

FOOTBALL SCOREBOARD SYSTEM – TECHNICAL SPECIFICATION

1. Scope and Purpose

This specification defines the minimum technical requirements for the supply, installation, and operation of a football scoreboard system with editable team names for use in stadiums and outdoor venues. The system consists of a graphical match display screen, a control unit, and a scoreboard platform.

2. System Components

- Graphical Match Display Screen
- Control Unit
- Scoreboard Platform

3. Graphical Match Display Screen

3.1 General Layout

- The match time is shown centered at the top of the screen; team names and scores appear below.

3.2 Match Time Indicator

- Time is displayed with 5 characters in **MM:SS** format (two digits minutes, “:” separator, two digits seconds).
- Time counting can run forward or backward in accordance with the rules of the game.
- Adjustable time range: **00:00 – 99:59**.
- Time accuracy: maximum tolerance **±0.1 seconds** over a 100-minute period.
- Digit height: **at least 64 cm**.

3.3 Team Name Indicators

- Team names can be entered via an external keyboard or the membrane keypad on the controller.
- At least **12 characters** are supported, depending on character width; character height is **not less than 56 cm**.
- In addition to the Latin alphabet, the following characters are supported:
Uppercase: Ç, Ć, Ĭ, Ö, Š, Ů, Ā, Á, Â, Ă, Æ, È, É, Ê, Ě, Ĩ, Í, Î, Ĳ, Ñ, Ò, Ó, Ô, Œ, Ú, Û, Ý, Ž, Æ, ß
Lowercase: ç, ģ, ĭ, ö, š, ů, à, á, â, ä, æ, è, é, ê, ë, ì, í, î, ĳ, ñ, ò, ó, ô, ù, ú, û, ý, ž, æ

3.4 Score Indicators

- Two digits are displayed for each team (**00–99**).
- Digit height: **at least 56 cm**.

4. Control Unit

4.1 Visual and Input Interface

- Minimum **4.3"** color TFT display (**480×272 px** minimum).
- Printed, water-resistant buttons; membrane keypad bonded to an aluminum front guard.
- Button markings indicating functions, compliant with international norms.
- Scores are adjusted in single steps with **Score + / Score –** keys.

4.2 Time and Match Management

- Time can run in count-up or count-down modes; cumulative operation is supported across periods.
- Automatic stop can be set at **45:00** and **90:00**; additional target stop times can be configured if required.
- After a pause, manual time entry allows restart from any desired time.
- Period display is available and the number of periods is configurable.

4.3 Displays and Content

- Yellow card, red card, and goal animations can be played during the match.
- Free text messages can be shown on the scoreboard.
- Before the match, player and referee information can be entered and displayed as animations.

4.4 Input Methods and Language Support

- Name entry is supported via external keyboard and directly on the controller (no computer required).
- Menu and text entry languages: **Turkish, English, French**.
- All special characters listed in §3.3 are supported in name entry and menus.

4.5 Power, Connectivity, and Robustness

- **Li-ion** battery for at least **10 hours** of operation; charge level viewable on the main screen.
- Full charge within **≤ 2 hours** using a **CE-certified** charger.
- Wireless (**RF**) connectivity; RF signals can be disabled via software from the controller.
- Scoreboard brightness adjustable in **100 levels** via the controller.
- LED module tests can be run from the controller; match information can be reset in a single action.
- All updates that do not require physical changes on the scoreboard are performed via the controller software.
- Hardware supports remote software updates without opening the enclosure.
- Connection connectors meet quality standards and are easy to plug/unplug.
- Enclosure material: **aluminum**; protection class: **IP54**.

5. Scoreboard Platform (Support Structure)

- The scoreboard platform is designed to be mounted on **four** metal legs.
- Leg height **≥ 2450 mm**; profile **≥ 100×100 mm**, wall thickness **5 mm**.
- Legs are anchored to the ground at two points; required rebar dowels are left and concrete backfill is applied.
- A suitable protective roof is provided against rain/snow/hail/dust/sun.
- Leg color is determined by the contracting authority; finished with electrostatic powder coating.
- The screen frame has static resistance suitable for **90 km/h** wind speed.

6. General Technical Provisions (Display and Electronics)

6.1 Mechanical and Dimensional

- The entire panel is made of aluminum or sheet steel.
- Each panel forming the scoreboard is **48 cm** high and **128 cm** wide.
- Panel thickness **≤ 15 cm**.
- Overall scoreboard dimensions: height **≥ 190 cm**, width **≥ 510 cm**.

6.2 LED Display

- Graphics-based display composed of **16×32 cm** LED modules.
- Modules are suitable for outdoor conditions.
- Pixel pitch **10 mm; 1 red LED per pixel**.
- LED lifetime **≥ 50,000 hours**.

6.3 Environmental Conditions

- Operating temperature: **−40 °C to +55 °C**.
- Relative humidity: operable within **0–95%**.
- Scoreboard protection class: **IP65**.

6.4 Power and Cabling

- Maximum power consumption **8.5 kW**.
- Mains voltage **200–240 V, 50/60 Hz**.
- Connectors are easy to plug/unplug and moisture-resistant.
- Internal wiring arranged neatly with grouped data cable bundles to facilitate service.
- For safety and service, internal wiring shall not use cut, spliced, or connector-less cables.
- Driver boards are protected against short circuits.
- Power supplies shall be **CE-certified**.
- ICs/microcontrollers used shall be from **ST, Toshiba, Texas (Instruments), NXP, or Green Micro**.
- External power and data cables conform to sizes and standards approved by the manufacturer.
- Wiring diagrams and fuse ratings are submitted for manufacturer approval.
- Data and power cables are shielded and not left exposed.
- The scoreboard is mounted securely on a solid base, in a location clearly visible to spectators, referees, and players.

6.5 Software and Documentation

- The software shall be developed by the LED display contractor; references to prior implementations shall be submitted to the authority.
- The manufacturer holds **ISO 9001** quality management certification.
- The product has **RoHS** and **CE** certificates.
- The user manual and warranty certificate shall be delivered.
- Warranty period: **2 years**.

SUMMARY TABLE – System-Wide (Key Mandatory Items)

Title	Mandatory Feature
Time Display	MM:SS, 5 characters, 00:00–99:59, ±0.1 s/100 min tolerance
Time Counting	Up/Down; auto stop configurable at 45:00 and 90:00; cumulative operation
Time Digit Height	≥ 64 cm
Score Indicator	Two digits per team (00–99); digit height ≥ 56 cm
Team Name Entry	Membrane keypad on controller and/or external keyboard; ≥ 12 characters
Character Support	Latin alphabet + all listed special characters
Controller Screen	≥ 4.3" TFT, ≥ 480×272 pixels
Power – Controller	Li-ion, ≥ 10 hours; full charge ≤ 2 hours with CE-certified charger
Connectivity	Wireless RF; software-controlled disable
Brightness	100-level adjustment from controller
Protection Class	Scoreboard: IP65; Controller: IP54
LED Modules	16×32 cm, outdoor type; 10 mm pixel pitch; red LED; lifetime ≥ 50,000 h
Power – Scoreboard	Max 8.5 kW, 200–240 V, 50/60 Hz

Title	Mandatory Feature
Environmental Conditions	−40...+55 °C, 0–95% RH
Mechanical Dimensions	Panel: 48×128 cm, thickness ≤ 15 cm; Scoreboard: ≥ 190×≥ 510 cm
Platform	4 legs; height ≥ 2450 mm; 100×100×5 mm profile; wind resistance 90 km/h
Documentation	ISO 9001, CE, RoHS; user manual; 2-year warranty