



Grass Valley

T2 4K Series

Digital Recorder/Players

T2 4K I/O Card Kit Installation Manual
(KTR4-IO-CV80-KIT, KTR4-IO-CV12G-KIT)

Version 3.4.5

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Grass Valley Web Site

This public Web site contains all the latest manuals and documentation, and additional support information. Use the following URL.
<http://www.grassvalley.com>.

Manual Explanation

- If there are any variations between the explanation in this manual and the actual application method, priority is given to the actual application method.
- This manual is a common manual for T2 4K Series. Screenshots and illustrations in this manual may vary from those of the actual product.
- The screenshots used as examples in this manual are those of the development stage, so they may vary from those in the final product.
- This manual is written for users who have a basic knowledge of how to use a computer.
- If there are no special instructions, perform the same operation as a normal computer operation.
- The contents of this product may modify without prior notice.

T2 4K I/O Card Kit Installation Manual
Version 3.4.5

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Safety Summaries

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

Injury Precautions

Use Proper Power Cord

To avoid fire hazard, use only the power cord specified for this product.

Ground the Product

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Do Not Operate Without Covers

To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

Do Not Operate in Wet/Damp Conditions

To avoid electric shock, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product Damage Precautions

Use Proper Power Source

Do not operate this product from a power source that applies more than the voltage specified.

Provide Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.


Battery Replacement


To avoid damage, a battery must be replaced once every five years. Please contact Grass Valley Product Support to replace the battery.

Safety Terms and Symbols

Terms in This Manual

These terms may appear in this manual:

 **WARNING:** *Warning statements identify conditions or practices that can result in personal injury or loss of life.*

 **CAUTION:** *Caution statements identify conditions or practices that may result in damage to equipment or other property, or which may cause equipment crucial to your business environment to become temporarily non-operational.*

Terms on the Product

These terms may appear on the product:

DANGER indicates a personal injury hazard immediately accessible as one reads the marking.


WARNING indicates a personal injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product

The following symbols may appear on the product:

 DANGER high voltage

 Protective ground (earth) terminal

 ATTENTION – refer to manual

Service Safety Summary



WARNING: *The service instructions in this manual are intended for use by qualified service personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries before performing service.*

Do Not Service Alone

Do not perform internal service or adjustment of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power

To avoid electric shock, disconnect the main power by means of the power cord or, if provided, the power switch.

Use Care When Servicing With Power On

Dangerous voltages or currents may exist in this product. Disconnect power and remove battery (if applicable) before removing protective panels, soldering, or replacing components.


To avoid electric shock, do not touch exposed connections.


Installation procedure of the video I/O card


Precautions before operations

This chapter mainly describes installation procedure of the video I/O card. Unless otherwise documented, installation procedures will be in reverse order of removals. If any installation instructions are documented, be sure to follow them.

NOTE: Do not discard any of the removed parts such as screws or stays.

 **WARNING:** *Be sure to turn off the system and disconnect the power cord from the product body prior to install the video I/O card. Otherwise, electric shock or product failure may result.*

 **WARNING:** *When you attach parts of T2, be sure to use exactly the same screws as were originally used on the parts.*

 **WARNING:** *Part of T2 may be damaged by electrostatic discharge or physical impacts. When you work on your system, be sure to wear a wrist strap for preventing electrostatic discharge (ESD) and provide grounding.*

Required tools

Phillips screwdriver #1, nippers

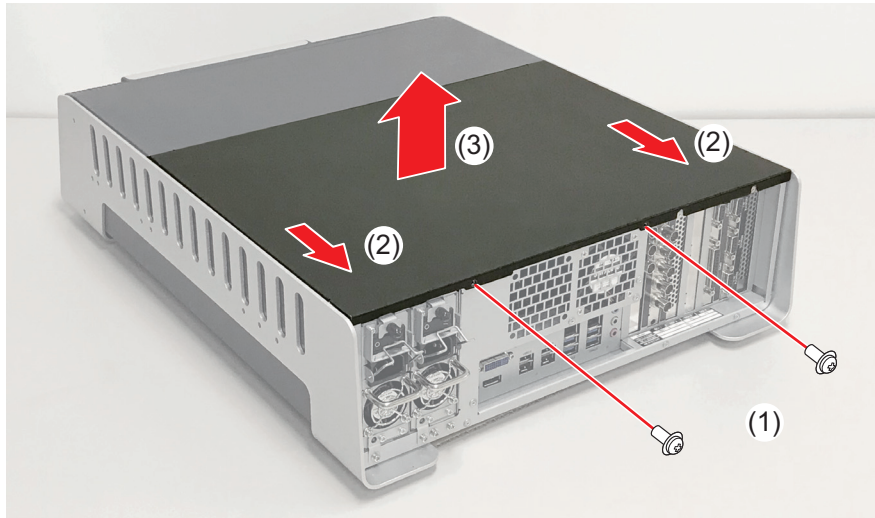
Turning off the T2 and disconnecting the power cord

1. Shutdown T2.
2. Turn off the main power switch.
3. Push the power cable clamp to unlock the power cord.
4. Unplug the power cord from the AC inlet.
5. Perform steps 1 to 3 on the other power supply. (T2 4K Elite only)

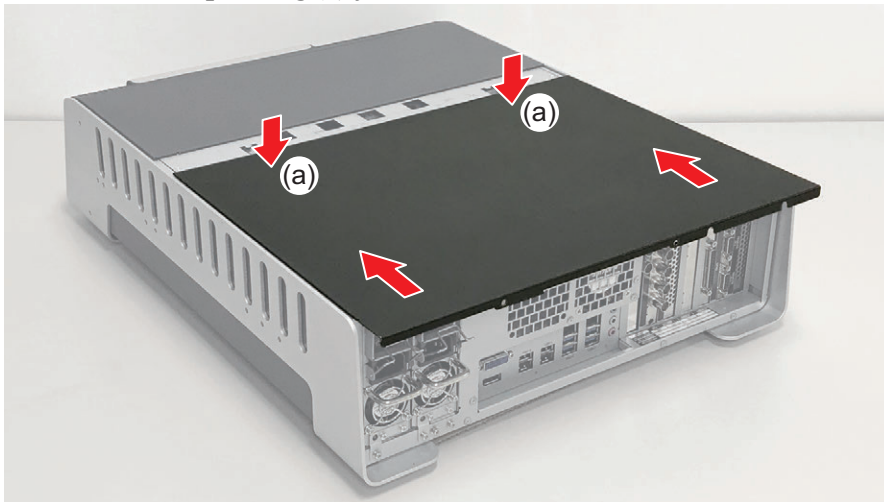
Disassembling the T2 4K

 **CAUTION:** When installing the video I/O card, take care not to damage the motherboard.

1. Remove the top cover (rear).
 - (1) Remove 2 screws (with springs and large washers) on the rear side.
 - (2) Hold the top cover (rear) with both hands to slide it out.
 - (3) Remove the top cover (rear).

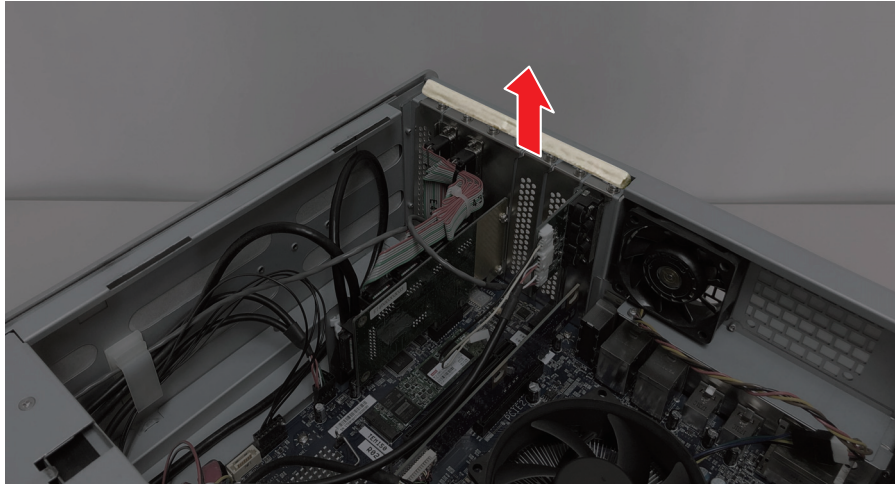


NOTE: To install the top cover (rear), place it at the position in the following figure, and then slide it while pressing (a) from above with both hands.



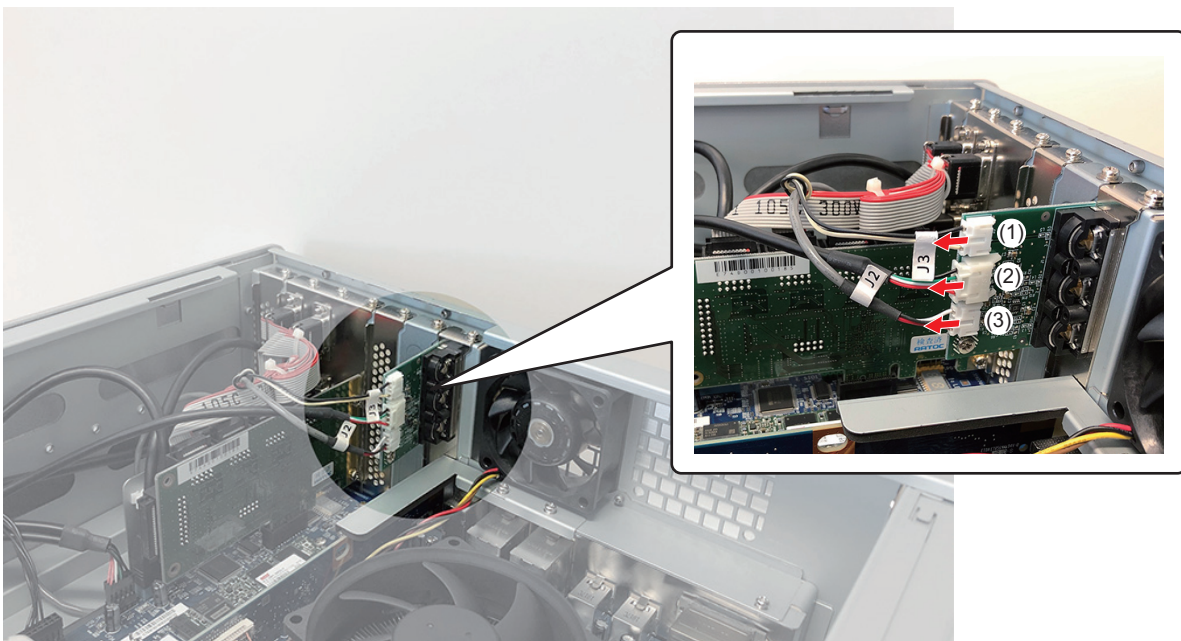
Installation procedure of the video I/O card

2. Remove the shield gasket.



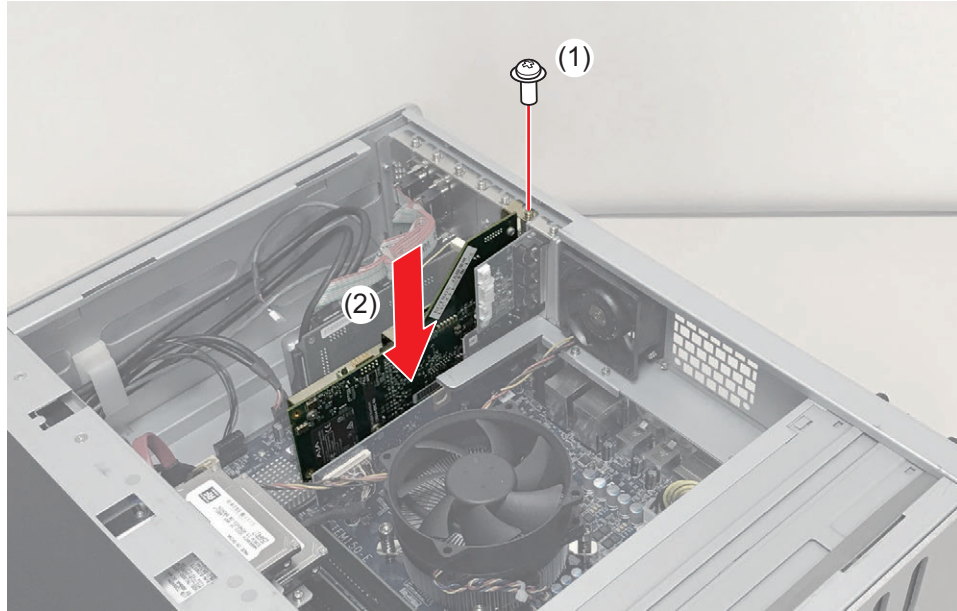
3. Disconnect following cables from the LTC/Monitor audio interface board.

- (1) The LTC In cable
- (2) The power cable of the LTC/Monitor audio interface board
- (3) The LTC Out/Monitor audio Out cable

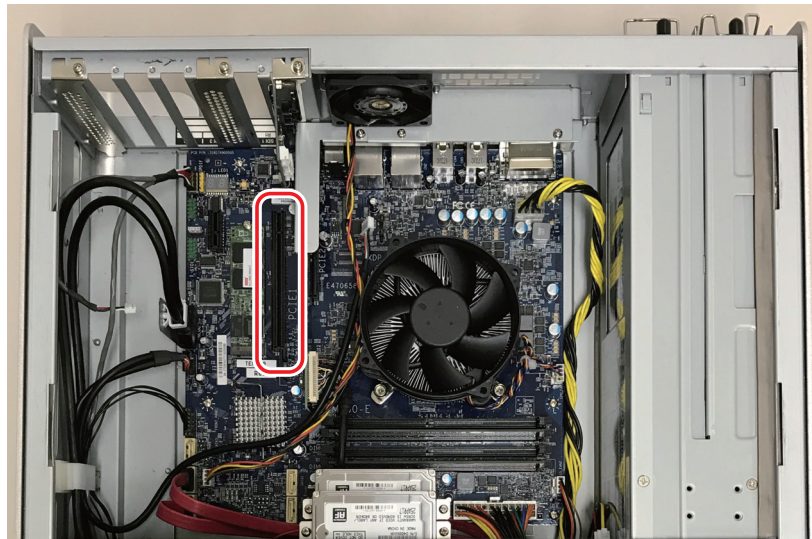


Installing the video I/O card

1. Remove the PCI-e slot cover.
2. Install the video I/O card.

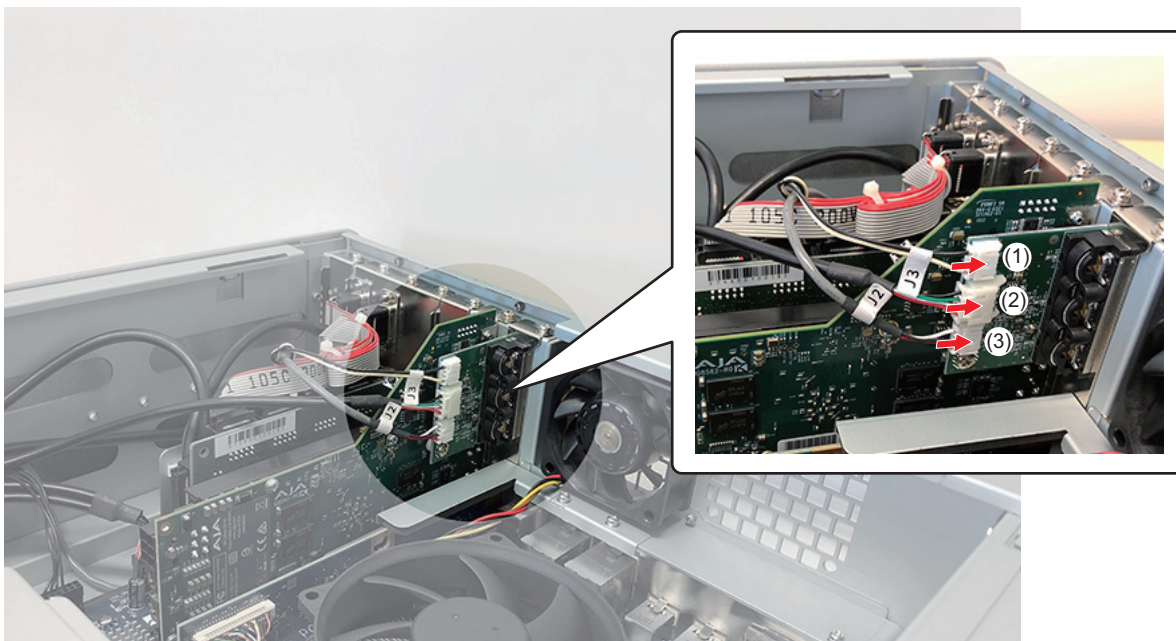


NOTE: The video I/O card must be installed into PCI Express x16 slot.

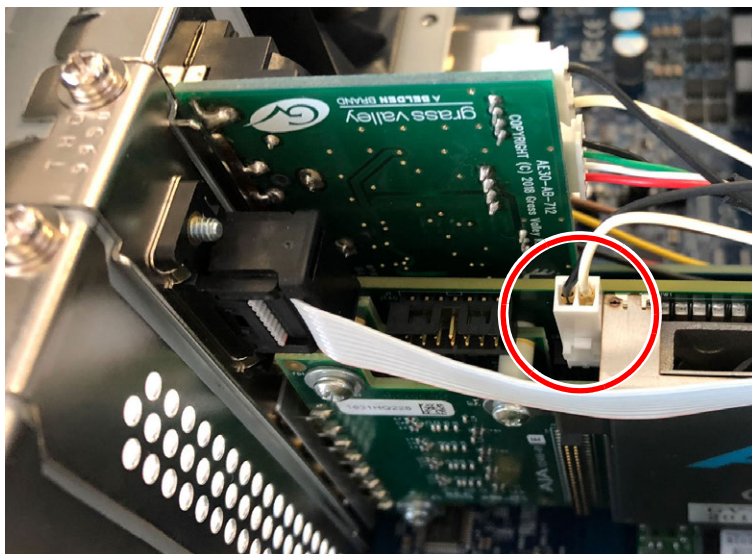


Installation procedure of the video I/O card

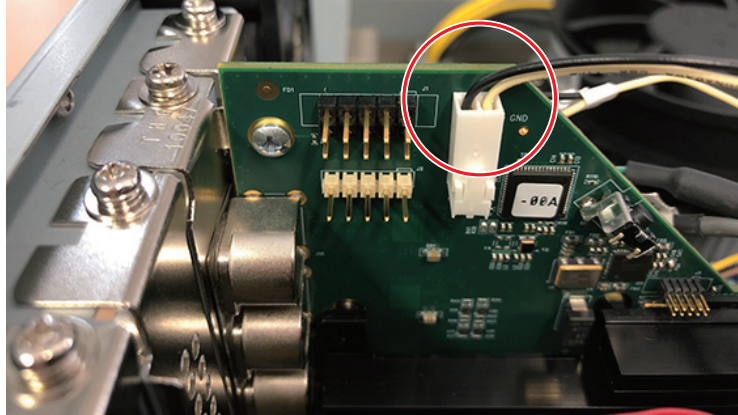
3. Reconnect three cables to the LTC/Monitor audio interface board.
 - (1) The LTC In cable
 - (2) The power cable of the LTC/Monitor audio interface board
 - (3) The LTC Out/Monitor audio Out cable



4. Connect the LTC In cable to the connector of video I/O card.
 - KTR4-IO-CV80-KIT (AJA Corvid 88)



- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



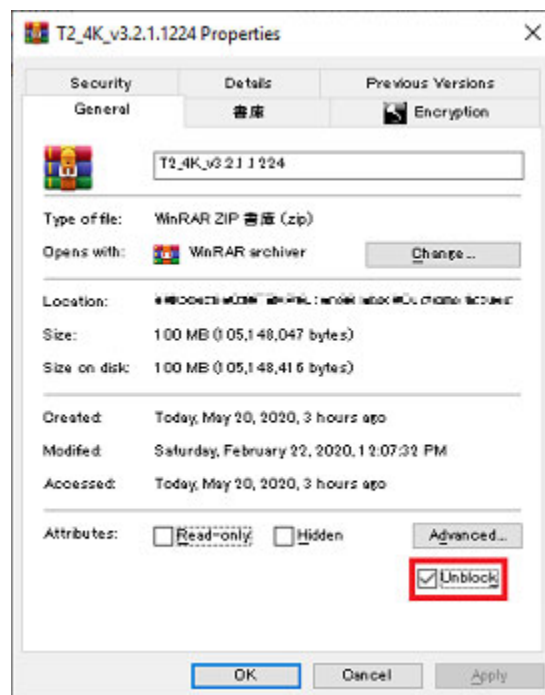
5. Install a new shield gasket as before.

Upgrading the software

Once the I/O board installation finished, upgrade the T2 4K software to the latest build.

Preparation

1. Download the latest build of T2 4K software installer.
<https://community.grassvalley.com/gvfileshare/s/?sid=d3h70n>
2. Right-click downloaded .zip file then choose **Properties**.
3. Go to **General**.
4. Confirm if **Unblock** option exists, if yes, untick the option then click **Apply** then **OK** button.

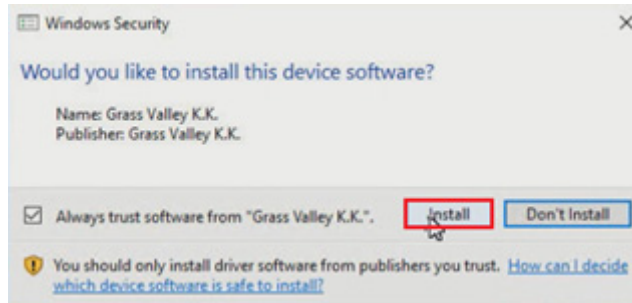


5. Create "T2_Upd" folder then unzip the .zip file.
6. Copy "T2_Upd" folder into a USB stick.
7. Connect both keyboard and mouse to the T2.

Upgrade the software

1. Whilst pressing **SHTL/JOG** and **VAR** buttons, turn on the T2.
2. Once both buttons lit on, release the buttons.
3. Choose **Start > My Computer** and open "T2_Upd" folder in the USB stick.
4. Double-click "T2_4K_Updater.exe". Software upgrade will proceed.

5. If below screen appears, click **Install** button.



6. Click **Yes** button in restart required dialog box to launch file update. T2 will restart in maintenance mode.

NOTE: *If you click **No** button, you need to restart in maintenance mode manually before starting the T2 in Command Center mode. If the step is skipped, the T2 may not work properly.*

7. Restart the T2 in Command center mode.

Commissioning

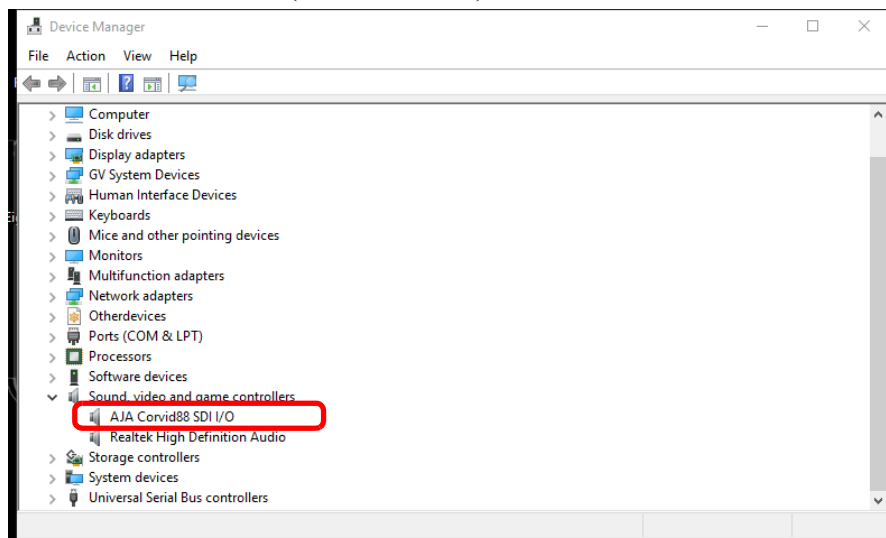
Confirm hardware detection

Confirm if the installed video I/O card is correctly detected by both Windows Device Manager and T2 Command Center software.

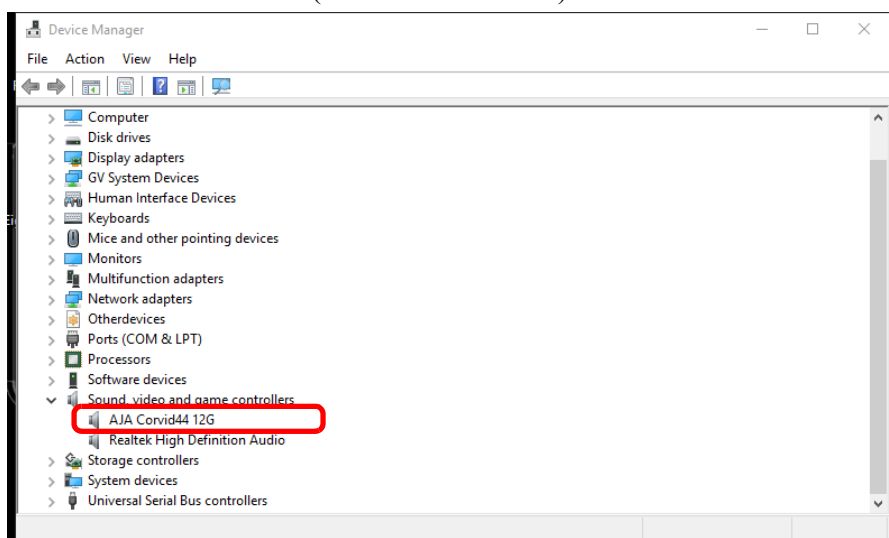
Confirm on Windows Device Manager

1. Start the T2 in maintenance mode.
2. Press [Windows] key + [R] then type devmgmt.msc and click **OK** button.
3. In Windows Device Manager, expand Sound, video and game controllers pane.
4. Confirm if installed video hardware appears without "!" or "X" mark.
Installed Kit Device name should appear.

- KTR4-IO-CV80-KIT (AJA Corvid 88)



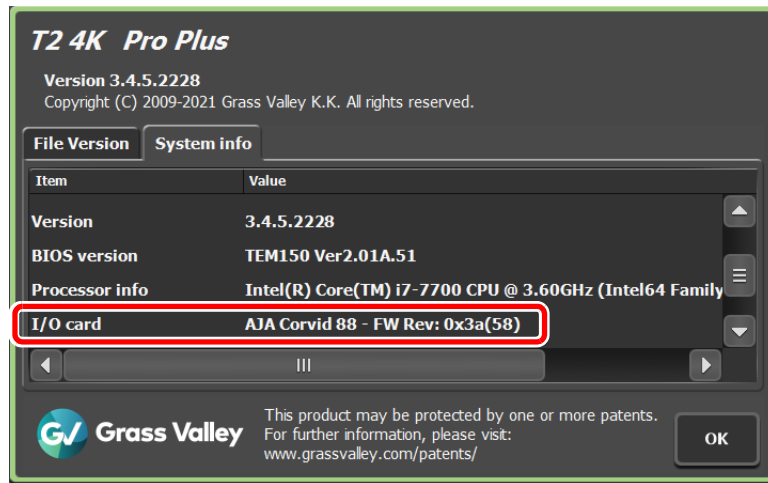
- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



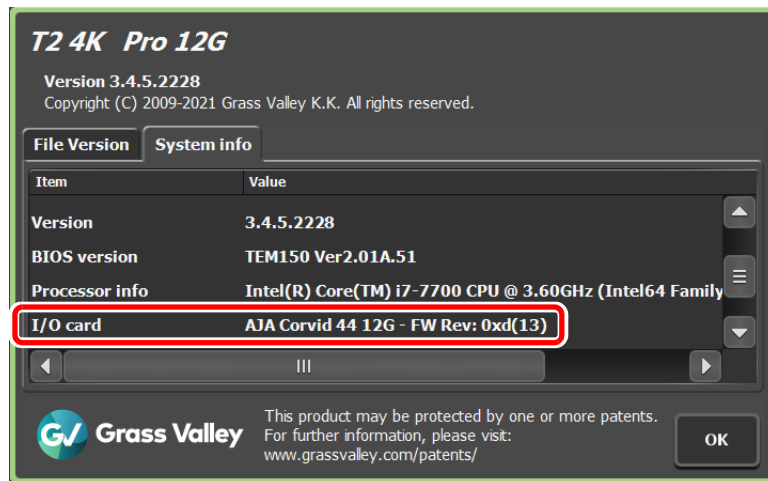
5. Close Windows Device Manager.

Confirm in T2 Command Center software

1. Start the T2 in Command Center mode.
2. Tap **Bin** > **Menu** > **Tools** > **About T2**.
3. Version info will appear. Choose **System info**.
4. At "I/O card", confirm if "AJA Corvid 88" or "AJA Corvid 44 12G" appears.
 - KTR4-IO-CV80-KIT (AJA Corvid 88)



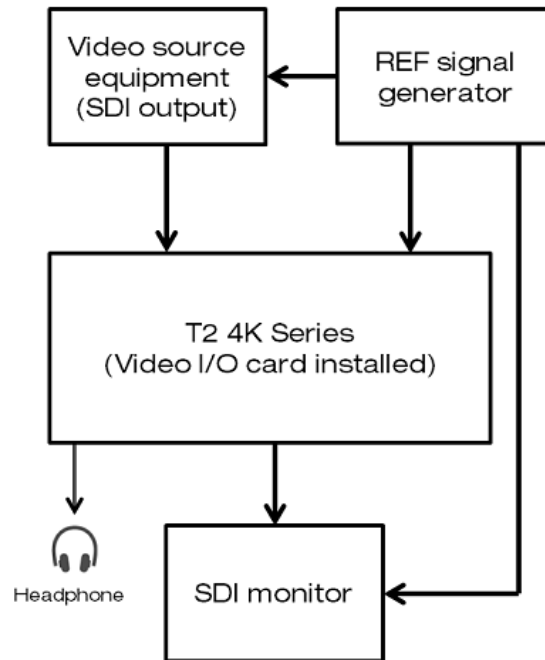
- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



5. Tap **OK** button.

Connect equipment for commissioning

Connect required equipment for commissioning the T2 4K Series.



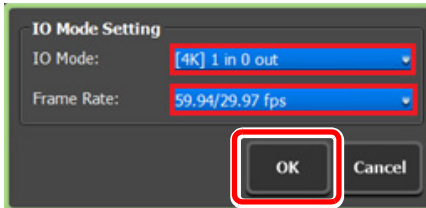
NOTE: Required specification of source, monitor will be vary depending record or playback format in the workflow.

NOTE: If the system works on internal sync, connecting REF signal generator is not required.

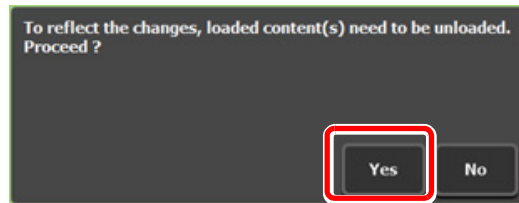
NOTE: If multiple playout works, connect multiple monitor or repeat to disconnect and connect single monitor for the test.

Configure I/O mode

1. Tap **Config** > **General** > **Hardware**.
2. Tap **Settings** button.
3. I/O mode settings will appear. Choose I/O mode and format from the drop-down list then tap **OK** button.

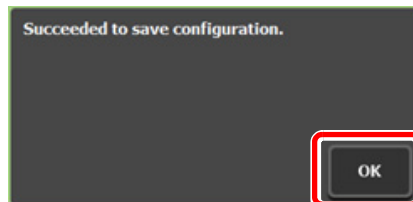


4. Tap **Yes** button.



Configure sync mode

1. Tap **Config** > **General** > **Hardware**.
2. At "Reference", choose sync mode due to the workflow.
3. If you switch to another mode, below message will appear. Tap **OK** button.



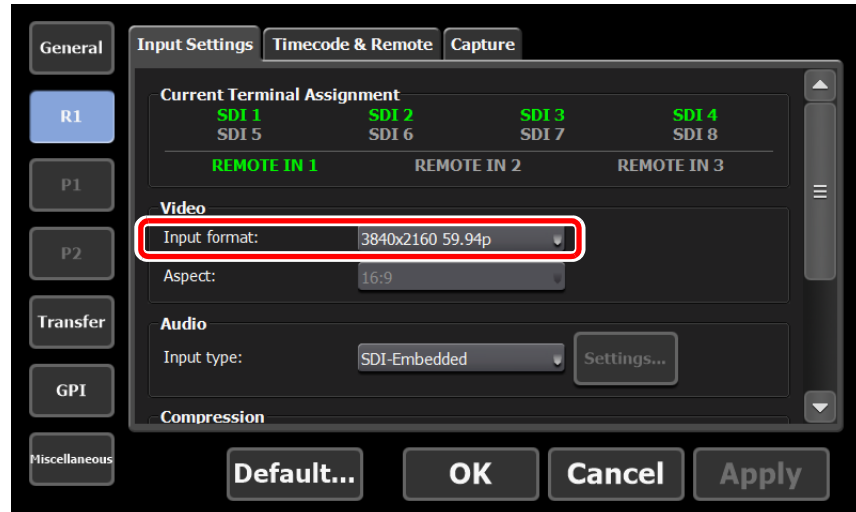
4. If you choose **External**, confirm if "SIGNAL OK" status appears.



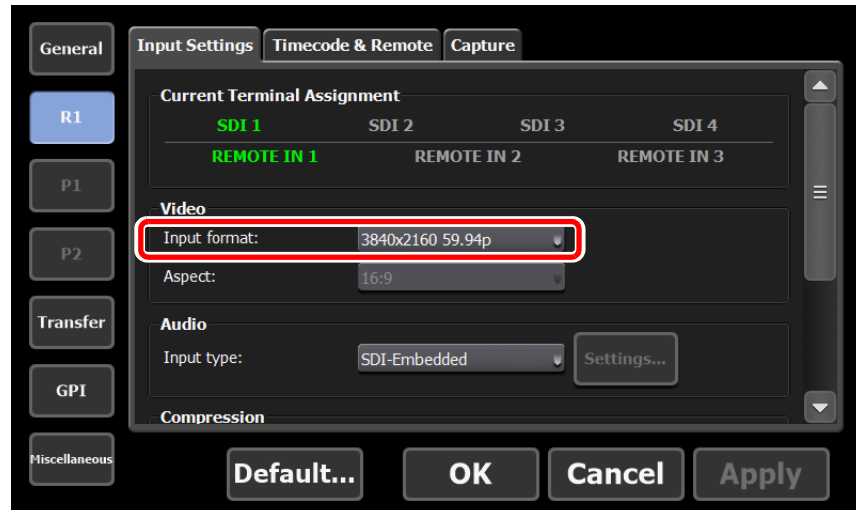
5. Close the configuration screen.

Configure recording format

1. Tap **Config** > **R1** > **Input Settings**.
2. Choose input format and SDI cabling mode from the drop-down list.
 - KTR4-IO-CV80-KIT (AJA Corvid 88)



- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



3. Tap **OK** button.

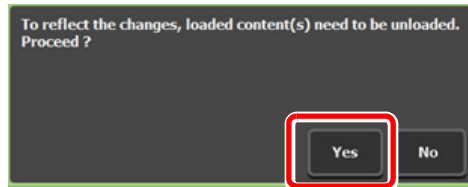
Test video recording

1. Switch to 1ch view mode.
2. Press **R1** button.
3. Input source video and audio to the T2. Confirm if video correctly appears on the preview window and audio can be heard via headphone.
4. Press **Rec** button to start video recording. Record a video for several minutes.
5. Press **Stop** button.

Test clip playback

4K video

1. Tap **Config** > **General** > **Hardware**.
2. Tap **Settings** button.
3. I/O mode settings will appear. Choose [4K] 0 in 1 out mode and format* from the drop-down list then tap **OK** button.
 - * Same format as step 3 in "[Configure I/O mode](#)" on page 17 needs to be selected.
4. Tap **Yes** button.

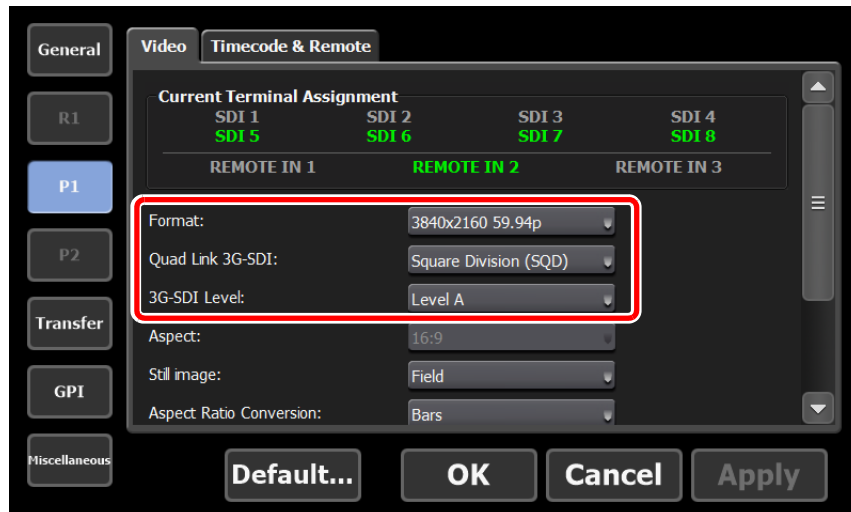


5. Tap **Config** > **P1** > **Video**.
6. Configure below settings:

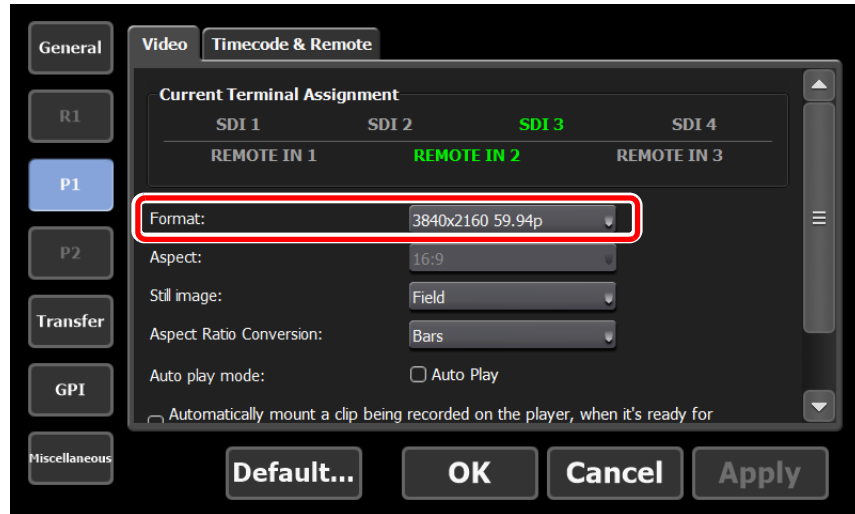
Format: Choose same format as recorded clip.

Quad-link 3G-SDI, 3G SDI Level: If needed, choose proper mode depends on cabling.

- KTR4-IO-CV80-KIT (AJA Corvid 88)



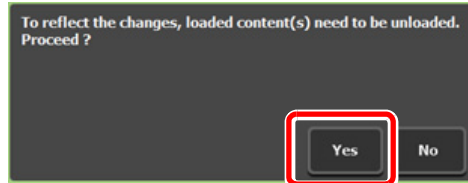
- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



7. Load recorded clip to P1 channel.
8. Playback the clip. Confirm if correct video appears on both front panel preview screen and connected monitor. Also confirm if T2 plays correct audio via headphone.

HD/SD video

1. Tap **Config > General > Hardware**.
2. Tap **Settings** button.
3. I/O mode settings will appear. Choose I/O mode depends on the workflow and format* from the drop-down list then tap **OK** button.
 - * Same format as step 3 in "Configure I/O mode" on page 17 needs to be selected.
4. Tap **Yes** button.

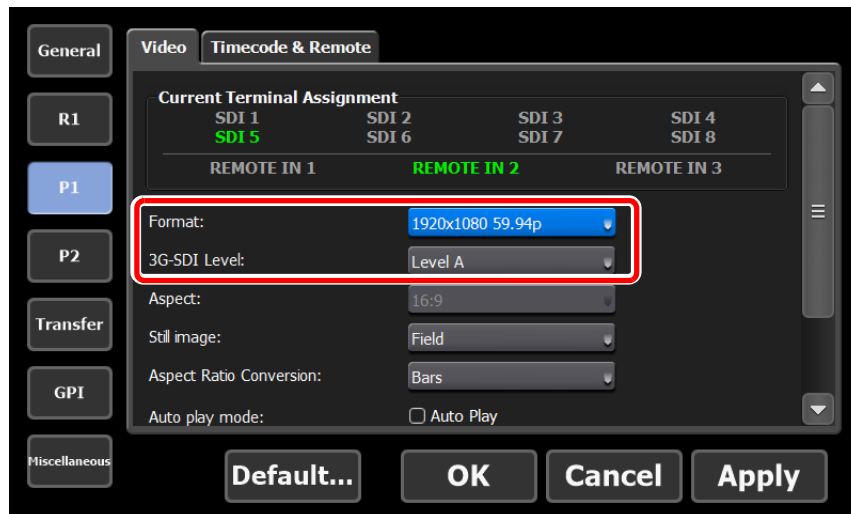


5. Tap **Config > P1 > Video**.
6. Configure below settings:

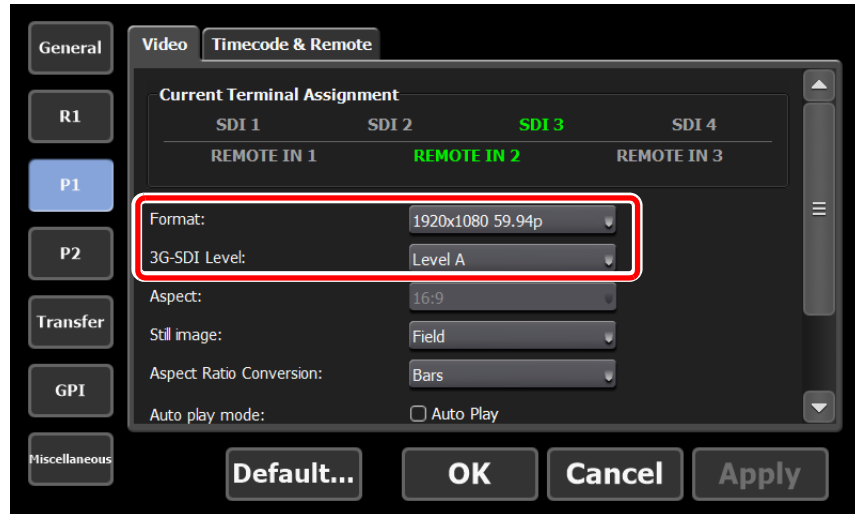
Format: Choose same format as recorded clip.

Quad-link 3G-SDI, 3G SDI Level: If needed, choose proper mode depends on cabling.

- KTR4-IO-CV80-KIT (AJA Corvid 88)



- KTR4-IO-CV12G-KIT (AJA Corvid 44 12G)



7. Load recorded clip to P1 channel.
8. Playback the clip. Confirm if correct video appears on both front panel preview screen and connected monitor. Also confirm if T2 plays correct audio via headphone.

NOTE: If you use multiple output channel, repeat step 5 to 8 for each playout channel.