

INDOOR SPORTS SCOREBOARD SYSTEM

TECHNICAL SPECIFICATION

1. Scope and Purpose

This technical specification defines the minimum technical requirements for the procurement, installation, commissioning, and use of a scoreboard system, 24/14 second **Shot Clock** devices, and control units for multi-purpose indoor sports. The system shall be used in Basketball, 3x3 Basketball, Volleyball, Handball, Futsal, Field Hockey, Indoor Hockey, Hockey 5S, Ice Hockey, Underwater Hockey, Rink Hockey, Roller Inline Hockey, and Water Polo. For basketball, **FIBA, NBA, EuroLeague, and 3x3** modes are required; additionally, the proposed brand's timing, videoboard, or scoreboard systems must have **at least five** verified usage references in major events such as **EuroLeague/EuroCup/AfroBasket/BAL/World Championship**.

2. Compliance, Approvals, and Certificates

- **FIBA approval is mandatory.** Approval documents shall be submitted with the bid.
- Compliance with the rules of the relevant sports federations: **FIBA** (basketball), **IHF** (handball), **FIVB** (volleyball).
- Product compliances: **CE** and **RoHS**.
- Manufacturer quality system: **ISO 9001**.

3. System Composition (Minimum)

- **Score, Period/Set, Game Time, and Team Foul Panel** (main scoreboard)
- **24/14 Second Shot Clock Devices** (for opposite backboards)
- **Control Units:**
 - Main Console (multi-sport)
 - **Shot Clock** Console (24/14 s)
 - Game Time Console
- Backboard mounting brackets for 24/14 second devices
- Scoreboard mounting brackets

4. Main Display Panel – Technical Features

General Layout: Team scores positioned on the left/right sides of the panel; centered **game time** at the bottom; to the right/left of game time, three **Timeout** squares per team;

period at the bottom; to the right/left of the period, two arrows indicating the attacking team; team fouls positioned accordingly.

4.1 Score Indicators

- **3 digits per team**, range **0–199**.
- **Digit height ≥ 25 cm**.
- **Color: White**.
- Unused digit positions shall remain **blank**.

4.2 Game Time Indicator

- **MM:SS**, total **4 digits**; supports count up/down.
- Adjustable time **00:00–99:59**.
- **1/10 second** display in the **last 60 seconds**.
- Maximum tolerance **± 0.1 s within 100 minutes**.
- **Audible signal** at expiry.
- **Digit height ≥ 25 cm; Color: Yellow**.

4.3 Period / Set Indicator

- **1 digit**, range **0–9**.
- **Digit height ≥ 20 cm; Color: White**.
- In basketball, the overtime period shall be indicated by the letter **“O”**.
- On Period/Set change, the game clock and **Timeout** indicators shall be automatically adjusted according to the sport.

4.4 Team Foul Indicators

- **1 digit per team**, range **0–9**.
- **Digit height ≥ 23 cm; Color: Red**.
- In basketball, the situation after the **4th foul** shall be indicated with a **square**.
- When a player foul is entered, the team foul value **increases automatically**; manual correction is possible via the main console.
- Values are **automatically reset/adjusted** at period transitions.

4.5 Timeout Indicator

- **3 square dots per team; side ≥ 5 cm.**
- **Color: Yellow.**

4.6 Attack / Service Indicator

- **1 arrow per team** (indicates the attacking team in basketball / the serving team in volleyball).
- **Color: Red.**
*(Use on a dedicated unit may be referred to as a **Ball Possession Arrow** or, where panelized, a **Ball Possession Arrow Indicator**.)*

5. 24/14 Second Shot Clock Devices

- Single-sided devices shall be mounted to **opposite backboards**.
- When **game time drops below 24 s**, the **Shot Clock** shall either be **disabled** or **synchronized** with the game clock.
- Display range **0–99 s**; **24 s** and **14 s** start/stop; resume from the same value.
- **Audible signal** at expiry.
- **Backboard-top mounting** in accordance with FIBA standards; if needed, **suspension from the ceiling** to above the backboard.
- **Digit height ≥ 25 cm; Color: Red.**
- When **24s + 14s** are pressed simultaneously on the **Shot Clock** console, the indicator **turns off** (digits blank).
- If **game time** is below **24/14 s** and the relevant keys are used, the digits **turn off automatically**.

6. Control Units

6.1 Main Console (Multi-Sport)

- **Embedded, operating-system-free architecture**; independent of Android / iOS / Windows; high responsiveness and low latency.
- **RF 868 MHz** wireless and **RS485** wired infrastructure when required.
- **Color TFT $\geq 7"$, $\geq 800 \times 480$ pixels.**
- Waterproof printed **membrane keypad**; **aluminum** front protection.

- Uppercase: Ç, Ğ, İ, Ö, Ş, Ü, À, Á, Â, Ä, Æ, È, É, Ê, Ë, Ì, Í, Î, Ï, Ñ, Ò, Ó, Ô, Õ, Ú, Û, Ý, Ž, ß
Lowercase: ç, ğ, ı, ö, ş, ü, à, á, â, ä, æ, è, é, ê, ë, ì, í, î, ï, ñ, ò, ó, ô, õ, ù, ú, û, ý, ž, ð

- Branch support (**minimum 13**): Basketball, 3x3 Basketball, Volleyball, Handball, Futsal, Field Hockey, Indoor Hockey, Hockey 5S, Ice Hockey, Underwater Hockey, Rink Hockey, Roller Inline Hockey, Water Polo.
- Basketball modes: **FIBA, EuroLeague, 3x3, NBA**.
- **100-step brightness** adjustment; switch-off and **LED/address test** functions.
- **Game/Timeout/halftime/24–14 s** durations customizable based on rules.
- **Early warning** timing during **Timeout** is adjustable.
- **Automatic period transitions; foul** and **Timeout** values are adjusted in accordance with **FIBA** rules.
- **Inter-period Timeouts** are kept ready and start with a **start** command when referees leave the court.
- Team/media Timeouts are programmed similarly.
- **Time difference** between the main console and the scoreboard & 24 s devices < **0.05 s**.
- Reset options: **only game data / only player data / all data**.
- Data storage: For Basketball, Volleyball, Handball, Futsal, Hockey, and Water Polo, player–team–time data are stored in **separate memories**.
- Score control: **Score +1/+2/+3** and **Score –**.
- Management of up to **14 players** in basketball and **16 players** in handball.
- In handball, tracking of **5 separate Exclusion Time** penalties; when consecutive penalties are given, times are **summed on the same row**.
- In basketball, the **last foul** taken is flashed on the **Exclusion Time Indicator** panel with **jersey number + ordinal of the foul** for **10 s**.

- **Audible signals** and **Backboard Lights** are controlled **independently** (during Timeout/manual sound, Backboard Lights can remain inactive while sound is heard).
- In volleyball, a **clock** or **count-up** can be shown on the main screen and the scoreboard; can be blanked if desired.
- **Single-action data refresh** after power outage.
- Transmission of game/player/team data via **RS485 Half Duplex** single line up to **1 km**.
- All updates not requiring physical changes on the scoreboard are made via **console software**.
- **Timeout** durations can be shown on the **24 s** devices (set from the main console).
- The system supports **remote software updates** without opening the device.
- Enclosure: **Aluminum**, protection class **IP54**.

6.2 Shot Clock Console

- Operates **synchronized** with the main console.
- **24s, 14s, Start, Stop** buttons.
- When **24s + 14s** are pressed simultaneously, the **Shot Clock** indicator **turns off**.
- When game time stops, it stops **in sync**; **cannot be started before** the match.
- **Weight ≤ 0.5 kg; ABS body; IP54.**

6.3 Game Time Console

- Synchronized with the main console; **start/stop** of the game and **manual control of audible signals**.
- **Weight ≤ 0.5 kg; ABS body; IP54.**

7. Panel Structural and Electrical Requirements

- All-aluminum panel.
- **Minimum dimensions:** Height ≥ 100 cm, Width ≥ 200 cm; thickness ≤ 8.5 cm.
- **SMD LED, 7-segment** digit structure; a single/multiple LED failure shall **not** extinguish the entire segment.
- **Static driving technology** for clarity in camera recordings.

- Installation on a solid base with safe viewing for spectators/referees/players.
- **Easy-to-plug/unplug** and **moisture-resistant** connectors.
- Front protection: **anti-reflective transparent plexiglass** (special reflect/lexan type).
- Internal layout: grouped data cables, neat/clean wiring; cables shall be uncut/unspliced/with sockets.
- **Short-circuit protected** driver boards.
- **CE-certified** power supplies.
- **LED lifetime $\geq 50,000$ hours.**
- Integrated circuit/processor brands: **ST, Toshiba, Texas, NXP, or Green Micro.**
- Operating temperature: **$-40^{\circ}\text{C} \dots +55^{\circ}\text{C}$.**
- External power and data cables, wiring diagrams, and fuse values shall be **manufacturer-approved.**
- Data and power cables shall be **protected** and **not visible.**

8. Installation, Documentation, and Warranty

- A **user manual** and **warranty certificate** shall be delivered.
- **Warranty period: 2 years.**

9. Reference Uses (Mandatory)

The proposed brand's timing, videoboard, or scoreboard systems shall have been used in **at least five** of the following major events: **EuroLeague, EuroCup, AfroBasket, Basketball Africa League (BAL), World Championship (basketball)**. References shall be submitted with documentation.

SUMMARY TABLE – System Overview (Highlighted Mandatory Items)

A) Indicators – Colors and Dimensions (Strict)

Component	Digits/Symbol	Range / Function	Min. Digit Height	Color
Team Score (each team)	3 digits	0–199	≥ 25 cm	White

Component	Digits/Symbol	Range / Function	Min. Digit Height	Color
Game Time (MM:SS)	4 digits	00:00–99:59; last 60 s with 1/10 s	≥ 25 cm	Yellow
Period/Set	1 digit	0–9; overtime “0”	≥ 20 cm	White
Team Foul (each team)	1 digit	0–9; square after 4th foul	≥ 23 cm	Red
Timeout Indicator (each team)	3 square dots	Side ≥ 5 cm	—	Yellow
Attack/Service Arrows	1 arrow (per team)	Attack/service direction	—	Red
24/14 s Shot Clock	2 digits	0–99; 24/14; Start/Stop	≥ 25 cm	Red

B) Highlighted Mandatory Features

- **FIBA-approved**; compliant with **FIBA/IHF/FIVB** rules.
- Basketball modes: **FIBA, NBA, EuroLeague, 3x3**.
- **≥ 5** uses at major events: EuroLeague, EuroCup, AfroBasket, BAL, World Championship.
- Embedded **OS-free** architecture, low latency.
- **RF 868 MHz** wireless + **RS485 (1 km)** wired communication.
- **Color TFT ≥ 7" (≥ 800×480), IP54**, aluminum enclosures.
- **100-step brightness**, LED/address test, **static driving** (camera-friendly).
- Independent control of **audible signals / Backboard Lights**.
- **1/10 s** display in the last 60 s; **sync difference < 0.05 s**.
- External keyboard, membrane keypad, four languages (Turkish/English/French/Spanish).
- Broad special-character support (all listed uppercase/lowercase characters).
- **CE, RoHS**; manufacturer **ISO 9001**.
- **LED lifetime ≥ 50,000 hours**, operating **–40...+55 °C**.
- **Remote update** (without opening); **data recovery** (after outage).