

POLECAM

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The Warning Page!

It is essential that this manual is read and understood before attempting to operate Polecam.

Should you have any questions regarding the operation of Polecam please do not hesitate to contact us.



RoHS

This product conforms with restriction of hazardous substances directive

This product meets EU consumer safety, health environmental requirements.



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Get Me Started

This guide is to get you started with Polecam as quickly as possible. It is recommended that you read through the rest of this manual for more detailed instructions on setting up and using your Polecam.

Assembly & Cable Rigging

Try and find level ground. If on grass always try and use a ground sheet. Although the rig is designed to be built with no tools, small parts can still be dropped. It also gives you a nice flat, clean and dry surface to make adjustments or modifications.

Always build the rig with all five sections (seven sections if you are using 7th Heaven Polecam). Each section is approx. 1.1m (3.5') long.

- Remove the rigging stands from the mast bag and set up about 1m (39") apart.
- Place the Polecam on to the rigging stands (securing it with the Velcro straps) or attach it to a suitable tripod.
- Take the Interface unit from the Polecam unit bag and place it on the right-hand side of the mounting plate using the supplied Velcro strips. Take the Camera Control Unit from the Polecam unit bag and place it on the left-hand side of the mounting plate using the supplied Velcro strips.
- Take a carbon fibre section from the mast bag and slide it into the Polecam, ensuring that the locking pin engages. Slide one of the rigging stands to the front of this section.
- Add further sections, as above, moving the rigging stand along with each new section, until five carbon fibre sections are assembled. (or seven if you are assembling a 7th Heaven version)
- Select the 10m Camera head to CCU cable, the 10m Pan and Tilt cable and, if required, the 10m microphone cable. Unroll them onto a clean surface taking care not to damage the connectors.



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Assembly & Cable Rigging

- Insert the head ends of the cables into the cable feeder and feed them into the boom through the slot on the bottom of the main Polecam rig. Keep feeding the cables into the Polecam boom until they emerge from the end of the carbon fibre tube. Use Gravity to help feed the wires.
- At the head end of the unit remove the cable feeder and make sure there is approx. 60cm (24") of camera cable, 10cm (4") of Pan and Tilt cable and 2cm (1") of microphone cable protruding from the boom. Do this by pulling the cables back through the cable feed slot.
- At the rear end of the boom reverse coil the excess Camera head to CCU cable, secure loosely with the supplied cable tie and hang on the cable hook. (Loosely secure all cables to avoid pinching and to allow for any adjustments later) Remove the protective cap from the cable and place the cap in the unit bag tray then connect the cable to the CCU.
- Now reverse coil the excess Pan and Tilt cable, secure loosely with the supplied cable tie and hang on the cable hook. Pass the cable through the hole in the mounting plate and connect the cable end to the Interface unit.
- Reverse coil the excess Microphone cable, secure loosely with the supplied cable tie and hang on the cable hook. Pass the cable through the hole in the mounting plate and connect the cable end to the Interface unit.
- Take the monitor from the unit bag and attach it to the monitor clamp then attach the monitor and clamp onto the Polecam boom 500–750mm along the first section of carbon fibre; this is a personal preference setting.
- Take the monitor cables from the Unit Bag and attach the XLR power cable and the BNC cable. The BNC cable should be attached to the HD/SDI in on the back of the monitor. Loosen the monitor clamp and thread the cables underneath and re-tighten the ratchet handle of the monitor clamp. (Putting the cables under the monitor clamp acts as a strain relief).
- Remove the rubber grommet from the upper side of Section 1 and feed the monitor cables through the grommet and down through the access hole in the Polecam. Push them through until they emerge from the bottom cable feed slot.
- Reverse coil any excess of these two cables and hang them on the hook. Pass the 4 pin Lemo connector through the cable access hole and attach to the interface unit. Then attach the BNC connector to the HD/SDI output on the rear of the Camera Control Unit.
- Take the joystick out of the unit bag and undo the Velcro strap on the bottom. Attach the Joystick to the main Polecam rig just in front of the access hole using the Velcro strap. Ensure you put the monitor cables underneath the Joystick Velcro strap.



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Assembly & Cable Rigging

- Next take the Joystick cable from the unit bag tray and attach one end to the Joystick. Pass the other end through the cable grommet and thread the cable down through the access hole in the same manner as the monitor cables.
- Reverse coil any excess, hang on the hook and pass the 12 pin Lemo through the cable access hole and attach to the interface unit.
- Now replace the cable grommet.
- Next remove the Pan and Tilt head from the unit bag. Loosen the nut and pass the cables through the access hole and slide the head over the carbon fibre. Hand tighten the nut to secure onto the end of the carbon fibre pole.
- Next unscrew the iris mounting block from the Pan and Tilt camera cradle using the nut on the underside.
- Take your chosen camera head and using the screws provided attach this to the iris mounting block.
- Screw your chosen lens onto the camera head.
- Take an iris drive belt from the accessories wallet and double wrap this around the lens. Ensure the iris drive belt is on the iris cuff of the lens and lift one of the wraps and pull this over the iris pulley.
- Next replace the iris mounting block onto the Pan and Tilt camera cradle with the screw provided.
- Push the 4 pin binder into the connector on the iris mounting block.
- Take the camera cable end cap off the Camera Cable and attach this to the camera head.
- Take the Pan and Tilt cable connector and attach this to the top of the Pan and Tilt head.
- If you have not done so already, remove the lens cap, this can be stored either in the unit bag tray or attached to the underside of the drop arm of the Pan and Tilt head.
- If using the microphone this should just sit proud of the Pan and Tilt head access port at the top.
- Finally take the camera power cable (4 pin XLR to 4 pin Hirose) from the unit bag tray and attach this to the 12v DC output of the Interface unit. Pass the Hirose end through the cable access hole and attach to the Camera Control Unit.



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Assembly & Cable Rigging

- Remove the metal retaining pin from the adjustable threaded bar at the rear of the Polecam Rig and remove the Knurled Polecam nut. Place dumbbell weights onto the shaft (the internal threaded bar extends and retracts by screwing to accommodate your weights) to provide counter balance for the rig. At this stage the tripod mounting clamp should be positioned midway between the two silver studs on the underside of the Polecam Rig. This is your adjustable balance point and is used to fine tune the balance point of the Polecam Rig or to adjust the balance point if you add or remove Polecam sections or weights. At 5 sections with a single HD camera head on a standard Pan/Tilt head you can start with 2 x 7.5Kg dumbbell weights. **Remember to replace the Knurled Polecam nut and secure with the silver retaining pin.**
- You are now ready to provide power for the rig which can be either with Mains Power or Batteries.
- To power the rig from mains – take the power supply out of the unit bag tray and attach this to the side of the interface unit using the Velcro. Then take one of the 4 pin XLRs and plug this into the “Power In” of the interface unit. Attach the IEC lead and plug into the mains socket.
- To power the rig from batteries – take the 4 pin XLR lead that is connected to the Battery Plates on the same side of the interface unit and plug this into the “Power In” of the interface unit.

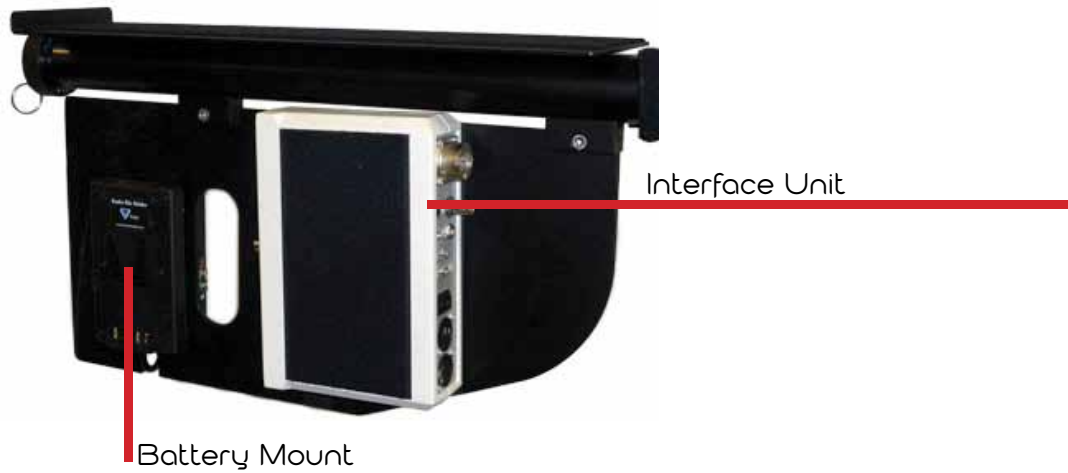
IMPORTANT NOTE ABOUT USING BATTERIES ON THE POLECAM

- The Polecam rig runs from one battery but there are two plates. When two fully powered batteries are placed on the rig the Polecam will take power from one battery. When the battery is nearly depleted the alarm will sound on the interface unit (providing this has not been silenced via a switch on the interface unit). There is a switch on the side of the battery plates on the Camera Control Unit side. If the operator moves this switch the Polecam will take power from the second battery. The switch is a “Make Before Break” switch which means the Polecam will take power from the second battery before disconnecting from the first battery. Therefore providing seamless power.
- You are now ready to power up the rig. First turn on the interface unit by the switch on the front. You should see a green light to indicate power. Next turn on the power on the Camera Control Unit and finally turn on the power on the front of the monitor.

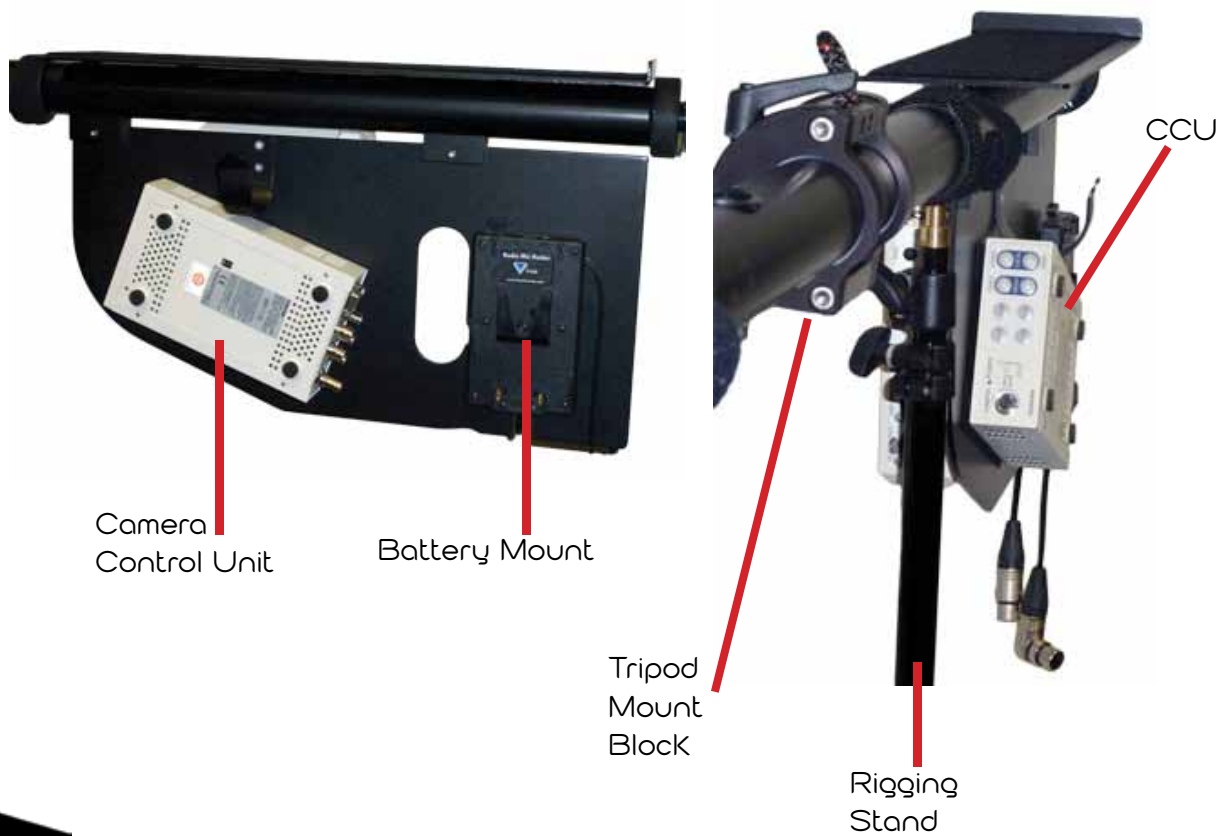


Diagrams

Polecam Viewed From Right Hand Side



Polecam Viewed From Left Hand Side





Cable Hook Showing Reverse Coil Cables



Monitor HD-SDI In

4 Pin XLR



Joystick

Joystick Connector



Combined tripod mount, harness hook & pivot point adjustment



Interface Unit Showing Connections on Right Hand Plate



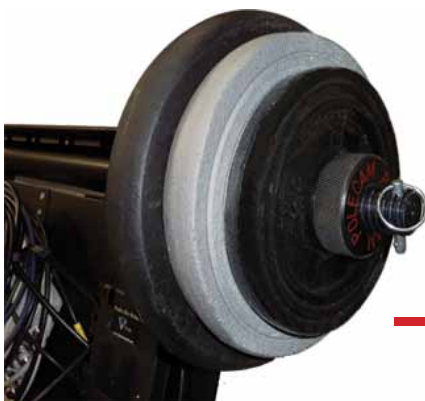
Make before Break Switch on Left Hand Battery Mount



Camera head assembly mounted in cradle



Iris motor shaft with drive belt installed on lens iris cuff



Rear end dumbbell mounting system showing lock nut & securing pin

The internal threaded bar extends and retracts to accommodate your weights.

Polecam Interface Unit

The Interface Unit is the central control unit for Polecam. All of the sockets on the Interface Unit are different so it is virtually impossible to connect the wrong plug in the wrong socket.



There are four switches on the Interface Unit and their operation is detailed as follows:

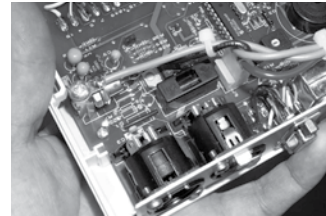
The 'Power' switch controls the electrical power to the system and its accessories.

IT IS VITAL THAT ALL CABLES ARE CONNECTED TO THE INTERFACE UNIT BEFORE THE POWER SWITCH IS ACTIVATED. IT IS ALSO ESSENTIAL TO POWER OFF THE CAMERA AND SERVO SYSTEMS BEFORE DISCONNECTING ANY CABLES. IRREPARABLE DAMAGE TO THE CCU AND SERVO SYSTEMS MAY RESULT IF YOU DO NOT HEED THIS WARNING!

1. The 'Monitor' switch should always be set to CAM.
2. The 'Alarm' switch enables an audible warning of battery condition. The battery status LED shows you the state of charge of the batteries. The LED will change colour to reflect the voltage of the supply as follows: Green is Good Power, Amber is low and flashing Red is CHANGE BATTERY! (see table on next page)
3. The two 4 pin XLR D.C. connectors enable you to power the camera CCU plus one other external accessory. Do not draw more than 4 Amps (48 Watts) total from these two sockets. There will also be a visual warning on the Joystick Tally. This will be a flashing indication.
4. The 'Iris' switch selects either remote control over the iris from studio or OB unit or local allowing iris control via the Polecam Joystick.

Battery Voltage	LED Colour	Audible Warning
11.2	Green	None
10.8 - 11.2	Amber	Slow bleep
10.8	Red	Fast bleep

There are two spare blow fuses located in the lid of the interface unit.



Polecam Joystick



Tilt Reverse Switch

Pan Reverse Switch

Polecam is driven by a proportional joystick, i.e. the more you deflect the joystick from the centre position the faster the servo will turn. Low speed is OFF. Do not set at low speed.

Direction of both Pan & Tilt can be reversed by two buttons (see above).

The mechanical iris can also be controlled via the joystick.

Check List

- ✓ Ensure iris is open and iris selector on the joystick is switched to 'local'.
- ✓ Check that servo speed is not at zero
- ✓ Check monitor selector switch. Should always be set to CAM.
- ✓ Ensure battery alarm is switched on the interface



The Harness

You will need to operate Polecam from the harness when working from the back of a moving vehicle, boats, motor racing pit lanes and other situations when operating from a tripod is not possible.

When working from moving vehicles or boats always use safety harness equipment. Although the Polecam has been manufactured to a very high standard and tested rigorously it has not been certified as a safety harness. If in any doubt please use the correct safety equipment as instructed by your Health & Safety officer.

1. It is advisable to warm up the muscles with some simple stretching before using Polecam on the harness.
2. Put the harness on making sure that it fits tightly but comfortably. Pulling down on the side you hang your Polecam you should be able to feel even weight on both sides as well as across the webbing on the back. It is normal for the shoulder strap on the non rig hanging side to be shorter.
3. Release the safety straps from the boom supports and pick up the rig from underneath to find the balancing point then replace rig onto support.
4. Standing beside the boom attach the harness to the mounting hook on top of the Tripod mounting block.
5. Carefully let go of the boom to see if the balance point is correct – generally it is better to achieve a balance point that allows the head end of the boom to rise when you release it.
6. Ensure the horizon of the camera is correct
7. Always operate with the rig-side leg forward.



Basic Operating Instructions

Operating

Always use Polecam on a tripod when getting started. Only use Polecam on the harness once you are completely familiar with the equipment and are confident with basic operation.

Step 1 – Learn P&T action fully before attempting to combine this with booming. Start with the crane locked off high. Learn to follow a subject that is at least 2m (6') from the camera and P&T unit, slowly allow the subject to get closer to the camera unit until eventually it is underneath the camera. It is at this point you can start work on 360° spins. Always beware of not looking back at yourself or looking up and therefore seeing the top of the head unit. Also always be aware of where the camera is and of the amount of twists in the camera cable.

Step 2 – Basic booming. Take a static subject that is at least 2m (6') from the camera and using the boom and P&T Unit, slowly boom from left to right Keeping the subject in centre of frame at all times. Then boom up and down Keeping the subject in the centre of frame. Next start to move the boom in a square eventually moving on to a figure of eight (again Keeping the subject in the centre of the frame at all times.) Slowly move closer and closer to the subject until you are directly above it and are able to scan from the sides over the top.

Step 3 – It is important to get used to flying the Polecam without using a monitor. You must watch the head unit at all times. An exercise/demonstration of this is to try to fly the camera into a coffee cup – you will find it much easier to achieve by watching the head unit rather than the monitor.

Step 4 – Start to create more and more complex moves with a moving subject.

Finally – Once you feel comfortable with the movement of the boom and P&T unit, move on to operating from the harness.



Extending or Shortening The Boom

1. Replace the rig onto the rigging stands (front rigging stand behind section to be removed or added) and secure with the Velcro straps.
2. Power off the system. **REMOVE ALL WEIGHTS AND ANY BATTERIES- THIS IS VITAL!!!** Unplug the Pan & Tilt and camera cable and unlock the head unit, remove it and replace into the foam insert in the bag unit.
3. To remove sections of the boom depress the locking pin and twist the section before pulling out. Pull the excess cable from the rear of the unit until correct cable lengths are protruding from the head end. Repeat the step until the desired boom length is achieved moving the front rigging stand back each time.
4. Replace the head unit. Tighten the nut to secure. Reconnect the cables and re-attach the batteries and counterweights.
5. To extend the boom reverse steps 1-4 releasing the extra cable required from the hook pulling through sufficient cable to thread through the new length of boom.
6. Power up
7. Release the safety straps and find the new balance point.

Transportation

If you need to transport Polecam it is not necessary to completely dismantle the system. It is possible to leave all the cables threaded through Polecam and repack it into the mast bag. To do this remove the P&T head, interface unit, monitor & clamp, joystick & CCU. Then remove all carbon fibre sections and reverse coil the loom and secure at the end of the Polecam. Then place the Polecam into the mast bag.

This enables a speedy re rig at the new site. It is not, however, advisable to travel long distances or ship the rig on aircraft without completely dismantling Polecam.



Basic Maintenance

- ✓ Always Keep your Polecam, rig clean and dry. After using the rig at an outdoor location (especially dusty or salty conditions) unpack completely and dry and clean all parts with appropriate cleaning agent as soon as possible. Never Leave a damp rig in the closed bags for a length of time.
- ✓ Regularly check that cables and their connectors are in good condition
- ✓ Regularly reverse coil cables wherever possible, especially multicore cables
- ✓ Always put dust caps onto cables to protect the pins

Warranty & Servicing

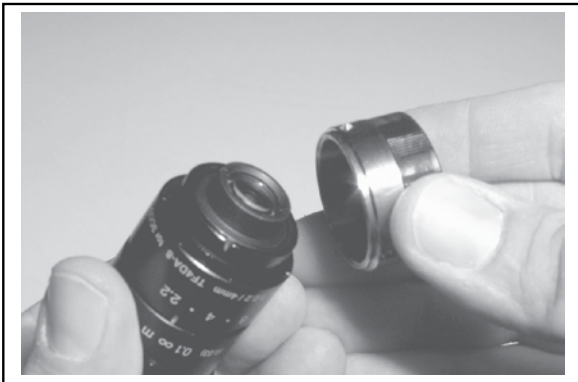
- Polecam provides a one year warranty against defective materials or workmanship and this warranty is effective from the date of the invoice.
- During the warranty period Polecam guarantees the performance and electrical safety of the products, provided that the products are operated and handled in accordance with the instructions in this manual.
- In the event that goods supplied by Polecam become faulty, Polecam's liability is limited to either replacement or free-of-charge repair,
- Polecam will not under any circumstances be responsible for any consequential losses or damage.
- Polecam's appointed Distributor will be responsible for ensuring the compliance of all Polecam products with local laws and legislation as applicable within the (area) market, unless agreed otherwise in writing by Polecam.



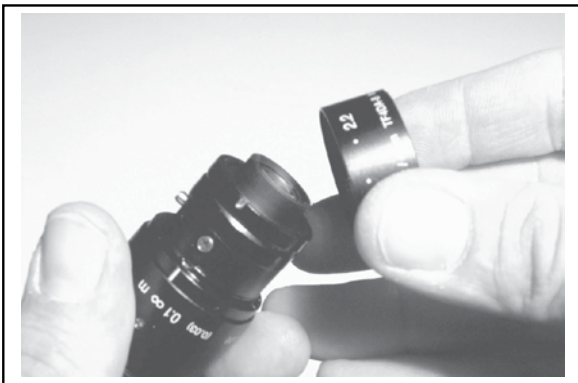
Lens Modification (Fujinon 4mm)



First of all make sure that the work environment is clean. Using an appropriate optical screwdriver loosen 3 x flathead retaining screws but do not remove completely. Do not remove the cross-head screw as this is a locating screw.



Remove silver C-mount ring.



Remove iris ring.



Remove and discard the small ball bearing and spring from the iris ring.

Re-assemble lens as before and check that iris and focus move freely.