

MULTI-SPORT TIMING AND SHOT CLOCK (24–14 s) SYSTEM

TECHNICAL SPECIFICATION

1. Scope

This technical specification covers the 24/14 second shot clock displays, their control/operational functions, general structural/electrical requirements, installation, certification, and acceptance conditions for multi-sport use in indoor sports halls, primarily basketball.

The specification requires that relevant time displays are supported in sports such as water polo, hockey (various types), and futsal, and that basketball modes include **3x3, FIBA, NBA, and EuroLeague**.

This document also emphasizes CE and RoHS compliance as well as **FIBA approval**.

2. Definitions

- **Shot Clock:** Digital displays showing the offensive time between 0–99 seconds.
 - **Control Unit:** The unit that enables start/stop, 24s/14s set, and reset functions for the shot clocks.
 - **Game Clock:** The main game time (hall scoreboard game clock).
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3. Applicable Standards and Approvals

- **FIBA Approval:** Shot clocks and related control units shall be **FIBA-approved**; installation and visibility shall comply with FIBA standards.
- **CE and RoHS:** All products shall comply with CE and RoHS requirements.
- **Quality Management:** Manufacturer shall hold an **ISO 9001 Quality Management System certificate**.

Note: Relevant international approvals and compliance documents will be submitted at delivery.

4. System Components

- **Shot Clock Display Panels** (mounted above opposing baskets or suspended from the ceiling above the basket).

- **Control Unit** (24s/14s management, start/stop/restart).
 - **Audible Signal System** (automatic warning when shot clock expires).
 - **Power Supply and Connection Equipment** (cables, connectors, power units).
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5. Functional Requirements (Basketball)

1. Shot clock shall display values between 0–99 s.
 2. Devices shall be capable of starting from 24 s, showing remaining seconds when stopped, and resuming from the stopped value.
 3. Audible signal shall sound at expiration of shot clock.
 4. When game clock is below 24 s, shot clock displays shall either remain off or run synchronized with the game clock.
 5. When both 24s and 14s buttons are pressed simultaneously, the shot clock screen shall clear and digits remain blank.
 6. When game clock drops below 24 s or 14 s, if the relevant buttons are used, the shot clock digits shall automatically switch off.
 7. Basketball modes selectable: **FIBA, NBA, EuroLeague, 3x3**.
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6. Multi-Sport Support

- The system shall support relevant time displays for water polo, hockey (various types), and futsal, with display and counter behavior adjusted accordingly when branch selection is made.
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7. Structural and Visual Requirements

1. All panels shall be manufactured from aluminum.
2. Panel dimensions: minimum height 35 cm, minimum width 50 cm.
3. Displays shall use SMD LED; digits shall be 7-segment structure.
4. All numeric displays shall use static drive technology for clear image in camera recordings.
5. Shot clock digit height: minimum 25 cm.

6. Shot clock color: Red.
 7. Front surface shall include anti-glare plexiglass or lexan-type transparent protection.
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8. Electrical and Electronic Requirements

1. Connectors shall be easy to plug/unplug and moisture-resistant.
 2. Internal cabling shall be grouped data cables, cleanly arranged; no cut, spliced, or unsocketed cables allowed.
 3. Driver boards shall be protected against short circuits.
 4. Power supplies shall be CE-certified.
 5. LEDs shall have a minimum lifetime of 50,000 hours.
 6. Integrated circuits/processors used shall be from ST, Toshiba, Texas, NXP, or Green Micro.
 7. Operating temperature: -40 °C to +55 °C.
 8. External power and data cables shall be manufacturer-approved in dimension and standard; wiring diagrams and fuse values shall be manufacturer-approved.
 9. Data and power cables shall be protected and installed so as not to be visible externally.
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9. Installation and Mounting

1. Devices shall be mounted above the basket in compliance with FIBA standards.
 2. If basket-top mounting is not possible, suspension from the ceiling above the basket shall be provided.
 3. Installation and cabling shall follow manufacturer-approved diagrams and instructions.
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10. Certification and Delivery

1. CE and RoHS compliance certificates shall be provided.
2. User manual and warranty certificate shall be delivered.

3. System shall be warranted for at least 2 years.

11. Brand and Reference Qualification

- 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. An official/verifiable reference list shall be submitted.
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12. Acceptance and Test Criteria

- **Functional tests:** Displaying 0–99 s, 24s/14s setting, simultaneous 24+14 button press (blank screen), <24s game clock behavior, and audible signal.
 - **Visual tests:** Digit height measurement (≥ 25 cm), confirmation of red color, anti-glare surface, static drive verification for camera clarity.
 - **Structural tests:** Panel size ($\geq 35 \times 50$ cm), aluminum body, connector/moisture resistance, internal cabling arrangement, protective cabling, CE-certified power supplies, short-circuit protection.
 - **Environmental test:** Operating temperature range verification and manufacturer confirmation documents.
 - **Document control:** FIBA approval, CE/RoHS declarations, ISO 9001 certificate, reference organization list, user manual, and warranty certificate.
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SUMMARY TABLE – System-Wide Key Mandatory Features

Item	Mandatory Feature
FIBA Compliance	Mounting in accordance with FIBA standards
Basketball Modes	FIBA, NBA, EuroLeague, 3x3
Multi-Sport Support	Water polo, hockey (various types), futsal
Display Color	Shot clock red
Digit Height	≥ 25 cm (shot clock)
Panel Dimensions	≥ 35 cm height, ≥ 50 cm width
LED Type/Structure	SMD LED, 7-segment, static drive

Item	Mandatory Feature
Front Surface	Anti-glare lexan/plexiglass protection
Body Material	Aluminum
Functions	0–99 s, 24/14 s set, simultaneous 24+14s blank screen, <24s sync/blank, audible signal at end
Electrical/Electronic	CE-certified PSU, short-circuit protected drivers, ST/Toshiba/Texas/NXP/Green Micro ICs
Cabling	Protected, invisible; moisture-resistant connectors; manufacturer-approved diagrams/fuses
Operating Temp	–40 °C ... +55 °C
Certificates	CE, RoHS, ISO 9001
Warranty	At least 2 years
Brand References	Proven use in ≥5 major events (EuroLeague, EuroCup, AfroBasket, BAL, World Championship)