



KINESIS KB360-Pro ZMK Programming Engine User Manual

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USER'S MANUAL ZMK Programming Engine



KB360-Pro

Proudly designed and hand-assembled in the USA since 1992

Keyboard® with the ZMK Programming Engine Keyboard models covered by this manual include all KB360-Pro series keyboards (KB360Pro-xxx). Some features may require a firmware upgrade. Not all features are supported on all models. This manual does not cover the setup and features for the Advantage360 keyboard which features the SmartSet Programming Engine. February 18, 2021, Edition This manual covers features included up through the firmware version 2483f3b (February 18, 2022)

If you have an earlier version of firmware, not all features described in this manual may be supported. To download the latest firmware here: kinesis.com/support/kb360pro/

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FCC Radio Frequency Interference Statement

Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Warning

To assure continued FCC compliance, the user must use only shielded interfacing cables when connecting to a computer or peripheral. Also, any unauthorized changes or modifications to this equipment would void the user's authority to operate.

INDUSTRY CANADA COMPLIANCE STATEMENT

This Class B digital apparatus meets all requirements of the Canadian Interface-causing Equipment Regulations. Cet Appareil numerique de la classe B respecte toutes les exigences du Reglement sur le material brouilleur du Canada.

Read Me First

1.1 Health and Safety Warning

Continuous use of any keyboard may cause aches, pains, or more serious cumulative trauma disorders such as tendinitis and carpal tunnel syndrome, or other repetitive strain disorders.

- Exercise good judgment in placing reasonable limits on your keyboarding time every day.
- Follow established guidelines for computer and workstation setup (see Appendix 13.3).
- Maintain a relaxed keying posture and use a light touch to press the keys.

A keyboard is not a medical treatment

This keyboard is not a substitute for appropriate medical treatment! If any information in this guide appears to contradict your health care professional's advice, please follow your health care professional's advice.

Establish realistic expectations

- Ensure that you take reasonable rest breaks from keyboarding during the course of the day.
- At the first sign of stress-related injury from keyboard use (aching, numbness, or tingling of the arms, wrists, or hands), consult your health care professional.

No warranty of injury prevention or cure

Kinesis Corporation bases its product designs on research, proven features, and user evaluations. However, because of the complex set of factors believed to contribute to computer-related injuries, the company can make no warranty that its products will prevent or cure any ailment. Your risk of injury may be affected by workstation design, posture, time without breaks, type of work, non-work activities and individual physiology.

If you currently have an injury to your hands or arms, or have had such an injury in the past, it is important that you have realistic expectations of your keyboard. You should not expect an immediate improvement in your physical condition simply because you are using a new keyboard. Your physical trauma has built up over months or years, and it may take weeks before you notice a difference. It is normal to feel some new fatigue or discomfort as you adapt to your Kinesis keyboard.

1.2 Preserving Your Warranty Rights

Kinesis does not require any product registration to obtain warranty benefits, but you will need your purchase receipt in the event you need a warranty repair.

1.3 Quick Start Guide

If you are eager to get started, please consult the included Quick Start Guide. The Quick Start Guide can also be downloaded from the Advantage360 Pro Resources Page. Consult this full manual for advanced features.

1.4 Read This User's Manual

Even if you don't normally read manuals or you are a long-time user of Kinesis Contoured keyboards, Kinesis strongly encourages you to review this entire manual. The Advantage360 Professional uses an open-source programming engine called ZMK and features a totally different way of customizing the keyboard from prior contoured keyboards from Kinesis.

If you unknowingly execute a programming shortcut or key combination, you could inadvertently alter the performance of your keyboard, which could have unintended consequences for your work and might necessitate a hard reset of the keyboard.

1.5 Power Users Only

Like it says in the name, this Advantage360 Professional keyboard was designed specifically for professional users. The programming engine is not nearly as user-friendly as Kinesis SmartSet Engine found on the "base" model Advantage360. If you want to customize your layout but are used to using Kinesis onboard programming THIS MAY NOT BE THE RIGHT KEYBOARD FOR YOU.

1.6 Sleep Mode

To maximize battery life and speed up charging, the keyboard is equipped with a 30-second sleep timer. Each key module will go to sleep after 30 seconds with no activity. The next keypress will wake the key module nearly instantaneously so as not to disrupt your work.

Overview

2.1 Geometry and Key Groupings

If you are new to a Kinesis Contoured keyboard, the first thing you will notice about the Advantage360™ keyboard is its sculpted shape, designed to conform to the natural postures and shapes of your hands—which reduces the physical demands of keyboarding. Many have imitated this striking design but there is no substitute for its unique three-dimensional shape. While the Advantage360 looks very different from other keyboards, you'll find that making the transition is actually quite easy because of its intuitive form factor, thoughtful key layout, and its unparalleled electronic configurability. The Advantage360 keyboard features distinctive key groupings not found on traditional or “natural style” keyboards.

2.2 Keyboard Diagram



2.3 Ergonomic Design and Features

The design of the Advantage360 keyboard traces its roots to the very first Contoured™ keyboard introduced by Kinesis in 1992. The original objective was to develop a design informed by generally accepted ergonomic design principles to maximize comfort and productivity and minimize the major health risk factors associated with typing. Every aspect of the form factor was thoroughly researched and tested.

Learn More: kinesis.com/solutions/keyboard-risk-factors/

Fully split design

Separating the keyboard into two independent modules allows you to position the keyboard so you can type with straight wrists which reduces abduction and ulnar deviation which are harmful postures that can lead to repetitive strain injuries such as carpal tunnel syndrome and tendonitis. Straight wrists can be achieved by a mixture of sliding the modules apart to approximately shoulder-width and/or rotating the modules outward. Experiment with different positions to find what is most comfortable for your body type. We recommend starting with the modules close together and gradually moving them apart. Thanks to wireless linking you can position the modules wherever you want without having to clutter your desk with a link cable.

Bridge Connector

If you aren't ready to go to full separation, attach the included Bridge Connector to recreate the classic separation of the one-piece contoured keyboard. Note: The Bridge Connector is NOT designed to bear the weight of the keyboard, it's a simple spacer for desktop use. So do not pick the keyboard up by one module with the Bridge Connector attached.

Integrated palm supports

Unlike most keyboards, the Advantage360 features integrated palm supports and optimal cushioned palm pads, now magnetic and washable (sold separately). Together these enhance comfort and reduce stressful extension and pressure on the wrist. The palm supports provide a place to rest the hands while they are not actively keying, though many users prefer to rest while typing to take the weight off the neck and shoulders. You should not expect to be able to reach all the keys without rocking your hands forward at times.

Separate thumb clusters

The left and right thumb clusters feature commonly used keys such as Enter, Space, Backspace, and Delete. Modifier keys such as Control, Alt, Windows/Command. By moving these commonly used keys to the thumbs, the Advantage360 redistributes the workload from your relatively weaker and overused little fingers to your stronger thumbs.

Vertical (orthogonal) key layout

Keys are arranged in vertical columns, unlike conventional “staggered” keyboards, to reflect the optimal range of motion of your fingers. This shortens reach and reduces strain, and can also make it easier to learn touch typing for new typists.

Concave key wells

The key wells are concave to reduce hand and finger extension. Hands rest in a natural, relaxed position, with the fingers curled down to the keys. Keycap heights are varied to match the different lengths of your fingers. Conventional flat keyboards cause longer fingers to arch up over the keys and result in an extension of the muscles and tendons in your hands, which causes rapid fatigue.

Low-force mechanical key switches

The keyboard features full-travel mechanical switches known for their reliability and durability. The standard brown stem switches feature “tactile feedback” which is a slightly elevated force around the midpoint of the stroke of the key which lets you know the switch is about to be activated. A tactile response is preferred by many ergonomists because it cues your fingers that activation is about to occur and is thought to reduce the incidence of “bottoming out” the switch with a hard impact.

If you are coming from a laptop keyboard or a membrane-style keyboard, the additional depth of travel (and noise) may take some getting used to, but the benefits are huge.

Adjustable Tenting

The contour design of the Advantage360 naturally positions your hands so that your thumbs are approximately twenty degrees higher than your pinky fingers when the keyboard is in its lowest position. This “tented” design helps to minimize stresses associated with pronation and static muscle tension while enabling maximum keying productivity. Using the buttons on the underside of the keyboard you can quickly and easily choose between three available heights to find the settings that feel most natural for your body. We recommend starting on the lowest setting and working your way up until you find the sweet spot.

2.4 LED Indicator Lights

There are 3 RGB light-emitting diodes (LEDs) above each thumb cluster. The Indicator LEDs are used to indicate the status of the keyboard and provide programming feedback (See Section 5). Note: Caps Lock, Num Lock, and Scroll Lock only work on a Windows machine when the keyboard is connected over USB.

Left Key Module

Left = Caps Lock (On/Off)

Middle = Profile/Channel (1-5)

Right = Layer (Base, Kp, Fn, Mod)



Right Key Module

Left = Num Lock (On/Off)

Middle = Scroll Lock (On/Off)

Right = Layer (Base, Kp, Fn, Mod)



Default Layers: Base: Off, Kp: White, Fn: Blue, Mod: Green

Default Profiles: 1: White, 2: Blue, 3: Red. 4: Green. 5: Off

2.5 Open-Source Programmability via ZMK

Kinesis contoured keyboards have long featured a fully-programmable architecture that allowed users to create macros and custom layouts and the Advantage360 Professional is no exception. Based on popular demand from power users, we built the Pro model using the revolutionary open-source ZMK engine which was specifically designed to support Bluetooth and wireless linking of the split keyboard. The beauty of open-source is that the electronics grow and adapt over time based on user contributions we hope that YOU will become a member of the ZMK community and help take this technology to new and exciting places

What's different about ZMK

Unlike prior versions of the Advantage, ZMK does not support onboard recording of macros or remapping. Those actions take place through the 3rd party site [Github.com](https://github.com) where users can write macros, customize layouts, add new layers, and much more. Once you've built your custom layout you simply download the firmware files for each module (left and right) and Install them on the keyboard's flash memory. ZMK does support a variety of “other” onboard programming commands which are accessed using the dedicated “Mod” key found on the right module.

5 Profiles but only 1 Layout

ZMK supports multi-channel Bluetooth which means you can pair your keyboard with up to 5 Bluetooth-enabled devices and instantly switch between them using the Mod-shortcut (Mod + 1-5). However, each Profile always

features the same underlying Layout. Since ZMK limits you to a single Layout, the way to increase the number of key actions is to build additional Layers. The default Layout has 3 layers (4 if you count the Mod Layer) but you can add dozens more to suit your workflow.

Rechargeable Lithium-Ion Batteries and On/Off Switches

Each module contains a rechargeable lithium-ion battery and an on/off switch. Slide each switch AWAY from the USB port to turn ON the battery, and slide the switch TOWARDS the USB port to turn OFF the battery. When using the keyboard wirelessly you must have each module switched ON and a sufficiently charged battery. The batteries are designed to last for several months with the LED backlighting DISABLED. If you plan to use backlighting you will need to charge the battery on a much more regular basis. Note: The left module is the “primary” module so it consumes more power than the right module so it is normal to charge that side more often.

2.6 Reset Button

Each key module features a physical reset button which can be accessed via a paper pressed into the thumb cluster at the intersection of the 3 keys shown at the right. If you have difficulty finding the spot, remove the keycaps or use a flashlight. Reset button functionality is described later in this Manual.



Installation and Setup

3.1 In the Box

- Quick Start Guide
- Two Charging Cables (USB-C to USB-A)
- Additional keycaps for customization and keycap removal tool
- Bridge Connector

3.2 Compatibility

The Advantage360 Pro keyboard is a multimedia USB keyboard that uses generic drivers provided by the operating system, so no special drivers or software is required. To connect the keyboard wirelessly you will need a Bluetooth-enabled PC or a Bluetooth dongle for your PC (sold separately).

3.3 Choice of USB or Bluetooth

The 360 Pro is optimized for wireless Bluetooth Low Energy (“BLE”) but it can also be used in USB mode by connecting the left module directly to your PC. Note: The left and right modules will always communicate with each other wirelessly. Connecting the right module to a PC is only for purpose of charging the battery.

Note: Anytime the left module is connected to a PC over USB keystrokes will be sent to that PC over USB and any paired Bluetooth PC will be ignored.

3.4 Recharging the Battery

The keyboard ships from the factory with only a partially charged battery. We recommend plugging both modules into your PC to charge them fully when you first receive the keyboard.



3.5 USB Mode

To use the keyboard over USB, simply connect the left module to a full-size USB port using one of the included charging cables. To power the right module you can either 1) toggle the On/Off switch to the “On” position and use battery power, or 2) connect the right module to a USB port and use “shore” power. Note that if you choose not to connect the right module you will need to charge it eventually.



3.6 Bluetooth Pairing

The Pro can be paired with up to 5 Bluetooth-enabled devices. Each of the Profiles is color-coded for easy reference. The keyboard defaults to Profile 1 (“White”). The Profile LED will flash rapidly to signal it is ready to be paired.

1. Toggle both switches to the “On” position (away from the USB port)
2. Navigate to your PC’s Bluetooth menu
3. Select the “Adv360 Pro” from the menu and follow the prompts
4. The keyboard’s Profile LED will go “solid” when the keyboard pairs successfully



Pairing with additional devices

1. Hold the Mod key and tap 2-5 (2-Blue, 3-Red, 4-Green, 5-Off) to toggle to a different Profile
2. The Profile LED will change color and flash rapidly to indicate the keyboard is now discoverable
3. Navigate to the new PC's Bluetooth menu and select "Adv360 Pro" to pair this channel (Repeat)

Getting Started

4.1 Positioning and Work Area Setup

Thanks to its separate key modules, unique thumb clusters, and built-in tenting, the Advantage360 forces you to adopt an optimal typing position when you place your fingers over the home row. The Advantage360 uses the conventional home row keys (ASDF / JKL;). The home row keys feature special, cupped keycaps designed let you quickly find the home row without taking your eyes off of the screen. Despite the unique architecture of the Advantage360, the finger you use to press each alphanumeric key is the same finger you would use on a traditional keyboard.

Position your fingers on the color-contrasted home row and relax your right thumb over the Space Key and your left thumb over Backspace. Raise your palms slightly above the palm rests while typing. This position provides the necessary mobility for your hands so that you can comfortably reach all the keys.

Note: Some users may need to move their arms slightly while typing to reach some distant keys.

Workstation configuration

Since the Advantage360 keyboard is taller than a traditional keyboard and features integrated palm supports, it may be necessary to adjust your workstation to achieve a proper typing posture with the Advantage360. Kinesis recommends the use of an adjustable keyboard tray for optimal placement.

Learn More: kinesis.com/solutions/ergonomic-resources/

4.2 Adaptation Guidelines

Many experienced typists overestimate the amount of time it will take them to adapt to the key layout. By following these guidelines you can make adaption fast and easy, regardless of your age or experience.

Adapting your "kinesthetic sense"

If you are already a touch typist, adapting to the Kinesis Contoured keyboard does not require "re-learning" to type in the traditional sense. You just need to adapt your existing muscle memory or kinesthetic sense.

Typing with long fingernails

Typists with long fingernails (i.e., greater than 1/4") may have difficulty with the curvature of the key wells.

Typical adaptation period

You will need a little time to adjust to the new shape of the Advantage360 keyboard. Laboratory studies and real-world testing show that most new users are productive (i.e., 80% of full speed) within the first few hours of starting to use an Advantage360 keyboard. Full speed is typically achieved gradually within 3-5 days but can take up to 2-4 weeks with some users for a few keys. We recommend not switching back to a traditional keyboard during this initial adaptation period as that can slow your adaptation.

Initial awkwardness, fatigue, and even discomfort is possible

Some users report awkwardness when first using a Contoured keyboard. Mild fatigue and discomfort may occur while you adjust to new typing and resting postures. If you experience severe pain, or symptoms persist for more than a few days, stop using the keyboard and see Section 4.3.

After Adaptation

Once you have adapted to the Advantage360, you should have no problem switching back to a traditional keyboard, though you may feel slow. Many users report an increase in typing speed because of the efficiencies inherent in the contoured design and the fact that it encourages you to use proper typing form.

If You Are Injured

The Advantage360 keyboard is designed to reduce the physical stress that all keyboard users experience—whether or not they are injured. Ergonomic keyboards are not medical treatments, and no keyboard can be guaranteed to cure injuries or prevent the occurrence of injuries. Always consult your health care professional if you notice discomfort or other physical problems when you use your computer.

Have you been diagnosed with RSI or CTD?

Have you ever been diagnosed with tendinitis, carpal tunnel syndromes, or some other form of repetitive strain injury ("RSI"), or cumulative trauma disorder ("CTD")? If so, you should use special care when using a computer, regardless of your keyboard. Even if you simply experience modest discomfort when using a traditional keyboard you should use reasonable care when typing. To achieve the maximum ergonomic benefits when using the Advantage360 keyboard, it is important that you arrange your workstation in accordance with generally accepted ergonomic standards and take frequent "micro" breaks. For individuals with existing RSI conditions, it may be advisable to work with your health care provider to develop an adaptation schedule.

Establish realistic expectations

If you currently have an injury to your hands or arms or have had such an injury in the past, it is important that you have realistic expectations. You should not expect an immediate improvement in your physical condition simply by switching to the Advantage360, or any ergonomic keyboard for that matter. Your physical trauma has built up over months or years, and it may take a number of weeks before you notice a difference. At first, you may feel some new fatigue or discomfort as you adapt to the Advantage360.

A keyboard is not a medical treatment!

The Advantage360 is not a medical treatment nor a substitute for appropriate medical treatment. If any information in this Manual contradicts the advice you have received from a healthcare professional, please follow your healthcare professional's instructions.

When to begin using your new keyboard

Consider beginning to use your Advantage360 keyboard after you have taken a break from traditional keyboarding— perhaps after a weekend or a vacation, or at the very least first thing in the morning. This gives your body a chance to rest and make a fresh start. Trying to learn a new keyboard layout can be frustrating, and if you are working long hours or under a deadline that can make matters worse. Do not overtax yourself early on, and if you have not been using a keyboard regularly, build up slowly. Even if you are symptom-free, you are still susceptible to injury. Do not dramatically increase your keyboard usage without first consulting your health care professional.

If your thumbs are sensitive

The Advantage360 keyboard is designed for increased thumb usage compared to a traditional keyboard which places more strain on the little fingers. Some new Kinesis contoured keyboard users initially experience fatigue or discomfort as their thumbs adapt to the increased workload. If you have a preexisting thumb injury, be especially careful to move your hands and arms when reaching for thumb keys and consider customizing your layout to reduce the thumb workload.

Guidelines for using your thumbs

Avoid stretching your thumbs to reach the furthest keys in the thumb clusters. Instead move your hands and arms slightly, being careful to stay relaxed, and keep your wrists straight. If your thumbs are especially sensitive, consider using your index fingers instead of your thumbs to activate these keys. You may want to speak with your health care professional about these options. If pain persists for more than several days, stop using the Advantage360 keyboard and contact your health care professional for advice.

Basic Keyboard Use

5.1 Base, Multi-Layer Layout

The default layout is a great place to start learning the Advantage360. The keyboard comes pre-configured for QWERTY typing on a Windows PC but the layout can be reconfigured using the web-based GUI and by rearranging any number of keycaps.

The Advantage360 Pro is a multi-layer keyboard which means that each physical key on the keyboard can perform multiple actions. The default layout features 3 easily accessible layers: The primary “Base Layer”, and two secondary layers (“Fn” and “Keypad”) which offer auxiliary key actions. The user can use the 3 dedicated layer keys in the default layout to move between the layers as needed. Most keys perform the same action in all 3 layers by default, but keys that have unique actions in the auxiliary layers have additional legends on the front of the keycap. Navigating layers can be intimidating at first but with practice, it can actually boost your productivity and improve your comfort by keeping your fingers on the home row.

Note: Power users can add dozens more layers using the GUI.

Each Layer is color-coded and indicated by the rightmost LED on each module

- Base: Off
- Kp: White
- Fn: Blue
- Mod: Green

Function Keys (F1 – F12) reside in the new Fn Layer

Long-time users of our contoured keyboard will note that we have eliminated the 18 half-size function keys

resulting in a more compact layout. The Function Key actions now reside in the new “Fn Layer” as secondary actions for the traditional number row (offset by one). The Fn Layer can be accessed by pressing either of the two new “pinky” keys labeled with “Fn”. By default these two Fn Layer Keys momentarily shift the keyboard to the Fn Layer. Example: To output F1, press and hold either of the Fn Layer Keys and then tap the “=” key. When you release the Fn Layer Key you return to the Base Layer and the primary key actions.

By default, the Fn layer features 12 unique key actions (F1-F12) which are legend on the front left edge of the keycaps but any custom key actions can be written to this layer.

Numeric 10 Key resides in the Keypad Layer

The new full-size Keypad Layer Key (left module, labeled with “kp”) toggles the keyboard into the Keypad Layer where the standard numeric 10-key actions are found on the right module. Unlike the Fn Layer Keys, the Keypad toggles layers. Example: To output “Num Lock”, tap the Keypad Layer key once to move in the Keypad Layer, and then tap the “7” key. Then tap the Keypad Layer Key again to return to the Base Layer.

By default, the Keypad layer features 18 unique key actions on the right module (traditional 10 key) which are legend on the front left edge of the keycaps but any custom key actions can be written to this layer.

5.2 Four new Hotkeys

The Advantage360 features 4 keys in the middle of the keyboard labeled 1-4 inside of a circle. By default these keys are blank so don’t be disappointed if they don’t produce any action at first. These four keys can be programmed to perform any single key action, mouse click, macro, and more. And a different action can be assigned in each layer. Use them in whatever way you see fit, or simply ignore them.

5.3 Disable Indicator LEDs

If you find the indicator LEDs annoying, not useful, or want to maximize battery life you can disable all indicator LEDs with the shortcut Mod + Space, or Mod + Backspace. See Section 2.4 for LED assignments.

5.4 Adjust backlighting

The Pro features 5 levels of brightness and Off. Using the backlight will significantly affect battery life so we recommend disabling the backlight except when needed. To adjust the backlight up or down through the 6 levels, hold the Mod key and tap either set of arrow keys (Up/Left to increase and Down/Right to decrease). You can also quickly toggle backlighting on/off using the shortcut Mod + Delete, or Mod + Enter.

5.5 Toggling between the 5 Profiles

The Pro can be paired with up to 5 different Bluetooth Enabled devices (See Section 3). Use the shortcut Mod + 1-5 to toggle between the 5 Profiles to pair from scratch or reconnect with a previously paired device.

- Profile 1: White
- Profile 2: Blue
- Profile 3: Red
- Profile 4: Green
- Profile 5: Off (Use this profile for maximum battery life)

5.6 Battery Level

For a real-time update on battery level in each module, hold the Mod key and then hold either Hotkey 2 or Hotkey 4. The indicator LEDs will temporarily display the charge level for each key module. Note: The left module will drain the battery faster because that is the primary module and uses more CPU power.

- Green: More than 80%
- Yellow: 51-79%
- Orange: 21-50%
- Red: Less than 20% (Charge soon)

If you are not getting your desired battery life, dim the backlighting (or turn it off altogether). You can also use Profile 5 which does not have a static Profile LED and/or disable indicator lighting as well.

5.7 Bluetooth Clear

If you wish to re-pair one of the 5 Bluetooth Profiles with a new device (or are having trouble connecting), use the Bluetooth Clear shortcut (Mod + Left Alt, or Mod + Right Windows) to erase the connection with PC in the active Profile. If you are simply trying to re-pair with the same device we recommend disconnecting/removing the “Adv360 Pro” from the target PC and performing the Bluetooth Clear command so you have a clean slate.

5.8 Indicator LED Feedback

- Profile LED Flashing Rapidly: The selected Channel (1-5) is now discoverable and ready to be paired with a Bluetooth-enabled device.
- Profile LED Flashing Slowly: The selected Channel (1-5) is has been successfully paired BUT the Bluetooth-enabled device is not in range. If that device is powered on and in range, it may be necessary to erase the pairing connection and start again.
- Right Side LEDs are flashing Red: The right module has lost connection with the left side. Either the left side is out of range, powered off, or the battery is dead. If none of those are the case, it may be necessary to re-sync the modules. You can re-sync the left and right modules by plugging both into power at the same time, or by using a paper clip folded into a u-shape to press both reset buttons at the same time.

5.9 Bootloader Mode

The bootloader is used to gain access to each key module's flash memory for installing new firmware or performing a Settings Reset. Use the key command Mod + Hotkey 1 for the Left Module, or Mod + Hotkey 3 for the Right Module. You can also

5.10 Default Layout Map

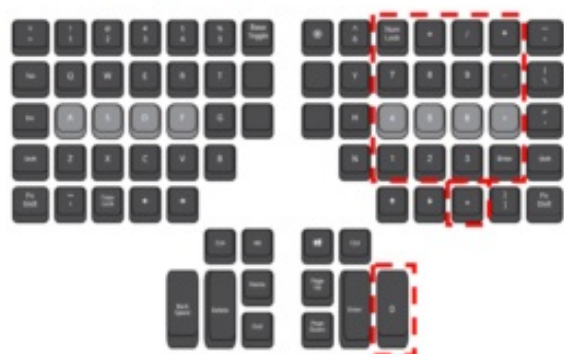
Base Layer



Function Layer ("Fn")



Keypad Layer ("Kp")

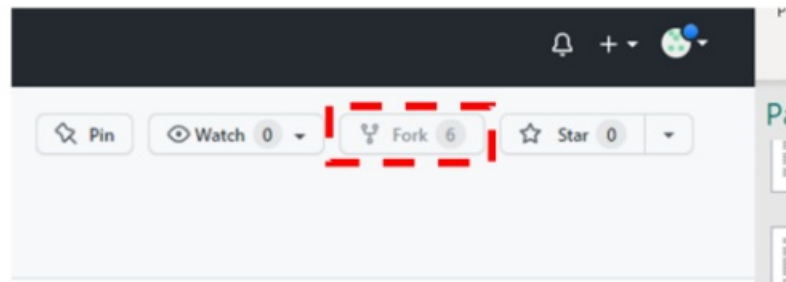


Customizing your Keyboard

Custom programming your Advantage360 Pro keyboard happens on Github.com, a 3rd party site where open-source collaborators share and host projects like ZMK.

6.1 Setting up your GitHub Account

1. Visit [Github.com/signup](https://github.com/signup) and follow the prompts to create and verify your account
2. Once your account has been set up, log in to Github and visit the main 360 Pro code “Repository” at github.com/PolarityWorks/zmk-config-adv360
3. Click the “Fork” button in the upper corner to create your own personal Advantage360 “repo”



4. Click the Actions Tab and then click the green button to enable “Workflows”



6.2 Using the Keymap Editor GUI

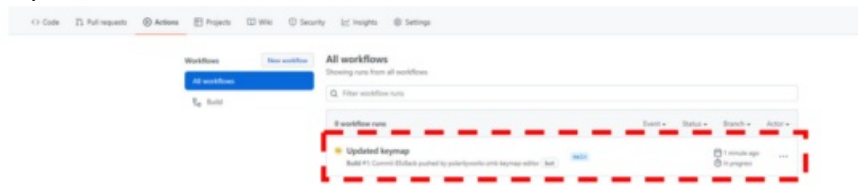
The graphical interface for custom programming the Advantage360 is web-based so its compatible with all operating systems. Simply visit the URL below and log in with your GitHub credentials when prompted.

polarityworks.github.io/keymap-editor/

If you have multiple Repositories in your GitHub account, select the “Adv360” repo and select the “main” Branch. A 2D graphical representation of the keyboard will appear on the screen. Each switch position will display the default action. Navigate between the 4 layers using the circular buttons at the left. To reassign a key, first, click the upper left corner to designate the desired behavior. The behavior “&kp” represents a standard keypress but there are many other options for power users to choose from. Then click the center of the corresponding switch to select the desired key action. When you have finished all your changes click the green “Commit Changes” button at the bottom of the screen.

6.3 Building Firmware

Anytime you “Commit Changes” you can navigate to the Actions tab in your Adv360 Repo where you will see a new workflow entitled “Updated Keymap”. Github is now automatically building a new set of left and right keyboard firmware files with your custom layout. The yellow dot indicates the build is in progress. Each build will take several minutes so be patient.



Once the build is complete, the yellow dot will turn green. Click the “Updated keymap” link to load the build page and then click “firmware” to download the two firmware files to your PC. Follow the firmware update instructions in the next chapter to flash the firmware onto the keyboard.



6.4 ZMK Token List

ZMK supports a wide array of keyboard actions (letters, numbers, symbols, media, mouse actions). Visit the link below for a handy list of tokens to reference when programming your keyboard.

<https://zmk.dev/docs/codes/>

6.5 Creating Macros via Direct Programming

The ZMK engine in the Advantage360 Pro does not support recording macros on-the-fly like earlier versions of the Advantage. Macros can be created by direct programming the macros.dtsi file on GitHub. Open the “Code” tab on Adv360 Repo on GitHub, then open the “config” folder, and then the macros.dtsi file. Click the pencil icon to edit the file. There are several example macros stored in this file already and we recommend editing one of those macros. First, change the name to something short and memorable in all 3 locations. Then input the desired sequence of keys on the bindings line using the tokens linked above. Then click the “Commit changes” button.

Example macros.dtsi Syntax

```
macro_name: macro_name {  
    compatible = "zmk,behavior-macro";  
    label = "macro_name";  
    #binding-cells = <0>;  
    bindings = <&kp E>, <&kp X>, <&kp A>, <&kp M>, <&kp P>, <&kp L>, <&kp E>;  
};
```

Once you’ve written your macro to the macros.dtsi file, navigate back to the “config” folder and open the “adv360.keymap” file. Click the pencil icon to edit this file and then assign your macro to the desired key position in the desired layer using the syntax “¯o_name”. Click “Commit Changes” and now navigate to the Actions tab and follow the instructions (see Section 7.1) to download and install your new firmware file with the updated keymap.

Firmware Update

Your Advantage360 Pro keyboard comes from the factory with the most up-to-date fully-vetted version of the ZMK firmware as of its build date but Kinesis may at times release new versions of firmware to improve performance and/or compatibility. And 3rd party contributors to ZMK may publish experimental features that you wish to test out as well. And each time you update your layout (aka “keymap”) you will need to install a new version of the

firmware.

When installing firmware be mindful of the fact there are unique left and right versions and installing them on the wrong key module will have negative consequences.

7.1 Firmware Update Process

1. Obtain the appropriate Advantage360 Pro firmware update files (".uf2" files) from GitHub
2. Connect the left module to your PC using the charging cable
3. Then place the left module into bootloader mode using the shortcut Mod + Hotkey 1 (note: keystrokes on the keyboard are disabled while in the bootloader).
4. Copy and paste the left.uf2 firmware update file onto the removable drive "Adv360" that will appear on your PC
5. The keyboard will automatically install the file and disconnect the removable drive
6. Now connect the right module to your PC using the charging cable
7. Then place the right module into bootloader mode using the shortcut Mod + Hotkey 3
8. Copy and paste the right.uf2 firmware update file to the other "Adv360" removable drive
9. The keyboard will automatically install the file and when both sides have been updated you are ready to go

Note: You can also place a key module into bootloader mode using the physical Reset button. Unfold a paper clip and find the small hole centered between Page Up, Page Down, and Enter on the right module and Home, End, and Delete on the left module. With the desired module connected via USB simply double-click the Reset Button to enter bootloader mode manually. Note: You do not need to remove any keycaps to access this button.

7.2 Settings Reset

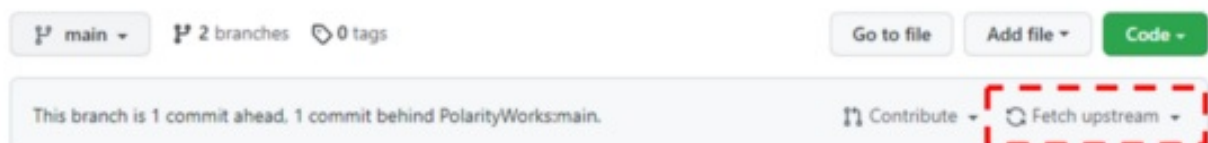
In some instances, like when installing a major firmware release from Kinesis or if you are having difficulties with a new build, it will be desirable to install a rescue firmware file to restore the keyboard its basic state PRIOR to installing the update file.

1. Navigate to the "Code" tab on your Adv360 Repo
2. Click the "settings-reset.uf2" link and then click the "download" button
3. Follow the instructions above to install settings-reset.uf2 on to both the left and right key modules
4. Once the settings-reset file has been installed on both modules, proceed to install the new firmware files of your choice.

Note: The keyboard will be inoperable until new firmware is installed so you may want to have an alternate keyboard handy. And use the physical Reset button to place the keyboard into bootloader mode.

7.3 Finding New Firmware

To pull the latest firmware from Kinesis, click the Fetch Upstream button from the "Code" tab. Then you can visit your workflows in the "Action" tab and select the desired build, and then click "Re-Run all Jobs" to rebuild your keymap in the new firmware.



Troubleshooting, Support, Warranty, and Care

8.1 Troubleshooting

If the keyboard behaves in unexpected ways, there are a variety of easy "DIY" fixes you can experiment with:

Stuck Key, Stuck Indicator LED, keystrokes not sending, etc

With the keyboards unplugged, simply toggle the on/off switch to all the keyboards to refresh themselves.

Connect the left module over the USB to see if keystrokes are working.

Trouble pairing

The Profile LED will flash rapidly if the keyboard is unpaired and discoverable. The Profile LED will flash slowly if the keyboard is having pairing difficulties. If you are having trouble pairing (or re-pairing) use the Bluetooth Clear shortcut (Mod + Left Alt or Mod + Right Windows) to erase the PC from the active Profile. You will also want to remove the keyboard from the corresponding PC and then attempt to re-pair from scratch.

Right module not sending keystrokes

It may be possible for your modules to lose track of each other. To re-sync the left and right modules as a “set”, bend a paperclip into a wide “U” shape and align it with the Reset Button on each module at the same time. Once aligned, press both ends of the paper clip in rapid succession. If both Reset buttons are hit within one second of each then they will re-sync.

Still not working

If you are still having difficulties, try installing the settings-reset.uf2 file or a fresh firmware file (See Section 7).

For more FAQs and troubleshooting tips visit: kinesis.com/supportikb360pro/.

8.2 Contacting Kinesis Technical Support

Kinesis offers, to the original purchaser, free technical support from trained agents based in our US headquarters. Kinesis has a commitment to delivering best-in-class customer service and we look forward to helping if you experience any problems with your Advantage360 keyboard or other Kinesis products.

For technical, please submit a Trouble Ticket at kinesis.com/support/contact-a-technician.

8.3 Warranty

Visit kinesis.com/support/warranty/ for the current terms of the Kinesis Limited Warranty. Kinesis does not require any product registration to obtain warranty benefits. Proof of purchase is required for warranty repairs.

8.4 Return Merchandise Authorizations (“RMAs”) and Repairs

For any repair by Kinesis, regardless of warranty coverage, first, submit a Trouble Ticket to explain the problem and obtain a Return Merchandise Authorization (“RMA”) number and shipping instructions. Packages sent to Kinesis without an RMA number may be refused. Keyboards will not be repaired without information and instructions from the owner. Products normally should be repaired by qualified personnel only. If you wish to perform your own repairs, contact Kinesis Tech Support for advice. Unauthorized or inexpertly carried-out repairs may jeopardize the safety of the user and may invalidate your warranty.

8.5 Battery care

This keyboard contains two rechargeable Lithium-ion batteries which are potentially hazardous and can present a serious FIRE HAZARD, SERIOUS INJURY, and/or PROPERTY DAMAGE if damaged, defective or improperly used. Do not disassemble or modify the battery on anyway. Vibration, puncture, contact with metals, or tampering with the battery can cause it to fail. Lithium-ion polymer batteries contain elements that may pose health risks to individuals if they are allowed to leach into the groundwater supply. Dispose of the battery properly. Contact Kinesis if you would like to purchase a replacement battery.

8.6 Cleaning

The Advantage360 is hand-assembled in the USA by trained technicians using premium components. It is designed to last for many years with proper care and maintenance, but it is not invincible. To clean your Advantage360 keyboard, use a vacuum or canned air to remove dust from the key wells. Using a water-moistened cloth to wipe the surface will help keep it looking clean. Avoid excess moisture!



8.7 Use caution when moving keycaps

A keycap removal tool is provided to facilitate changing keycaps. Please be delicate when removing keycaps and note that excessive force can damage a key switch and void your warranty.

Note: that the Advantage360 uses a variety of keycap heights/slopes so moving keys may result in a slightly different typing experience.

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Documents / Resources

 <p>Advantage360 KINESIS</p> <p>USER'S MANUAL ZMK Programming Engine</p>  <p>KB360-Pro</p> <p><small>Privacy: designed and tested according to the ISO 9001:2015</small></p>	<p>KINESIS KB360-Pro ZMK Programming Engine [pdf] User Manual KB360-Pro, ZMK Programming Engine</p>
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References

- [GitHub: Let's build from here · GitHub](#)
- [GitHub - PolarityWorks/zmk-config-adv360: Adv360 zmk config](#)
- [Join GitHub · GitHub](#)
- [Ergonomic Resources | Kinesis Corporation](#)
- [Keyboard Risk Factors | Kinesis Corporation](#)
- [Contact a Technician - Kinesis](#)
- [Kinesis Advantage360 Pro \(ZMK\) Keyboard | Technical Support](#)
- [Manufacturer's Warranty | Kinesis Corporation](#)
- [ZMK Keymap Editor](#)
- [Apache License, Version 2.0](#)
- [Kinesis Ergonomic Keyboards, Mice and Input Solutions](#)
- [Z Codes | ZMK Firmware](#)