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Introduction

This online documentation will help you get started as soon as possible with your Middle Things device. You can also download the complete documentation in a PDF form, to print it easily. We recommend that you use the web version as much as possible, since we can maintain it up-to-date all the time!

If there is anything you'd like us to help you with, please contact our customer support at support@middlethings.co

Also, feel free to share your feedback / questions in the new Middle Things user group on Facebook!





TIP

We also recommend you check out our extended video tutorials on the Middle Things Youtube Channel.



Important Information & Safety

Read instructions carefully before installation & operation.

The ACP-R, APC and Middle Remote are designed for indoor and dry environment use only. Children must not play with the ACP-R. If any cable is damaged, it must be replaced.

The APC-R, APC and Middle Remote do not contain any internal batteries. The only way to turn off the products is to disconnect them from power. Electrical products myst be disposed in conformity with national regulations for

electronic waste and not with household waste.

Legal Notice

DJI, RS2, Ronin-S, and Ronin are trademarks of SZ DJI Technology Co., Ltd Blackmagic Design, Blackmagic Pocket Cinema Camera, ATEM, Da Vinci, Da Vinci Resolve are trademarks of Blackmagic Design Pty Ltd Android, Google Play and the Google Play logo are trademarks of Google LLC. iPhone, iPod, iPad, and Mac OS are registered trademarks of Apple Inc, registered in the US and other countries. App Store is a service mark of Apple Inc, registered in the U.S. and other countries are trademark or registered trademark of Cisco in the U.S. and other countries and is used under licence.

On this page



APC-R Quick Start

Congratulations for getting your hands on your first APC-R unit! In this section we are going to get started setting up the APC-R for a complete remote gimbal + camera workflow.

If you are only looking to control Blackmagic Design cameras wirelessly without any gimbal, we recommend you jump directly to the dedidated section: Wireless Camera Control for Blackmagic Design cameras.



(!) INFO

You can also follow our complete APC-R hands on video tutorial on the Middle Things Youtube Channel.

1. Download & Install Middle Control

The Middle Control desktop app is the central software that controls all your APC-R units and communicates with the Blackmagic Design ATEM switcher if you have one. The software has to be running all the time. It is available both on Mac OS and Windows.

Windows macOS

Download the Middle Control app in the Mac OS App Store

Supported OS: Mac OS Big Sur (11) or later.

2. Getting your APC-R ready

First, start by mounting the two antennas on the APC-R. You should never power the APC-R without any antennas, since it could damage the electronics.

2.1 Powering the APC-R

There are two different ways you can power the APC-R, you can choose one or the other:

- Using the Micro USB APC-R connection (i.e : 5V DC from a USB power bank)
- Using the CanBUS / SBUS APC-R connection (direct power from your DJI Gimbal)

For the gimbal & camera control use case, we would recommend powering the APC-R using the CanBUS cable directly. However, if you want to use your APC-R without any gimbal, just for wireless BPMCC or URSA Broadcast control, we would recommend using the USB port of your camera or a USB power bank, connected to the APC-R micro USB input. For this wireless use case, please check our dedicated section: Wireless Camera Control for Blackmagic Design cameras

CAUTION

- Make sure the two APC-R antennas are always mounted before powering your APC-R. Not mounting the antennas could damage the electronics in the long term.
- You should not use the APC-R AUX port for power or USB communication. The AUX port can only be used with the Middle Tally using a USB3.2 cable.

2.2 Connecting the APC-R to the gimbal

Connect your APC-R Canbus cable to the DJI RS2 using either:

- · The DJI Focus Wheel
- The Middle Things APC-R Gimbal Adapter (DJI RS2 Gimbal only)

You can mount one of these adapters on either side of the gimbal.

Depending on your gimbal model, the connection port you have to connect to on the APC-R will be slightly different:

DJI RS2 and later

Connect the cable to the to CanBUS port on the APC-R. If using the DJI Focus Wheel, set the little switch to CanBUS.

DJI Ronin-S / Ronin-S / Ronin 2

Connect the cable to the to SBUS port on the APC-R. If using the DJI Focus Wheel, set the little switch to SBUS.

The APC-R LED will turn yellow as soon as it is powered on.

2.3 Connecting the APC-R to the camera

The APC-R can remotely control Blackmagic Cameras. There are two different options to do so:

Option A : Direct Bluetooth Control

Option B : Indirect SDI / HDMI connection (through the ATEM)

△ You should not use both options at the same time. For instance, you shouldn't have a Blackmagic Pocket 4K controlled by an ATEM Mini Pro through HDMI (Option B) **AND** also controlled by the APC-R with Bluetooth at the same time (Option A) It's one or the other.

Unfortunately, if you are using an ATEM Mini connected to a Blackmagic Camera using HDMI, the only way to cut the Camera Control info from the HDMI signal is to use an HDMI splitter, or a 3G Bidirectional Converter. **More info**

3. Connect your APC-R to your network

3.1 Network Workflow Overview

Now that the APC-R is powered on and connected to your gimbal. Let's connect it to the network. The most simple workflow we recommend is to use a router on which you connect your laptop(s), your ATEM and your different APC-R units using ethernet cables. The router will automatically set the IP addresses of your APC-R units for you thanks to its built-in DHCP.



As opposed to a **router**, a **switch** does not have any built-in DHCP server. So if you are using a network switch instead of a router, you will have to set the IP adresses of your APC-R units manually. See this section for more information.

3.2 Connect the APC-R Ethernet Port Connect your APC-R to the network router using an ethernet RJ45 cable. Make sure your laptop is connected to the same router as your APC-R. 3.3 View the APC-R Connection Status in Middle Control Start the Middle Control Software and confirm that your APC-R is showing up in the status page. You can click on the APC-R name to bring up more detail. On Mac OS, the status page is the left sidebar of the app. The devices will show under "Network Status".

(!) INFO

- If you are not seeing any APC-R show up in the Middle Control Status, please check the corresponding.
 troubleshooting section
- In some cases, the CanBUS status can say "Not Connected", when it actually is connected. So if you have connected the Canbus, and you see "CanBUS not connected", try and see wether you have remote gimbal control despite that message.

3.4 Connect Middle Control to your ATEM

Connecting Middle Control to your ATEM is not an obligation, but it will unlock you additional features such as:

- Save & Recall Camera Presets (white balance, focus, ISO, iris...)
- · Showing the current camera parameters in Middle Control, Companion, or the Middle Remote
- Fully Wireless Control for your Blackmagic Design cameras. Check out Wireless Camera Control

To connect Middle Control to your ATEM, set your **ATEM switcher IP address** in the **Switcher** tab and press "Connect".

4. Control your Gimbal & Camera Remotely

4.1 Using the Middle Control software buttons

Head over to the Gimbal tab of Middle Control.

Select camera number 1 and click on the pan / tilt arrows. Your gimbal should start moving! You can adjust the speed using the **Pan/Tilt Speed slider**.

If you've connected your camera as well (see 2.3), you should be able to control the camera's parameter too in the **Camera** tab (i.e autofocus, start rec, iso, iris, focus...).

(i) NOTE

- The **default APC-R camera ID value is 1.** This is why we need to select camera 1 in Middle Control to control the corresponding gimbal / camera. To change the Camera ID, please <u>read this tutorial</u>.
- If the **Iris** doesn't seem to change but all the other settings work, press the multiple times. You might have an F4.0 lens and only moving iris between F1.8 and F2.8.

If the Focus doesn't seem to change but all the other settings work, try long pressing the focus +/buttons.

Windows macOS

4.2 Using an external USB Joystick Controller

For a more practical experience, you can also connect a USB joystick controller to your laptop. Then, you can map the axis and buttons of the joystick to gimbal & camera actions in Middle Control:

- Press the Edit Mappings button.
- In Middle Control, click on the the camera or gimbal action you want to assign.
- Move or press the desired joystick axis or button.
- Some actions will only be available for buttons, other will only be available for axis.

Windows macOS

(i) NOTE

You can check the supported USB gaming controllers on the APC-R support page.

4.3 Using the Middle Remote

The Middle Remote will provide you with the best possible control experience, with a highly professional look & precision control. Thanks to the 3 axis joystick, 4 RGB buttons and 8 touch sensitive infinite control knobs with dedicated OLED displays showing the current camera values, the Middle Remote is the perfect fit for Middle Control. And it can support other ecosystems such as sound (Behringer X32, Yamaha...) or lights (DMX).

4.4 Using a Streamdeck XL (Bitfocus Companion)

If you want to connect Middle Control to Bitfocus Companion, please head over to the Bitfocus Companion section.

What's next?

Anything unclear or buggy in this tutorial? Please contact us at support@middlethings.co.

Also, feel free to share your feedback / questions in the new Middle Things user group on Facebook! 👍

Going further, you can have a look at the following sections :

- Change the APC-R Camera ID
- Controlling the Zoom with the DJI Focus Motor.
- Using Middle Control with a Streamdeck via BitFocus Companion
- Getting started with the Middle Remote
- Setting up for Wireless Camera Control



On this page



Middle Remote Quick Start

Congratulations for getting your hands on your first Middle Remote! In this section we are going to get started with setting up the Middle Remote with the APC-R for a complete remote gimbal + camera workflow.



You can also follow our complete Middle Remote hands on video tutorial on the Middle Things Youtube Channel.

1. Prequisites

In this section, we will assume that you have already configured your APC-R and that you can control both your gimbal & camera with the Middle Control buttons or a USB joystick. If you haven't, be sure to follow our complete APC-R tutorial on the Middle Things Youtube Channel or the APC-R Getting Started section.

2. Download & Install Glue

In addition to running Middle Control, you will need to run the Glue software by Make Pro X, which connects Middle Control to the remote. Glue also allows you to re-assign the buttons on the remote the way you like, and to connect other devices to the remote like the Behringer X32 or DMX lights for instance.

Download Glue

3. Load the Middle Control Solution

• Start Glue, you will be greeted will a welcome screen. Select "Download from Cloud"

- Enter the following Middle Control Solution code: middle-control-1
- Choose the latest version and press ok. Then click on the Middle Control folder to open the solution.
- You can head over to the MakePro Devices tab. Now connect your Middle Remote to your laptop USB port. The remote will show up in green on the left sidebar below "My Devices"



A CAUTION

Depending on your purchase date, your remote might have to go through an automatic update. In which case, it will show "Updating..." next to the remote name. DO NOT DISCONNECT the remote before the update is finished!

- Start the Middle Control software and make sure it is connected to your ATEM.
- In Glue, head over to the Features tab. Yous should see a green dot next to the MiddleControl feature.

Now your remote should display all of your ATEM camera values on the small OLED displays, corresponding to the values of the 8 touch sensitive encoders. You can select any of the Camera ID 1,2,3 and 4 selection buttons at the bottom of the remote and start controlling your gimbal & corresponding camera.

4. Assign the Middle Remote buttons

In order to get you started as soon as possible, the remote is loaded with a default configuration, but you can assign the encoders and buttons differently. In order to do so, follow the instructions below:

- Go to the MakePro Devices tab.
- Click on any of the actionable remote buttons (encoders, rgb buttons...)
- In the right sidebar, **double click** any action you want to assign to that button.

The OLED screens will automatically update.



In the Glue **Settings** -> **Behaviour** , we recommend you activate the following:

- Keep Glue running in background
- Start Glue automatically after logging in
- Hide Window on Launch
- Automatically load last opened Solution

This way, Glue will silently boot in the background each time you start your computer!

What's next?

Anything unclear or buggy in this tutorial? Please contact us at support@middlethings.co.

Also, feel free to share your feedback / questions in the new Middle Things user group on Facebook! 👍



Going further, you can have a look at the following sections:

- Using Middle Control with a Streamdeck via BitFocus Companion
- Expanding the Middle Remote

Usage

Changing the APC-R camera ID

There are two ways you can set the APC-R camera ID:

- Using the **iOS Middle Setup app**. Activate Bluetooth on your iPhone / iPad / M1 Mac and select your APC-R. You can then edit the Camera number.
- Using the **Windows / Mac OS Middle Control** desktop app. Just connect your APC-R to your laptop with the micro-usb port using a data cable (not a power cable). Then you can set the camera ID in the setup page.

You can also edit the name of your APC-R devices.



The APC-R Camera ID / Middle Control Camera ID and ATEM Camera ID are all the same. So you should set the APC-R Camera ID to the same number as your ATEM camera number.

Windows macOS

Connect your APC-R, then the APC-R will show up on the left sidebar. You can select it to access the Camera ID number. Press **Press Save** when you're done.

Usage

Setting up the DJI Focus Motor

If you have a DJI RS2, you can control your lens Zoom remotely using the DJI Focus Motor for RS2. This motor is included in the DJI RS2 Pro Combo package. We recommend using follow focus gears that are custom made for your lens: https://followfocusgears.com. But you can also use the universal focus ring gears included with the DJI motor.

Here are the steps you need to follow:

- \triangle Make sure your DJI RS2 is updated to the latest firmware using the Ronin app.
- Attach the DJI Focus Motor to the RS2 following the DJI instructions. The motor must be solidly attached to the lens to prevent it from slipping when reaching the endpoints.
- Connect the DJI Focus Motor to the middle USB-C port of the RS2 with the original DJI cable.
- Run an Autocalibration of the focus motor (not a manual calibration). To run an autocalibration, swipe from the right on the RS2 LCD screen and swipe down until you see Focus Motor Endpoints. Press and then select Focus Motor Calib. Start the calibration. The focus motor will now calibrate, by checking the endpoints on the lens. If you get too much slipping and cannot calibrate, you can hold the lens to the motor during calibration.

When you move the Zoom Value slider in Middle Control you should see the motor move from start to end position.

Windows macOS

During your live production work, we recommend controlling the Zoom either:

- With the Middle Remote (twist/rotation of the 3-axis joystick)
- With a USB gaming joystick (twist/rotation of the 3-axis joystick)
- With Companion using the Z+/Z- buttons of our custom Companion Pages



CAUTION

The APC-R only supports control for only one DJI Focus Motor, it can only be used for Zoom. We recommend using a Blackmagic Design camera so that you can control focus using the built-in lens focus motor.

Saving Position Presets

IN THE WORKS!

This section is not yet available but we are working to release it as soon as possible. In the meantime, you can learn how to save & recall presets in our complete APC-R hands on video tutorial on the Middle Things
Youtube Channel

On this page



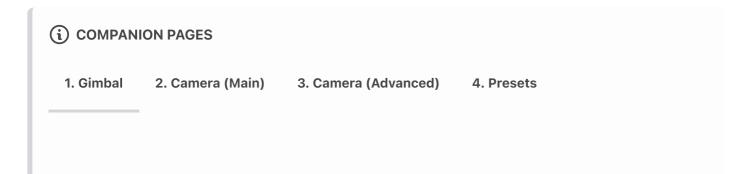
Connecting Middle Control with Companion - Streamdeck XL

If you would like to use your Stream Deck Mini, Regular or XL with the Middle Control software to control the camera & gimbal settings remotely and trigger presets, then you are at the right place. We support the Bitfocus Companion ecosystem through the Middle Control Companion plugin. Here is how to get going.

1. Download an install Bitfocus Companion

Download **BitFocus Companion 2.2** on the official website. Please note that in order to use the fourth custom page dedicated to position presets, you will need to run Companion 2.2 beta build 4060 or above.

Now, you could just start adding your buttons one by one just as you would with any other plugin. But we wanted to make it easy for you so we've built 4 custom Companion Pages:



2. Install our Companion custom pages

2.1 Download all the latest pages

(I) APRIL 4TH, 2022 UPDATE

We released new improved V2.3.1 Companion pages that includes a 4th page for presets. They now show the current Camera parameter values (WB, Iris, Tint, Gain, etc..) and the currently selected camera ID in Middle Control. These dynamic variables can be accessed anytime in Companion. You can download these 4 custom v2.3.1 pages through the download button right below.

In order to use the custom Companion pages you need:

- Middle Control version 2.3.0 or later.
- Companion V2.2 Public Release or later

If you want to use the 4th Preset page you need:

- Companion V2.2 Beta Build version 4060 or above
- Middle Things APC-R
- DJI RS2

Download Companion Pages V2.3.1



You can still download our **V1 custom Companion pages** that are designed to be used with older versions of Middle Control and Companion.

2.2 Import the custom pages into Companion

One after the other, import the four .companionconfig files into Companion using the Import / Export tab in Import Configuration . Select destination pages that are free from any buttons. Of course you can always rearrange and delete the buttons you don't need later.

On import, you will good that our puptors require on ATEM instance and Communical will prompt you to prosts on
On import, you will see that our custom pages require an ATEM instance and Companion will prompt you to create a new ATEM instance or to link your existing one. We recommend you link your ATEM instance. This way, you will get your own ATEM Names instead of the generic camera IDs selectors. And you will know which cameras are on air and in preview.

3. Configure the Middle Control Instance
Now go over to the Connections Tab -> Edit Middle Control module and set the IP adress of the computer that is running Middle Control on your network. If Middle Control is running on the same computer which has Companion running, just enter 127.0.0.1, it's the easiest workflow, that we actually recommend.

4. Press the buttons! Next, make sure you have Middle Control running, when you press camera selection buttons on the Stream Deck you should see them move in Middle Control.

\bigcirc A FEW TIPS FROM THE MIDDLE THINGS TEAM

- You can long press Focus / Iris / WB / Tint & ISO buttons for faster change.
- In the **preset page**, long press any preset for 3 seconds to save the current state of the gimbal / camera into the preset.
- Don't forget that for the preset page to work, you need Companion Beta 2.2 build number 4060 or above

- After each camera selection action, you can also add a **Aux/Output: Set source** action for your ATEM. To set the selected input into an AUX Monitor output of the ATEM for instance.
- You can recall the current camera & gimbal attributes (white balance, current camera ID, iris, pan / tilt speed etc.) within companion using the Middle Control variables in Companion!

(!) INFO

For more information on how to use the BitFocus Companion plugin in more detail, feel free to check out our **complete video tutorial** on this topic :

On this page



Wireless Camera Control for Blackmagic Cameras

You might have purchased the APC-R for use without any gimbal, and specifically for its **wireless Camera Control feature**. In a live production multi-camera setup, Blackmagic Design ATEM Software Control is powerful and allows you to adjust settings like Iris / Shutter / ISO / Focus / ND Filters / WB as well as Primary Color Correction remotely.

However, if you have moving camera operators (steadicam, shoulder cam...) which have to send the video signal wirelessly (i.e using Teradek / Hollyland video transmitters), you will only have a one-way communication. You cannot have both the video transmission and the reverse camera control information running in the same wireless video TX/RX kit. This is why URSA Mini Pro and URSA Broadcast require 2 SDI cables if you want to control them remotely. One for the video signal and one for the return signal (which includes Camera Control signal). And you also can't use two video TX/RX units, one for each direction, because the control commands will be cut from the Program return feed by the video transmitter.

Using the APC-R for Wireless Camera Control

With the Middle Things APC-R, we wanted to solve this by offering a solution that acts as a Wi-Fi (ATEM Network) to Bluetooth (Camera Control) converter. Let's take the network router that you've connected to your ATEM. Well, the APC-R connects to this router through Wi-Fi and grabs the camera control information of ATEM Software by reading into the ATEM. The APC-R then forwards that information wirelessly to the Blackmagic Camera using Bluetooth.

The APC-R can be powered with 5V using the back USB-C port of the URSA Broadcast G2 , or any 5V USB Powerbank. It is compact enough to be easily attached to the URSA Broadcast (i.e : velcro).
1. Power the APC-R
Mount the two included APC-R antennas before connecting the device.
Power the APC-R by feeding 5V DC into the micro USB port . It could either be a USB power bank, the BMPCC USB-C output or the URSA Mini Pro / Broadcast USB-C output. The LED of the APC-R will turn yellow.
2. Pair the APC-R to your Blackmagic Camera using Bluetooth

To pair your APC-R to your camera using Bluetooth, you need to use **iOS Middle Setup app** (not possible on Android). Once the pairing is made, you do not need to open the app again, so you can borrow an iPhone / iPad / Mac M1 if you are on Android.

Pairing procedure:

- 1. Activate Bluetooth on your iPhone / iPad / M1 Mac.
- 2. Launch Middle Setup and select your APC-R.
- 3. Make sure you also activate Bluetooth in the Setup page of your Blackmagic Design camera.
- 4. Bring your camera close to the APC-R.
- 5. Select your camera in Middle Setup. A prompt will pop up, asking for a code.
- 6. A **6 digit code** will show up on the Blackmagic Bluetooth Screen. Enter this pairing code into the Middle Setup prompt.

And your camera is paired! The LED on your APC-R will turn from **yellow** to **blue**.

You can also change the APC-R Camera number for this APC-R in the very same app.

3. Download & Install Middle Control

The Middle Control desktop app is the central software that controls all your APC-R units and communicates with the Blackmagic Design ATEM switcher if you have one. The software has to be running all the time. It is available both on Mac OS and Windows.

Windows macOS

Download the Middle Control app in the Mac OS App Store

Supported OS: Mac OS Big Sur (11) or later.

Run the app, set your **ATEM switcher IP address** in the **Preferences** tab and press "Connect".

4. Connect the APC-R to your network (wired)

Connect the APC-R to your ATEM router **using an ethernet cable at first**, to check wether you're all good on the connection. The APC-R will automatically get its IP adress from your router DHCP. If DHCP is disabled on your router, or you are using a switch instead of a a router, please check this section that will guide you for setting a fixed IP in the APC-R

Make sure your laptop is connected to the same router as your APC-R.

Confirm that your APC-R is showing up in the status page. You can click on the APC-R name to bring up more detail. On Mac OS, the status page is the left sidebar of the app. The devices will show under "Network Status".

Now, try adjusting settings in Blackmagic ATEM Software Control for **Camera ID number 1** (Iris, ISO, Color Correction), you should have a response on the camera.



If you are not seeing any APC-R show up in the Middle Control Status, please check the corresponding. <u>troubleshooting section</u>

5. Connect the APC-R to your network (wireless)

It's now time to set your Wifi Access Point credentials in the APC-R.

Just connect your APC-R to your laptop via the APC-R micro-usb port using a data cable (not a power cable). Then you can set the Wi-Fi crendentials and the APC-R Camera number in the setup page. If you wish to set up a fixed IP, make sure the wireless IP address is different from the wired IP address.

Windows macOS

Connect your APC-R, then the APC-R will show up on the left sidebar with a USB icon. You can select it to access the network settings. Don't forget to press **Press Save** when you're done. You can disconnect / reconnect the APC-R to make sure the settings have been saved successfully.

6. You now have complete wireless control!

Disconnect the ethernet cable. The APC-R will connect to your Wi-Fi network within around 5-15 seconds. You can know adjust your settings wirelessly from Blackmagic ATEM Software.

You are now ready to go!

Wireless Range

Here are a few notes on how to tweak the wireless range.

▶ Bluetooth Range (APC-R to Camera)

▶ Wi-Fi 2.4Ghz Range (APC-R to Wi-Fi Access Point)

Troubleshooting

Running into issues? Here are few elements to help you troubleshoot.

- ▶ I have control over all camera settings except Lift / Gamma / Gain / Contrast / Saturation
- I have control over all camera settings except Focus
- ▶ Tally Program/Preview status not shown on camera
- ▶ I have control over ethernet but not Wi-Fi

On this page



Using the Middle Tally

The Blackmagic Bluetooth Camera Control protocol does not allow us to show the tally preview / program info on the camera LCD / monitor. In order to address this, we have released on a little external Tally light that can be connected to the **AUX** port of the APC-R. You can find more information here on the product page.

Just connect the Middle Tally to the APC-R AUX port using the included 50cm cable. Or any USB 3.2 / Thunderbolt
cable (simple USB type C power cables won't work).
Now make sure the Middle Control software is running and connected to your ATEM. Your tally will automatically power up. Four states are possible :
• Red: When this APC-R has its Camera ID on Air (Program)
• Green: When this APC-R has its Camera ID on Preview (Preview)
Yellow: When no tally data is received from Middle Control (Middle Control not connected to the ATEM or
APC-R not connected to Middle Control).
Off: When it is working properly, but the Camera ID is neither in program or in preview.

(i) NOTE

The Middle Tally is not a standalone Tally. It can only be used with the APC-R.

Tally Brightness

You can adjust the Tally brightness in the Middle Control settings.

On this page



Using the Thrustmaster TCA Sidestick & Quadrant

The aim of this guide is to expose a few tips and axis / button mapping suggestions for the Thrustmaster TCA Sidestick and Quadrant.



You can use many other joysticks like the Logitech Extreme 3D Pro or an Xbox controller but we find this TCA combo very efficient since you have plenty of axes and buttons you can map.

Middle Control Mapping tips

Below is our recommendation for your Joystick mapping in Middle Control. You can buy the TCA sidestick and TCA quadrant separately. We recommend mapping focus to buttons instead of an axis, since you will get more precise control. We found that mapping focus to the rudder trim button gives a nice control too.



The small top hat / thumb joystick has a different behavior on Mac OS and Windows.

Windows macOS

Can be mapped to any +/- setting. We recommend to map the left / right movement to focus control.

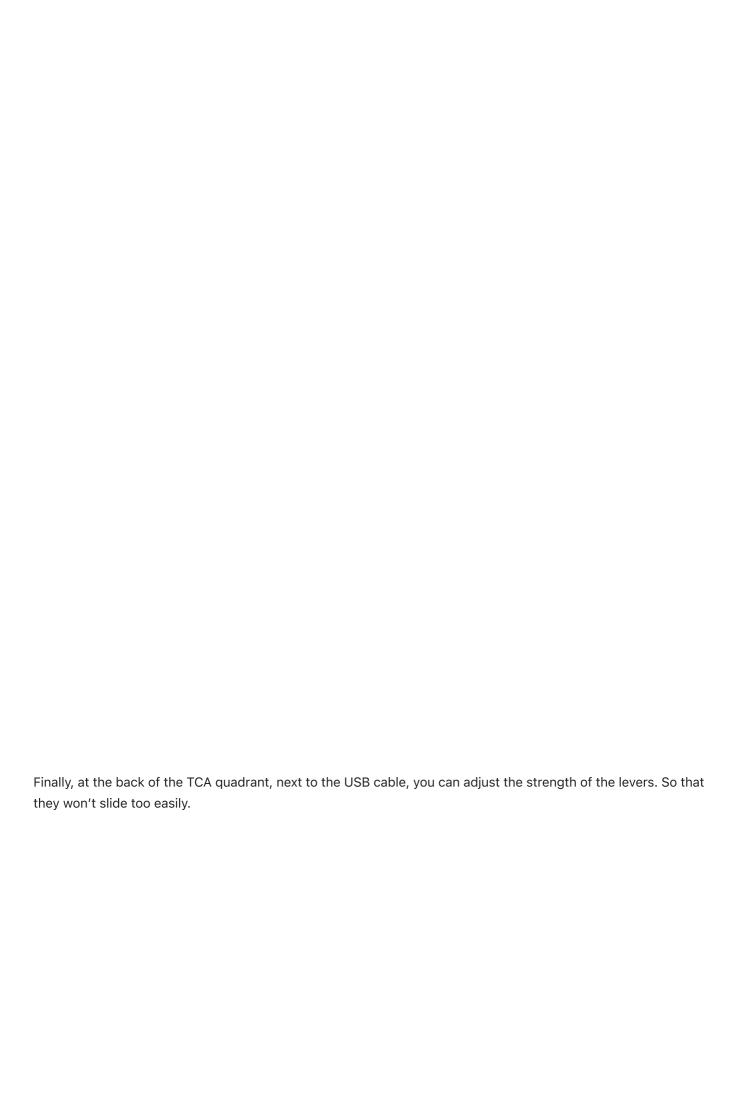
You can also buy the Thrustmaster TCA Add-on that gives you two additional axis, that you can use for Zoom speed and ISO for instance, giving you even more control.

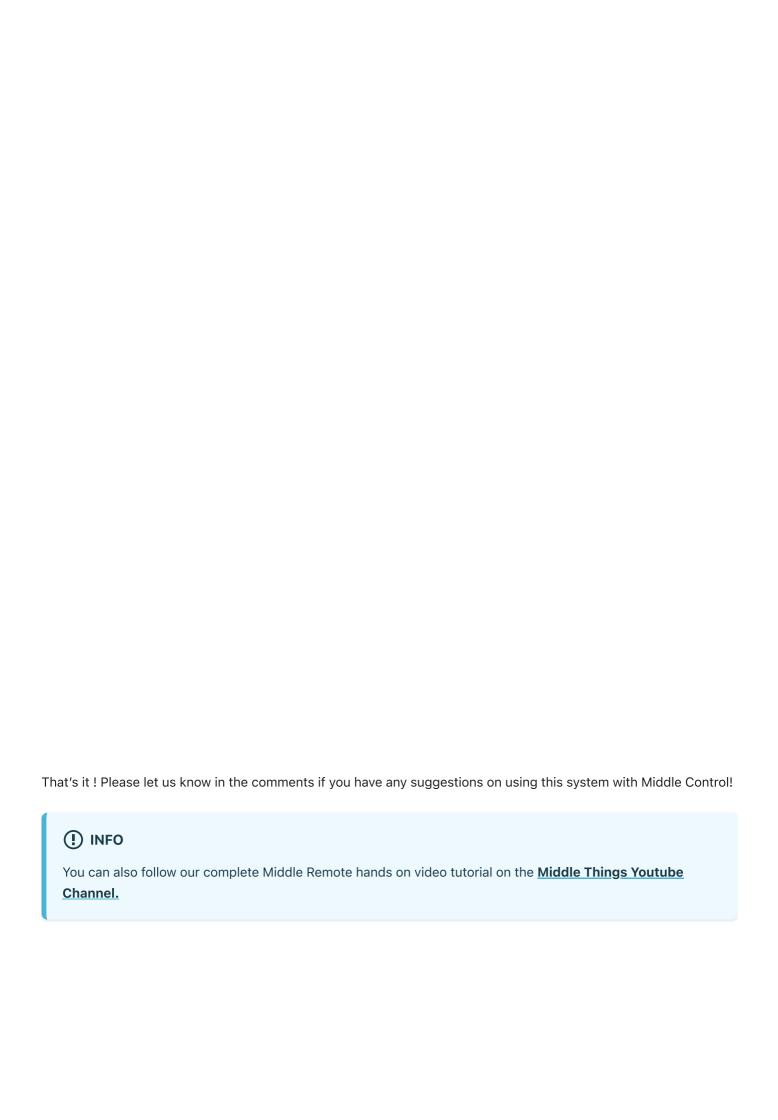
Adjustments to make on the TCA Series

Thiese joysticks where initially designed for flight simulation so there are a couple of modifications you can bring to make them more suited for live camera control. The first one is remove the detents, those "clicks" that occur when you move the levers up and down. In order to do so on the TCA quadrant. You just unscrew the two U-shaped parts at the bottom and you reverse their position and screw them back.

On the sidestick, you can also disable the detent at the end of the slider by pulling off the knob and unscrewing the small plastic part.







> Usage

Using DJI Active Track

The APC-R can be used to remotely activate the DJI Active Track technology which allows you to track a moving subject. In order to use DJI Active Track you need to use the DJI Raven Eye kit (included in the DJI RS2 Pro Combo package).

Here are the steps you need to take:

- Activate DJI Raven Eye and connect it to your DJI RS2 using the DJI instructions.
- Connect the camera HDMI port to the RavenEye.
- Make sure that you can activate RavenEye automatic tracking from the DJI Ronin app.
- Make sure your APC-R is setup.

If you want to activate / deactivate active track remotely using the APC-R:

- Move your gimbal to center the subject in the frame.
- Press the Active Track button in Middle Control (or map it to a joystick action / companion button)
- The gimbal will now follow the subject automatically. Press Active Track again to disable the tracking.

(i) NOTE

You will need an HDMI doubler to split the camera signal to both the RavenEye and the ATEM switcher.

IN THE WORKS!

The rest of this section is not yet available but we are working to release it as soon as possible.



Configuring APC-R to fixed IP

By default, the APC-R is set to fetch its IP address automatically from the router DHCP. You can set each ACP-R to a fixed IP address using the **Windows / Mac OS Middle Control** desktop app. Just connect your APC-R to your laptop via the APC-R micro-usb port using a data cable (not a power cable). Then you can set the camera ID in the setup page.

Windows macOS

Connect your APC-R, then the APC-R will show up on the left sidebar. You can select it to access the network settings. Don't forget to press **Press Save** when you're done.

You can disconnect / reconnect the APC-R to make sure the settings have been saved successfuly.



The Ethernet and Wi-Fi IP addresses HAVE to be different!

Configuring APC-R for direct connection (no router)

Using a router to link all your devices (ATEM, APC-R, Computers, Companion) is the recommend method.

However, if you want to control the APC-R without any router using direct ethernet cabling (or using a network switch) to your computer, here how you should proceed. **It is only supported on Windows**.

- Make sure your APC-R is **not** connected to the ethernet cable at this stage.
- Go to your Network Adapter Settings on your laptop and select the ethernet network card that is connected
 to the APC-R (could be USB / Ethernet dongle for instance). In the Properties, select Internet Protocol
 Version 4 (TCP/IPv4) configure its settings to a custom IP adress, as follow. You can use any IP adress you
 want, this is just an example:

• IP address: 192.168.10.35

• **Subnet Mask**: 255.255.255.0 (or 24 if you get an error when validating, can happen on the Windows 11 interface)

• **Default Gateway**: 192.168.10.1

- Launch Middle Control software. In the status page, the IP adress shown should match the one of your network adapter, specified above (192.168.10.35 here)
- Connect your APC-R to Middle Control using a micro USB cable, go into the Setup page and untick **DHCP** in the Ethernet settings. Set a custom IP address for your APC-R:

• **IP address**: 192.168.10.37 (it needs to be different than the one of your computer but with the same subnet, ex 192.168.10.XX)

Subnet Mask: 255.255.255.0

• **Default Gateway**: 192.168.10.1

Windows

- Now connect the APC-R ethernet cable to your computer or your dongle
- In Middle Control, the APC-R should show up in the Status page.

◯ TIP

- If you also want to connect your ATEM to Middle Control, you can set the ATEM with a fixed IP that matches the subnet of the other IPs and connect it to the ethernet switch. Put this IP in the switcher tab of Middle Control. For instance, in the case above, you can set your switcher to 192.168.10.240.
- If you want to keep your ATEM in DHCP mode, connect another network adapter (like a USB to ethernet adapter) to your computer, leave its network settings configured to "Get IP Adress automatically". Then, open ATEM Setup software and in the properties of the ATEM, look for the IP adress of the ATEM. Copy and paste this IP in the switcher tab of Middle Control.



Advanced Camera Configuration

IN THE WORKS!

This section is not yet available but we are working to release it as soon as possible.

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Expanding the Middle Remote with Glue & Make Pro X

IN THE WORKS!

This section is not yet available but we are working to release it as soon as possible. In the meantime, you can also follow our complete Middle Remote hands on video tutorial on the <u>Middle Things Youtube Channel</u>



Control over the Internet



IN THE WORKS!

This section is not yet available but we are working to release it as soon as possible.

APC-R does not show up in Middle Control

If the APC-R LED is **yellow** or **blue**, but does not appear in the status page of the Middle Control Desktop Software when connected using Ethernet, please review the following:

- The computer running Middle Control is on the same network as your APC-R
- Are you using a switch/direct ethernet connexion instead of a router? Please read this.
- · If your computer is connected to multiple wifi and ethernet networks, try connecting to only one network
- The IP address shown at the bottom of the Status page of Middle Control corresponds to your computer IP address on that network.



- The IP adress of your ATEM in the switcher tab is correct (if you have one)
- The APC-R is set to DHCP. To adjust these settings, connect the APC-R to your computer using USB and in the Setup page, click on APC-R settings.
- Check that you are running the latest version of Middle Control and your APC-R is up to date in the Setup tab.
- If you are powering the APC-R using CANBUS only, try disconnecting and reconnecting 4-5 times and see if it shows up. If not, try and power the APC-R using micro USB and see if it shows up.
- Try connecting your computer running Middle Control to the network using an ethernet RJ45 cable and not Wi-Fi



I have no control over Gimbal or Camera

First, check that your camera is paired to your APC / APC-R. The APC / APC-R LED should be blue and on the iOS Middle Setup app, you should see your camera with a small "Forget Pairing" button right below, when you access your APC. If your ATEM instructions have no effect on the camera, please review the following:

- Make sure your BMPCC 4K / 6K is updated to the latest firmware. Some versions had issues with bluetooth.
- Make sure the ATEM Camera ID shown in the Middle Setup iOS app (or the APC-R details in the Middle Control Status page) correspond to the Input number of your camera (SDI 6, HDMI 2, etc..).
- If you are using the APC, make sure you are adjusting a controllable setting (such as shutter, DB gain, white balance..) . For the complete list of controllable settings, please check the APC Support page..
- If you are using the APC, make sure your SDI cable goes from an SDI or PGM Output of the switcher, to the SDI Input of the APC (not SDI Loop out)
- If you are using the APC, make sure you are sending a 3G-SDI signal (1080p max resolution) with a proper cable. Try another cable. If you can only feed a UHD signal, convert it using a Teranex Express converter.



Saving & Recalling Presets does not work properly

When you recall your saved presets, if you are not seeing what you have recorded, please check the following:

- The computer running Middle Control Software should be on the same network as your ATEM and should be connected to your ATEM in the switcher tab.
- When you save a preset, try to adjust the setting a little before recording it, either using Middle Control, ATEM Software Control or a Joystick mapping. For instance, to move the white balance, move it from 3200K to 3100K and then 3200K before recording again.
- Recording a focus position right after an autofocus is not supported. You need to adjust the focus manually before recording a preset.
- If you adjust your settings directly on the Camera, these will not be recorded. You need to adjust settings on the ATEM Software or through our software.
- Lens focus position can only be saved on MFT lenses (BMPCC4K for instance).

! INFO

Installing Middle Control Software returns an error

If you are running into errors during the installation of the Middle Control software or if the Middle Control crashes on launch, please try the following:

- Install the latest version of Blackmagic Design ATEM Software Control and try again
- Install VSTRedist: x64 https://aka.ms/vs/16/release/vc_redist.x64.exe or x86 version https://aka.ms/vs/16/release/vc_redist.x86.exe
- · Try running the software, it could be working perfectly fine despite the installation error
- · Restart your computer



Middle Control crashes on launch / doesn't launch

If you are running into errors during the installation of the Middle Control software or if the Middle Control crashes on launch, please try the following:

- Install the latest version of Blackmagic Design ATEM Software Control and try again
- Install VSTRedist: x64 https://aka.ms/vs/16/release/vc_redist.x64.exe or x86 version https://aka.ms/vs/16/release/vc_redist.x86.exe
- · Try running the software, it could be working perfectly fine despite the installation error
- · Restart your computer



Camera Control isn't very smooth and does not work very well (focus, iris, etc....)

Camera Control isn't very smooth and does not work very well (focus, iris, etc....)

If your camera control isn't working very smoothly with the APC-R please read the following.

- Make sure you are running the latest version of both Middle Control, Blackmagic Camera and ATEM firmware and ATEM Software.
- ATEM Mini users: Make sure your are not sending camera control commands twice: using both the APC-R
 bluetooth chip and the ATEM HDMI camera control (such as ATEM Mini / BMPCC 4K HDMI connection or using
 bidirectionnal converters). Since the camera is receiving the same control information two times you will have a
 conflict.
- ATEM Mini users: Camera Control is generally much smoother using Bluetooth control from the APC-R than using the HDMI control protocol of the ATEM Mini.
- If you are controlling your Camera using the Bluetooth chip of the APC-R, make sure the APC-R is less than
 1.5 meters (5 feet) away from your camera



My APC-R doesn't show up in the iPhone app

If the app gives you "No APC/APC-R Detected", and doesn't show any APC/APC-R, please go through the following checks:

- Make sure **Bluetooth is turned on** on your iPhone.
- Make sure the included Antennas are connected to the APC/APC-R
- Make sure the APC/APC-R is powered on (the LED should be Yellow or Blue)
- Try and move your phone closer to the APC/APC-R.
- Force quit the app by a swipe up gesture and open it again.
- Disconnect & Reconnect the power to restart the APC/APC-R, and try again.

(!) INFO



I cannot pair my camera to the APC-R

- Make sure you are using a compatible camera..
- Make sure the included antenna is connected to the APC (two for the APC-R) .
- Bring your camera closer to the APC / APC-R and try again.
- Don't wait too long after the code shows up on the camera, there is an automatic timeout.
- If you have another language set on your BMPCC, set it in English and try again. Some languages show the wrong bluetooth status (Blackmagic issue)



If all of this fails to solve your issue, we apologize for the inconvenience, please contact customer support at support@middlethings.co

On this page



External SDK / API

If you would like to control Middle Control Software using an external device, you can do so by sending TCP commands to the computer that is running **Middle Control version 2.3 or above**. There is no SDK that can directly communicate with the APC-R units at this stage.

Here are the specifications of the TCP protocol:

(i) TCP PROTOCOL SPECIFICATIONS

Host: IP Adress of computer running Middle Control *

Port: 11581

End character: \n (CRLF or LF)

*can be 127.0.0.1 if your software is running on the same computer

Complete list of TCP commands

General actions

CAM1: Select camera/gimbal number 1

CAM2: Select camera/gimbal number 2

CAM3: Select camera/gimbal number 3

.... all the way up to CAM99

PRESET1: Trigger preset 1 of the currently selected camera ID

PRESET2: Trigger preset 2 of the currently selected camera ID

PRESET3: Trigger preset 3 of the currently selected camera ID

... All the way up to PRESET12

PRESET1C5: Trigger preset 1 of Camera ID 5 (preset 5.1 in Middle Control)

PRESET2C5: Trigger preset 2 of Camera ID 5 (preset 5.2 in Middle Control)

... All the way up to PRESET12C5

SPRESET1C5: Record preset 1 of Camera ID 5 (preset 5.1 in Middle Control)

SPRESET2C5: Record preset 2 of Camera ID 5 (preset 5.2 in Middle Control)

... All the way up to SPRESET12C5

Gimbal actions (for variable axis)

These actions will be applied to the currently selected camera ID:

Pxx: Pan speed command, xx between -2048 and +2048 (INT16)

Txx: Tilt speed command, xx between -2048 and +2048 (INT16)

Rxx: Roll speed command, xx between -2048 and +2048 (INT16)

Zxx: Zoom command, xx between -2048 and +2048 (INT16)

ZSxx: Zoom speed command, xx between 1 and 100 (INT8)

PTSxx: Pan/Tilt speed command, xx between 1 and 100 (INT8)

aFxx: Focus command, xx between 0.0 and 1.0 (FLOAT)

aIxx: Iris command, xx between 1.5 and 9 (FLOAT)

aWBxx: White Balance command, xx between 2500 and +10 000 (INT16)

aTINTxx: Tint command, xx between -50 and +50 (INT8)

aIS0xx: ISO command, xx between -12 and +36 (INT8)

Gimbal actions (for buttons)

These actions will be applied to the currently selected camera ID:

PAN_L: Pan the gimbal left

PAN_R: Pan the gimbal right

TILT_U: Tilt the gimbal up

TILT_D: Tilt the gimbal down

ROLL_L: Roll the gimbal left

ROLL_R: Roll the gimbal right

A CAUTION

After each of the gimbal actions above, you MUST also add a stop action which will stop the movement, after a delay of at least 70ms. These are PAN_IDLE, TILT_IDLE and ROLL_IDLE. Depending on which movement you mapped. For instance, a PAN_L action should be followed by a PAN_IDLE action after at least 70ms.

Z00M+: Zoom in by a step

Z00M- : Zoom out by a step

SPEED+: Increase the pan/tilt speed

SPEED-: Decrease the pan/tilt speed

ZSPEED+: Increase the zoom speed

ZSPEED-: Decrease the zoom speed

ACTIVETRACK: Active Track Enable / Disable

Camera actions

These actions will be applied to the currently selected camera ID. Works with Blackmagic cameras controlled by the ATEM or paired to the APC-R using bluetooth.

AUTOFOCUS: Triggers autofocus
AUTOIRIS: Triggers autoiris
COLORBARS: Show Color Bars
ZEBRA: Show Zebra Guide

FALSECOLORS: Show False Color Guide

STATUSVIEW: Show the status view on the HDMI out of the camera

FOCUS+: Focus in by a step
FOCUS-: Focus out by a step

IRIS+: Iris increase
IRIS-: Iris decrease

WB+: White balance increase WB-: White balance decrease

ISO+: ISO Increase
ISO-: ISO Decrease
TINT+: Tint increase
TINT-: Tint decrease

SHUTTER+: Shutter Increase
SHUTTER-: Shutter Decrease

ND+: ND Filter Increase
ND-: ND Filter Decrease

REC_START: Start Rec
REC_STOP: Stop Rec

REC_START_ALL: Start Rec on all cameras
REC_STOP_ALL: Stop Rec on all cameras

(!) INFO

Previously, the SDK was based on UDP commands on port 2390. The commands are the same, but the UDP API will soon be discountinued in the future.