

SHOT CLOCK DEVICE TECHNICAL SPECIFICATION

1. Scope and Purpose

This technical specification covers the supply, installation, operation, and acceptance criteria of the **24–14 second Shot Clock** device to be procured for sports halls. The device, primarily for basketball, shall provide game time and shot clock countdown displays with multi-branch support.

2. Compliance and Certification

- 2.1. The device must be **FIBA Level 2 approved** and designed in compliance with this standard.
 - 2.2. The product must have **CE and RoHS compliance certificates**.
 - 2.3. The manufacturer must hold an **ISO 9001 Quality Management System certificate**.
 - 2.4. 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. This must be documented with official references.
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3. System Definition and General Features

- 3.1. The device shall be usable in halls where basketball is played.
 - 3.2. One single-sided unit shall be mounted above each opposing basket, able to run game time and shot clock indicators synchronously or independently.
 - 3.3. When the shot clock is stopped, the game time indicators must continue running.
 - 3.4. When the game time drops below 24 seconds, the shot clock indicators shall either stop operating or run synchronized with game time.
 - 3.5. The shot clock shall display values in the 0–99 s range.
 - 3.6. The device must allow starting from 24 s, stopping at any remaining value, and resuming from that value.
 - 3.7. An audible signal must be given at the end of the shot clock.
 - 3.8. The device must have hardware and software compatible with league and organization rules.
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4. Branch and Mode Support

- 4.1. Basketball modes: **FIBA, NBA, EuroLeague, and 3x3** must be included.
- 4.2. Other sports: There must be timing profiles suitable for **water polo, futsal, and**

various types of hockey.

4.3. Branch/mode selection must be accessible through a user interface for quick access by field officials.

5. Display and Visual Performance

5.1. Game time digit height ≥ 13 cm; shot clock digit height ≥ 25 cm.

5.2. Game time color: yellow; shot clock color: red. The game time color must match the game time display on the main scoreboard.

5.3. All numeric displays must use **static drive technology** for clarity in camera recordings.

5.4. Displays must use **SMD LED**, digits in 7-segment structure.

5.5. **Red Backboard Lights** complying with FIBA standards shall be mounted around the basket; at the end of game time, these lights must remain on for at least 2 seconds.

5.6. **Yellow Backboard Lights** complying with FIBA standards shall be mounted above the basket; at the end of shot clock, these lights must remain on for at least 2 seconds.

6. Audible Warning and Signaling

6.1. The sound signals used at the end of the shot clock and the end of game time must be in different tones.

6.2. Signal strength must be at least **120 dBA (1 m)**.

7. Control and Functional Behavior

7.1. When the 24s and 14s buttons on the shot clock controller are pressed simultaneously, the shot clock display must be cleared and the digits remain blank.

7.2. When the game time drops below 24 or 14 s, and the relevant buttons are pressed on the controller, the shot clock digits must automatically turn off.

7.3. Synchronization and priority rules between game time and shot clock must comply with the requirements of the relevant branch/mode.

8. Physical Structure

8.1. The panel body must be made entirely of **aluminum**.

8.2. Panel height ≥ 50 cm; width ≥ 55 cm.

8.3. The panel's front face must be covered with anti-glare plexiglass or lexan-type transparent protection.

9. Electronic Infrastructure

- 9.1. Connectors must be easy to plug/unplug and resistant to moisture.
 - 9.2. For ease of maintenance, the device must have a clean internal structure with grouped data cables.
 - 9.3. No cut, spliced, or unsocketed cables inside the device.
 - 9.4. Driver boards must be protected against short circuits.
 - 9.5. Power supplies must be CE-certified.
 - 9.6. LEDs must have a lifetime $\geq 50,000$ h.
 - 9.7. Integrated circuits/processors must be from **ST, Toshiba, Texas, NXP, or Green Micro**.
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10. Electrical / Environmental Conditions

- 10.1. Operating temperature: $-40\text{ }^{\circ}\text{C} \dots +55\text{ }^{\circ}\text{C}$.
 - 10.2. External power and data cables must conform to dimensions/standards approved by the scoreboard manufacturer.
 - 10.3. Installation wiring diagrams and fuse values must be approved by the manufacturer.
 - 10.4. Data and power cables must be protected and hidden; installation must be approved by the manufacturer.
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11. Mounting and Mechanics

- 11.1. Devices must be mounted above the basket in compliance with FIBA standards.
 - 11.2. If basket-top mounting is not possible, ceiling suspension above the basket shall be provided.
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12. Software / Integration

- 12.1. Device software must offer a **parametric structure** for branches and modes, enabling authorized users to quickly change modes.
 - 12.2. The color and format of the game time indicator must match the main scoreboard.
 - 12.3. Simultaneous display of game time and shot clock must be supported when required.
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13. Documentation and Delivery

- 13.1. User manual and warranty certificate must be delivered.
 - 13.2. Commissioning and functional test reports must be submitted after installation.
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14. Warranty and Technical Service

- 14.1. The system must have a 2-year warranty.
- 14.2. The manufacturer/supplier must have maintenance-repair support plans and spare part stock management for after-sales service.

15. Acceptance and Test Criteria

- 15.1. Digit heights, colors, and synchronization behavior of game and shot clocks shall be tested on-site.
- 15.2. Sound level measurement (≥120 dBA @1 m) shall be performed.
- 15.3. Backboard Lights colors and ≥2 s duration shall be verified.
- 15.4. 24s/14s simultaneous command behavior and automatic shutdown at critical thresholds shall be tested.
- 15.5. Temperature, power, and data cabling shall be inspected per approved diagrams and protection conditions.
- 15.6. Certification and references (FIBA Level 2 approval, CE/RoHS, ISO 9001, and major event usage references) shall be checked.

SUMMARY TABLE – System-Wide (Key Mandatory Features)

Item	Mandatory Feature
FIBA Compliance	FIBA Level 2 approved
Basketball Modes	FIBA, NBA, EuroLeague, 3x3
Other Sports	Water polo, futsal, hockey (various types)
Shot Clock Display	0–99 s; digit ≥25 cm; red
Game Time Display	Digit ≥13 cm; yellow; same as main scoreboard
Backboard Lights	Game end: red ≥2 s; Shot clock end: yellow ≥2 s
Audible Warning	≥120 dBA (1 m); different tones for game end/shot clock end
Display Technology	SMD LED; 7-segment; static drive
Panel Material/Front	Aluminum panel; anti-glare plexiglass front
Panel Dimensions	Height ≥50 cm; Width ≥55 cm
Mounting	Basket-top mounting; ceiling suspension if necessary

Item	Mandatory Feature
Electronic Safety	Short-circuit protected drivers; CE-certified power supplies
Connections	Moisture-proof, easy connectors; protected cabling
Durability	Operating temp -40...+55 °C; LED lifetime ≥50,000 h
Certificates	CE, RoHS; ISO 9001
Warranty	2 years
Brand References	Used in ≥5 major events (EuroLeague, EuroCup, AfroBasket, BAL, World Championship)