

# MC4K

## ALL-IN-ONE LED MEDIA SERVER

Integrated media control, playback and 4K program output in a compact 1U platform

**1 × 4K60**

PROGRAM OUTPUT

**1U**

RACKMOUNT

**6C / 12T**

AMD CPU

**M2**

MEDIA SOFTWARE

**CONTROL • PLAYBACK • RENDERING • 4K PROGRAM OUTPUT**

1U rackmount | Creative mapping | Timeline control | Live inputs

## SECTION 01

# PRODUCT OVERVIEW

A compact all-in-one LED media server integrating media control, playback rendering and one defined 4K program output.

The MC4K combines M2 media control, media playback and display-side rendering in a compact 1U rackmount platform. Its defined program-output path uses one DisplayPort 1.2 connection at up to 3840 × 2160 @ 60 Hz to feed an external LED Sending Controller. Creative splitting, geometric warping, rotation and CAVE perspective workflows support conventional and irregular LED installations.

**1 × 4K60**
**PROGRAM OUTPUT**

DisplayPort 1.2 LED video path

**1U**
**RACKMOUNT**

Compact 482 × 300 × 44 mm chassis

**6 / 12**
**CORES / THREADS**

AMD processing platform

**16 GB**
**DDR5 MEMORY**

System and project workspace

## SYSTEM ROLE

| ROLE                                   | MC4K CAPABILITY                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Integrated media control</b>        | Manages media, projects, scenes, schedules and multiple LED displays through M2 software.                               |
| <b>On-board playback and rendering</b> | Decodes media and renders the mapped output on its integrated industrial computing platform.                            |
| <b>4K program output</b>               | Provides one DisplayPort 1.2 program-output path at up to 3840 × 2160 @ 60 Hz.                                          |
| <b>Operator display connection</b>     | Provides one HDMI 2.0 rear video output, specified up to 3840 × 2160 @ 60 Hz.                                           |
| <b>Creative mapping</b>                | Supports content splitting, reassembly, geometric warping, rotation and CAVE perspective conversion.                    |
| <b>Operations</b>                      | Provides scheduling, unattended startup, remote power functions, third-party control integration and device monitoring. |

**PRODUCT CLASSIFICATION** MC4K is an all-in-one LED media server: control and display-side rendering are integrated. Downstream LED sending controllers are still required to convert its video outputs into LED display data.

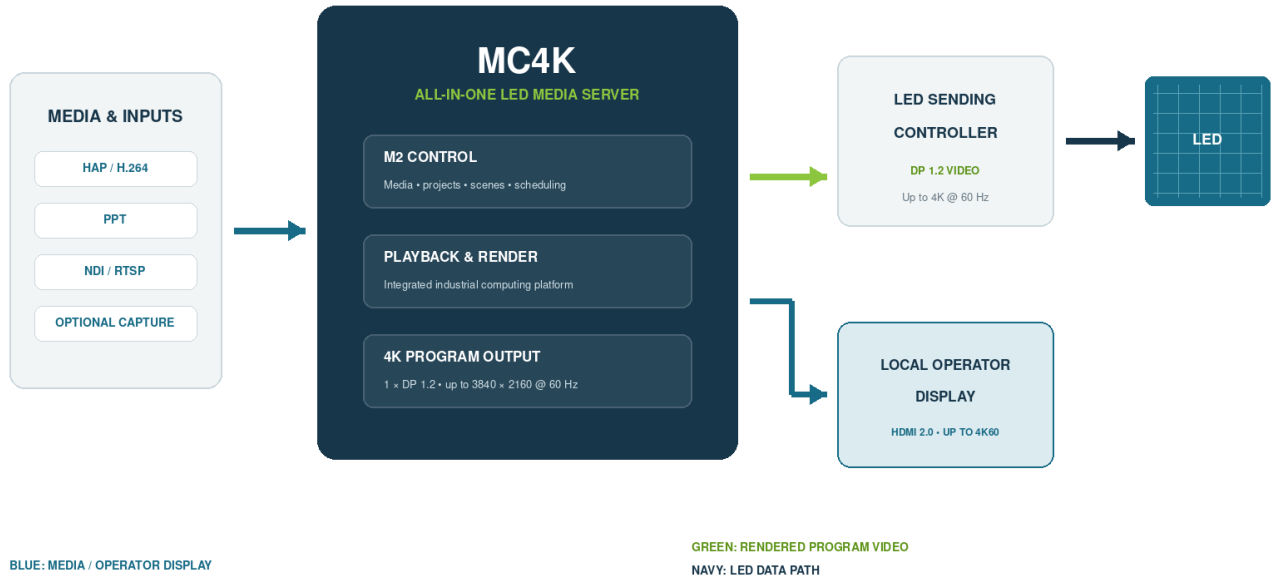
## SECTION 02

# INTEGRATED SYSTEM ARCHITECTURE

Media control and rendering are performed inside MC4K; LED sending controllers remain separate downstream devices.

## INTEGRATED CONTROL-AND-DISPLAY ARCHITECTURE

MC4K combines media control, playback rendering and one defined 4K program-output path in a 1U server.



## COMPONENT RESPONSIBILITIES

| COMPONENT                               | PRIMARY RESPONSIBILITY                                                                                               |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>MC4K All-in-One LED Media Server</b> | Manages media and projects, performs playback/rendering and provides one defined DP 1.2 4K program-output path.      |
| <b>Local operator monitor</b>           | The supplied workflow shows a separate operator display; the rear HDMI 2.0 output is specified up to 4K @ 60 Hz.     |
| <b>LED Sending Controller</b>           | Accepts the DP 1.2 rendered program output, converts it into LED display data and drives the receiving-card network. |
| <b>LED display system</b>               | Receiving cards, modules and cabinets reproduce the mapped image within the configured LED-control capacity.         |

**SIGNAL-PATH BOUNDARY** DisplayPort 1.2 is the defined LED program-output path. HDMI 2.0 is a separate rear video output used for the reference local-display path. Neither connector outputs LED data directly; an LED Sending Controller is still required.

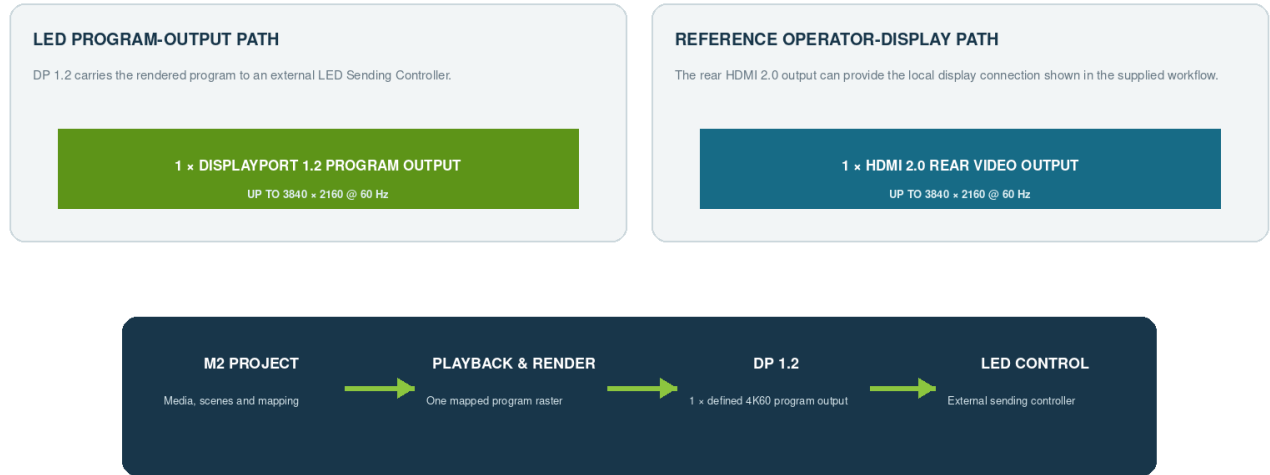
## SECTION 03

# 4K OUTPUT & DISPLAY WORKFLOWS

Separate the defined LED program-output path from the rear video connection used for the operator display workflow.

## 4K PROGRAM-OUTPUT AND OPERATOR-DISPLAY WORKFLOW

The source defines one DP 1.2 program output and a separate HDMI 2.0 rear video connection.



Pixel mapping and LED load remain subject to the output raster and downstream LED-control capacity.

## SUPPORTED OUTPUT MODES

- One LED program-output path over DisplayPort 1.2 at up to 3840 × 2160 @ 60 Hz.
- One composite or irregular LED installation whose regions are sliced and mapped inside a single output raster.
- Different LED display projects can be batch-managed and controlled independently; simultaneous physical delivery remains limited to the one defined program-output channel.
- Irregular, angled or composite LED surfaces that require custom splitting, mapping and geometric correction.
- Native-resolution 1:1 pixel mapping within the output format and downstream LED Sending Controller capacity.

**OUTPUT-ROLE CLARIFICATION** The rear panel has one HDMI 2.0 connector and one DisplayPort 1.2 connector, both specified up to 4K @ 60 Hz. The product feature list defines one DP 1.2 LED program-output channel; the supplied workflow separately shows an operator monitor.

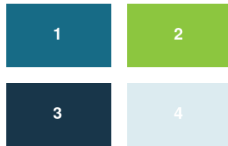
## SECTION 04

# CREATIVE MAPPING & CAVE WORKFLOWS

Prepare content for irregular, angled and immersive LED surfaces without constraining the project to a conventional rectangular canvas.

### CREATIVE MAPPING AND GEOMETRY TOOLSET

#### SLICE & REASSEMBLE



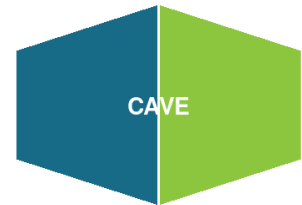
Divide one source into independent regions and rebuild the final composition.

#### WARP & ROTATE



Apply geometric transformation and rotation for angled or irregular surfaces.

#### CAVE PERSPECTIVE



Convert conventional video into a mapped CAVE perspective workflow.

## MAPPING FUNCTIONS

| FUNCTION                                  | APPLICATION                                                                                       |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Arbitrary splitting and reassembly</b> | Divides source imagery into independent regions and reconstructs the final display composition.   |
| <b>Geometric warping</b>                  | Transforms content geometry to fit angled, skewed or non-planar display surfaces.                 |
| <b>Image rotation</b>                     | Rotates mapped regions to match the physical orientation of display sections.                     |
| <b>Saved slicing projects</b>             | Stores multiple mapping projects and switches them through the control system.                    |
| <b>CAVE perspective conversion</b>        | Converts conventional video into a perspective-mapped workflow for compatible CAVE installations. |
| <b>HDR playback</b>                       | Supports playback of HDR video content within the configured system workflow.                     |

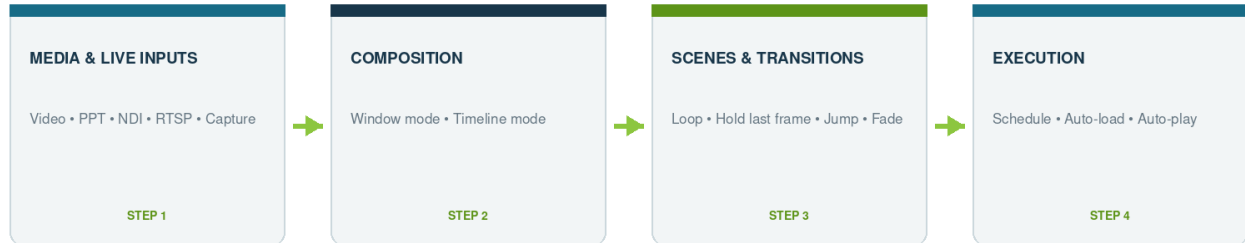
**PROJECT VALIDATION** Final results depend on the complete render, output and LED mapping chain. Verify every surface from the intended audience viewpoint before acceptance.

## SECTION 05

# PLAYBACK, SCENES & SCHEDULING

Build programs in window or timeline mode, control scene behavior and automate playback for attended or unattended operation.

## PROGRAM CREATION AND PLAYBACK CONTROL



**PROGRAM SCENES** No fixed scene-count limit is stated in the source specification.

**POWERPOINT** Presentation playback supports page control from a compatible presentation remote.

## PLAYBACK CONTROL

| FUNCTION                 | BEHAVIOR                                                                             |
|--------------------------|--------------------------------------------------------------------------------------|
| <b>Window mode</b>       | Builds a composition from independently placed content windows.                      |
| <b>Timeline mode</b>     | Arranges media and scene events along a time-based program sequence.                 |
| <b>Scene count</b>       | No fixed program-scene limit is stated in the source specification.                  |
| <b>Playback actions</b>  | Loop playback, hold the last frame and jump to another program.                      |
| <b>Scene transitions</b> | Fade-in and fade-out transitions between programs.                                   |
| <b>Scheduled tasks</b>   | Starts selected programs according to a configured schedule.                         |
| <b>PowerPoint</b>        | Plays PowerPoint presentations and supports page control from a presentation remote. |

## SECTION 06

# MEDIA FORMATS & LIVE INPUTS

Combine high-performance media codecs, network streams, presentations and optional capture-card signals in one program environment.

### MEDIA, STREAMING AND CAPTURE INPUTS

#### HAP FAMILY

Hap • Hap Q • Hap Alpha

#### H.264

MOV • AVI • MP4 containers

#### NETWORK VIDEO

NDI and RTSP inputs

#### CAPTURE CARDS

Optional HDMI / SDI capture

#### PRESENTATIONS

PowerPoint playback and page control

#### HDR VIDEO

HDR media playback workflow

Format support may also depend on codec profile, media characteristics and the installed capture hardware.

## FORMAT AND INPUT REFERENCE

| CATEGORY                | SUPPORTED ITEMS / CONDITION                                                                  |
|-------------------------|----------------------------------------------------------------------------------------------|
| High-performance codecs | Hap, Hap Q and Hap Alpha                                                                     |
| General video codec     | H.264                                                                                        |
| Video containers        | MOV, AVI and MP4; additional mainstream formats may be supported by the software environment |
| Network video           | NDI and RTSP inputs                                                                          |
| Physical capture        | Capture-card inputs; HDMI and SDI capture cards are optional                                 |
| Presentations           | PowerPoint playback with compatible page-control remote                                      |
| Dynamic range           | HDR video playback                                                                           |

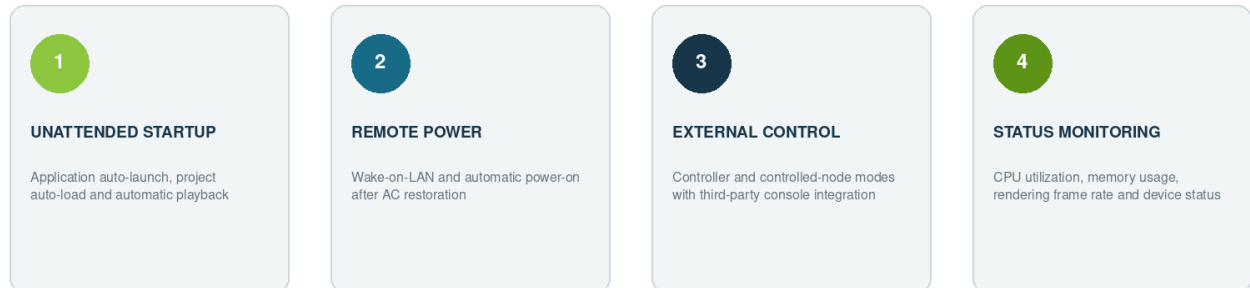
**CAPTURE HARDWARE** HDMI and SDI inputs require the corresponding optional capture card. They are not built into the standard rear I/O panel shown in this specification.

## SECTION 07

# AUTOMATION, CONTROL & MONITORING

Support unattended startup, remote power functions, third-party console integration and real-time health monitoring.

## AUTOMATION, EXTERNAL CONTROL AND MONITORING



**OPERATOR PROTECTION** The software interface can be locked at any time to reduce accidental operation.  
Scheduled operation still requires correctly configured power, networking, video outputs and LED controllers.

## OPERATIONAL FUNCTIONS

| FUNCTION                                  | CAPABILITY                                                                                        |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Automatic application startup</b>      | Launches the media control software automatically after system startup.                           |
| <b>Project auto-load / auto-play</b>      | Loads the configured project and begins playback without manual operator action.                  |
| <b>Controller / controlled-node modes</b> | Supports coordinated server control and integration with compatible third-party control consoles. |
| <b>Wake-on-LAN</b>                        | Allows the server to be awakened through a configured network connection.                         |
| <b>AC-recovery auto-start</b>             | Supports automatic startup after AC power is restored when the system is configured accordingly.  |
| <b>System monitoring</b>                  | Monitors server status, CPU utilization, memory usage and rendering frame rate.                   |
| <b>Interface lock</b>                     | Locks the software interface to reduce accidental operation.                                      |



SECTION 08

## FRONT PANEL

Front USB access and local power control on the compact 1U rackmount chassis.



*Front-panel interface map. Product image is for reference; delivered appearance may vary.*

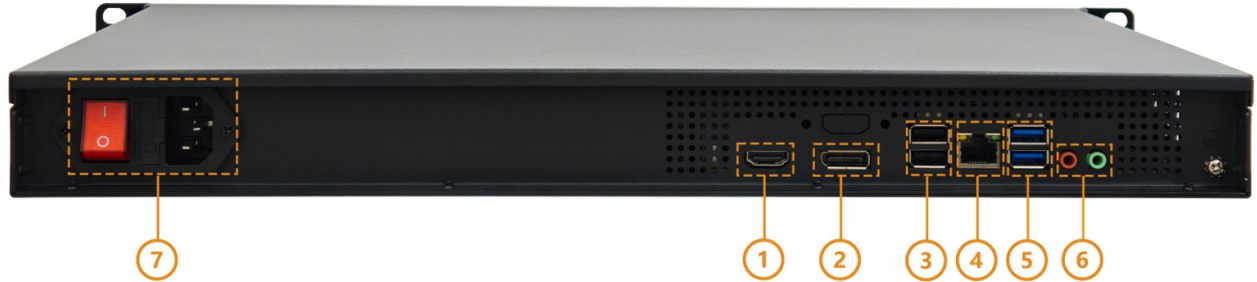
| NO. | ITEM         | FUNCTION                                                                      |
|-----|--------------|-------------------------------------------------------------------------------|
| 1   | 2 × USB 2.0  | Front-panel Type-A connections for supported peripherals and storage devices. |
| 2   | Power button | Turns the server on or initiates the configured power action.                 |

**INTERFACE NOTE** The supplied interface table identifies the two front ports as USB 2.0. Confirm the delivered USB generation if front-port throughput is project-critical.

## SECTION 09

# REAR PANEL

Program and display video outputs, USB, network, analog audio and universal AC power connections.



Rear-panel interface map. Product image is for reference; delivered appearance may vary.

| NO. | INTERFACE              | FUNCTION                                                                      |
|-----|------------------------|-------------------------------------------------------------------------------|
| 1   | HDMI 2.0 output        | One rear video output, specified up to 3840 × 2160 @ 60 Hz.                   |
| 2   | DisplayPort 1.2 output | Defined LED program-output path, specified up to 3840 × 2160 @ 60 Hz.         |
| 3   | 2 × USB 2.0            | Rear Type-A connections for supported peripherals.                            |
| 4   | LAN                    | One Ethernet connection for control and communications; supports Wake-on-LAN. |
| 5   | 2 × USB 3.0            | High-speed rear Type-A connections for supported peripherals and storage.     |
| 6   | Analog audio           | Stereo audio input and output connections.                                    |
| 7   | AC input               | AC 100–240 V, 50/60 Hz.                                                       |

## SECTION 10

# INTERFACE SPECIFICATIONS

Operational limits and intended use for the video-output, operator, network, audio and power connections.

| INTERFACE       | QTY.    | SPECIFICATION / USE                                                              |
|-----------------|---------|----------------------------------------------------------------------------------|
| DisplayPort 1.2 | 1       | Defined LED program-output path; maximum stated format 3840 × 2160 @ 60 Hz.      |
| HDMI 2.0        | 1       | Separate rear video output; maximum stated format 3840 × 2160 @ 60 Hz.           |
| Front USB       | 2       | USB 2.0 Type-A interfaces, as identified in the supplied interface table.        |
| Rear USB 2.0    | 2       | Rear Type-A interfaces for supported peripherals.                                |
| Rear USB 3.0    | 2       | High-speed rear Type-A interfaces for supported peripherals and storage.         |
| LAN             | 1       | Ethernet connection for control and system communications; supports Wake-on-LAN. |
| Analog audio    | 2 jacks | Stereo audio input and output connections.                                       |
| AC power input  | 1       | AC 100–240 V, 50/60 Hz.                                                          |

## OUTPUT-PATH CLARIFICATION

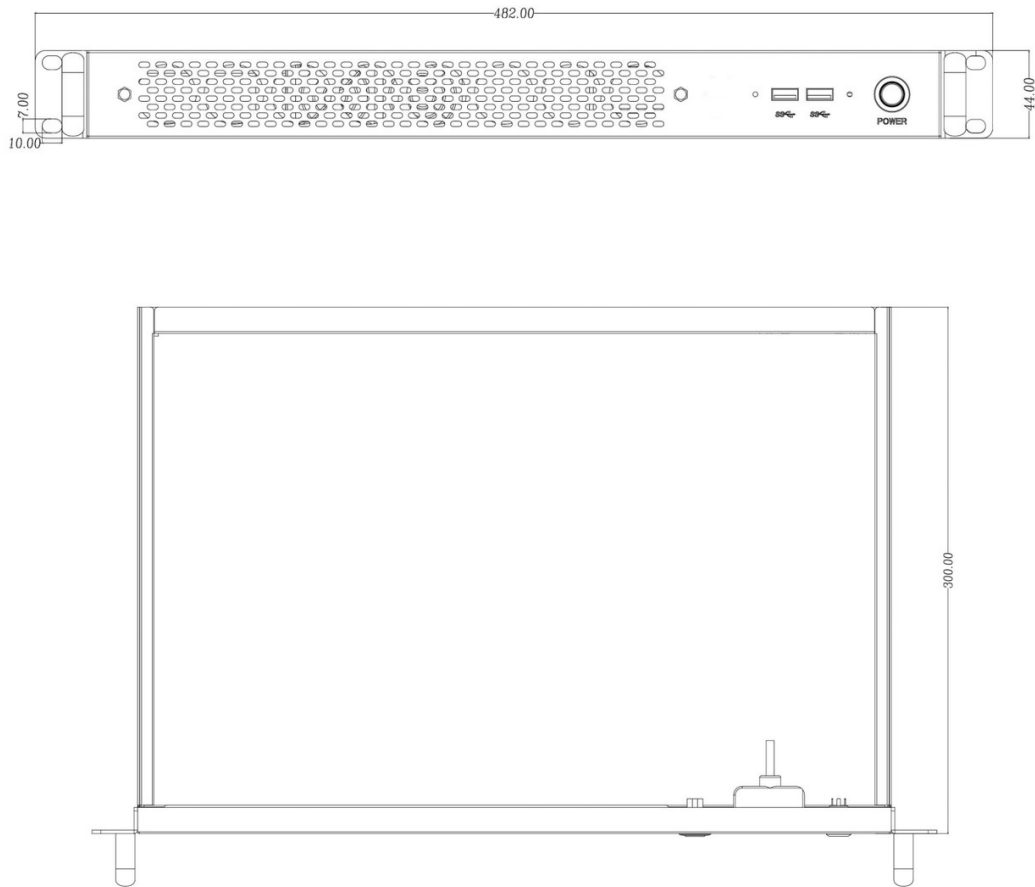
- The product feature list defines one DisplayPort 1.2 program-output channel for the rendered LED video path.
- HDMI 2.0 is a separate rear video output. The supplied application workflow shows a local operator display in addition to the LED program path.
- Both rear video connectors are specified up to 3840 × 2160 @ 60 Hz, but the source does not define two simultaneous LED program-output channels.
- Optional HDMI/SDI capture interfaces are installed as capture cards and are separate from the standard motherboard I/O listed above.
- The LAN port speed is not stated in the source specification; confirm project-specific network-performance requirements.

**DESIGN RULE** Size each video-output format, adapter/cable path, LED sending controller and downstream receiving-card load as one complete signal chain.

## SECTION 11

# MECHANICAL DIMENSIONS

Compact 1U rackmount form factor for control-room and equipment-rack integration.



Mechanical dimensions. Units: mm. Drawing tolerance:  $\pm 0.3$  mm.

| PARAMETER               | SPECIFICATION                       |
|-------------------------|-------------------------------------|
| Overall dimensions      | 482 mm (W) × 300 mm (D) × 44 mm (H) |
| Rack height             | 1U                                  |
| Overall rackmount width | 482 mm                              |
| Chassis depth           | 300 mm                              |
| Net weight              | 3.95 kg                             |
| Drawing tolerance       | $\pm 0.3$ mm                        |

**RACK INTEGRATION** Allow clearance for front and rear airflow, AC power, DisplayPort/HDMI cabling, network and audio connections, and service access.

## SECTION 12

# HARDWARE & SYSTEM SPECIFICATIONS

Integrated media control, playback, rendering, video output and M2 software configuration.

| CATEGORY          | PARAMETER                  | SPECIFICATION                            |
|-------------------|----------------------------|------------------------------------------|
| Product           | Product name               | All-in-One LED Media Server              |
| Product           | Model                      | MC4K                                     |
| Program output    | Configured channel         | 1 × DisplayPort 1.2                      |
| Program output    | Maximum format             | 3840 × 2160 @ 60 Hz                      |
| Rear video output | HDMI connection            | 1 × HDMI 2.0, up to 3840 × 2160 @ 60 Hz  |
| Platform          | Motherboard                | Integrated custom industrial motherboard |
| Processor         | CPU                        | AMD processor, 6 cores / 12 threads      |
| Memory            | System memory              | 16 GB DDR5                               |
| Storage           | Internal storage           | 256 GB high-speed M.2 solid-state drive  |
| Optional capture  | Input hardware             | HDMI or SDI capture card                 |
| Power             | Power supply / rated power | 150 W                                    |
| Chassis           | Form factor                | 1U rackmount chassis                     |
| Software          | Media platform             | M2 media control and playback software   |

## CONFIGURATION NOTES

- The source defines one DisplayPort 1.2 LED program-output channel and lists HDMI 2.0 as a separate rear video output.
- LED load capacity depends on the selected output format, LED sending controller and downstream receiving-card configuration.
- Media-decoding performance depends on codec, resolution, frame rate, bit rate, project complexity and concurrent tasks.
- Confirm optional capture-card type, quantity and driver compatibility when HDMI or SDI input is required.

**SPECIFICATION BOUNDARY** The source states one DP 1.2 LED program-output channel at up to 4K @ 60 Hz; it does not state an aggregate LED pixel-load figure.

## SECTION 13

# GENERAL SPECIFICATIONS

Electrical, environmental, physical, packaging and standard-accessory data.

| CATEGORY              | PARAMETER                 | SPECIFICATION                                    |
|-----------------------|---------------------------|--------------------------------------------------|
| Electrical            | Input voltage / frequency | AC 100–240 V, 50/60 Hz                           |
| Electrical            | Rated power               | 150 W                                            |
| Operating environment | Temperature               | 0°C to 40°C                                      |
| Operating environment | Humidity                  | 0% to 80% RH, non-condensing                     |
| Storage environment   | Temperature               | –10°C to 60°C                                    |
| Storage environment   | Humidity                  | 0% to 95% RH, non-condensing                     |
| Mechanical            | Dimensions                | 482 × 300 × 44 mm (W × D × H)                    |
| Mechanical            | Net weight                | 3.95 kg                                          |
| Packaging             | Gross weight              | 5.5 kg including accessories and packaging       |
| Packaging             | Outer carton dimensions   | 540 × 440 × 130 mm                               |
| Standard accessories  | Included items            | 1 × AC power cord; 1 × certificate of conformity |

**POWER NOTE** Actual power consumption may vary with operating conditions, installed hardware, project load, environment and system settings.

## DEPLOYMENT CHECKPOINTS

- Provide a correctly grounded AC circuit within the specified input range.
- Confirm rack depth, rail/support method, airflow direction and rear-cable clearance before installation.
- Confirm the DisplayPort program-output cable path, HDMI display path and input formats supported by the LED Sending Controller.
- Record the final M2 project, output assignment, LED mapping, slicing configuration and startup behavior during handover.

## SECTION 14

# INSTALLATION, SAFETY & DOCUMENT CONTROL

Electrical safety, environmental handling and revision traceability for the MC4K specification.

## INSTALLATION & SAFETY

- High voltage: the product operates from AC 100–240 V. Installation and servicing must be performed by qualified personnel.
- Disconnect AC power before opening the chassis, changing internal hardware or performing service work.
- Prevent liquids, metal fragments and other conductive objects from entering the enclosure.
- Operate the server in a dry, clean and well-ventilated environment within the stated temperature and humidity limits.
- Do not obstruct the front or rear ventilation openings; maintain sufficient clearance for heat removal.
- Connect the protective earth and use a properly grounded rack and AC distribution system.
- Secure data and project backups before software servicing or hardware replacement.
- Verify the AC-recovery auto-start and Wake-on-LAN configuration before enabling unattended operation.

**ELECTRICAL HAZARD** This equipment contains hazardous AC voltages. Do not remove the chassis cover while power is connected.

## DOCUMENT CONTROL

| DOCUMENT VERSION | RELEASE DATE | CHANGE DESCRIPTION                            |
|------------------|--------------|-----------------------------------------------|
| V4.0             | 2025-07-15   | Initial release of the updated specification. |
| V4.1             | 2026-07-08   | Interface specifications updated.             |

**SPECIFICATION BASIS** This English edition is based on the supplied Chinese MC4K Multimedia Server Specification V4.1 and preserves the stated hardware, interface, mechanical and environmental limits.

**NOTICE** Specifications, installed components, software functions and product appearance may change with revision. Confirm critical project requirements before deployment.

**After-Sales Service Hotline: 400-881-3531**

**Website: [www.mooncell.com.cn](http://www.mooncell.com.cn)**

Professional LED Display Control Systems

Specifications and product appearance are subject to change without notice.

