

MULTI-PURPOSE INDOOR — PROFESSIONAL SCOREBOARD SYSTEM

TECHNICAL SPECIFICATION

1) Purpose and Scope

This technical specification defines the minimum technical requirements for the supply, installation, commissioning, and operation of a professional scoreboard and auxiliary units to be used in multi-purpose indoor sports halls. The system shall be usable in **Basketball (FIBA, NBA, EuroLeague, 3x3), Volleyball, Handball, Futsal, Water Polo**, and various **Hockey** disciplines (field hockey, indoor hockey, hockey 5S, ice hockey, underwater hockey, rink hockey, roller inline hockey). The system shall comply with **FIBA, IHF**, and **FIVB** rules.

Usage reference requirement: Documentation shall be provided proving that the proposed brand's timing, videoboard, or scoreboard systems have been used in **at least five** major international organizations such as **EuroLeague, EuroCup, AfroBasket, BAL (Basketball Africa League), FIBA World Championship**.

Control Console (Architecture and Interface): The control console shall operate on an **embedded architecture without an operating system**, independent of Android / iOS / Windows. This structure shall ensure **high response speed** and **low latency**. Communication shall be provided via **RF 868 MHz wireless** and, when required, **RS485 wired** infrastructure. The console shall include a **membrane keypad**; by connecting an **external keyboard**, team and player data (**number, foul, score**) can be entered directly. **Turkish, English, French, and Spanish** language support is mandatory. **Special character support** is required (see 6.1).

2) System Composition

- **Score and Game Time Panel**
- **Period, Team Foul, and Timeout Panel**
- **Player Foul and Player Score Panels** (for both teams)
- **24/14 Second (Shot Clock) Devices** and **Backboard Lights** above the hoop
- **Control Units** (Main Console, Shot Clock Controller, Game Time Controller)
- **Mounting brackets** (for the scoreboard and backboard-top units)

3) Panel and Indicator Features

3.1 Score and Game Time Panel

- **Score:** 3 digits per team, **0–199; white**; digit height ≥ 30 cm; unused positions shall remain **dim**.

- **Game time: mm:ss (4 digits)**; supports count up/down; adjustable **00:00–99:59**; **1/10 second** display during the **last 60 s**; tolerance **±0.1 s / 100 min**; audible signal at expiration; **yellow**; digit height **≥ 30 cm**.

3.2 Period, Team Foul, and Timeout Panel

- **Period/Set: 1 digit, 0–9**; in basketball, overtime shall be shown as **“0”**; **white**; digit height **≥ 20 cm**.
- **Team fouls: 1 digit per team, 0–9**; **red**; digit height **≥ 23 cm**; in basketball, the situation after the **4th foul** is indicated by a **square**.
- **Timeout rights: 3 square dots per team (≥ 5 cm side)**; **yellow**.
- **Timeout duration: 2 digits, 0–99**; countdown; **yellow**; digit height **≥ 30 cm**; audible signal at start/end, adjustable pre-warning for remaining time.
- **Attack/Service indicators: 1 arrow per team**; **red** (**Ball Possession Arrow** / service indicator).

3.3 Player Foul and Player Score Panels

- **Layout: 12 player rows per team**; from outside to inside **jersey number – foul – score**.
- **Jersey number: 2 digits, 00–99**; **yellow**; digit height **≥ 12 cm**.
- **Player foul: 1 digit, 0–9**; **red**; digit height **≥ 12 cm**; for **Basketball/EuroLeague** maximum 5, for **Handball** maximum 3 indications. **At least 3 flashes** on change.
- **Player score: 2 digits, 0–99**; **white**; digit height **≥ 12 cm**; **at least 3 flashes** on change.
- **At the start of the match**, sections are dim; they become visible only according to entered values.

3.4 24/14 Second (Shot Clock) Devices and Backboard Lights

- **FIBA Level 2** approved; mounted above the backboard; **one single-sided unit per hoop** on opposite sides.
- **Shot Clock** range **0–99 s**; **24/14** start, stop, resume from hold.
- When **game time drops below 24 s**, the Shot Clock either becomes **inactive** or operates **synchronized** with the game clock.
- **Digit heights: Game time ≥ 13 cm (yellow)**; Shot Clock **≥ 25 cm (red)**.

- **Backboard Lights: Red** (game-time expiration) and **yellow** (Shot Clock expiration) in accordance with FIBA; remain on for ≥ 2 s at expiration.
- **Audible signal:** Different tones for Shot Clock and game time; ≥ 120 dBA @ 1 m.
- Program/hardware compliant with **EuroLeague / EuroCup** competition rules.

4) Control Units

4.1 Main Console

- **Embedded (OS-less)** architecture, **RF 868 MHz** wireless and **RS485** wired communication support (**RS485 Half-Duplex**, single line, up to **1 km**).
- **Sport profiles:** Basketball (**FIBA, EuroLeague, 3x3, NBA**), Volleyball, Handball, Futsal, Water Polo, and various Hockey types (field, indoor, 5S, ice, underwater, rink, roller inline).
- **Display:** Color **TFT $\geq 7"$** , $\geq 800 \times 480$ resolution.
- **Interface:** Waterproof printed **membrane keypad** with **aluminum** front protection; **external keyboard** entry for team/player names (no PC required).
- **Languages:** **Turkish, English, French, Spanish.**
- **Special character support (mandatory):**
Uppercase: Ç, Ğ, İ, Ö, Ş, Ü, À, Á, Â, Ã, Ä, Æ, È, É, Ê, Ë, Ì, Í, Î, Ï, Ñ, Ò, Ó, Ô, Õ, Æ, Ú, Û, Ý, Ž, Æ, Æ
Lowercase: ç, ğ, ı, ö, ş, ü, à, á, â, ã, ä, æ, è, é, ê, ë, ì, í, î, ï, ñ, ò, ó, ô, õ, ù, ú, û, ý, ž, æ, æ
- **Functions:** Profile-based quick selection of sport settings; **100-level brightness**; ability to **blank** indicators and perform **LED/address tests**.
- **Customization** of game/Timeout/interval/Shot Clock times according to discipline rules; adjustable pre-warning for Timeout.
- **Automatic arrangement** of foul and Timeout values at period transitions (**FIBA**).
- Prepared **team/media Timeouts** and intervals to be started on command.
- Time difference between main console and scoreboard/24-s devices < 0.05 s.
- **Score shortcuts:** **Score +1/+2/+3/-**; display/control up to **14** players in Basketball and **16** in Handball.
- In Handball, tracking up to **5 simultaneous Exclusion Time** entries and **accumulation** on the same player's row.
- In Basketball, the last foul's **jersey number and which foul** can be shown with a **10 s flash**.

- Independent control of **audible signals** and **Backboard Lights**.
- In Volleyball, **clock/count-up** display (can be dim).
- **Single-action full data restore** after power outage.
- **Remote/without opening the cover** software update via software.
- **IP54** protection class; **aluminum** housing.

4.2 Shot Clock Controller

- Operates synchronized with the main console.
- **24s, 14s, Start, Stop** buttons; when **24s + 14s** are pressed simultaneously, the Shot Clock display turns **off**.
- Cannot be started before the competition; stops in sync when game time stops.
- **≤ 0.5 kg, ABS** housing, **IP54**.

4.3 Game Time Controller

- Synchronized with the main console; **start/stop** game time and **manual audible** signal control.
- **≤ 0.5 kg, ABS** housing, **IP54**.

5) Scoreboard Mechanical and Electrical Features (General Technical Matters)

- **Panel body** entirely **aluminum**.
- **Minimum dimensions:** Height **≥ 190 cm**, Width **≥ 330 cm**; Thickness **≤ 8.5 cm**.
- Indicators are **SMD LED, 7-segment; static drive** technology for camera clarity.
- In case of a segment fault, the **entire segment shall not go dark**.
- **Connectors** easy to plug/unplug and **moisture-resistant**.
- **Front protection:** non-glare transparent plexi of reflective/lexan type.
- **Internal wiring:** grouped data cables, neat and clean interior arrangement; for maintenance and safety, cables shall be **uncut/unspliced/with sockets**.
- **Driver boards** with **short-circuit protection**.
- **Power supplies** **CE-certified; LED life ≥ 50,000 hours**.
- **Operational temperature** **-40 °C ... +55 °C**.

- External power and data cables shall be **manufacturer-approved** sizes/standards; wiring diagram and fuse ratings shall be **manufacturer-approved**.
- Data and power cables shall be **shielded** and **not exposed**.
- A **data output for broadcasters** shall be present on the console.
- **Suspension:** shall be hung from **at least one point** using a **hoist/motor with ≥ 500 kg capacity**.

6) Software and Language/Alphabet Support

6.1 Character Set (Mandatory)

Uppercase: Ç, Č, Ĭ, Ö, Š, Ü, À, Á, Â, Ä, Æ, È, É, Ê, Ë, Ì, Í, Î, Ï, Ñ, Ò, Ó, Ô, Õ, Ù, Ú, Ý, Ž, Æ, ß

Lowercase: ç, č, ĭ, ö, š, ü, à, á, â, ä, æ, è, é, ê, ë, ì, í, î, ï, ñ, ò, ó, ô, Õ, ù, ú, ý, ž, æ, ß

7) Certification and Warranty

- Products shall comply with **CE** and **RoHS** requirements.
- The manufacturer shall hold an **ISO 9001 Quality Management System** certificate.
- A **user manual** and **warranty certificate** shall be delivered.
- The system shall have a **minimum 2-year warranty**.

SUMMARY TABLE – System-Wide (Highlighted Mandatory Elements)

Section / Indicator	Digits / Quantity	Value Range	Color	Min. Size (Height)
Team Score	3 digits / team	0–199	White	≥ 30 cm
Game Time (Panel)	4 digits (mm:ss)	00:00–99:59; last 60 s 1/10	Yellow	≥ 30 cm
Period / Set	1 digit	0–9 (Overtime: “0”)	White	≥ 20 cm
Team Fouls	1 digit / team	0–9	Red	≥ 23 cm
Timeout Rights	3 squares / team	—	Yellow	≥ 5 cm (square side)

Section / Indicator	Digits / Quantity	Value Range	Color	Min. Size (Height)
Timeout Duration	2 digits	0–99 (countdown)	Yellow	≥ 30 cm
Player No.	2 digits / player	00–99	Yellow	≥ 12 cm
Player Foul	1 digit / player	0–9 (Basketball: max. 5; Handball: max. 3)	Red	≥ 12 cm
Player Score	2 digits / player	0–99	White	≥ 12 cm
Shot Clock (24/14 s)	—	0–99 s	Red	≥ 25 cm
Game Time (Backboard-top unit)	—	—	Yellow	≥ 13 cm
Backboard Lights	Red / Yellow	On ≥ 2 s at end	—	FIBA-compliant
Audible Signal	—	≥ 120 dBA @1 m	—	—
Communication	RF / Wired	RF 868 MHz, RS485 (≤ 1 km)	—	—
Console Display	TFT	≥ 7", ≥ 800×480	—	—
Console Protection	IP class	IP54	—	—
Body	Material	Aluminum	—	—
LED Technology	7-segment SMD	Static drive	—	—
Operating Temperature	—	–40 °C ... +55 °C	—	—
Compliance / Modes	—	FIBA, IHF, FIVB; Basketball: FIBA, NBA, EuroLeague, 3x3	—	—
Reference Requirement	—	≥ 5 major international events	—	—

Section / Indicator	Digits / Quantity	Value Range	Color	Min. Size (Height)
Documents	—	CE, RoHS, ISO 9001	—	—
Warranty	—	≥ 2 years	—	—