



Macnica Utility

User Manual



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1. Introduction

The Macnica MEP-100 Utility is a macOS application designed to configure and monitor the Macnica MEP-100 or MEP-100F video processing cards. The utility provides comprehensive control over firmware management, network configuration, PTP synchronization, and input/output stream settings.

1.1. System Requirements

- macOS 15 or later (compatible with Apple Silicon processors only)
- Installed MEP Library and M2S Library drivers
- Macnica MEP-100 or MEP-100F card installed in your system



2. Background Process (Daemon)

The Macnica Utility includes a background process (also called a “daemon”) that runs independently of the main application.

2.1. What is the Background Process?

The Background Process is a system service that:

- **Runs Independently:** Continues running even when you close the Macnica Utility application
- **Starts Automatically:** Launches at system boot (when properly installed)
- **Configure the Cards settings:** Communicates directly with the MEP-100 cards to update firmware, manage license and apply settings such as Network Settings, PTP,...
- **Communicates with other processes:**
 - In Macnica Utility, you can create Input and Output Streams. These are not saved on the card itself. They are saved in a configuration file that can be saved.
 - When other processes (applications that want to use the Macnica card) start, they connect to the daemon to get the available streams, and can start using them. Once they start using them, they communicate in turn to the Daemon to let it know that a stream is used.

2.2. Checking Daemon Status

To check if the Background Process is installed and running:

1. Open the **Background Process** menu in the menu bar
2. Look at the Status indicator:
 - **Connected (version number)** with green dot: Daemon is running properly
 - **Disconnected** with red dot: Daemon is not running or not installed



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2.3. Installing the Daemon

Important - Beta Version Notice: In the current beta version, daemon installation must be done manually through the menu. The final release version will handle daemon installation and updates automatically.

To Install:

1. Open the **Background Process** menu in the menu bar
2. Select **Install Daemon**
3. You will be prompted for administrator credentials (the daemon requires system-level privileges)
4. Wait for installation to complete
5. Check the status indicator
6. it should change to “Connected” with a green dot
7. The daemon will now start automatically at system boot

What Gets Installed:

- The daemon executable is installed to a system location
- A launch daemon configuration is created to auto-start the service
- The daemon begins running immediately after installation

2.4. Uninstalling the Daemon

To Uninstall:

1. Open the **Background Process** menu in the menu bar
2. Select **Uninstall Daemon**
3. You will be prompted for administrator credentials
4. The daemon stops running and is removed from the system
5. The status indicator will change to “Disconnected” with a red dot

When to Uninstall:

- Before upgrading to a new version of the Macnica Utility (see below)
- When switching to GUI-only operation
- For troubleshooting daemon-related issues
- When removing the Macnica Utility from your system



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2.5. Daemon Version Compatibility

Critical: The daemon version must match the Macnica Utility application version.

-  **Compatible:** Application v1.2.3 with Daemon v1.2.3
-  **Incompatible:** Application v1.2.3 with Daemon v1.2.2
-  **Incompatible:** Application v1.3.0 with Daemon v1.2.3

Version Mismatch Symptoms:

- Configuration changes don't apply to cards
- Application shows "Disconnected" status
- Stream processing errors or unexpected behavior
- Settings revert after application restart

Solutions:

- Make sure that the "Macnica Utility" application is running from the "Applications" folder.
- Uninstall and reinstall the daemon when updating the application.

2.6. Troubleshooting Daemon Issues

The first thing to check is to make sure that the "Macnica Utility" application is running from the "Applications" folder. Indeed, the Daemon is in the application itself and macOS will only start it if it is located in the "Applications" folder.

2.6.1. Daemon Won't Install

Symptoms:

Install command fails or daemon shows as "Disconnected" after install

Solutions:

- Make sure that the "Macnica Utility" application is running from the "Applications" folder.
- Ensure you provide administrator credentials when prompted
- Check that no other version is already installed (uninstall first)
- Verify disk permissions allow system-level installations
- Check Logs view for specific error messages
- Restart your Mac and try installing again



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2.6.2. Daemon Shows Wrong Version

Symptoms:

Status shows an old version number or version doesn't match application

Solutions:

- Make sure that the “Macnica Utility” application is running from the “Applications” folder.
- Uninstall the daemon completely
- Verify it shows as “Disconnected”
- Reinstall the daemon
- Confirm the version number matches the application version

2.6.3. Configuration Not Applying

Symptoms:

Save configuration succeeds but cards don't respond

Solutions:

- Make sure that the “Macnica Utility” application is running from the “Applications” folder.
- Verify daemon status is “Connected” (not “Disconnected”)
- Check that card is detected in Overview view
- Try restarting the daemon (uninstall, then install)
- Check Logs view for communication errors
- Verify configuration file permissions are correct

2.6.4. Daemon Stops After System Update

Symptoms:

Daemon was working but stopped after macOS update

Solutions:

- Make sure that the “Macnica Utility” application is running from the “Applications” folder.
- macOS security updates may require daemon reinstallation
- Uninstall and reinstall the daemon
- Grant any new security permissions if prompted
- Verify daemon starts and shows “Connected”

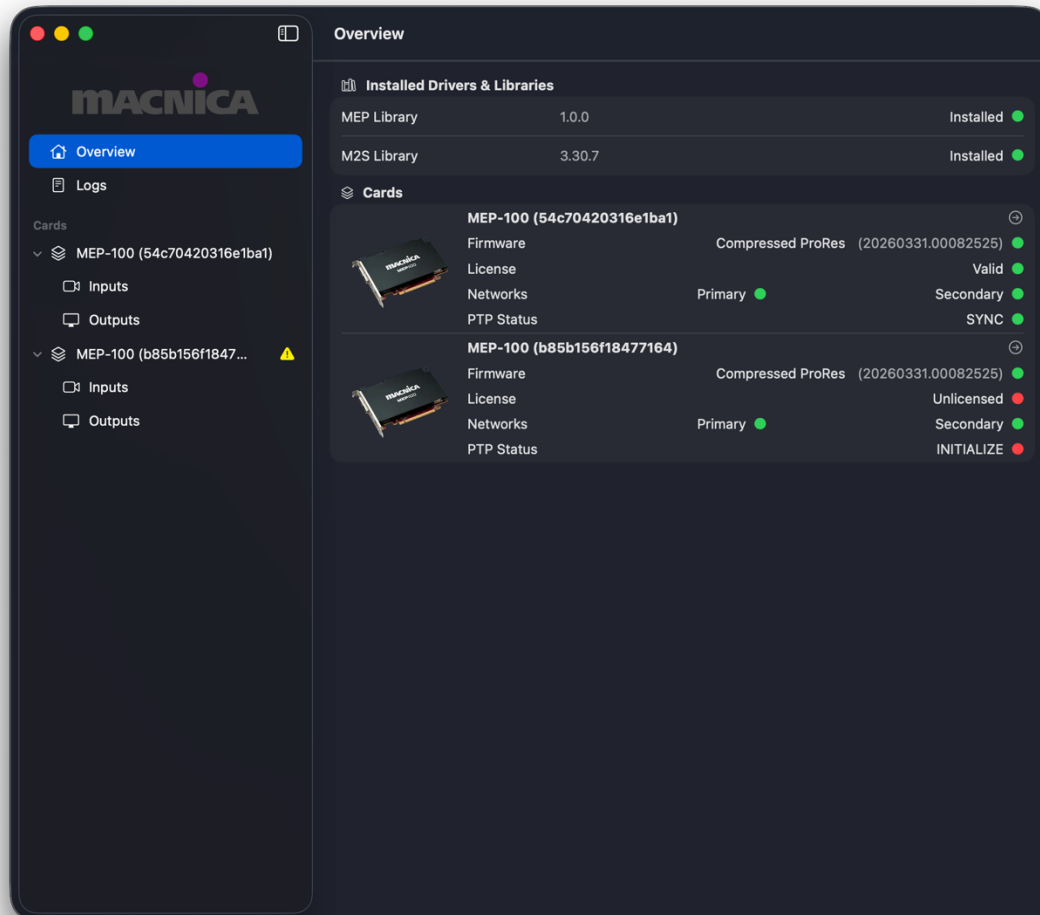


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3. User Interface

3.1. Overview View

The Overview View provides a high-level summary of your system's status.



3.1.1. Installed Drivers & Libraries

This section displays the installed driver versions:

- **MEP Library:** The core driver library for the Macnica card
- **M2S Library:** The Media to Stream library for video processing

A green indicator shows that each library is properly installed. If either shows “Not installed” (version 0.0.0), you need to install the appropriate drivers.



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3.1.2. Cards

This section displays all detected Macnica cards with the following information:

- **Card Name:** Shows the model (MEP-100 or MEP-100F, where “F” indicates a card with a fan) and serial number
- **Firmware:** Displays the current firmware type (Compressed ProRes, Uncompressed, or Unknown) and version number
 - Green indicator: Firmware matches the installed drivers
 - Orange indicator: Firmware update available
- **License:** Shows whether the card has a valid license
 - Green indicator: Licensed
 - Red indicator: Unlicensed
- **Networks:** Status of Primary and Secondary network interfaces
 - Green indicator: Link up
 - Red indicator: Link down
- **PTP Status:** Status of PTP for the card
 - Green indicator: PTP is SYNC
 - Orange indicator: PTP is initialized but not SYNC
 - Red indicator: PTP is initializing

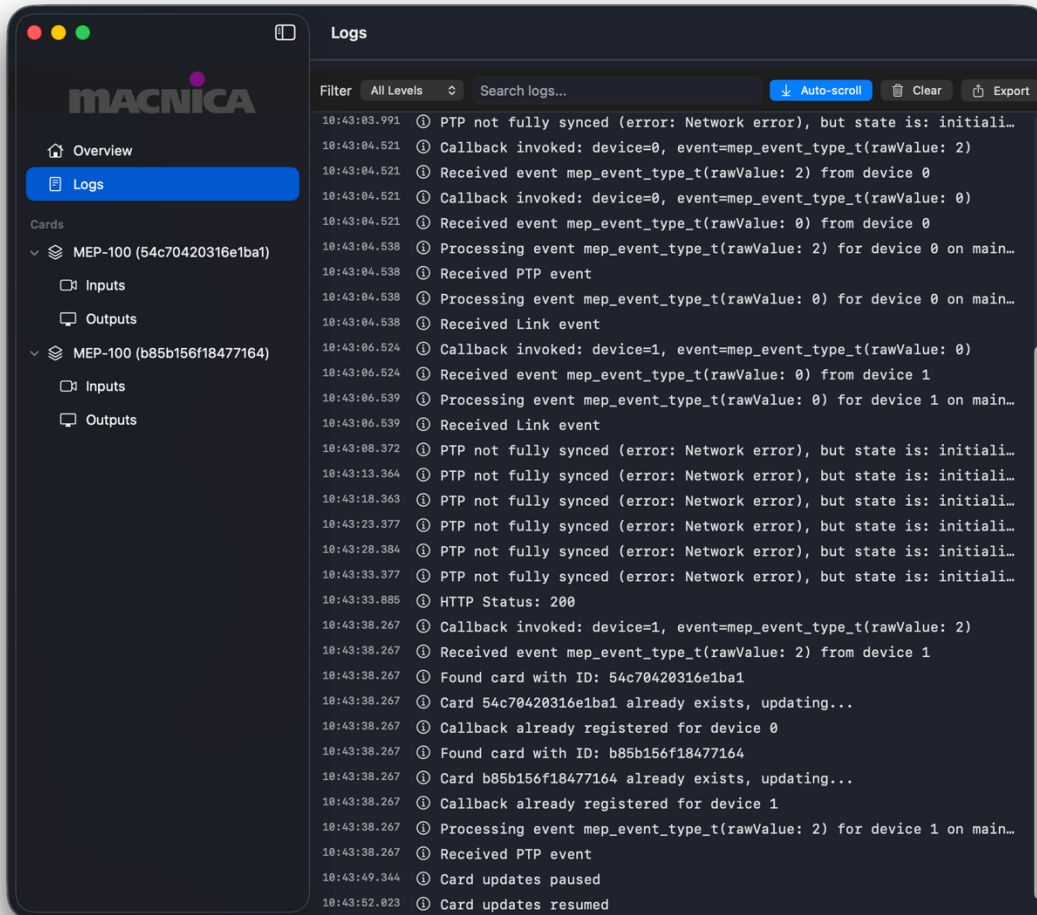
Click the arrow button next to any card to navigate to its detailed configuration page.



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3.2. Logs View

The Logs View provides real-time monitoring of system events and messages.



3.2.1. Features

- **Filter by Level:** Use the dropdown menu to filter logs by severity (Debug, Info, Warning, Error)
- **Search:** Enter text to search within log messages
- **Auto-scroll:** Toggle to automatically scroll to new log entries
- **Clear:** Remove all current log entries
- **Export:** Save log entries to a text file

3.2.2. Log Levels

- **Debug** (gray): Detailed diagnostic information



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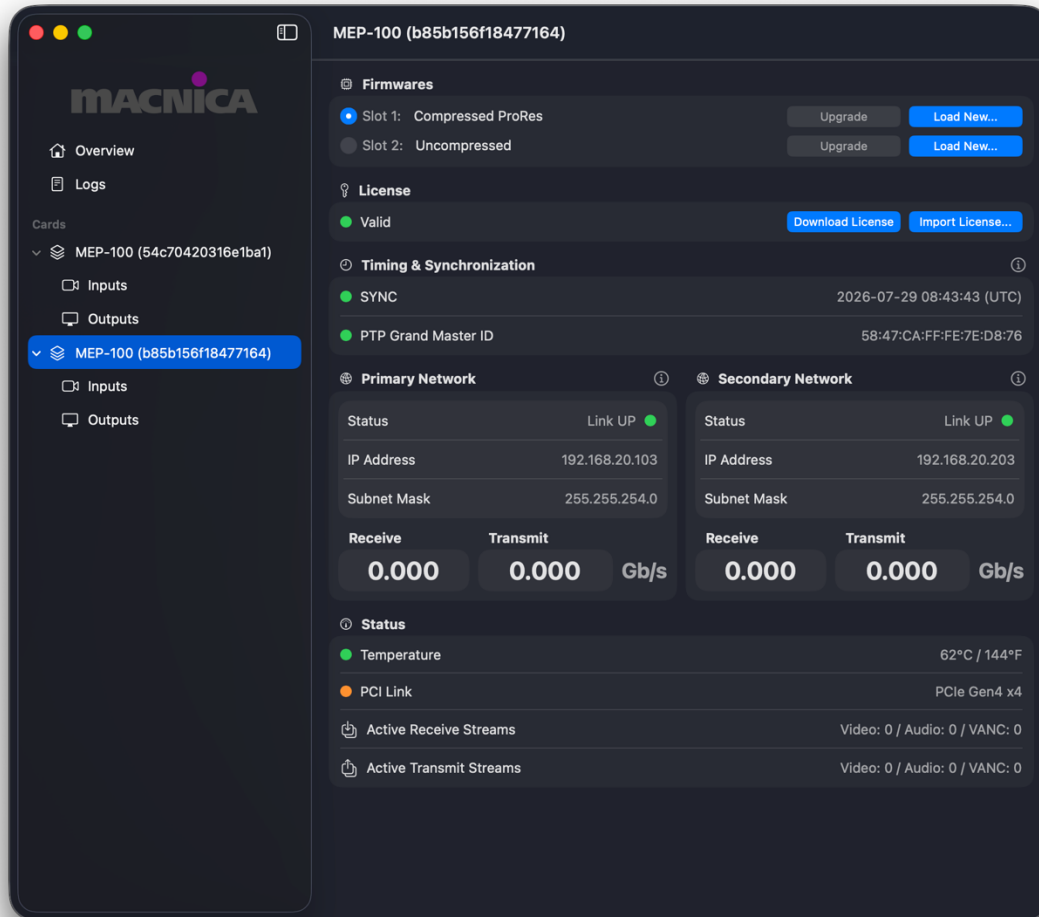
- **Info** (default): General informational messages
- **Warning** (orange): Potential issues that don't prevent operation
- **Error** (red): Critical issues requiring attention



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3.3. Card View

The Card View displays detailed status and configuration options for a specific card.



3.3.1. Firmwares

The MEP-100 card contains multiple firmware slots (typically 2 slots), you can switch from one to the other. Each slot can contain different firmware variants.

Firmware Types:

- **Compressed ProRes** (ST2110-21 - variant#3):
 - Supports Uncompressed over ST2110-20 and ProRes over 2110-22
 - Number of supported flows: Up to 8 Video / 8 Audio / 8 Ancillary (In and out, full duplex)



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- **Uncompressed** (ST2110-21 - variant#1):
 - Supports only Uncompressed over ST2110-20
 - Number of supported flows: Up to 32 Video / 32 Audio / 32 Ancillary (In and out, full duplex)
- **Unknown:** Firmware types that don't match the standard variants (Compressed or Uncompressed)

Selecting Active Firmware:

- Use the radio buttons to select which firmware slot to boot from
- Changes take effect on the next reboot

Upgrading Firmware:

The utility automatically monitors for new firmware versions in the appropriate system location (/Library/Application Support/Macnica/firmware). These firmware versions are installed by the Macnica Installer.

- **Upgrade Button:**
 - Enabled (blue) when a newer version of firmware is detected for the currently selected slot
 - The button is only available for Compressed ProRes (variant#3) or Uncompressed (variant#1) firmware
 - Firmware files should be automatically copied by the installer to the appropriate system location (/Library/Application Support/Macnica/firmware)
 - The upgrade will only be offered if the new firmware has a different version number than what's currently installed
- **Load New... Button:**
 - Always enabled for all slots
 - Use this button to manually load firmware files from any location
 - Essential when:
 - You want to load firmware that is neither Compressed (variant#3) nor Uncompressed (variant#1)
 - Your current firmware is an unknown variant that can't be auto-upgraded
 - You have custom or beta firmware files to install

Important: Firmware updates require a system reboot to take effect. Any active streams will be interrupted during the update process.



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3.3.2. License

The license section shows whether your card is authorized. A license is required for the card to operate, without a license, critical information, such as PTP will not be received.

Status Indicators:

- **Green** indicator + “**Valid**”: Card is properly licensed
- **Red** indicator + “**Unlicensed**”: No valid license found. Make sure to get one for the card to operate.

Managing Licenses:

- **Download License:**
 - Automatically connects to Macnica’s license server
 - Retrieves the license associated with your card’s serial number
 - Requires an active internet connection
 - This is the preferred method when you have internet access
- **Import License...:**
 - Opens a file browser to select a license file
 - Use this option when:
 - You have no internet connection
 - You received a license file directly from Macnica
 - The automatic download fails

Troubleshooting License Issues:

- If you have internet connection but “Download License” fails, contact Macnica support
- Ensure your card’s serial number is registered with Macnica
- License files are specific to each card and cannot be transferred between units



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3.3.3. Timing & Synchronization (PTP)

Precision Time Protocol (PTP) ensures frame-accurate synchronization across devices on your network. It is critical that the PTP status is “SYNC”.

PTP Status Indicators:

- **INITIALIZE** (Red):
 - PTP is starting up or not configured
 - The card is not yet synchronized
 - Link is down
 - **Troubleshooting:** Check that PTP is enabled on your network and a Grand Master clock is present
- **ASync** (Orange):
 - The card has detected PTP messages but is not yet synchronized
 - Normal during initial connection (should transition to SYNC within seconds)
 - **Troubleshooting:** If stuck in ASync, check network connectivity and PTP configuration. Make sure that PTP settings (Domain, Announce interval, ...) are the same for the card, as on your PTP Grand Master.
- **ADJUST** (Orange):
 - The card is adjusting its clock to match the PTP Grand Master
 - Temporary state during synchronization
 - Should transition to SYNC quickly
- **HOLDOVER** (Orange):
 - PTP Grand Master signal has been lost
 - The card is maintaining its last known timing
 - **Troubleshooting:** Check PTP Grand Master availability and network connectivity
- **SYNC** (Green):
 - The card is fully synchronized with the PTP Grand Master
 - This is the desired operational state
 - Frame-accurate timing is maintained

PTP Information:

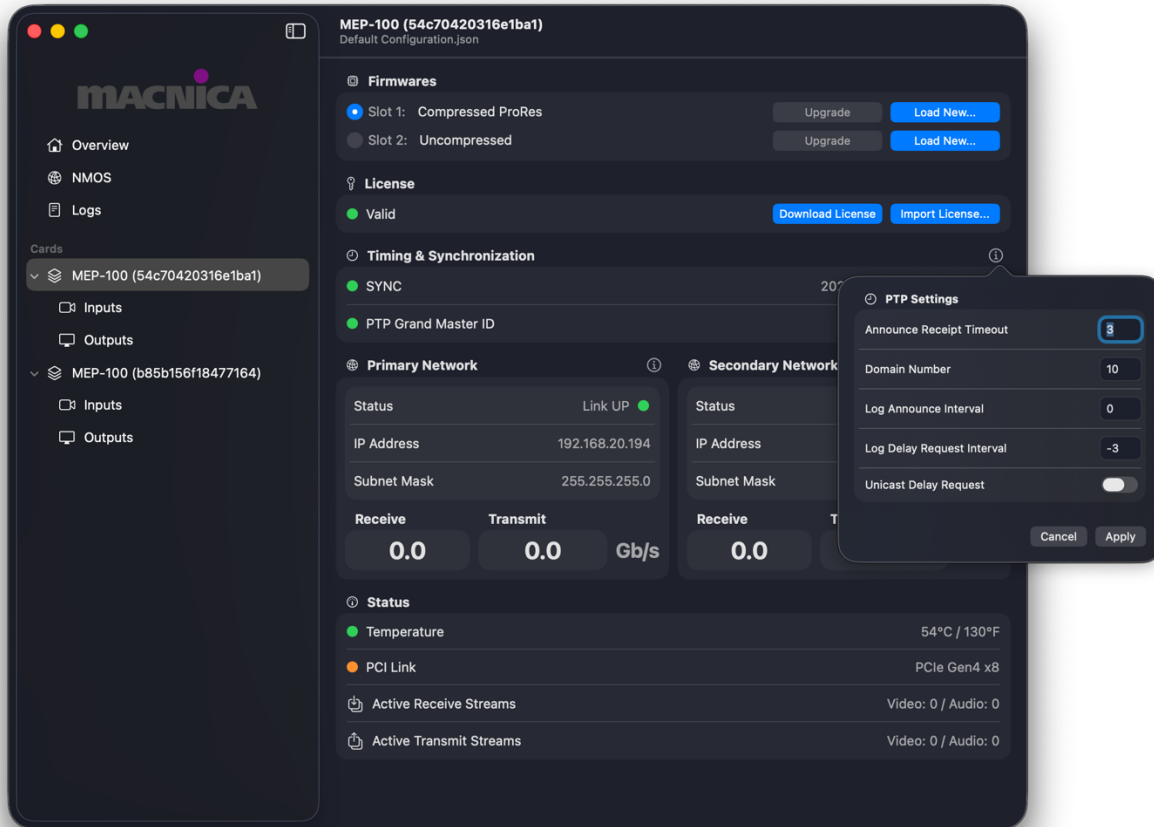
- **Current Date/Time:** Shows the current PTP time (in UTC or TAI format, it will show UTC if the PTP grand master sends the UTC Offset Valid flag)
- **PTP Grand Master ID:** Unique identifier of the clock source your card is synchronizing to



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PTP Settings

To view and modify the PTP Settings, click on the “info” button at the top right of the section:



You will be able to change the following settings:

- **Announce Receipt Timeout:** Number of announce intervals before declaring Grand Master lost
- **Domain Number:** PTP domain number (devices must share the same domain to synchronize)
- **Log Announce Interval:** How frequently announce messages are expected ($\log_2$ seconds)
- **Log Delay Request Interval:** How frequently delay requests are sent ($\log_2$ seconds)
- **Unicast Delay Request:** Enable for unicast PTP operation (vs. multicast)

Important:

- These settings must match the ones of your PTP Grand Master.



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- Make sure that there are no active streams before changing the PTP settings, as it will disrupt existing streams. You can check the number of active streams in the “Status” section.
- Changing PTP settings while streams are active requires confirmation
- PTP settings are “Global”, they will be the same for all cards, you can not use different settings for each card, if you change settings on one card, the same settings will be applied to the second card.

3.3.4. Network Status

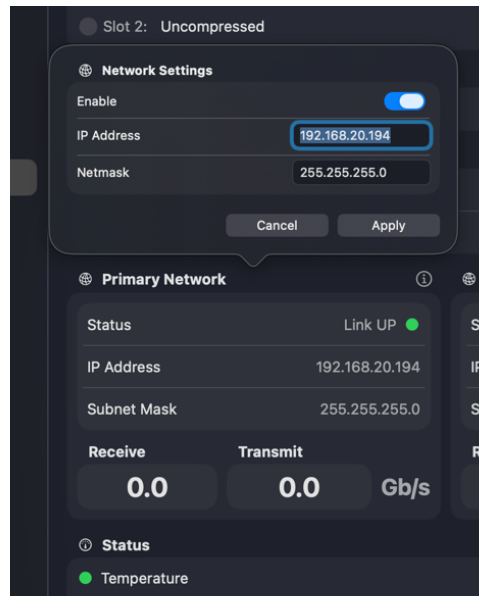
Each card has two independent network interfaces: Primary and Secondary.

Network Information:

- **Status:** Link UP (green) or Link DOWN (red)
- **IP Address:** The assigned IP address for the interface
- **Subnet Mask:** The network subnet mask
- **Receive/Transmit Speed:** Real-time bandwidth usage in Gb/s

Configuring Network Settings

To modify Network Settings, click on the “info” button:



You will be able to modify the following settings:

- **Enable:** Toggle to enable/disable the network interface
- **IP Address:** Set the static IP address
- **Netmask:** Set the subnet mask



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Important:

- Make sure that there are no active streams before changing the Network settings, as it will disrupt existing streams. You can check the number of active streams in the “Status” section.
- Changing network settings while streams are active requires confirmation
- Both interfaces can be active simultaneously for redundancy or increased bandwidth
- IP addresses must be on different subnets if both interfaces are enabled

3.3.5. Status

Temperature

Shows current card temperature in both Celsius and Fahrenheit

Color Indicators:

- **Green:** Normal operating temperature (below 80°C)
- **Yellow:** Elevated temperature (between 80°C and 90° C) - monitor for stability issues.
- **Orange:** Temperature too high (exceeds card’s warning threshold: 90°C) – card can be damaged when operating at these temperatures.
- **Red:** Card is too hot (exceeds card’s critical threshold: 98°C), it enters in “hibernation” mode and stops working.

Temperature Concerns:

- Elevated temperatures may indicate:
- Insufficient case cooling/airflow
- High ambient temperature
- Dust buildup in the system
- Heavy processing load
- If temperature remains in orange/red, consider:
- Improving case ventilation
- Reducing ambient temperature
- Cleaning dust from the system
- Reducing the number of active streams
- Upgrading to MEP-100F (fan-equipped model, fanless models can not run in a Thunderbolt chassis, and inside a Mac Pro, require to push fan speed with a utility)



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PCI Link

Displays the PCIe generation and lane configuration.

Warning! When used inside a Thunderbolt chassis, the information may not be accurate. Indeed, the important factor will be the expansion chassis that you use. If you use a Thunderbolt 5 chassis, but either use a Thunderbolt 3 cable, or use a Thunderbolt 3 computer, it will still register as PCIe Gen4 x4, while in fact its real speed is PCIe Gen3 x4.

Color Indicators:

- **Green:** Card is connected to a Gen4 x16 PCIe slot. It is working at optimal bandwidth.
- **Orange:** Card is connected to a PCIe Gen3 x16, Gen4 x8, PCIe Gen3 x8 or Gen4 x4. Reduced bandwidth - you will not be able to use all the simultaneous streams that then card is capable of.
- **Red:** Card is connected to slower PCIe. Will Significantly impact performances.

Non-Optimal PCI Link Causes:

- Card installed in a lower-speed PCIe slot,
- Card is installed in a Thunderbolt Expansion chassis. A Thunderbolt 5 chassis is recommended and will show as PCIe Gen4 x4. Bandwidth will be limited to about 1/4th of what the card can do in an internal PCIe Gen4 x16 slot.
- Slot is x8 or x4 instead of x16
- Slot is sharing lanes with other devices
- Motherboard limitations
- Poor physical connection (reseat the card)

Impact: Lower PCIe bandwidth may limit the number of simultaneous high-bitrate streams the card can handle.

Active Streams

- **Active Receive Streams:** Shows number of active incoming video and audio streams
- **Active Transmit Streams:** Shows number of active outgoing video and audio streams

These values update in real-time as you start/stop streams.



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3.4. Card Inputs / Outputs View

The Card Inputs/Outputs View configures how the card receives/sends video streams from/to the network.

3.4.1. Advanced Settings Toggle

In the inputs and outputs settings, you can enable the “Advanced Mode” to handle more complex routing scenarios. See below the differences.

Basic Mode (Toggle OFF):

- Simplified interface
- Single multicast IP address for Video, Audio, and Ancillary data
- One Audio Stream per video stream
- Appropriate for straightforward configurations

The screenshot shows the Macnica Utility interface for configuring card inputs and outputs. The left sidebar contains navigation options: Overview, Logs, and a list of cards. Two cards are listed: MEP-100 (54c70420316e1ba1) and MEP-100 (b85b156f18477164). The 'Inputs' option is selected for the second card. The main panel displays the configuration for 'MEP-100 (b85b156f18477164) Inputs'. At the top, there is a toggle for 'Advanced Settings' (currently off) and a 'Number of Video Streams' set to 8. Below this is a 'Ports & Payload' table:

Service	Payload	Primary Port	Secondary Port
Comp. Video	124	50022	50122
Uncomp. Video	96	50020	50120
Audio	97	50030	50130
Ancillary	100	50040	50140

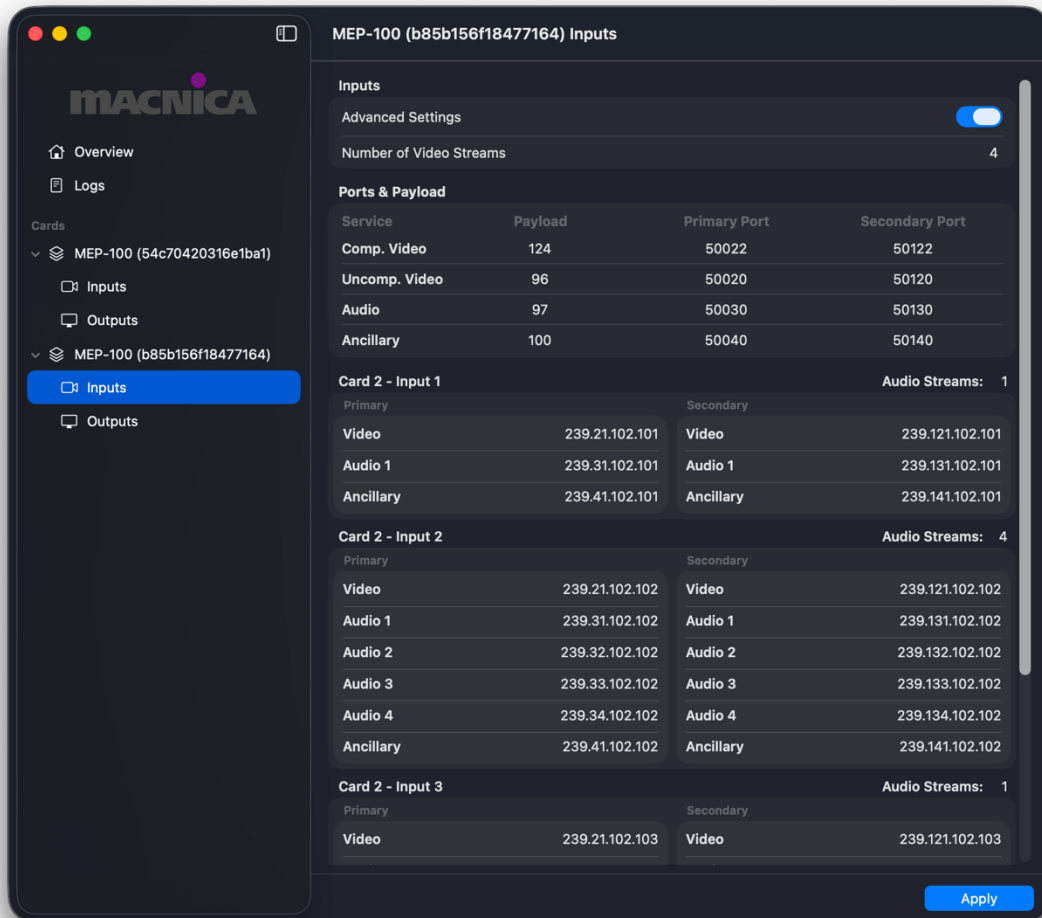
Below the table, there are six input configuration sections, each for 'Card 2 - Input' (Input 1 through Input 6). Each section has a 'Primary' and 'Secondary' configuration row. The 'Primary' row shows 'Video/Audio/ANC' and the IP address '239.21.102.X' (where X is the input number). The 'Secondary' row shows 'Video/Audio/ANC' and the IP address '239.121.102.X' (where X is the input number). An 'Apply' button is located at the bottom right of the configuration panel.



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Advanced Mode (Toggle ON):

- Separate multicast IP addresses for each stream
- Allows customization of the number of audio streams per video stream
- Required for complex routing scenarios



Warning: Changing between “Advanced” and “Basic” mode can clear some of your settings.

3.4.2. Number of Video Streams

- Sets how many video input streams to configure
- Maximum value depends on your firmware version (see [Understanding Stream Limitations](#))
- The application will refuse to enter a value above the supported value.



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3.4.3. Ports & Payload (Manual Mode Only)

Defines default RTP port numbers and payload types for all streams:

- **Comp. Video** (Defines the payload and port numbers when the application uses Compressed video in ST2110-22):
 - Payload: RTP payload type (Default Value: 124)
 - Primary Port: RTP port number for primary network
 - Secondary Port: RTP port number for secondary network (for redundancy)
- **Uncomp. Video** (Defines the payload and port numbers when the application uses Uncompressed video in ST2110-20):
 - Payload: RTP payload type (typically 96-127 for dynamic types)
 - Primary Port: RTP port number for primary network
 - Secondary Port: RTP port number for secondary network (for redundancy)
- **Audio:**
 - Same structure as video
 - Typically uses a different port range
- **Ancillary:**
 - For ancillary data (closed captions, timecode, etc.)
 - Same structure as video/audio

Note:

Individual stream configurations below will inherit these values by default.

- **Video:** When the application that generate the stream will start a compressed stream (in ProRes), it will pick the values in the “Comp. Video” line, while if it starts an uncompressed stream, it will use the values in the “Uncomp. Video” line.
- **Audio:** All streams on that card will use the same payload and port numbers
- **Ancillary:** All streams on that card will use the same payload and port numbers

3.4.4. Stream Configuration

Each input/output stream is displayed as a card with Primary and Secondary network configurations.



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Stream Name

- Click the name field to customize the stream identifier
- Default names are “Input 1”, “Input 2”, or “Output 1”, “Output 2”,...etc.

Audio Streams Counter

- Click the number to set the number of audio streams for this video stream

Basic Mode Layout:

- One IP address field per network (Primary/Secondary)
- This IP address is used for Video, Audio, and Ancillary data
- Simplest configuration option

Advanced Mode Layout:

- **Video:** Separate IP address for video stream
- **Audio 1, Audio 2, ...:** Individual IP addresses for each audio stream
 - Number of audio fields is controlled by “Audio Streams” counter
 - Each video stream can have 0-N audio streams associated
- **Ancillary:** Separate IP address for ancillary data

Primary vs. Secondary Networks:

- Primary: Main network path for stream delivery
- Secondary: Redundant network path (backup)
- Both can be active simultaneously with identical content for failover protection
- Configure different IP addresses on different subnets

3.4.5. Important Notes

- The total number of audio channels across all video streams is limited (see [Understanding Stream Limitations](#))
- Always click “Apply” at the bottom of the window to save changes
- Changes take effect immediately and may briefly interrupt active streams
- Multicast IP addresses should be in the range 224.0.0.0 to 239.255.255.255



4. Understanding Stream Limitations

The MEP-100 card has specific limitations on the number of simultaneous streams it can process. These limits vary based on firmware version and configuration.

4.1. Maximum Stream Counts

Typical Limits (varies by firmware):

- Maximum video input streams: 8-32 (depends on firmware and resolution)
- Maximum video output streams: 8-32 (depends on firmware and resolution)
- Maximum audio streams: 8-32 per direction (input or output)

4.2. Audio Stream Considerations

Each video stream can have multiple audio streams associated with it. The key limitation is the **total number of audio channels** across all video streams.

Example Scenarios:

Assuming a limit of 16 audio streams for inputs:

-  **Valid:** 8 video streams × 2 audio streams each = 16 audio streams total
-  **Valid:** 4 video streams × 4 audio streams each = 16 audio streams total
-  **Valid:** 16 video streams × 1 audio stream each = 16 audio streams total
-  **Invalid:** 8 video streams × 3 audio streams each = 24 audio streams total (exceeds limit)

4.3. Impact of Multi-Audio Configurations

Using multiple audio streams per video stream reduces the number of video streams you can process:

- If you need 4 audio streams per video (e.g., for 5.1 surround + stereo), you can only use 4 video streams (4 video × 4 audio = 16 audio channels)
- If you only need 1 audio stream per video (stereo pair), you can use up to 16 video streams (16 video × 1 audio = 16 audio channels)



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4.4. Firmware-Specific Variations

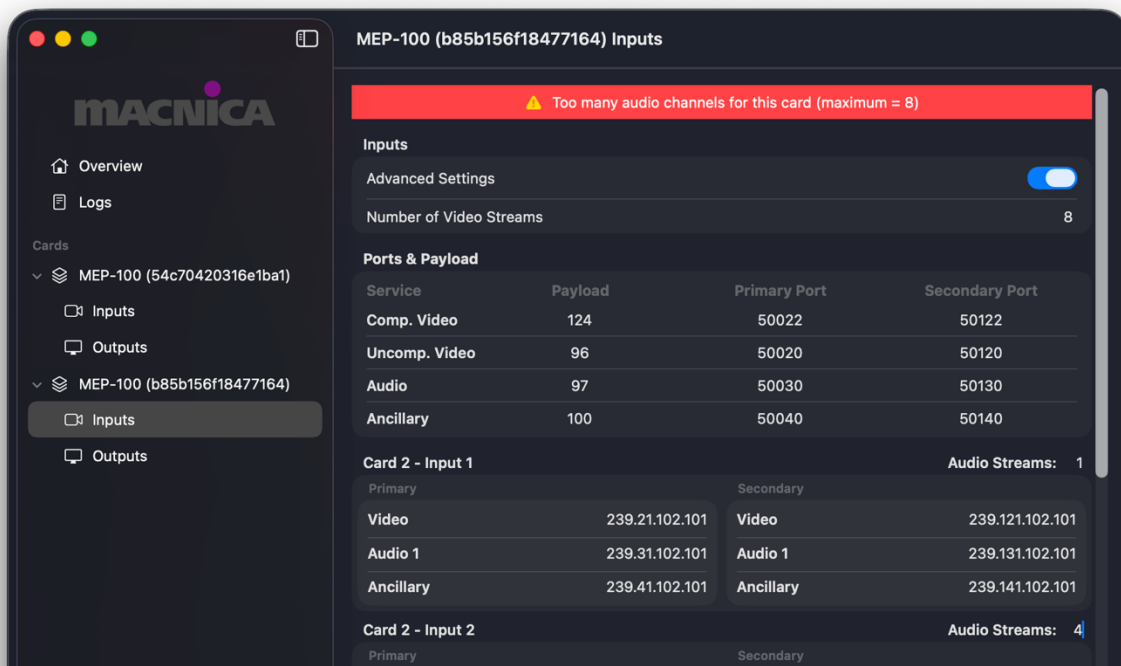
Different firmware variants have different capabilities:

- **Compressed ProRes (ST2110-21 - variant#3):**
 - Supports Uncompressed over ST2110-20 and ProRes over 2110-22
 - Number of supported flows: Up to 8 Video / 8 Audio / 8 Ancillary (In and out, full duplex)
- **Uncompressed (ST2110-21 - variant#1):** For uncompressed video workflows
 - Supports only Uncompressed over ST2110-20
 - Number of supported flows: Up to 32 Video / 32 Audio / 32 Ancillary (In and out, full duplex)
- **Unknown:** Firmware types that don't match the standard variants (Compressed or Uncompressed)

4.5. Error Indicators

The application will display a red error banner at the top of the Inputs or Outputs view if you configure:

- Too many video streams for the current firmware
- Too many total audio streams for the current firmware
- The error message will indicate the maximum allowed value.





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4.6. Best Practices

1. **Plan Your Configuration:** Determine your audio channel requirements before configuring video stream counts
2. **Monitor Active Streams:** Check the “Status” section in the Card View to see how many streams are currently active
3. **Test Incrementally:** When approaching limits, add streams one at a time to verify stability
4. **Consider PCIe Bandwidth:** Even if the firmware allows many streams, PCIe bandwidth may be a bottleneck (see [PCI Link](#) section)



5. Export and Import Configurations

The Macnica Utility allows you to export and import configuration files. This is useful for different production scenarios, backup purposes, or when switching between different workflow setups.

5.1. Configuration File Contents

Configuration files store all settings including:

- Input stream configurations (multicast addresses, port numbers)
- Output stream configurations (multicast addresses, port numbers)
- Number of video streams and audio streams per card
- Advanced vs. Basic mode preferences

Configuration files **do not** store:

- Per-card network settings (Primary/Secondary IP addresses and netmasks)
- Firmware slot selections (stored on card hardware)
- License information (stored on card hardware)
- PTP settings (stored on card hardware and shared globally)
- Real-time status information (temperature, active streams, etc.)

5.2. Exporting a configuration

Once you have set all the input, output setting to your liking, go to the menu “File > Export Configuration As...”, select a location for your configuration file and a name, then click on “Save”.

This will save a json file with all your inputs, outputs settings that you can then import later.

5.3. Importing a configuration

To import a configuration, go to the menu “File > Import Configuration...”, select the json file that you have exported, and click on “Open”. This will load all the settings in the view, but won’t apply them, if you quit and restart the application at this point, the settings will revert back to what they were before the import. Click on “Apply” to apply and save the settings.



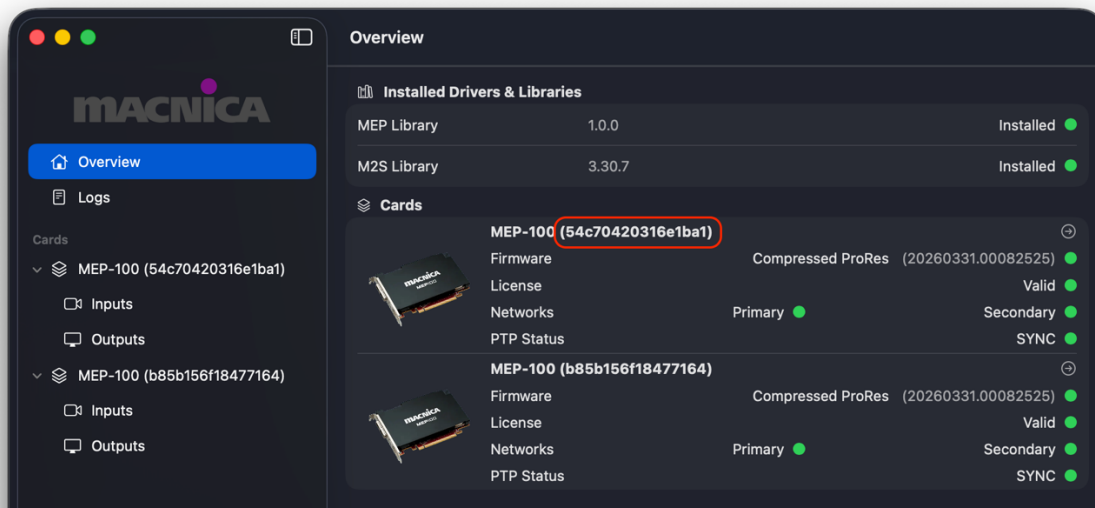
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5.3.1. Importing a configuration from another computer/card.

A given configuration is “tied” to a specific card. Indeed, the configuration contains the chipID of the card, and the structure of the file looks like this (with two cards in the system):

```
{
  "card_settings" : {
    "54c8457316e2ba3" : {
      "card_input_settings" : {...},
      "card_output_settings" : {...}
    },
    "b85b245f18488164" : {
      "card_input_settings" : {...},
      "card_output_settings" : {...}
    }
  }
}
```

If you want to reuse the configuration file for another card, simply replace the chipID of the card of the configuration file (for example 54c8457316e2ba3 for the first card), with the one of your card. You can easily see the chipID of your card in the Macnica Utility, next to the card name:





6. REST API

The Macnica MEP-100 Utility provides a REST API for programmatic access to card information and real-time updates via WebSockets.

6.1. Documentation

6.1.1. Configuration

The REST API server runs on port 8091 by default.

Base URL: `http://localhost:8091`

6.1.2. Authentication

The current version does not require authentication for local connections.

6.1.3. Endpoints

GET /cards

Retrieves detailed information about all connected MEP-100 cards.

Request:

```
GET /cards HTTP/1.1
Host: localhost:8091
```

Response:

```
Status Code: 200 OK
Content-Type: application/json
```

Response Body

Returns a JSON array containing card objects. Each card object includes:

- `id`: Card identifier (integer)
- `serial_number`: Unique hardware serial number
- `name`: Display name of the card
- `firmware_version`: Current firmware version
- `firmware_type_description`: Type of firmware installed (e.g., "Compressed ProRes")
- `is_connected`: Connection status (boolean)
- `is_licensed`: License status (boolean)



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- `requires_firmware_upgrade`: Whether firmware update is needed (boolean)
- `has_warning`: Warning indicator (boolean)

Network Configuration:

- `primary_network`: Primary network interface settings
 - `ip_address`: IP address
 - `netmask`: Subnet mask
 - `enabled`: Interface enabled status
- `secondary_network`: Secondary network interface settings (same structure)

Hardware Information:

- `pci_link_speed`: PCIe generation (e.g., 4 for Gen4)
- `pci_link_lanes`: Number of PCIe lanes (e.g., 8, 16)
- `pci_link_description`: Human-readable PCIe configuration (e.g., "PCIe Gen4 x16")
- `current_temperature`: Current temperature in Celsius
- `critical_temperature`: Maximum safe temperature
- `temperature_string`: Formatted temperature string
- `has_fan`: Whether card has active cooling

Capabilities:

- `maximum_number_of_video_inputs`: Maximum video input streams
- `maximum_number_of_video_outputs`: Maximum video output streams
- `maximum_number_of_audio_inputs`: Maximum audio input streams
- `maximum_number_of_audio_outputs`: Maximum audio output streams

Current Usage:

- `rx_video_streams_in_use`: Active video receive streams
- `tx_video_streams_in_use`: Active video transmit streams
- `rx_audio_streams_in_use`: Active audio receive streams
- `tx_audio_streams_in_use`: Active audio transmit streams



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PTP (Precision Time Protocol):

- `ptp_configuration`: PTP settings
 - `domain_number`: PTP domain (default: 10)
 - `log_announce_interval`: Announcement interval
 - `log_delay_req_interval`: Delay request interval
 - `announce_receipt_timeout`: Receipt timeout
 - `unicast_delay_request`: Unicast mode flag
 - `ip_tos`: IP Type of Service values
 - `ip_ttl`: IP Time to Live values
- `ptp_status`: Current PTP state
 - `status`: Lock status (0 = locked)
 - `grand_master_id`: Grand master clock identifier
 - `current_date_time`: Current PTP timestamp
 - `is_utc_time`: Whether time is UTC

Firmware Slots:

- `slot_contents`: Array of available firmware images
 - `id`: Firmware slot identifier
 - `firmware_type`: Firmware type identifier
 - `build_date`: Build date string
 - `requires_upgrade`: Upgrade flag
- `selected_slot`: Currently active firmware slot index

License Information:

- `license_information`
 - `is_authorized`: Authorization status

Example Response:



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```
[
{
  "id": 0,
  "serial_number": "b85b156f18477164",
  "name": "MEP-100 (b85b156f18477164)",
  "firmware_version": "20260213.00103850",
  "firmware_type_description": "Compressed ProRes",
  "is_connected": true,
  "is_licensed": true,
  "requires_firmware_upgrade": false,
  "has_warning": false,
  "primary_network": {
    "ip_address": "192.168.20.193",
    "netmask": "255.255.255.0",
    "enabled": true
  },
  "secondary_network": {
    "ip_address": "192.168.21.193",
    "netmask": "255.255.255.0",
    "enabled": true
  },
  "pci_link_description": "PCIe Gen4 x16",
  "pci_link_speed": 4,
  "pci_link_lanes": 16,
  "current_temperature": 54.5,
  "critical_temperature": 98,
  "temperature_string": "54°C / 130°F",
  "has_fan": false,
  "maximum_number_of_video_inputs": 8,
  "maximum_number_of_video_outputs": 8,
  "maximum_number_of_audio_inputs": 8,
  "maximum_number_of_audio_outputs": 8,
  "tx_video_streams_in_use": 0,
  "rx_video_streams_in_use": 0,
  "tx_audio_streams_in_use": 0,
  "rx_audio_streams_in_use": 0,
  "ptp_configuration": {
    "domain_number": 10,
    "log_announce_interval": 0,
    "log_delay_req_interval": -3,
    "announce_receipt_timeout": 3,
    "unicast_delay_request": false,
    "ip_tos": [0, 0],
    "ip_ttl": [64, 64]
  },
  "ptp_status": {
    "status": 0,
    "grand_master_id": 6361276199519311990,
    "current_date_time": 796055018.802256,
    "is_utc_time": true
  },
  "slot_contents": [
    {
      "id": "efcc9de83b60453f",
      "firmware_type": 17279359491067888959,
      "build_date": "2026021300103850",
      "requires_upgrade": false
    },
    {
      "id": "d94784bf93f6859a",
```



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```
        "firmware_type": 15656628587932845466,  
        "build_date": "2026021300155059",  
        "requires_upgrade": false  
    },  
    ],  
    "selected_slot": 0,  
    "license_information": {  
        "is_authorized": true  
    }  
}  
]
```



7. Troubleshooting

7.1. Common Issues and Solutions

7.1.1. Card Not Detected

Symptoms: No cards appear in the Overview view, “Waiting for cards...” message displayed

Possible Causes:

1. Drivers not properly installed
2. Card not seated correctly in PCIe slot
3. Card not receiving power
4. Incompatible PCIe slot

Solutions:

1. Verify MEP Library and M2S Library versions in Overview (should not be 0.0.0)
2. Shut down computer, reseal the card firmly in the PCIe slot
3. Ensure PCIe power connectors (if required) are properly connected
4. Try a different PCIe slot (preferably x16, Gen3 or higher)
5. Check system logs for PCIe enumeration errors
6. Reinstall drivers if necessary

7.1.2. License Download Fails

Symptoms: “Download License” button doesn’t retrieve a valid license

Possible Causes:

1. No internet connection
2. Card serial number not registered with Macnica
3. License server temporarily unavailable
4. Firewall blocking connection

Solutions:

1. Verify internet connectivity
2. Contact Macnica support with your card’s serial number (visible in Overview)
3. Request a license file via email and use “Import License...” instead
4. Check firewall settings to allow the utility to connect to Macnica’s servers



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7.1.3. PTP Won't Sync

Symptoms: PTP status stuck in INITIALIZE, ASYNC, or ADJUST

Possible Causes:

1. No PTP Grand Master on the network
2. PTP configuration mismatch (domain number, announce interval)
3. Network connectivity issues
4. Incorrect VLAN or network segmentation
5. PTP multicast traffic being filtered

Solutions:

1. Verify a PTP Grand Master device is active on your network
2. Check PTP Settings (click info button in Timing section) and ensure they match your Grand Master
3. Verify network connectivity with ping tests
4. Ensure PTP multicast traffic (224.0.1.129) is allowed on your network
5. Connect directly to PTP Grand Master (if possible) to isolate network issues
6. Use unicast PTP if multicast is problematic on your network

7.1.4. Streams Not Receiving/Transmitting

Symptoms: No stream activity shown in Status section

Possible Causes:

1. Incorrect multicast IP addresses
2. Network not configured for multicast routing
3. IGMP snooping preventing multicast delivery
4. Streams sending/receiving on wrong network interface
5. Firewall blocking RTP traffic

Solutions:

1. Verify all IP addresses are in valid multicast range (224.0.0.0-239.255.255.255)
2. Ensure network switches support and are configured for multicast (IGMP)
3. Check that IGMP snooping (if enabled) is correctly configured
4. Verify card network interfaces are on correct subnets
5. Test with direct connection between sender and receiver to isolate network issues
7. Use network analysis tools (Wireshark) to verify RTP traffic is present on the network

7.1.5. High Temperature Warning

Symptoms: Temperature indicator is orange or red



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Possible Causes: 1. Insufficient case airflow 2. High ambient temperature 3. Dust buildup 4. Heavy processing load (many active streams) 5. Card fan failure (MEP-100F only)

Solutions:

1. Improve case ventilation (add fans, reposition case)
2. Move system to cooler environment
3. Clean dust from case and card
4. Reduce number of active streams temporarily
5. Reduce stream resolutions/bitrates if possible
6. If MEP-100 (non-F), consider upgrading to MEP-100F with fan
7. Contact Macnica support if temperature remains critical with good cooling

7.1.6. Poor PCI Performance

Symptoms: Orange or red PCI Link indicator, stuttering video, dropped frames

Possible Causes:

1. Card in x8 or x4 slot instead of x16
2. Card in PCIe Gen2 or Gen1 slot
3. Slot sharing lanes with other devices
4. Poor physical connection
5. Motherboard PCIe configuration limiting bandwidth

Solutions:

1. Move card to primary x16 PCIe slot (usually closest to CPU)
2. Verify slot is PCIe Gen3 or higher (check motherboard specifications)
3. Remove other PCIe devices that may be sharing lanes
4. Reseat the card to ensure solid connection
5. Check motherboard BIOS for PCIe configuration options
6. Consult motherboard manual for PCIe lane distribution
7. Consider motherboard upgrade if current board has insufficient PCIe bandwidth

7.1.7. Configuration Changes Not Saving

Symptoms: Settings revert after clicking Apply

Possible Causes:

1. Configuration file permission issues
2. Invalid configuration values
3. Card not responding to configuration commands

Solutions:



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1. Verify the utility has write permissions to the configuration file location (/Library/Application Support/Macnica/Macnica Utility)
2. Check Logs view for error messages when clicking Apply
3. Restart the utility
4. Try configuring one setting at a time to identify problematic values
5. Reset to default configuration and reconfigure gradually



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7.2. Advanced Topics

7.2.1. Redundancy Configuration

The MEP-100 supports full redundancy through its dual network interfaces:

1. Configure Primary Network with one IP subnet
2. Configure Secondary Network with a different IP subnet
3. Set identical stream parameters on both networks (same ports and payload types)
4. Stream sources should send duplicate streams to both networks
5. Card will seamlessly switch between networks if one fails

7.2.2. Multicast Best Practices

- Use different multicast groups for different streams to prevent conflicts
- Reserve a range of multicast addresses for your facility
- Document your multicast addressing scheme
- Avoid using well-known multicast addresses (224.0.0.x)
- Use IGMP version 3 for better multicast control
- Enable IGMP snooping on managed switches for efficiency

7.2.3. Performance Optimization

To maximize stream capacity:

1. Use PCIe Gen4 x16 slot for best performance
2. Ensure adequate cooling (temperature below 70°C)
3. Minimize number of audio streams per video stream where possible
4. Use appropriate firmware for your workflow (compressed vs. uncompressed)
5. Keep firmware updated to latest version



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7.3. Support and Additional Resources

For technical support, firmware updates, or licensing inquiries, contact Macnica:

- **Technical Support:** Contact your Macnica representative
- **License Issues:** Provide your card serial number when requesting assistance
- **Firmware Updates:** Available through Macnica support channels

7.3.1. Important Notes

- Always ensure streams are stopped before upgrading firmware
- Keep a record of your configuration (the utility saves to a JSON file)
- Regular system maintenance (cooling, drivers) helps prevent issues
- Monitor Logs view for early warning of potential problems