LED PITCH PERIMETER BOARDS

UEFA LED technical specifications for club competitions

(valid as of July 2021)

WE CARE ABOUT FOOTBALL

LED pitch perimeter boards

LED technical specifications for UEFA Champions League, UEFA Europa League, UEFA Europa Conference League and UEFA Women's Champions League

2021-2024/25 cycle

During the 2021-24/25 cycle, UEFA will operate LED pitch perimeter advertising boards to all matches in each UEFA Champions League season from the Play Off round until the Final. In the UEFA Europa League, UEFA will extend its operation and use LED pitch perimeter advertising boards at all matches as of the group stage. For the new UEFA Europa Conference League, as many matches as possible should be delivered with LED pitch perimeter boards – ideally all matches as well, as of the group stage. For the UEFA Women's Champions League, all matches as of the Quarter Finals should be delivered with LED pitch perimeter boards. For all competitions, UEFA plans to use as many existing club LED pitch perimeter boards as possible however, technical specs will be different between UEFA Champions League (incl. finals and SuperCup) and UEFA Europa League, UEFA Europa Conference League and UEFA Women's Champions League as shown below.

Wherever stadia or clubs which are due to host matches in these competitions acquire a LED system meeting the minimum criteria outlined below, UEFA will survey the system and power set-up once in place, with a view to using it for those matches. Clubs or agencies can also request advice from UEFA ahead of any system purchase or rental deal, although it is the responsibility of the club or agency to make sure any system meets the specifications provided. Full approval from UEFA can only be given once a system can be surveyed on-site.

System reviews and acceptance visits will be conducted by UEFA's independent LED pitch perimeter boards consultant agency O'Neill Modern Media (OMM) and potentially one of UEFA's appointed technical supplier.

UEFA Champions League

In UEFA Champions League, at all rounds from the play off onwards, clubs will be required to provide, free of any rental cost, LED advertising board systems that meet the technical specifications notified herewith (and in previous versions of these guidelines) to the clubs by UEFA. UEFA will survey the system and power set-up in advance. In addition, the club has to provide two LED system technicians for each match period from midday MD-2 to midday MD+1.

Set-up

Systems which meet the specifications must be set-up in such a way as to conform to UEFA's needs. This means one continuous system, at least 246m long and 90 cm high, with fully closed corners and no gaps. Boards must be fully visible from the main camera position, ideally running under the crossbar of each goal, or if need be, over the cross-bar, but in no cases should the cross-bar bi-sect the board artworks. Content should be fully legible under floodlights, and a system test to match artwork colours and calibrate the host broadcast main camera to those colours will be required on MD-1 in the evening under full match light conditions, whenever possible.

UEFA's external LED supplier

Once a system is considered suitable, an agreement will be offered by UEFA, in which the system owner takes responsibility and liability for the delivery of a fully functioning system. UEFA's appointed LED supplier, will need

access to the system for the relevant UEFA Champions League matches to implement their software control for artwork management, run sequence preparation, on-site graphics control, and match operation and reporting. The local clubs' or agencies' system and technicians would then work under the direction of the supervisor and control operator from UEFA's appointed LED supplier.

Power

Where pitch side power capacity and security of supply can be guaranteed, UEFA will use the club's existing house power. Consumption costs are to be covered by the clubs. Where the existing house power capacity is not sufficient, or where there is no back-up power source at Semi-Final and Final venues, then UEFA will, at its own cost, bring in a dedicated twin-pack generator to guarantee the operation of the boards.

External systems

In the event that a club is unable to provide a LED advertising system meeting the required technical or set-up specifications then UEFA shall provide and install an appropriate system and shall deduct EUR 25'000 per match for such provision from the distribution due to the club for its participation in the competition. Removal of any non-compliant system will be the responsibility of the club and at the cost of the club: the appropriate clean stadium principles continue to apply. In either case, UEFA will cover operational staff costs and costs for artwork adaptation or management.

UEFA Europa League

In UEFA Europa League, at all rounds from the group stage onwards, UEFA would like to use as many club LED pitch perimeter systems as possible according to the technical specs below incl. the operator and technicians. Wherever a club LED system could be used, UEFA will survey the system and power set-up in advance. Once a system is considered suitable and a rental fee has been agreed (incl. technicians and operator), an agreement will be offered by UEFA, in which the system owner takes responsibility and liability for the delivery of a fully functioning system for each match period from midday MD-2 to midday MD+1. As no external overlay supplier (like in UEFA Champions League) will be appointed, the club's LED play out system should be used by the usual club's LED operator. In this case, UEFA would send out a supervisor to help the operator with the playout of UEFA's partner and corporate messages as long as it is needed.

Set-up

Systems which meet the specifications must be set-up in such a way as to conform to UEFA's needs for this competition. This means a minimum of 200m covering the touchline and goallines incl the goals and a minimum height of 80 cm. Boards must be fully visible from the main camera position, ideally running under the cross-bar of each goal, or if need be, over the cross-bar, but in no cases should the cross-bar bi-sect the board artworks. Content should be fully legible under floodlights, and a system test to match artwork colours and calibrate the host broadcast main camera to those colours will be required on MD-1 in the evening under full match light conditions, whenever possible.

External systems

Should a stadium not have a system which, at UEFA's sole discretion, matches UEFA's required standards, UEFA's external overlay supplier will bring, install and operate an external system for each such match equal to or better than the quality levels indicated below. Such an operation will be fully at UEFA's cost. However, clubs are responsible for the cost and operation of removing any existing boarding: for all matches, the appropriate clean stadium principles continue to apply.

Power

Where pitch side power capacity and security of supply can be guaranteed, club's existing house power should be used. Consumption costs are to be covered by the clubs. Where the existing house power capacity is not sufficient, or where there is no back-up power source at Semi-Final and Final venues, then UEFA will, at its own cost, bring in a dedicated twin-pack generator to guarantee the operation of the boards.

UEFA Europa Conference League

In UEFA Europa Conference League, at all rounds from the group stage onwards, UEFA would like to use as many club LED pitch perimeter systems as possible according to the technical specs below. Wherever a club LED system could be used, UEFA will survey the system and power set-up in advance. Once a system is considered suitable and a rental fee has been agreed (incl. technicians and operator), an agreement will be offered by UEFA, in which the system owner takes responsibility and liability for the delivery of a fully functioning system for each match period from midday MD-2 to midday MD+1. As no external overlay supplier (like in UEFA Champions League) will be appointed, the club's LED play out system should be used by the usual club's LED operator. In this case, UEFA would send out a supervisor to help the operator with the playout of UEFA's partner and corporate messages as long as it is needed.

Set-up

Systems which meet the specifications must be set-up in such a way as to conform to UEFA's needs for this competition. This means a minimum of 200m covering the touchline and goallines incl the goals and a minimum height of 80 cm. Boards must be fully visible from the main camera position, ideally running under the cross-bar of each goal, or if need be, over the cross-bar, but in no cases should the cross-bar bi-sect the board artworks. Content should be fully legible under floodlights, and a system test to match artwork colours and calibrate the host broadcast main camera to those colours will be required on MD-1 in the evening under full match light conditions, whenever possible.

External systems

Should a stadium not have a system which, at UEFA's sole discretion, matches UEFA's required standards, UEFA will setup static boards. In this case clubs are responsible for the cost and operation of removing any existing boarding: for all matches, the appropriate clean stadium principles continue to apply.

Power

Where pitch side power capacity and security of supply can be guaranteed, club's existing house power should be used. Consumption costs are to be covered by the clubs. Where the existing house power capacity is not sufficient, or where there is no back-up power source at Semi-Final and Final venues, then UEFA will, at its own cost, bring in a dedicated twin-pack generator to guarantee the operation of the boards.

UEFA Women's Champions League

In UEFA Women's Champions League, at all rounds from the Quarter Finals onwards, UEFA would like to use as many club LED pitch perimeter systems as possible according to the technical specs below. Wherever a club LED system could be used, UEFA will survey the system and power set-up in advance. Once a system is considered suitable and a rental fee has been agreed (incl. technicians and operator), an agreement will be offered by UEFA, in which the

system owner takes responsibility and liability for the delivery of a fully functioning system for each match period from midday MD-2 to midday MD+1. As no external overlay supplier (like in UEFA Champions League) will be appointed, the club's LED play out system should be used by the usual club's LED operator. In this case, UEFA would send out a supervisor to help the operator with the playout of UEFA's partner and corporate messages as long as it is needed.

Set-up

Systems which meet the specifications must be set-up in such a way as to conform to UEFA's needs for this competition. This means a minimum of 200m covering the touchline and goallines incl the goals and a minimum height of 80 cm. Boards must be fully visible from the main camera position, ideally running under the cross-bar of each goal, or if need be, over the cross-bar, but in no cases should the cross-bar bi-sect the board artworks. Content should be fully legible under floodlights, and a system test to match artwork colours and calibrate the host broadcast main camera to those colours will be required on MD-1 in the evening under full match light conditions, whenever possible.

External systems

Should a stadium not have a system which, at UEFA's sole discretion, matches UEFA's required standards, UEFA will setup static boards or bring in a LED system. In this case clubs are responsible for the cost and operation of removing any existing boarding: for all matches, the appropriate clean stadium principles continue to apply.

Power

Where pitch side power capacity and security of supply can be guaranteed, club's existing house power should be used. Consumption costs are to be covered by the clubs. Where the existing house power capacity is not sufficient, or where there is no back-up power source at Semi-Final and Final venues, then UEFA will, at its own cost, bring in a dedicated twin-pack generator to guarantee the operation of the boards.

KEY DIMENSIONS

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
Pixel pitch	12.5mm or less, 3-in-1 SMD	16mm or less, 3-in-1 SMD
Length	Min 246m, closed corners	Touchline and goalline to near 6m line, open corners allowed
Display height (screen only)	Min 90cm	Min 80cm
Refresh rate	Min 2.800 Hz (Still photography has to be clearly visible with an exposure of 1/2000 at 10% brightness level of the LED system)	Min 1.800 Hz

Adjustable distance from floor	Up to 50mm	Up to 50mm

OPTICAL

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
Horizontal viewing angle	min 140°, ideal 160° (to ensure full visibility of goal-line boards from 16m and 5m cameras, with good visibility even from corner flag)	Goalline boards need to be visible from the 16m camera
Vertical viewing angle	min 60°	min 60°
Luminance	min 5500 Nit, ideal 6000 Nit	optional
Pixel-by pixel fine-tuning, adjustable using software on-site	✓	optional
Systems pre-calibrated to white at 6000K;	✓	optional
good depth and capacity of saturated colours	✓	✓

MECHANICAL

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
At least 2 spare cabinets in set-up, location freely configurable.	✓	optional
Quick-changeable modules. Module / cabinet change time <1 min, without	✓	optional

affecting running system – i.e. hot-swappable.		
Mechanism for access gates at several locations (if required), with no signal interruption.	✓	✓
Safety / emergency exit gates at several locations possible (if required), with signal interruption accepted in case of emergency use.	✓	optional
Mechanical connectors to align the system and minimise gaps between cabinets.	✓	optional
Black non-glare finishing on faceplate, and black/dark neutral colours on cabinet.	✓	optional
Weather-protection to IP-65 (front) and IP-54 (back) standard.	✓	✓
Foot stands must be safely covered with rubber protection.	✓	optional
Impact protection for LEDs and players.	✓	✓
Rubber louvers front and top to protect cabinets from impact and players from injuries.	✓	✓
Rubber padding to fill any gaps between pitch and system.	✓	✓
Maintenance and failure records available.	optional	optional

Transport casing designed for efficient storage and shipping (for transportable systems).	✓	optional
Complete system can fit into one standard European 40' truck (for transportable systems).	✓	optional

ELECTRICAL

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
European-voltage system (220-240V / 380-415V, 50Hz).	✓	✓
CEE standard power connectors for 400V, alternative power lock connectors in main power distribution.	✓	✓
Professional power connectors like Neutrik powerCon TRUE1 with IP 65 protection.	✓	✓ (other connectors brands accepted if CE certification is reached)
Heavy, high flex rubber cabling for outdoor use (cable type: H07RN-F).	✓	Preferred to have
All exposed cabling (incl. data cabling) must be protected.	✓	Preferred to have

Power loss must be limited to one cabinet – not tolerable to affect other cabinets. Only one breaker (16 A or less) incl. one RCD 30mA per cabinet.	✓	Preferred to have (in case of power failure in one cabinet a maximum of 27m is allowed to switch off)
Adjustable RCD 300mA on final 125A/63A circuits 3P + N including surge protection.	✓	30mA accepted if no other Rcd are installed between stadium main source and LED
EMC protection to highest EU standards and regulations.	✓	low voltage European standard CE certification is sufficient
CE, ROHS, EN, TÜV certifications required plus additional required local technical standard(s) to operate the system in the relevant venue where it will be used.	✓	optional
quick-changeable power-supplies installed within each LED module.	preferred	preferred
systems should avoid having power distribution boxes up against the rear of the LED systems: such boxes should be set back from the systems so as not to be in the way of system maintenance or photographers / TV camera positions.	preferred	optional

CONTENT CONTROL – DATA INTERFACING

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
Individual control of brightness, gamma, colours of every single pixel/ module/cabinet.	✓	optional
Default graphics (auto-switch feature) installed and enabled (set to static *shared-rotation*) in case of total data connection loss with server.	✓	preferred
In the event of a single cabinet change, current data, colours, brightness information must be stored in the cabinets.	✓	preferred
System viewed and operated as one single screen by control software.	✓	✓
Control signal connection via two redundant feeding points. Fibre optic data cabling from dedicated controller locations to the two return side corners.	✓	preferred
Data ring loop configured; if one connection fails an automatic switch activates data source from the opposite section.	✓	preferred
Neutrik Ethercon data connectors or similar adequate brands with RJ-45 IP 65 protection.	✓	✓ (other connectors brands can be accepted if reach the CE certification)

Neutrik optical single mode fibre optic cabling (IP 65 rated) preferred.	✓	✓ (other connectors brands can be accepted if CE certification is reached. Double mode also accepted)
Remote data monitoring and analysis.	optional	optional
Dual signal servers, each on UPS.	✓	✓
System back to full spec control after pitch power loss in < 25 sec.	✓	preferred
External controller software overlay possible; even number of sending cards preferred, with symmetrical set-up (e.g. 2, 4 or 6).	✓	optional

POWER

	UCL and club competition finals (incl, SuperCup)	**UEL/UECL/UWCL**
Safe, secure and demonstrably reliable pitch-side power required for system.	✓	optional
Fully backed-up power / two independent power sources preferred.	✓	optional
Potential to implement and connect a fully redundant twin-pack generator if existing power is not sufficient or not considered reliable enough by UEFA.	✓	optional

In case you have further questions, please send an email to signage@uefa.ch

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