



KAIROS™

3D CONTROLLER

User Manual



TIP

On the margins you will find information, which complement the contents of the manual.

They are not essential for the correct operation of the device, but you might find them useful.

Before you start your work with the **KAIROS** controller we strongly recommend to read the manual carefully.

Please note that using the adapter in a manner inconsistent with the instructions, any unauthorized repair attempts or any kind of modification of the device can cause a damage the manufacturer is not responsible for.

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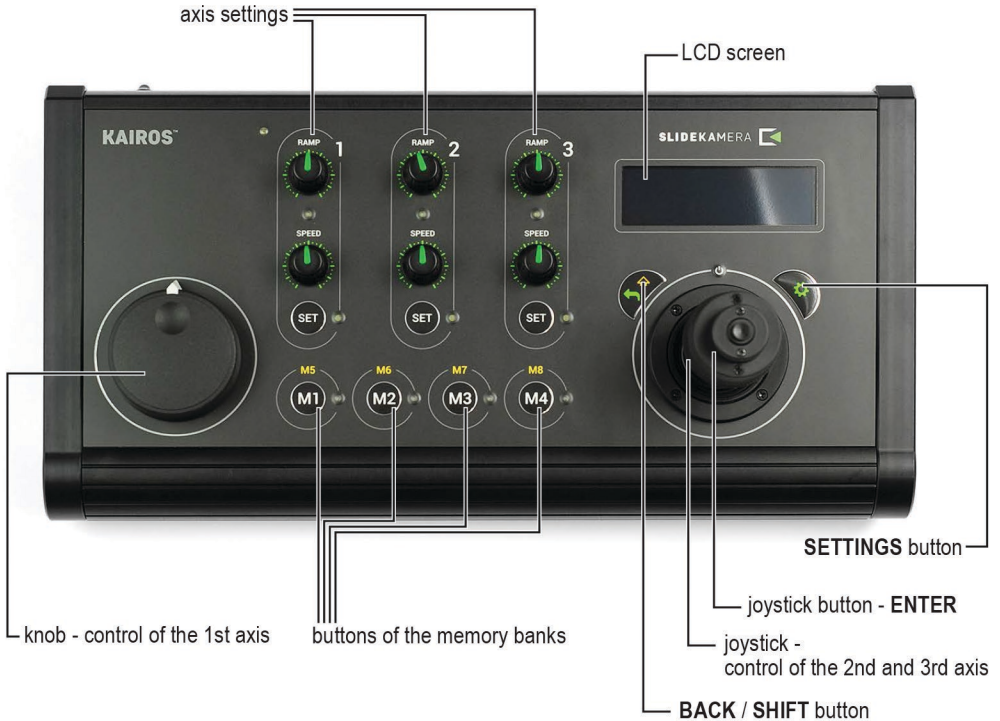
1. Content of the set

The set includes:

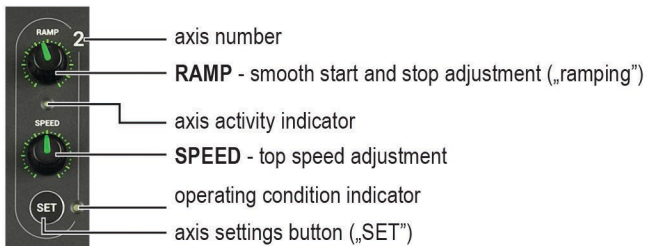
- **KAIROS** controller
- Wi-Fi antenna
- RF antenna
- **HET-BUS** steering cable (RJ45)
- transport case

2. Construction

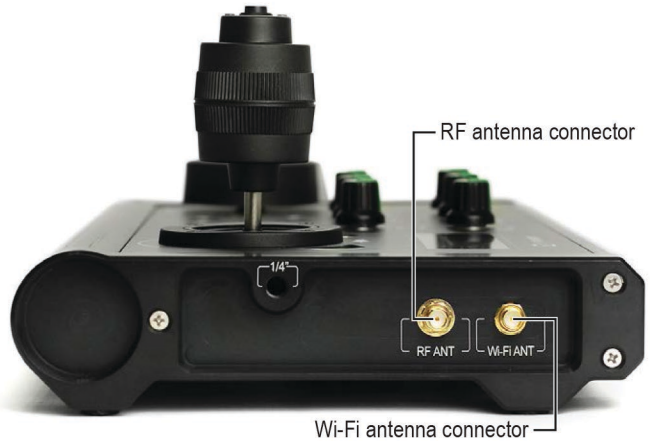
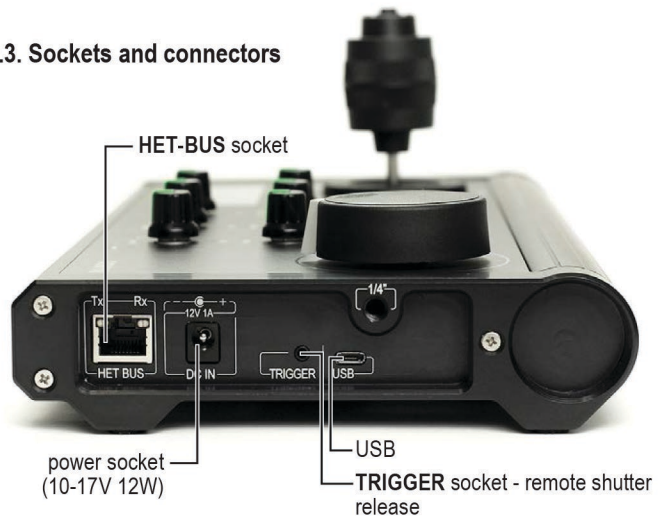
2.1. Control panel



2.2. Control panel - axis settings



2.3. Sockets and connectors



3. Connections

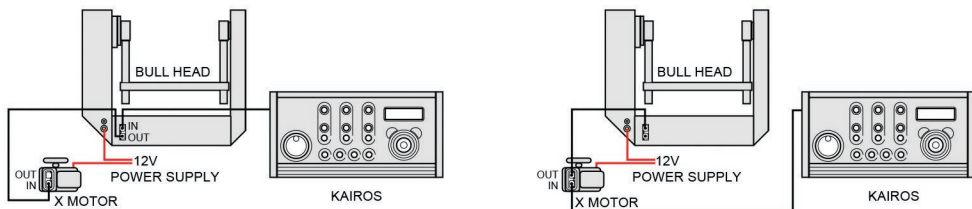
KAIROS controller can be connected to any device equipped with **HET-BUS** socket (RJ-45), such as slider drives (e.g. **X-MOTOR**, **ATLAS MODULAR**) and remote heads (e.g. **BULL HEAD**, **MONO HEAD**).

Most devices have two **HET-BUS** ports and multiple devices can be daisy chained to one controller and the order of the devices is not important.

Connecting cables:

- connect **KAIROS** controller to the first device of your choice, to its **IN** socket using steering cable;
- further device (if there is any) connect by connecting its **IN** socket with **OUT** socket of the previous device;
- connect power supply to devices, that require external power source for their motors (heads, sliders, etc.);
- **KAIROS** controller is powered by the **HET-BUS** connector and requires no additional power supply.

Examples of connecting KAIROS controller with other devices:



4. Power supply

KAIROS controller is powered by **HET-BUS** socket. If the controller is connected by wire, it requires no additional power supply.

KAIROS controller has a built in battery, that enables the controller to work wireless without any power adaptors.

KAIROS battery is charged by:

- **HET-BUS** socket - during operation with devices connected to the socket;
- USB socket - you can use any standard micro USB phone charger;
- 12V power socket.

The power socket can be connected to many 10-17V DC power sources (min. 12W power output), such as:

- AC power adapter;
- external 12V battery - e.g. **Slidekamera AF-7** power pack;
- V-lock or BP-U battery with D-Tap connector (additional adapter is required);
- BP-U battery with **SLIDEKAMERA BP-U Adapter** with magnetic holder.

PLEASE NOTE

Currently the controller does not allow to work wirelessly. This feature will be available for users by a software update.

TIP

Charging the battery by the USB socket is much slower, than charging by other ports of the controller.

PLEASE NOTE

The set does not include any power sources or adaptors required to power **KAIROS** controller.

5. Preparing the controller to work

5.1. Principles of operation

KAIROS is a controller designed to work with **SLIDEKAMERA** motion control devices. By default the controller can support up to 3 drives in any devices.

To precisely control devices made of multiple motors, that enable motion in multiple dimensions, **KAIROS** controller treats them as separate, independent drives. For example, 2D heads (such as **BULL HEAD** or **X HEAD**) are recognized by the controller as two separate drives: one for horizontal rotation of the camera (PAN) and second - for its TILT.

Each of these drives is assigned to one axis. Parameters of every axis can be adjusted separately by the **KAIROS** controller.

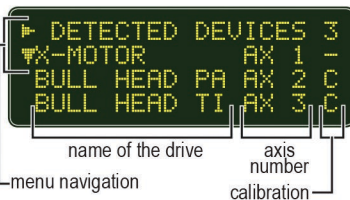
5.2. Turn on the controller

To turn the controller on, push the **SETTINGS** button. To turn it off, hold the **SETTINGS** button for 5 seconds.

5.3. Detecting devices

TIP

To ease menu navigation there are arrows displayed on the screen. They indicate the directions in which you can move the joystick to navigate through the screens and reveal next menu items.



After connecting and powering the devices, **KAIROS** controller detects available drives. The LCD screen displays the list of drives and assigned axes.

Editing axis assignment:

- press **ENTER** (joystick button) to begin;
- by moving the joystick up and down select the drive you want to assign to another axis;
- select axis number by moving the joystick left and right (note, that you can assign only one drive to one axis);
- press **ENTER** to finish.

5.4. Calibration

TIP

To recalibrate the drives in any time, use menu settings in the section **“8. KAIROS controller settings”** (p. 10).

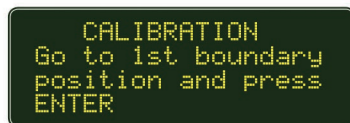
Calibration is a process of setting the extreme positions, that will never be exceeded. This prevents breaking off cables or damaging the camera. For safety reasons the **KAIROS** controller will not work if the drives are not calibrated.

If one of the connected devices has been calibrated previously, **KAIROS** controller by default skips its recalibration. For that drives a “-” symbol is displayed on the right side of the screen.

If working conditions has been changed (hardware was reconfigured, devices were moved, cable position has changed) and the drives has to be reconfigured, press **SET** button on the corresponding axis settings section of the control panel. The “-” symbol will be replaced by “C” and selected axis will be calibrated in the next step.

Drives, which calibration settings cannot be restored, for safety reasons will be mandatory calibrated.

To calibrate the selected axes:



- on the device detection screen move joystick to the right, a calibration screen will appear;
- using the main knob and/or the joystick set the first extreme

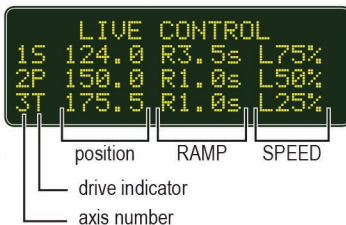
- positions on all calibrated axes;
- press **ENTER**;
- set second extreme positions on all calibrated axes;
- to finish press **ENTER**.
-

The controller will switch to **LIVE CONTROL** mode automatically.

6. LIVE CONTROL mode

KAIROS controller automatically runs **LIVE CONTROL** mode. It's basic mode, used to operate connected drives in real time.

The device is immediately ready to work. You can control your drives with the joystick and/or the knob on the control panel of the **KAIROS** controller.



6.1. Axis parameters

The LCD screen displays all parameters of the devices. These values can be altered by using the control panel of the **KAIROS** controller.

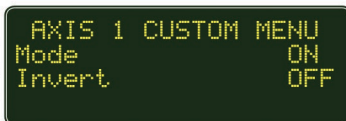
position - value corresponding to actual position of the drive; by default the motor of the slider is assigned to the 1st axis and is controlled by the knob on the left side of the controller; drives of the head (2nd and 3rd axis) are controlled by the joystick;

RAMP - smooth start and stop adjustment („ramping”), specified in seconds; the value is adjusted independently for each axis by a knob on the control panel of the **KAIROS** controller;

SPEED - drive's speed limit, specified as percentage of its maximum speed; the value is adjusted independently for each axis by a knob on the control panel of the **KAIROS** controller;

6.2. Axis custom menu

To enter the axis custom menu, press SET button on the axis settings section of the control panel. Axis activity indicator that corresponds to the chosen axis will blink.



Mode - working mode of the particular axis:

- **OFF** - axis is disabled, indicator is off;
- **ON** - the axis is enabled, the indicator lights green;
- **LOOP** - the drive moves automatically between the extreme points designated during calibration; axis activity indicator lights green and operating condition indicator blinks.

Invert - reverse the direction of the motion; relevant in some hardware configurations (e.g. when operator of the controller stands on the other side of the slider, or the remote head operates upside down).

To exit the axis custom menu, press again **SET** or use the **BACK** button.

TIP

To stop the drives working in **LOOP** mode, press **BACK** button or enter axis custom menu and change working mode of particular axis.

7. Record and playback

KAIROS controller is equipped with 8 memory banks that are used to store a single camera position or a trajectory - sequence of a camera movement. Memory banks 1-4 are available directly with the **M1-M4** buttons. To use memory banks 5-8, hold **BACK / SHIFT** button and press a **M1-M4** button.

7.1. Recording

TIP

Before recording, set your camera to the first position of the trajectory you're going to record using the **LIVE CONTROL** mode.

```
RECORD TRACK#1 PAUSE
ENTER: Start Rec.
M1: Save KEYFRAME
BACK: Cancel
```

To record a trajectory of the camera or single position, hold for 1 second a button corresponding to a memory bank (**M1-M4**). To record a trajectory to memory banks 5-8, hold

BACK / SHIFT button and hold **M1-M4** button.

- to record single position of the camera (**KEYFRAME**), press again the button of a memory bank (**M1-M4**);
- to record a trajectory press **ENTER**.

TIP

In the record menu and during the recording you can cancel the process by pressing **BACK** button. The trajectory will not be stored in the memory bank. If any data was previously recorded in that bank, it will be preserved.

```
RECORD TRACK#1
1S 124.0 R3.5s L75%
2P 150.0 R1.0s L50%
3T 175.5 R1.0s L25%
```

While recording a trajectory use the device in the same manner as in the **LIVE CONTROL** mode. You can adjust the camera position and axis parameters using the control panel on the **KAIROS** controller.

Note, that the trajectory is recorded even when the camera stays still. You can use this feature to record a pause at the beginning or at the end of the recording.

To stop recording, press **ENTER**. The controller will switch to **LIVE CONTROL** mode.

7.2. Playback

Playback activation

To playback data recorded in a memory bank, press the button of the memory bank (**M1-M4**). Camera will go to the home position (first position) of recorded trajectory.

TIP

If there is no data recorded in a memory bank, the controller will remain in the **LIVE CONTROL** mode.

```
PLAY TRACK#1 S+ F
Moving to Home P.
```

- if a single position was recorded (**KEYFRAME**), the controller will switch to **LIVE CONTROL** mode when the recorded position is achieved;
- if a trajectory was recorded, when the home position is achieved a playback menu will appear on the LCD screen.

Playback - main menu

Before playing the trajectory, you can adjust playback parameters:

Repeats - number of repetitions of recorded sequence;

Ratio - adjusting the speed of the recording by defining percentage of the original recording time;

RideTime - adjusting the speed of the recording by defining the exact time of the playback;

HomingMode - returning to the home position:

- **FAST** - camera returns to the home position as fast as possible;

PlaybackMode - direction of the played back trajectory:

- **S>** - trajectory is played back from the Start point (home position);
- **E<** - trajectory is played back backwards - from the End point to the home position.

```
▼ PLAY TRACK#1 PAUSE
Repeats      1
Ratio        100.0 %
RideTime     0h00m05s

▲HomingMode   FAST
PlaybackMode  S>

M1: Start/Pause
```

Playback - axes configuration menu

During playback any axis can be turned off or controlled manually, regardless of the recorded trajectory. To edit the axis settings press the SET button corresponding to the axis you wish to adjust.

For each axis you can adjust the following settings:

- **PLAY** - trajectory is played back as recorded;
- **MAN** - during playback the axis will be controlled manually in the same manner as in the **LIVE CONTROL** mode - you can control the axis in real time;
- **OFF** - during playback the axis will be disabled.

```
PLAYBACK AXES CONFIG
1 Slider      PLAY
2 Panorama    MAN
3 Tilt        OFF
```

Playback of the recorded trajectory

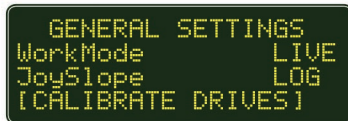
To begin the playback, press again button corresponding to the memory bank (M1-M4).

During playback **PlaybackMode**, **HomingMode**, **Repeats** and **Ratio** parameters are displayed on the LCD screen. **RideTime** indicates the time remaining to the end of the current repetition.

```
PLAY TRACK#1 S> F
Repeats      1
Ratio        100.0 %
RideTime     0h00m05s
```

After last repetition the **KAIROS** controller will switch automatically to the **LIVE CONTROL** mode.

8. KAIROS controller settings



To enter the settings menu press the **SETTINGS** button.

WorkMode - operating mode of the device, currently only the **LIVE CONTROL** mode is available; new modes, that are present in other **SLIDEKAMERA** controllers, such as **TIMELAPSE** or **ANIMATION**, will soon be available for users by a software update.

JoySlope - joystick characteristics:

- **LIN** - joystick's position translates linearly to the speed of the drives, provides equal control at high and low speed;
- **LOG** - this mode gives more precise control in low speed.

CALIBRATE DRIVES - recalibrating the drives, necessary when working conditions has changed.

Calibration is described in detail in the section “**5.4. Calibration**” (p. 6).

To exit the settings menu, press again **SETTINGS** or **BACK** button.

9. Technical specification

Weight:	2.7kg
Dimensions:	339mm x 169mm x 114mm
Compatible devices:	motion control devices equipped with the HET-BUS socket
Supply voltage:	10..17V DC min 10W
Operating temperature range:	od 0 do +40°C
Recommended relative humidity:	do 90%

10. Maintenance and operation

KAIROS controller does not need any additional service or lubrication of the components.

Maintenance procedures are reduced to keeping the equipment clean.

11. Terms of warranty

All **SLIDEKAMERA** products are covered by the manufacturer's warranty for a period of 12 months from the date of sale. Warranty covers production faults and material defects, which resulted in the product malfunctioning. Warranty covers the repair, or, if the repair proves impossible, replacement of the product with a new one. However, the cost of repair of the product cannot overrun the catalogue value of the product. The warranty does not cover damage and / or product defects resulting from the improper usage, as well as not following product maintenance specifications.

The warranty excludes:

- unauthorized attempts to repair or modify
- mechanical damage caused during transport and operation of such features as scratches, dents, pits, dirt, etc.
- flooding, moisture

To obtain warranty service the purchaser should deliver the damaged product together with a proof of purchase or proof of payment (invoice, cash register receipt). The product will be accepted for warranty service on condition, that it is delivered with correctly filled in complaint form and properly protected during transport.

The complaint form is available for download at: www.slidekamera.com

After the warranty period is exceeded any spare parts can be purchased directly from the manufacturer or in any selected points of sale.

PLEASE NOTE:

Any package sent at the expense of HET-CNC s.c., 80-175 Gdańsk, ul. Kartuska 386 will not be received.

IMPORTANT INFORMATION FOR CORRECT DISPOSAL OF THE PRODUCT IN ACCORDANCE WITH EC DIRECTIVE 2002/96/EC



At the end of its working life, the product must not be disposed of as urban waste. It must be taken to a special local authority differentiated waste collection centre or to a dealer providing this service. Disposing of electronic equipment separately avoids possible negative consequences for the environment and health deriving from inappropriate disposal and enables the constituent materials to be recovered to obtain significant savings in energy and resources. As a reminder of the obligation to dispose of electronic equipment separately, the product is marked with a crossed-out wheeled dustbin.