Component	Digits/Field	Size Req.	Color
Team Name	Text	≥16 cm	Yellow
Score	3 digits (0–199)	≥30 cm	White
Game Time	4 digits (MM:SS)	≥30 cm	Yellow
Timeout Indicator	3 squares/team	≥5 cm	Yellow
Timeout Duration	2 digits (0–99)	≥20 cm	Yellow
Period/Set	1 digit (0–9)	≥20 cm	White
Team Foul	1 digit (0–9)	≥23 cm	Red
Ball Possession Arrow	Arrow	—	Red
Exclusion – Jersey No	2 digits (0–99)	≥16 cm	Yellow
Exclusion – Time	3 digits (0:00–9:59)	≥16 cm	Red
Player Names	12 rows/team	≥12 cm	Yellow
Player No	2 digits (0–99)	≥12 cm	Yellow
Player Foul	1 digit (0–9)	≥12 cm	Red
Player Score	2 digits (0–99)	≥12 cm	White
24–14 Game Time	Digits	≥13 cm	Yellow
24–14 Shot Clock	Digits	≥25 cm	Red
Backboard Lights (game end)	Surround light	≥2 s	Red

Sub-Component	Digits/Field	Size Req.	Color
Backboard Lights (shot end)	Top light	≥2 s	Yellow
Digital Team Foul Markers	Digits	≥25 cm; 12.5 cm width	Red
Ball Possession Arrow Indicator	Arrow	≥11 cm	Red

10. SUMMARY TABLE – System-Wide

Subject	Mandatory Requirement
International Compliance	FIBA Level 2; IHF/FIVB rules; FIBA Whistle & Data Protocol
Game Modes	Basketball: FIBA, EuroLeague, NBA, 3x3
Architecture	Embedded, OS-free, high response, low latency
Communication	RF 868 MHz wireless + RS485 (Half Duplex), up to 1 km
Input	Membrane keypad + external keyboard
Language Support	TR / EN / FR / ES + full special characters (Ç Ğ İ Ö Ş Ü ... / ç ğ ı ö ş ü ...)
Timing Accuracy	Console vs scoreboard/24s diff <0.05 s
Display Driving	Static LED drive, 100 brightness levels
Mechanical / Protection	Aluminum, IP54, -40...+55 °C
Lifetime / Power	LED ≥50,000 h, CE-certified PSU
Warning Systems	≥120 dBA buzzer, red/yellow Backboard Lights
Software Update	Remote, no device opening
Certification	CE, RoHS, ISO 9001