
THE BEAST

THE BEAST

INSTRUCTION MANUAL (REVISION 1.3)

HERE IT IS!

After the long road The Beast is finally in your hands. The Beast combines state-of-the-art technology with eye-catching form of design and beauty. Featuring a hybrid combination of sensors (IMUs) and optical encoders The Beast delivers a completely new approach on how the 3-axial camera stabilization works, making your framing very cinematic and simply natural. Fully configurable through a built-in configuration system consisting of a sharp OLED screen, control keyboard and OnBoard Manager, The Beast redefines the workflow with a professional gimbal. Toolless balancing system, Lock'n'Load quick-detach function, ability to power up cameras and equipment alike straight from the main power source, heavy-duty construction, adaptable payload ranging from small DSLRs to production cameras and much more - this is what a cine stabilizer is supposed to be.

The Beast emerged from its smaller predecessor, ACR The Plus. The goal was to create the ultimate stabilizer for cine setups. It represents a combination of our deep passion, months of research, development and testing. Not to mention an incredible attention to detail.

The result is a stabilizer that offers a new world of possibilities for today's demanding filmmaker. The potential for innovation and creative applications is endless, and we couldn't be more excited to see how our users will surprise us.

This Manual will teach you how to setup, balance, and configure The Beast gimbal. First steps in operating a handheld gimbal are rather easy to complete but mastering your skills and achieving perfect results may take time. Bear in mind that the tool itself will not make a fresh cameraman to become a professional in a blink of an eye.

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GETTING STARTED

A handheld stabilizer is an advanced product and requires practice to get used to and master. Please, take some time to follow the general guidelines before using The Beast to make your operating experience as smooth and enjoyable as possible.

DISCLAIMER

All information and instructions in this document are subject to change without notice.

This is a sophisticated cinema product. It must be operated with caution and common sense and requires some basic mechanical knowledge. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. This Manual contains instructions for safety and operation. It is essential to read the entire Manual and follow all instructions and warnings in the manual, prior to setup or use, in order to operate the ACR The Beast correctly and avoid damage or injury.

ACR Systems has made every effort to provide clear and accurate information in this Manual, which is provided solely for the user's information. While thought to be accurate, the information in this document is provided strictly "as is" and ACR Systems will not be held responsible for issues arising from typographical errors or user's interpretation of the language used herein that is different from that intended by ACR Systems. All safety and general information is subject to change as a result of changes in applicable laws.

ACR Systems reserves the right to revise this Manual and make changes from time to time in the content hereof without obligation to notify any person of such revisions or changes. In no event shall ACR Systems, its employees or authorized agents be liable to you for any damages or losses, direct or indirect, arising from the misuse of any technical or operational information contained in this document.

ELEMENTS OF THE BEAST GIMBAL

1. Top handle
2. Lock’n’Load connector
3. Pan motor
4. Side handles
5. Pan axis adjustment
6. Roll axis adjustment
7. Camera tray / slider / tilt axis front-to-back adjustment
8. Tilt motor
9. Tilt axis Center of Gravity adjustment
10. ACR Li-Ion battery compartment hatch
11. ACR Li-Ion battery compartment
12. Built-in OLED screen
13. Screen control keyboard
14. Roll motor

BEFORE YOU START

Do NOT connect anything **to the DC OUT port!** There is a safety sticker on the port. This port is designed to power up external high-current devices and dedicated cables are to be used with this port. Using this port incorrectly will cause damage to your gimbal that is not covered by warranty.

Do NOT attempt to **calibrate the accelerometer** unless it is absolutely necessary or indicated by a ACR Systems technician.

Always check your **Lock'n'Load** connection to the handheld! The connector should be fully engaged and should ‚click' every time it is attached. Lock'n'Load V2 thumbscrew must always be tighten. Not checking that may cause the Lock'n'Load to disconnect on its own during work and result in the gimbal falling to the ground.

Always **calibrate your gyro** if the gimbal changes its location due to long travel. Bad gyro calibration usually causes horizon drift or other unwanted behavior. Gyro calibration takes only few seconds to complete and requires the gimbal not to move at all.

Do NOT attempt to **charge two batteries at once** (1x large battery and 1x small battery)! Such attempt will damage the charger and/or both batteries.

Do NOT disconnect the small adapter cable from your Intelligent Charger. This cable is essential for proper battery charging and is designed to work with custom ACR Large Batteries. Connecting the battery directly to the charger without this cable will cause short circuit and damage the battery or/and the charger.

Do NOT perform 360 degree rotation on the roll and tilt axis of the ACR The Beast too many times as it will result in cable tension and may damage the primary cabling causing a major malfunction.

Remember about the thresholds of the power output on both auxiliary power plug on the ACR The Beast camera tray and the DC OUT socket on the vertical arm. Both power exits are part of the same circuit and the summarized power output cannot exceed:

- **3A** when using **small ACR batteries**
- **5A** when using **large ACR battery**

CHARGING THE BATTERIES

Always check if your **charger** is properly set for the battery you are intending to charge.

- make sure to have the **+ (RED)** and **- (BLACK)** cables properly connected!
- use the round connector for the large battery and the rectangle connector for the small battery
- use the correct balancer port for every battery
- follow the correct actions order when attempting to charge a battery, as pictured on the opposite page:

1. Connect the RED and BLACK power leads correctly (1a, 1b).
2. Connect the AC power cable to the charger.
3. Insert the AC power cable into the wall socket.
4. All LEDs will light for 1 second and the charge status LED will flash green, which indicates the charger is ready to charge.
5. Select the correct battery type on the charger. For all ACR System batteries it is LiPo/LiIon.
6. Select the recommended charging current: 2A for small ACR batteries, 3A for large.
7. Connect the battery - use the black round connector **(with the charger adapter cable!)** for the large battery (7a) and the red rectangle connector for the small battery (7b).
8. Connect the battery balance lead to the correct balance socket on the side of the charger - 4S for the large battery (8a), 3S for the small battery (8b). The charger will automatically start charging.
9. The charge status LED and the cell status LED will light constant red. The cell 1-4 LED's will glow continuously indicating the number of cells of the battery pack currently being charged.
10. When the battery is fully charged, the "STATUS" LED will glow constant green.
11. Unplug the battery from the balance port.
12. Unplug the charge lead. The battery is ready for use in your The Beast.
13. Unplug the charger from the wall socket if you are not going to use it further.


1a


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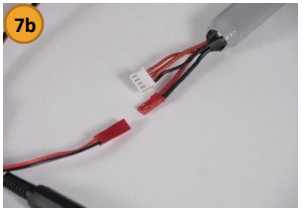

7b


10
ADVANCED BALANCE CHARGER
CELLS EQUALIZER
1S 2S 3S 4S
LiPo/LiIon LiFe STATUS 1A 2A 3A


1b


5
CELLS EQUALIZER
1S 2S 3S 4S
LiPo/LiIon LiFe STATUS 1A 2A 3A

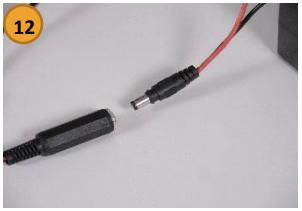

8a


11


2


6
2S 3S 4S
LiFe STATUS 1A 2A 3A


8b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3


7a


9
ADVANCED BALANCE CHARGER
CELLS EQUALIZER
15 25 35 45
STATUS 1A 2A 3A


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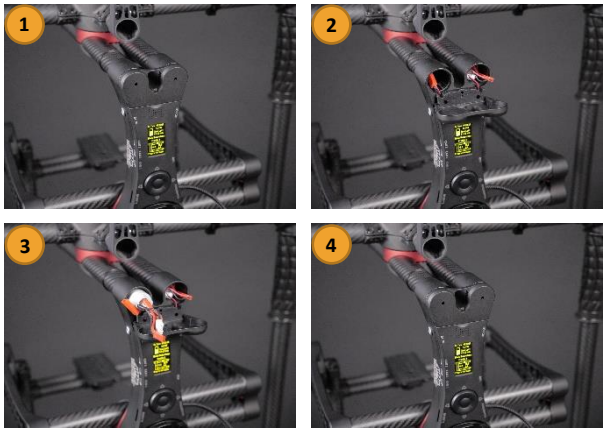
CONNECTING THE BATTERIES

WARNING: DO NOT use both types of batteries at once! Always use EITHER small batteries OR large battery to power up your ACR The Beast!

ACR The Beast can be powered from either two small Li-Ion batteries fitted inside the dedicated compartment or from one large Li-Po battery placed on the special Battery Mount Set for your handheld module. The small battery setup is intended to be used with lightweight, low-power-consumption setups and adds compactness to the whole rig. If you wish to power up external devices from the gimbal with small batteries, the power consumption should not exceed **3A**. The large battery power source is intended to be used with cine setups consisting of several additional equipment such as follow focus systems, wireless HD transmission adapters and high-current production cameras - everything can be powered straight from the gimbal power source using auxiliary LEMO socket on the camera tray and the DC OUT socket on the vertical arm - in case of the large battery it is recommended not to exceed **5A** power output.

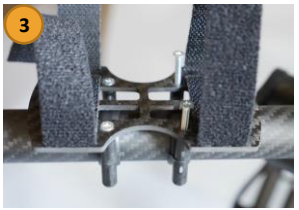
OPTION I: SMALL LI-ION BATTERIES (2X)

1. The small battery compartment hatch is located just above the OLED screen and the speaker. Pull the hatch up and back to fully open the batteries compartment.
2. There are two JST battery connectors inside.
3. Insert the two small ACR Li-Ion batteries fully into their tubes.
4. **Make sure that the gimbal is switched off** and properly connect the batteries (pay attention to the socket shapes!), hide the cables inside the tubes and close the compartment hatch - it should click.



OPTION 2: LARGE LI-PO BATTERY (IX)

1. The large Li-Ion battery is to be used with the Battery Mount Set. The set consists of: 1x connection cable, 4x mount half-rings, 4x screws with nuts, 1x carbon plate with Velcro straps. The large battery itself has soft Velcro straps for better attachment.
2. Place the mount rings on your handheld in a preferred spot and distance them to fit the holes of the battery plate.
3. Place the carbon plate on top of the mounts and use the screws to secure its position.
4. Use the nuts on the screws from below to tighten the mounts together.
5. Place the battery on the Velcro spots and use the Velcro straps to wrap it around and secure it. Connect the main cable to the battery power lead.
6. **Make sure that the gimbal is switched off** and connect the cable to the DC IN socket.



BATTERIES MAINTENANCE

BATTERIES AND CHARGER

WARNING: You must read these safety instructions and warnings carefully before charging or using your batteries. ACR small Li-Ion batteries require less care and are less dangerous but failure to exercise caution while using ACR large Li-Po batteries and comply with the following warnings could result in battery malfunction, electrical issues, excessive heat, fire, or injury and property damage. Apply the guidelines below to all kinds of ACR batteries for maximum safety.

GENERAL GUIDELINES AND WARNINGS

- Stop using or charging the battery immediately if the battery becomes or appears damaged, starts to balloon or swell, leaks, becomes deformed or gives off an odor, exceeds a temperature of 71ºC (160ºF), or if anything else abnormal occurs. Disconnect the battery and observe in a safe area outside of any building or vehicle for at least 45 minutes, as a damaged battery can experience a delayed chemical reaction that could possibly result in fire.
- Never disassemble, modify, puncture, shock, drop, crash and/or short circuit the battery. Leakage, smoke emission, ignition, explosion or fire can occur, which may result in personal injury or property damage.
- Never charge the battery while installed on ACR Systems products or other equipment or while inside a vehicle.
- Always use a dedicated LiPo/LiIon charger only. Do not use a Nickel-cadmium (NiCd) or Nickel-metal hydride (NiMh) charger, even though these chargers may appear similar to a LiPo/LiIon charger. Failure to do so may cause a fire, which may result in personal injury and/or property damage.
- Always ensure that the proper battery type and charging amperage is selected on your charger for every battery. Failure to properly set these settings could result in fire or explosion of the battery.
- Always check if the charger displays the correct number of cells of a given battery after connection to the balancer port. Do not attempt to charge battery if the cell count does not match the number of cells of a given battery.
- DO NOT leave the battery and charger unattended during use.

- Never drop charger or batteries.
- Never connect more than one battery pack to the charger at a time.
- Never attempt to charge “dead” or damaged batteries.
- Never charge a battery if the cable has been pinched or shortened.
- Never allow minors to charge or use battery packs without adult supervision.
- Never charge near moisture, extreme temperatures, flammable or combustible materials.
- Never charge or store batteries in extremely hot or cold places (recommended between 10º-26ºC/50º-80ºF), leave in a hot environment (inside an automobile in hot weather), or leave in direct sunlight.
- Never place or carry batteries in your pockets or clothing.
- Always use dedicated ACR LiIon and LiPo batteries.
- Always inspect the battery before charging.
- Always connect the positive red lead (+) and negative black lead (-) terminals of the battery to the charger terminals correctly.
- Always disconnect the battery after charging, and let the charger cool between charges.
- If a battery will not be used for more than one week, it is recommended that the battery is stored with a voltage of approximately 3.8V per cell. Do not store the battery fully charged. Store the battery at room temperature in a cool or shaded area (ideally between 10º-26ºC/50º-80ºF).
- Batteries should be stored in a vented, fire-resistant container. No more than two batteries should be placed in a container to avoid chain reactions. Storage temperatures should not fall below 0ºC/32ºF or above 54ºC/130ºF. Damaged batteries are extremely sensitive to temperature fluctuation and care should be taken in their immediate disposal. High temperatures may cause fire, even with undamaged batteries.

NOTICE - HANDLING LIPOs: Mishandling of LiPo batteries can result in fire. By handling, charging or using the ACR LiPo batteries, you assume all risks associated with LiPo batteries. If you are not prepared to accept complete liability for the purchase and/or use of the batteries, you are advised to return them in new and unused condition to the place of purchase immediately.

IMPORTANT NOTE - MINIMAL VOLTAGE: If you are using the battery to power or charge an accessory used with the ACR, it is your responsibility to constantly monitor the battery's voltage through the use of a voltage checker. For optimal performance and extended life, do not allow your battery voltage to drop below 3.4V. If the accessory drains the battery below 3.0V per cell, it will damage the battery and render the battery unusable. Never attempt to charge a battery that has individual cell voltages below 3.0V.

LIPO BATTERY DISPOSAL

LiPo batteries require special handling for safe disposal. The following steps must be taken to avoid damage or injury to yourself, your property or anyone who comes in contact with the battery. If the battery is undamaged but no longer useful:

1. Discharge the battery to a maximum of 1.0V per cell using a safe discharge method.
2. Leave the battery uncharged and retest the battery after 24 hours. If the battery is over 1.0V per cell, repeat the procedure until the battery is 1.0V per cell or less.
3. Place electrical tape over each wire lead and tape the wire leads to opposite sides of the battery.
4. Place battery in a sealed plastic bag and place plastic bag in a vented, firesafe container.
5. Use a fire-safe container to deliver battery to a recycling center authorized for LiPo batteries. Please note that not all battery recycling services include LiPo batteries. If no LiPo recycling facility is available in your area, contact your state or local HAZMAT agency for instructions.

If the battery is damaged:

1. If the battery or wiring is damaged, please contact your local HAZMAT facility for instructions. Batteries must be rendered safe before being transported or recycled.
2. DO NOT transport or ship batteries which have more than 1.0V per cell charged OR that show signs of damage without following the instructions given by the HAZMAT agency.

CONNECTION PORTS

DC IN SOCKET

Main power-in socket for external power source such as ACR Large Li-Po battery. When using external Batteries like V Mount, make sure when using long cables you have proper Lead Diameter / wire gauge to have enough Power / Voltage coming through until the Camera.

OLED SCREEN

Provides live information and displays the OnBoard Manager menus and options.

CAN PORTS

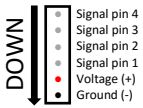
Auxiliary communication / signal ports for future use. These utilize a standard miniUSB socket.

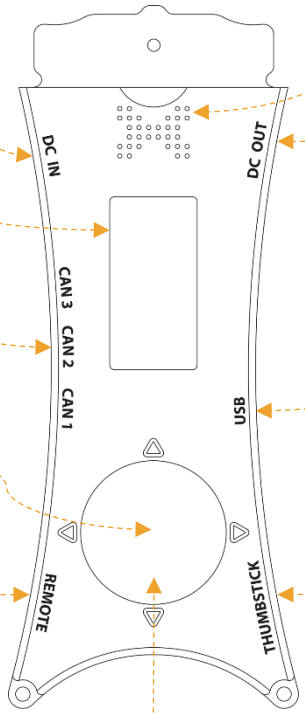
CONTROL BUTTON

Performs various actions depending on the number of consecutive clicks or after a long click, configurable through the OnBoard Manager and external software.

REMOTE SOCKET

Remote control socket for external signal receivers. Used to connect the Graupner GR-16L receiver that comes with the MZ-12 radio.
DO NOT connect the Thumbstick to this port!





BUILT-IN KEYBOARD

Used for navigation around the OnBoard Manager. Additionaly you can hold the down button while plugging USB for Service Mode.

SPEAKER

Emits voice messages about gimbal status, commands, menu options, errors, etc.

DC OUT PORT

Used to power up external devices through dedicated cables. Similar to the auxiliary LEMO connector on the camera tray. DO NOT connect the batteries or any other power sources to this port as it will damage the main board!

USB PORT

Used to connect USB cable for external software configuration and Service Mode or 5V power input from a computer to power up the OnBoard Manager for passive configuration.

THUMBSTICK SOCKET

Used for connecting analog ACR Thumbstick. Operates on a different voltage than the REMOTE socket!
DO NOT connect radio signal receivers to this port!

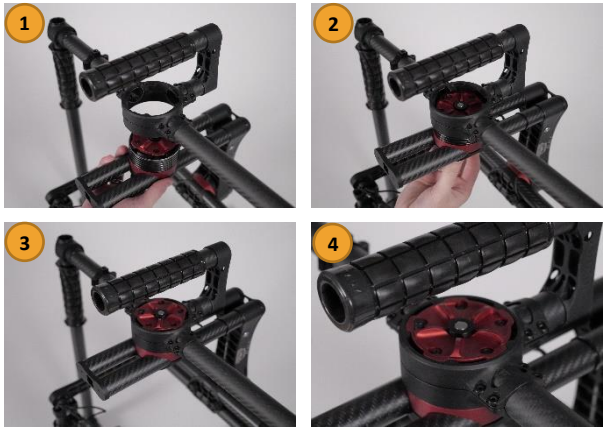
USING THE LOCK'N'LOAD

The custom Lock'n'Load system allows to quickly disconnect the gimbal from any adapter/ accessory attached to the top of the stabilizer (the pan motor). The Beast comes with a dedicated handheld module featuring Lock'n'Load connection. This proprietary system is designed to work with various future accessories and make switching any essential gear on set exceptionally easy without the use of any tools. Just insert, spin and click!

USING THE HANDHELD WITH LOCK'N'LOAD FEATURE

The handheld is a basic tool to use the gimbal on the ground by a human operator. It is necessary to make sure every time The Beast is picked up that the Lock'n'Load connection is fully engaged and secured. Failing to check the state of the connection may result in sudden disconnection and render the gimbal fall on the ground.

1. Align the XL handheld with the Lock'n'Load male connector on the pan motor as pictured. This is to make sure, that the gimbal always has the same starting position when being launched in Follow Mode. Insert the handheld onto the Lock'n'Load male section.
2. Rotate the Lock'n'Load connector counter-clockwise so it secures the connection.
3. Make sure that the connector is fully rotated - the endpoints should be on the other side of the rotation range.
4. Make sure that the locking lever is moved fully towards the outside of the ring.



USING THE LOCK'N'LOAD V2 UPGRADE KIT

The Lock'n'Load V2 upgrade kit is available in two forms: **handheld upgrade kit** and **simple upgrade kit**. Also there is available spare external side.

Simple upgrade kit is dedicated for connecting The Beast to drones, jibs and cranes. It does not provide support for handheld actions.

Handheld upgrade kit supports handheld work while using carbon tubes and handles from previous handheld module. It may also work as a stand – you will only need some flat surface.

NOTE: Change to Lock'n'Load V2 is irreversible. You won't be able to return to previous one.

1. Detach the handheld from Lock'n'Load module.
2. Mark position of old Lock'n'Load male connector with provided yellow sticker.
3. Unscrew 5 screws holding pan motor cap using hex screwdriver 2.0.
4. Align BOTTOM part and make sure that "FRONT" and arrow points previously marked position with yellow sticker.
5. With provided 5 hex screws screw BOTTOM part of adapter.
6. Insert TOP part (external side or handheld side) on BOTTOM one and use thumbscrew to connect both parts.
7. Check "FRONT" direction of both BOTTOM and TOP handheld side.
8. Unscrew handles from old handheld module using hex screwdriver 2.5
9. Attach side handles to Lock'n'Load V2 handheld side using hex screwdriver 3.0.
10. Insert TOP handheld side to BOTTOM part aligning TOP "FRONT" to BOTTOM "FRONT". Without top handle Lock'n'Load V2 can be used as "stand" in inverted mode.
11. Once handheld side is secured on BOTTOM part you can attach top handle.
12. After upgrade kit is properly assembled make sure that Adapter option in Details menu is set to ON for proper front center position of pan axis.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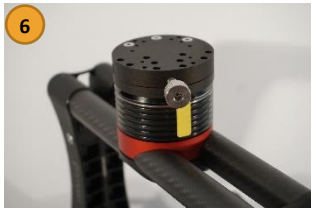
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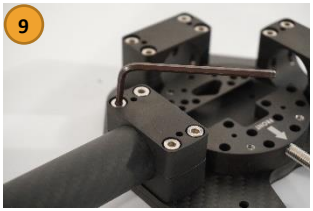
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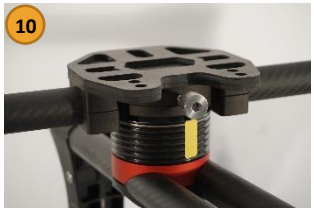
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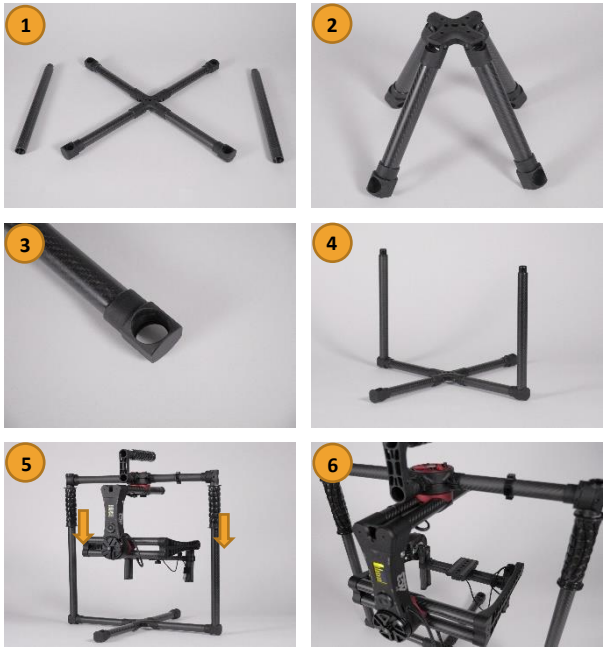
USING THE STAND

The stand is used for balancing, showcasing and storing the stabilizer. It is lightweight and folds into a compact form for ease of transportation. The central part of the stand features various holes and threads which allow it to be used with third-party camera support equipment such as sleds, tripods, etc. The stand can hold the gimbal with the handheld module in both underslung and inverted positions.

ASSEMBLING THE STAND

1. The stand comes in 3 parts: 1x main stand component and 2x carbon vertical tubes.
2. Unfold and place the main component on a flat, solid surface.
3. Insert the vertical carbon tubes in the two large holes on the opposite ends of the stand and make sure that the tubes sit tight in the holes (the other holes have smaller diameter and will not accommodate the tubes).
4. The stand should look like on the picture.
5. Insert ACR The Beast with the handheld onto the caps on top of the tubes. Note, that you can also insert the gimbal while inverted.
6. Make sure that the gimbal is fully engaged with the stand.
7. To remove gimbal easier from stand use a little shaking motion while lifting up.



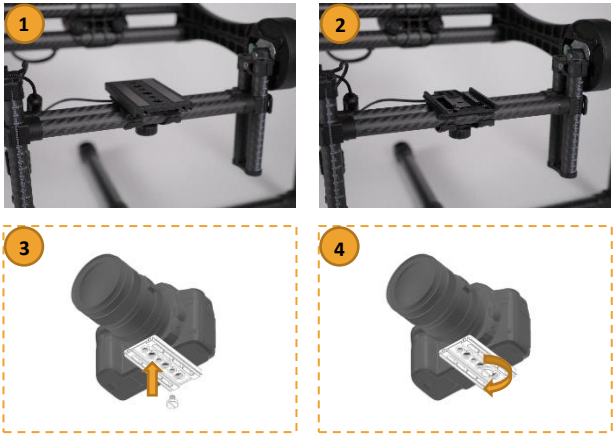
MOUNTING THE CAMERA

The Beast uses a quick release camera plate to easily attach and remove your camera from the stabilizer. It is essential that you fully build your camera setup before installing it onto the gimbal as it has direct impact on balancing.

ATTACHING THE PLATE TO THE CAMERA

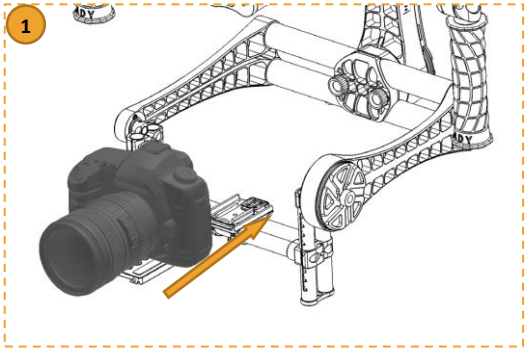
The camera plate features two types of threads for mounting both DSLRs and production camera alike. It is recommended to choose a thread hole as close to the assumed camera-lens setup center of mass as possible.

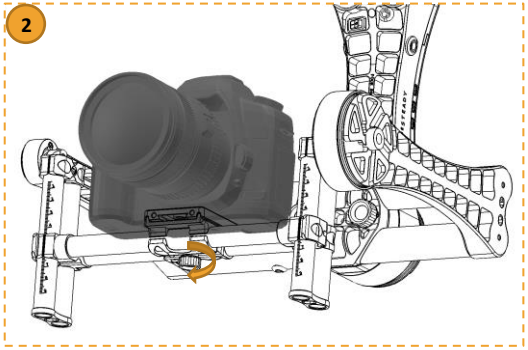
1. To remove the camera plate from the tray, rotate the camera plate knob clockwise until the camera plate slides off the mount. **NOTE:** turning the knob about half-turn allows the camera plate to slide back and forth. Turning the knob about halfway the range allows the whole mount to move left and right. This is essential to understand it when balancing the gimbal, as described in further sections of the Manual.
2. When the plate is removed, the mount looks as pictured. Notice how the slider edges are positioned when attaching the camera plate again.
3. Place the camera plate under your camera (or above in some camera models) and choose the screw you wish to use for attachment.
4. Tighten the camera screw well and make sure that the plate is aligned with lens axis. Not securing the camera plate properly may result in unwanted camera movement and loss of balance during gimbal operation.



INSERTING THE CAMERA ONTO THE STABILIZER

1. Loosen the camera plate knob so the mount edges can be moved to align with the camera plate sliders. Slide the camera with the plate onto the mount and make sure that all surfaces are correctly aligned and in the correct gaps.
2. When the plate is completely onto the mount, secure it with the knob. At this point you can pre-balance the camera on tilt axis - try to position the plate in a spot that will allow the camera to stay more or less in place by itself and not fall to either front or back.



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Lufthansa

BALANCING THE BEAST

Balancing is a crucial aspect of proper gimbal operation. Good balancing can provide the best possible performance while bad balancing will leave room for many unwanted occurrences such as micro-jittering or low range of operational angles. It is important to take some time to get used to how the balancing works. The Beast requires no tools to balance properly and with some experience it can be done in no time for cameras that are common for you. You will notice that the more you work with a particular camera setup, the more muscle memory you obtain and it takes much less time to prepare the stabilizer when following a familiar set of actions.

UNDERSTANDING THE AXES

A three-axis stabilizer works on tilt, roll and pan axes. The best practice is to balance tilt axis first, followed by roll axis and pan axis. Tilt axis takes the most time to balance as there are two points that need to be taken: front-to-back balancing and Center of Gravity balancing. Roll balance should always be performed after tilt balance is complete. Pan balance should be done last and requires proper tilt and roll balance.

The balancing should always be done on a complete camera setup that you intend to work with. Adding any additional gear or switching to very different lenses usually requires new balancing. The gimbal always has some spare power to overcome not-so-perfect balancing and can take a moderate change in focal length while on a set but generally it is recommended to check balancing after every gear change.

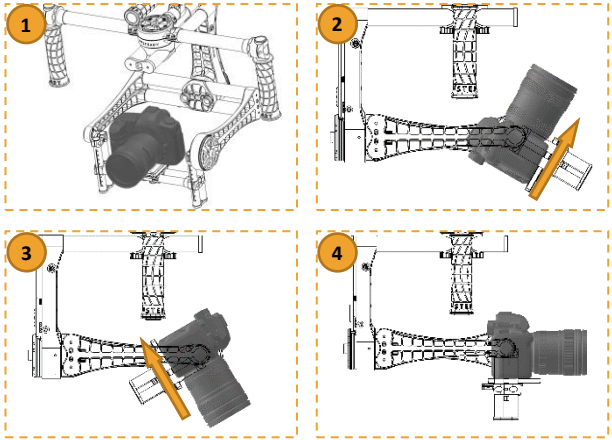
It is recommended not to tune and use the gimbal if the balancing is not done correctly. **Many user problems come from wrong balancing - that is why this important step should never be ignored**.

TILT FRONT-TO-BACK BALANCE

Tilt front-to-back balance is achieved when the camera remains leveled on its own when in neutral position. It should not fall forward (lens heavy situation) or backward (body heavy situation) unless pushed. This is the first step to achieve tilt axis balance and is achieved by operating the camera plate only.

FRONT-TO-BACK BALANCE

1. Make sure that the camera plate with your whole camera setup is properly installed on the tray mount. Place the camera in its neutral, 0 degrees position as pictured.
2. If the camera falls to the back, it is body heavy. Loosen the main plate knob and move the plate forward (towards the lens) to compensate the imbalance. Support the weight of camera while moving.
3. If the camera falls to the front, it is lens heavy. Move the plate backward (towards the camera body) to compensate the imbalance.
4. Work your back and forth movement so that you find the spot in which the camera stays on its own in the neutral position and is not willing to fall forward or backward. Once such position is achieved, the first step of tilt axis balancing is complete.

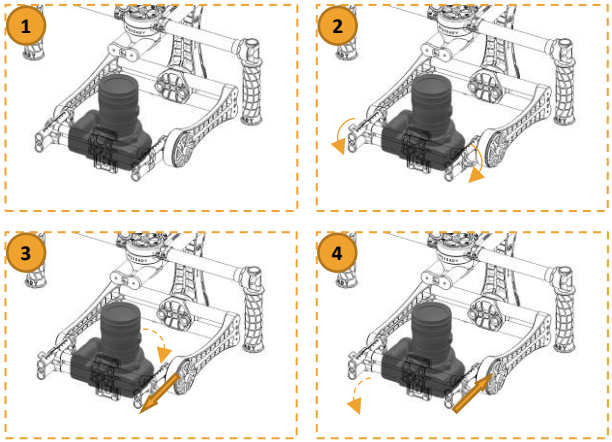


TILT CENTER OF GRAVITY BALANCE

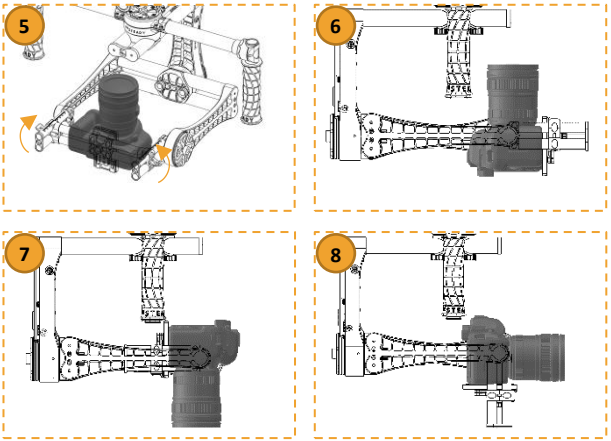
Once the tilt front-to-back balance is completely, you will most likely notice, that the camera is only able to stay at neutral position but wishes to fall either forward or backward when touched or pushed. This is because the Center of Gravity is not aligned with center of mass of the camera-lens-camera tray block. To fix that, the tray needs to be moved up or down along the printed scale to find this alignment.

CENTER OF GRAVITY BALANCE

1. Place your camera setup with lens facing 90 degrees to the top as pictured. Hold the whole tray so it does not rotate on its own at this point.
2. Release the side clamps to unlock the camera tray so it can move along the tubes with printed scale. Always use this scale to be sure that the left and the right sides are on the same level.
3. Observe the camera. If it attempts to fall back, towards the roll motor - the center of mass is too high. Move the whole tray down, towards the higher digits on the printed scale. Remember to move both sides of the tray simultaneously and check if they are on the same level.
4. If the camera attempts to fall to the front - the center of mass is too low. Move the whole tray up, towards the lower digits on the scale while maintaining simultaneous movement on both sides.



5. When you find a position when the camera stays on its own with the lens facing to the top, you may close the side clamps to secure it. The tilt balance may be complete at this point but it has to be confirmed but checking various camera positions.
6. Check if the camera stays on neutral position and does not try to move when touched or pushed.
7. Check the 90 degree top position as pictured. The camera should also stay on all angles in between.
8. Check the 90 degree bottom position as pictured. If the camera stays at this position and at all angles in between, the tilt axis balance is complete.



NOTE for longer Camera Setups: if the Lens cannot face up straight because the PAN Motor is in the way, you can either face it downwards or let the lens pass slightly right or left of the PAN Motor by angling the ROLL Axis slightly left or right.

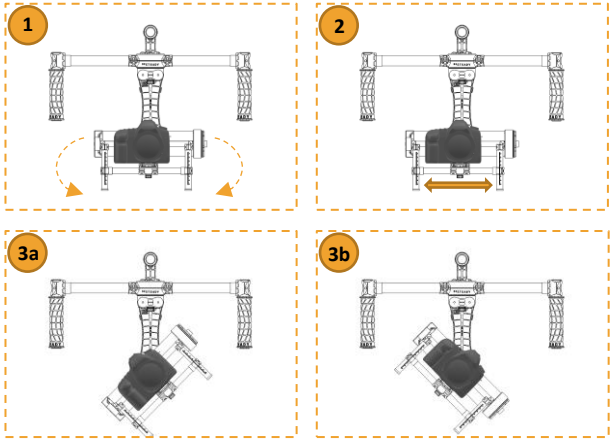
ROLL BALANCE

After the tilt balance is complete, roll balance can be performed. There are two ways to achieve good roll balance: moving the camera plate left and right and adjusting the roll bar through roll adjustment thumbscrews.

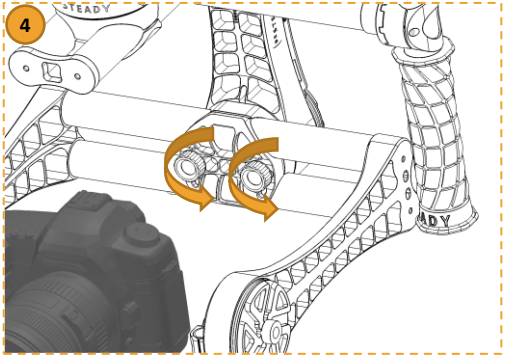
NOTE: Extremely heavy setups are likely to be not perfectly balanceable on roll axis. Such setup will be attempting to return to neutral roll position when leaned left or right on roll axis. It is normal and is happening due to the fact that some setups are beyond the adjustment ranges even though the weight is within the supported payload. In such cases the roll operating angles will most likely be limited and it may be easier to push the gimbal out of position on roll axis.

ROLL BALANCE

1. Position the camera in neutral position and check which side the camera tray wishes to fall to on the roll axis.
2. Loosen the camera plate knob about halfway so you can move the whole camera left and right. Be careful not to move the plate front to back as it may result in loosening the tilt axis balance point. Move the camera to side opposite to the side where the whole block wishes to fall to compensate the roll imbalance. Try to find a spot where you feel that camera stays on neutral roll position and does not lean to any side. Tighten the knob back afterwards.
3. With such spot found, check if the camera also stays on various roll angles - neutral, 45 degrees and 90 degrees, both left (3a) and right (3b) sides.



4. **(Optional)** In case the range that you are allowed to move the camera plate left and right in is not sufficient to achieve a good roll balance due to your camera size or other reasons, you can use the two roll bar adjustment screws on the inner side of the roll motors. Loosen those screws to perform a macro roll adjustment and move the whole roll bar left and right. **NOTE: Be sure to support the whole weight that you have on your stabilizer from the bottom by hand when loosening the main roll bar adjustment. Large forces are always working on that connector and loosening it weakens the gimbal structure. When balancing very heavy setups it is recommended to have another person to assist in supporting the payload while adjusting roll axis through this option.**



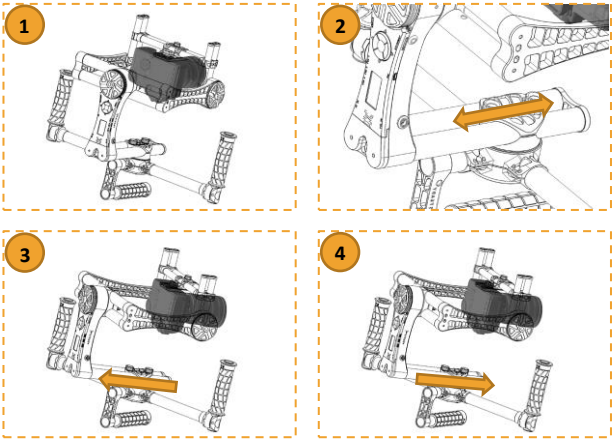
The roll balance is complete, when the camera stays on its own on various roll angles. At this point it should also stay on various combinations of tilt and roll angles given that the tilt balancing was finished properly as described in the previous section.

PAN BALANCE

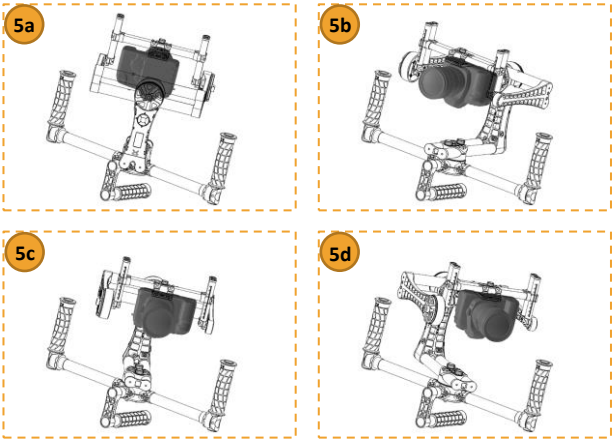
With both tilt and roll axes balance, the balancing can be completed with pan axis. The pan axis balance is probably the most difficult to understand and visualize. The pan axis is balanced when the whole weight beneath the pan motor is able to stay in position on various angles. To check that and adjust accordingly, some force has to be applied on the pan axis to see where the whole mass wishes to lean. To achieve that, the pan axis has to be tilted during checking and adjusting - when it is leveled, no force will work on the pan axis to indicate the imbalance.

PAN BALANCE

1. Position the stabilizer upside down (inverted) on a flat, solid surface as pictured.
2. The pan axis adjustment is located on the opposite side of the pan motor and is secured with two adjustment thumbscrews (similar to those found on the roll adjustment). Loosen these screws to move the whole pan arm back and forth. You may need to push the pan axis towards the pan motor a bit with one hand to ease the movement.
3. Observe the camera. If the gimbal falls towards the upper tilted side - the block is front heavy and you need to move the pan bar back.
4. If the gimbal falls towards the lower tilted side - the block is back heavy and you need to move the pan bar to the front.



5. (Pictures: 5a-5d) The goal is to find a spot where the pan bar stays by itself on any given position around the 360 degree range. Check various positions to see if it is achievable.



You can also balance while in not inverted mode and tilting the whole stand with gimbal on it.

The pan axis balance is complete when the gimbal is able to stay in position at any given angle. **NOTE:** Extremely heavy setups may not be fully balanceable on pan axis. In such case it is best to try to achieve balance when the pan axis is aligned with the handheld line an tried to return to this line from other positions.

Congratulations! The whole balancing process is now complete. You may now return the gimbal to the normal underslung position, put it back on the stand and confirm proper balancing by checking various camera positions.

THE ONBOARD MANAGER

ACR The Beast introduces a completely new way of how the gimbal can be configured - the **OnBoard Manager**. Thanks to this ultimate feature the stabilizer does not require any external devices or software to be configured to work. Everything can be done through the built-in command center, from axis stiffness to Follow Mode settings. The voice information system provides live commands acknowledgements, error statuses and other crucial information. The sharp OLED screen is highly readable in all conditions and along with the easy-to-use control keyboard makes working with The Beast an enjoyable and intuitive experience.

LAUNCHING THE BEAST

NOTE: Always initiate the stabilizer with a balanced camera setup. The stabilizer does not operate without the camera attached. It is not supposed to be launch unarmed.

ACR The Beast is preconfigured to work straight from the box with a medium-weight camera. After properly connecting the power source and switching the power switch the gimbal will perform a series of self-tests, which last for a few seconds and will start with the Summary Screen on the OLED display.

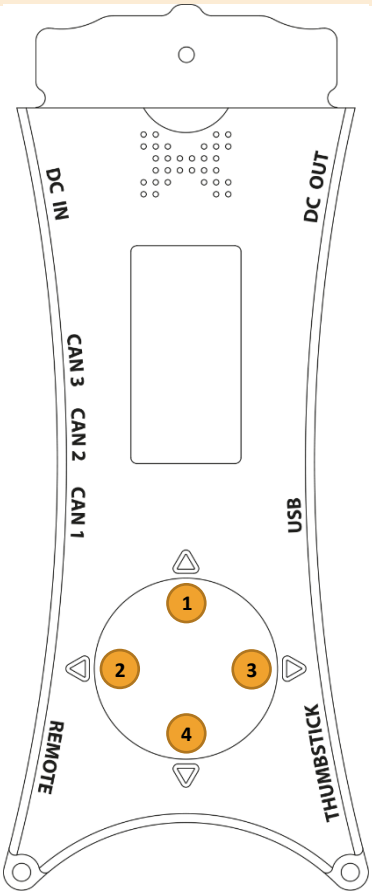
NOTE: The launch sequence may take longer if the „Skip Gyro calibration at startup" option is turned off. This option is turned on by default.

KEYBOARD NAVIGATION

1. **UP** – navigate to the upper position in the menu / raise setting value
2. **LEFT** – navigate to the previous menu level / save chosen setting
3. **RIGHT** – navigate to the next menu level / switch option / perform action
4. **DOWN** – navigate to the lower position in the menu / lower setting value

   USB CABLE PLUG IN while holding DOWN – enter Service Mode / Mass Storage Mode (requires USB connection)

WARNING: The navigation buttons are automatically inverted when the gimbal detects Inverted Mode. This is to not confuse the operator when the vertical arm is inverted and the OLED screen is positioned under the keyboard.



SHORTCUT KEYS

NOTE: these shortcuts will only work in Summary and Battery Monitor screens

HOLD RIGHT for 2 seconds – locks / unlocks the keyboard. This shortcut can be enabled / disabled in the Screen menu

HOLD LEFT for 2 seconds – toggles on/off follow on tilt axis

HOLD UP for 2 seconds – toggles on/off follow on pan axis

HOLD DOWN for 2 seconds – switches between Summary and Battery Monitor screens

HOLD MIDDLE for 2 seconds – starts gyro calibration

SUMMARY SCREEN

This screen is visible after ACR The Beast successfully initiates after a series of self-tests. It provides general information on current status of the stabilizer and camera position.

UP TIME

Shows the running time from the last launch.

BATTERY STATUS

Shows the current charge level of the battery.

GYRO CALIBRATION MONITOR

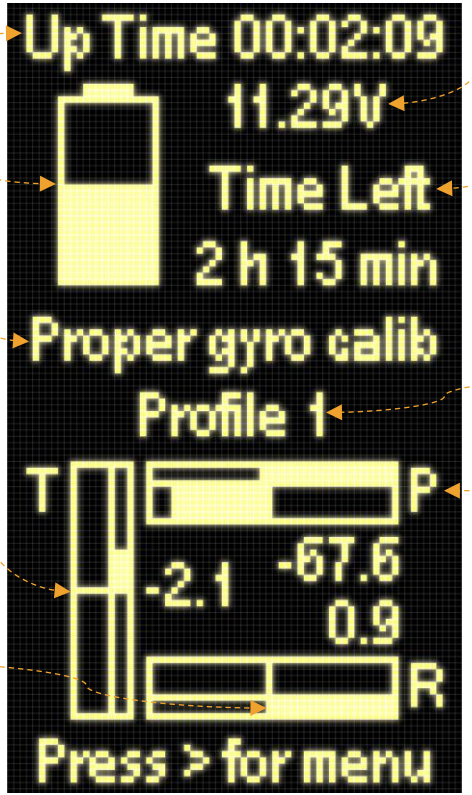
Shows the current status of gyro calibration. OLED screen will flash when gyro calibration status is BAD.

AXIS POSITION INDICATORS

Shows live deviation in degrees of tilt, pan and roll axes from the calibrated zero point / horizon level.

RC SIGNAL INDICATORS

Displays current RC signal for tilt, pan and roll axes if any RC is connected to The Beast.



CURRENT VOLTAGE

Shows the current battery voltage.

TIME LEFT

Shows approximate operating time left on the current battery. The estimation becomes more precise after time.

PROFILE

Shows the current profile.

AXIS MODE INDICATOR

T - tilt axis P - pan axis R - roll axis

A yellow letter (T) indicates that the axis is not in Follow Mode

A black letter with (T) yellow background indicates that the axis is in Follow Mode.

MENU WALKTHROUGH

PROFILES provides access to profiles choice. ACR The Beast supports up to 5 various profiles. Profiles are stored in .bsp files on the memory card and can be accessed and shared using the Service Mode. **NOTE: DO NOT** remove or change the defaults.bsp file!

Save Profile – saves the current profile to .bsp file on the internal microSD card

Save All Prof. – saves all 5 profiles to .bsp files on the internal microSD card

Load Profile – loads and overwrites the current profile from a .bsp file with the same profile name (if existent on the microSD card)

AUTOTUNE enters Autotune function. The gimbal will perform a series of actions to provide optimal performance for the current camera setup. Occasional jitter and vibrations may occur during the procedure. The procedure takes around 2 minutes. Autotune is a good way to start your tuning, however usually the best results require additional settings.

PERFORMANCE main menu for fine-tuning gimbal performance. Primary functions and motor powers are set here. Use the LEFT arrow to save a given setting value. Try to set the motor powers as high as possible without the vibrations kicking in. If the vibrations start, lower the strength by 5-10% and keep it there. Pay attention to which axis produces the most jitter and start adjusting there. You may need to readjust the power settings after a change in the camera setup.

Tuning On/Off – enables advance tuning options

Gain – sets motor response strength

Response – sets time of motor response to position changes – higher value for quicker response

Power – maximum motor power delivered – depends on power source

Tilt Axis - sets tilt motor strength – lower values for smaller cameras

Roll Axis- sets roll motor strength – lower values for smaller cameras

Pan Axis - sets pan motor strength – lower values for smaller cameras

Filter Strength - sets filter strength. Use for eliminating micro-vibrations. The default setting is 33%. Make system more immune to self-excitation.

Calibrate gyro - calibrates the gyro. The gimbal has to remain completely stationary during gyro calibration.

Drone mode On/Off - when turned ON, improves gimbal behavior during flights.

FOLLOW main menu for tuning the Follow Mode. The responsiveness settings tell a given axis how fast it should match the operators position after an operator performs a movement.

Follow mode - engage or disengage Follow Mode on an axis

Follow tilt - engages Follow Mode on tilt axis

Follow roll - engages Follow Mode on roll axis (NOTE: this will also enable Follow Mode on tilt axis as these two axes are paired together in the Follow Mode code

Follow pan - engages Follow Mode on pan axis

Xtended st. - switches back to Xtended Stabilisation (clean) mode

Tilt Follow - sets the responsiveness (speed) of Follow Mode on tilt axis.

Roll Follow - sets the responsiveness (speed) of Follow Mode on tilt axis

Pan Follow - sets the responsiveness (speed) of Follow Mode on tilt axis

Follow Deadband - sets the safe zone, where the Follow Mode does not engage. It can help eliminate human error during walking.

Follow Expo rate - sets the acceleration of Follow Mode. Higher settings will render the Follow Mode more smooth, lower settings will render it more linear. You can imagine it like a soft curve or easing in and out for accelerating and stopping movement.

Behavior – switches between responsive (fastest reacting option which allows almost whip pans and limits overshooting while sharp movement – best while working with wide-angle lens, a lot of dynamic moves, close to the object, like skateboarding or skiing), medium and smooth (slow reacting mode simulating high mass of camera configuration on the

camera shelf causing impression of fighting against inertia, final move looks like heavy configuration on steadicam – best working with actors, calm scenes leading object with long focal length lens and when not sure of your skills with working in follow mode) follow types.

NOTE follow speed settings define movement speed, deadband and expo define movement characteristic.

CONTROL menu for settings related to the remote control devices and the CONTROL button.

Control button - sets actions to consecutive clicks of the button

1-5 click - sets action to 1, 2, 3, 4 or 5 CONTROL button clicks

Long click - sets action to a long CONTROL button click

Filter - sets filter for remote control signal input. Larger filter setting renders the remote control less responsive.

Deadband - sets a safe zone where operating the remote control servos / joysticks does not affect the gimbal

Expo - sets the smoothness of remote controlled movement. Low expo sets provide more linear movement, high expo provide smoother movement with easing-in and easing-out.

Tilt/Roll/Pan Speed - sets the speed of remote control for tilt, roll and pan axes.

Advanced – advance remote control options

RC Mapping – you can manually change RC channels mapping on The Beast

MZ12GR16 - sets the correct pin settings for the dedicated Graupner MZ-12 Remote Control Unit. Use before your first MZ-12 run.

RC_T_Inv On/Off -.toggles invert for tilt axis on RC.

Autotrimming – starts procedure of RC signals trimming procedure

Thumbstick On/Off – toggles Thumbstick activation.

Link On/Off – toggles Link activation

SOUND menu for setting the sound / voice options

Commands O/F - toggles voice command confirmations

Errors O/F - toggles voice error information

Volume - sets voice volume

SCREEN menu for OLED screen settings

Brightness - sets OLED screen brightness

Lock O/F - enables the shortcut to lock the keyboard (RIGHT keyboard shortcut).

DETAILS menu for various details about the unit

Details screen - displays information about the current firmware on the unit as well as QR code for accessing ACR Systems website

Service screen – shows encoders position and other service information

Battery – displays information about the battery

Battery monitor - displays large live battery status monitor

Battery calibration – gimbal will recalibrate battery voltage monitor. This should be done with fully charged small batteries – 12.4V on both.

High power – lower battery monitor thresholds in case of high power consumption (e.g. RED cameras) and hi-power batteries (e.g. V-Lock)

Adapter On/Off – toggle this setting ON if you are using Lock'n'Load V2 upgrade kit

Restore defaults - loads defaults settings or restore factory default settings. **WARNING:** do not use this option unless absolutely necessary or instructed by ACR Systems technician.

SERVICE MODE

Service Mode is used for firmware updates as well as voice banks swapping.

To enter this mode it is required to **hold the DOWN button while inserting the USB cable into the USB port**. The gimbal will be detected as a mass storage device in the computer system and files saved on the internal microSD card will become accessible.

Remember to update your gimbal with proper firmware – **WARNING:** do not use firmware above 2.0 for The Beast V1.

FIRMWARE UPDATE PROCEDURE

1. Download latest firmware files from http://acr-sys.com/support/#software.
2. Unpack “sec.hex” file to separate folder.
3. Prepare gimbal for firmware upgrade:
    - Batteries must be disconnected.
    - External additional accessories powered from gimbal must be disconnected.
4. Connect USB cable to computer:
    - Press and hold DOWN button on embedded keyboard.
    - Connect USB cable to USB port on right side of vertical arm.
    - Release DOWN button.

5. On OLED screen you should see ‘USB Mass Storage’. You should see external drive connected to your computer system. Copy ‘sec.hex’ directly to connected drive. Check if file is visible on connected drive.
6. Reconnect USB cable. Gimbal will start auto-update procedure: it will verify file and start upgrading. Process usually takes up to two minutes. After that gimbal will restart and show SUMMARY screen. WARNING: do not disconnect USB cable during this operation. It may cause upgrade error. It may damage program existing on electronic board inside gimbal.
7. **(optional)** Go to DETAILS -> DETAILS SCREEN menu and check “Sec Firmware”. If update was made properly gimbal will show current firmware version.

OPERATING MODES

There are various operating modes that suit various shooting situations. In general two main areas of operating a gimbal can be highlighted: **single operator** and **multi operators**. Single operators usually use the intuitive Follow Mode, where the gimbal follows operators movements and in such case a second person is either not necessary or provides framing assistance via a remote control device only. Multi, more professional operator mode utilizes at least two users to achieve desired framing - one person holds the gimbal and controls its general position and direction its facing while the second person is responsible for detailed framing with, for example, third person pulling focus. It is essential to know every modes limitations and choose the right configuration for every job.

XTENDED STABILISATION

The Xtended Stabilization is a clean stabilization mode where the camera remains leveled independently of the rest of the gimbal. This mode is designed to work with an external control device such as an RCU or the Thumbstick as the first operator (gimbal holder) will not be able to control the framing and the camera will always point in one direction unless controlled by an external signal. Xtended Stabilization also allows the gimbal enter into Slim Side Mode, a „briefcase" position for low shots or for shots in narrow spaces. Follow mode can be activated once you are in Slim Mode Position.

FOLLOW MODE

The most popular operating mode - the Follow Mode - allows a single person to walk and shoot on his/her own. The purpose of the Follow Mode is to imitate operator's movements and eliminate the need of using an external Remote Control Unit for camera movement control. The Follow Mode is fully configurable within the **OnBoard Manager** in the **Follow** menu.

An operator can enable the follow function to either 1, 2 or all 3 axes. It is important to remember that while the tilt and pan axes can be engaged separately, the roll axis is always paired to the tilt axis and cannot operate on its own - it always works with the tilt axis following as well.

The Follow Mode can be configured to be either very linear, „robotic" or smooth, cinematic-like. ACR The Beast, thanks to very sophisticated movement control technology, makes the Follow Mode very smooth, natural and responsive at the same time. Feel free to experiment with Follow speed and expo settings on every axis to achieve the most satisfying results.

BRIEFCASE MODE

The Briefcase Mode is an extension of the Xtended Stabilization, where the gimbal is positioned vertically („briefcase") by the operator who is holding the device by one of the side handles. This allows for low pass shots or when shooting in narrow corridors / doorways or when the usage of only one hand is required (for example when riding a bike).

TIP: When in Slim Side Mode, the Follow Mode can be engaged either by using the OnBoard Manager menu, the Control Button or the Command Channel on the RCU. In such case the original Roll axis will become the Pan axis due to the gimbal position to allow the operator to intuitively follow as if the gimbal would be following in normal position.

INVERTED MODE

The Inverted Mode allows the unit to work upside down enabling the operator to have the camera at a more comfortable eye-level.

The Inverted Mode is engaged automatically depending on the position the gimbal is launched in. It is important to remember that it is not possible to toggle the Inverted Mode while the gimbal is running. The keyboard controls and the OLED screen are inverted as well when the Inverted Mode is detected.

FRAME INVERT

The Frame Invert is an additional camera mounting option which allows to hang the camera under the camera tray rather than place the camera on it. Several cameras have top mounting holes (for instance RED cameras, BlackMagic Design cameras) which allow them to be used in such configuration. Hanging the camera enables a better range of balance, especially for very heavy and bulky cameras such as the RED Epic. Similarly to the Inverted Mode, ACR The Beast automatically detects the camera tray position during startup for proper operation. It is recommended to use this mounting option for massive setups which usually have a low positioned center of mass.

NOTE: the Frame Invert can work in every operating mode.

REMOTE CONTROL

Remote Control comes in where a single person is not enough to obtain proper framing while filming. The Remote Control in general defines every external equipment used to control the position of the camera on the gimbal - be it cabled or radio / wireless equipment. The gimbal can be remotely controlled in all of the previously described modes - that makes the Remote Control more of a complimentary mode than a standalone feature.

There are two connection ports on the ACR The Beast for remote control devices. The REMOTE port is used to connect radio signal receivers, such as the dedicated Graupner GR-16L receiver from the MZ-12 radio set. The THUMBSTICK port is used to connect analog joystick controllers such as the dedicated ACR Thumbstick.

WARNING: Do not mix the ports! Do not connect a radio receiver to the THUMBSTICK port and an analog joystick to the REMOTE port!

The Thumbstick adds additional framing options for a single operator and is usually mounted on the handheld module close to operators thumb finger.

An external radio is used in more advanced setups were external framing control is necessary.

THUMBSTICK SETUP

CONNECTING THE ACR THUMBSTICK

The ACR Thumbstick was designed to be a plug-n-play device for your The Beast. Just connect your Thumbstick white marked side to the top. The Thumbstick can operate along with a connected RCU device (such as the Graupner MZ-12) which means that you can have two separate remote control sources at once - the Thumbstick for the gimbal holder and an external radio for the second operator.

THUMBSTICK CONTROL BUTTON

The Control Button on the Thumbstick works the same way as the central Control Button on the ACR The Beast. It is configurable and will perform the same actions as the main Control Button is set to.

ADJUSTING THUMBSTICK CONTROL

All the settings that are available in the Control menu of the OnBoard Manager are also affecting the Thumbstick signal input. Feel free to adjust the expo rate, deadband and speed to your preference.

WARNING: Always connect the Thumbstick while the ACR The Beast is NOT powered up from the battery or from USB port! Do NOT connect the Thumbstick to the Remote port! Make sure that the Thumbstick plug is connected the right way before powering up your gimbal!


TERADEK
OPERATED BY
ALEX JENTZ
well done

WARRANTY - GENERAL INFORMATION

WARNING

You should use the ACR The Beast safely and responsibly at all times, so as to avoid any damage or harm being caused to any person, animal or property next to which you are operating the gimbal. High awareness is especially required when operating the ACR The Beast with a multirotor / drone. In this respect you should ensure that you always operate the ACR The Beast in compliance with Manual instructions. ACR Systems also reminds you that you should not use our products for any unauthorized or unlawful purposes, as you will otherwise be fully liable for any loss or damage caused as a result of such unauthorized use. In particular, you should comply with any applicable data protection laws and refrain from operating the ACR The Beast with a camera in any way that could interfere with any other person's privacy. ACR Systems shall not be responsible for any consequences arising from the use of the product or the use of this guide, nor shall ACR Systems be responsible for any damage or accidental loss of data resulting directly or indirectly from the use of the product or the information contained in this guide.

WARRANTY

Without prejudice to any applicable statutory warranty, ACR Systems warrants that the ACR The Beast will be free from defects in material and workmanship for a period of 24-months from the initial date of delivery (excluding consumables which are warranted during 12 months from the initial date of purchase) upon presentation of dated proof of delivery to the retailer or to ACR Systems (including the product serial number). During the contractual warranty period, any defective product should be returned in its original packaging to the retailer's or ACR Systems after-sales service. After inspection of the product, ACR Systems will, at its sole discretion, either repair or replace the defective part or product, excluding any other indemnification of any nature.

ACR SYSTEMS WARRANTY DOES NOT COVER:

- defects due to damage caused by an accidental collision or fall;
- defects due to abnormal use of the product or if spare parts have been installed without following the recommendations and instructions provided by ACR Systems in the Manual or on www.acr-sys.com or on our Vimeo channel or if The Beast has been customized by the end-user;
- defects caused by repairs carried out by the end-user or an unauthorized third party, except spare parts provided by ACR Systems;
- defects due to the use of spare parts not provided by ACR Systems in the original packaging, the use of spare parts not approved by ACR Systems, in particular, the use of batteries not approved by ACR Systems (genuine batteries can be identified by their information sticker);
- defects caused by any reason other than a defect in material or workmanship;
- the gradual power loss of the ACR Systems rechargeable battery over time, which does not constitute as a defect in material or workmanship.

If upon technical tests being carried out any product is found non defective we reserve the right to return such product to the sender at the sender's cost and to levy a charge to cover ACR Systems technical test fees. Upon expiration of the 24-month warranty period or if the defect is not covered by the warranty, any defective product can be returned to ACR Systems after-sales service in order to be repaired or for a defective part to be replaced at the sender's costs. Repair will be carried out only after acceptance of the corresponding quotation.

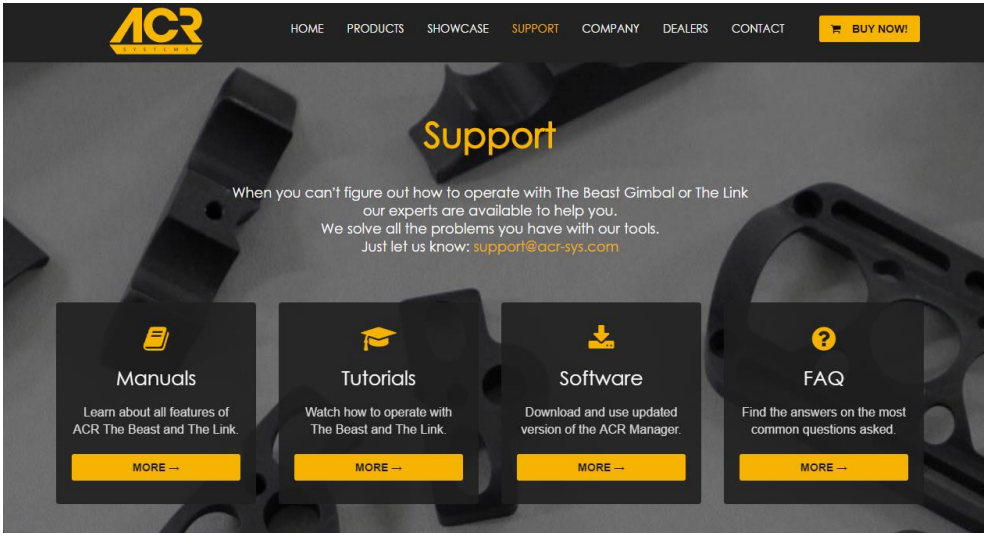
Except in relation to consumables, spare parts are subject to a 24-month warranty and are subject to the same terms and conditions as those described above. The warranty does not cover: damage to non ACR Systems products, including devices used to operate the ACR System products.

MODIFICATIONS

The explanations and specifications in this guide are given for information only and may be modified at any time without prior notice. The latest version of the Manual will however be available from our website at www.acr-sys.com. The explanations and specifications contained in this guide are deemed to be correct at the time of release. Although the utmost care has been taken when writing this guide, in order to provide you with information which is as accurate as possible. ACR Systems shall not be held responsible for any consequences resulting directly or indirectly from the use of the information herein. ACR Systems reserves the right to amend or improve the product design or user guide without any restrictions and without any obligation to notify users. As part of our ongoing objective to upgrade and improve our products, the product that you have purchased may therefore differ slightly from the model described in this guide.

DISPOSAL OF THIS PRODUCT AT THE END OF ITS LIFE

At the end of this product's life, please do not dispose of this product in your general household waste. Instead, in order to prevent possible harm to the environment or human health from uncontrolled waste disposal, please dispose of this product separately in accordance with your local laws and regulation. For more information on the separate collection systems for waste electrical and electronic equipment that are available for consumers, near your home, free of charge, please contact your local municipality authority. You can also contact the retailer from which you purchased your gimbal – he might have put in place recycling services or he may be part of a specific recycling scheme. This product will be then treated in an environmentally sound manner at a licensed recycling plant and its components will be recovered, recycled or reused in the most efficient manner, in compliance with the requirements of the applicable recycling laws.



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www.vimeo.com/channels/thebeast

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