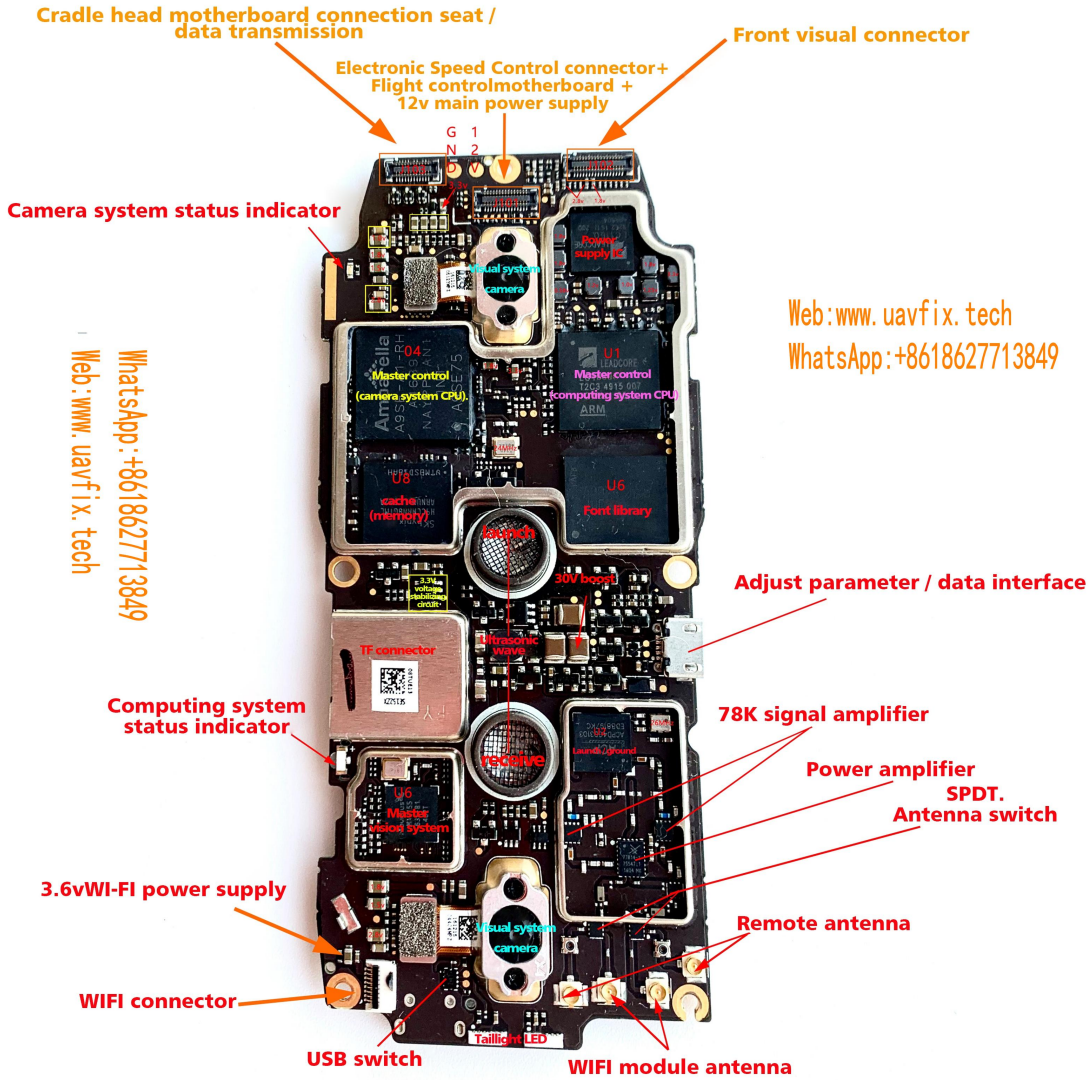
DJI Mavic pro Drawings of repair methods and technical data



DJI Mavic pro Core motherboard-side A Functional interpretation of components

DJI Mavic pro, which has a high market share and large sales volume, will be repaired frequently in the next few years.

The logic operation part of DJI Mavic pro is composed of U3 power supply, U1 logic CPU (integrated memory) and U6 logic NAND.

After the logic operation is partially damaged, it cannot opposite frequency and cannot connect to the remote control.

You can judge whether the logical operation part is working properly and whether it can enter the system normally by observing the operation system status indicator (opposite frequency indicator).

The computer system status indicator is red about 2 seconds after the motherboard has just been

powered on, then the light is turned off, and after about 3 seconds, the light turns green when it enters the system.

If the status indicator of the computing system is always red after the motherboard is powered on, and the light does not go out, it proves that the logical operation part cannot enter the system.

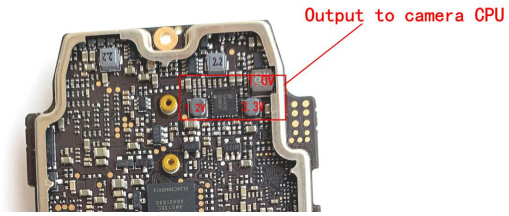
If the red light is on, it will be extinguished, but the green light is not on, it is also a failure to enter the system normally.Either the CPU cannot enter the system, or the NAND is damaged, or the system crashes, or the power supply is missing. Therefore, observing the status indicator of the computing system is the basis and way to judge whether the logical operation part is normal or not.

The scheme of the main control part of DJI Mavic pro is the same as that of DJI Phantom series.

The power chip of DJI Mavic pro is the same as Phantom4, 4A, 4pro and 4proV2.0, and can be used in general.

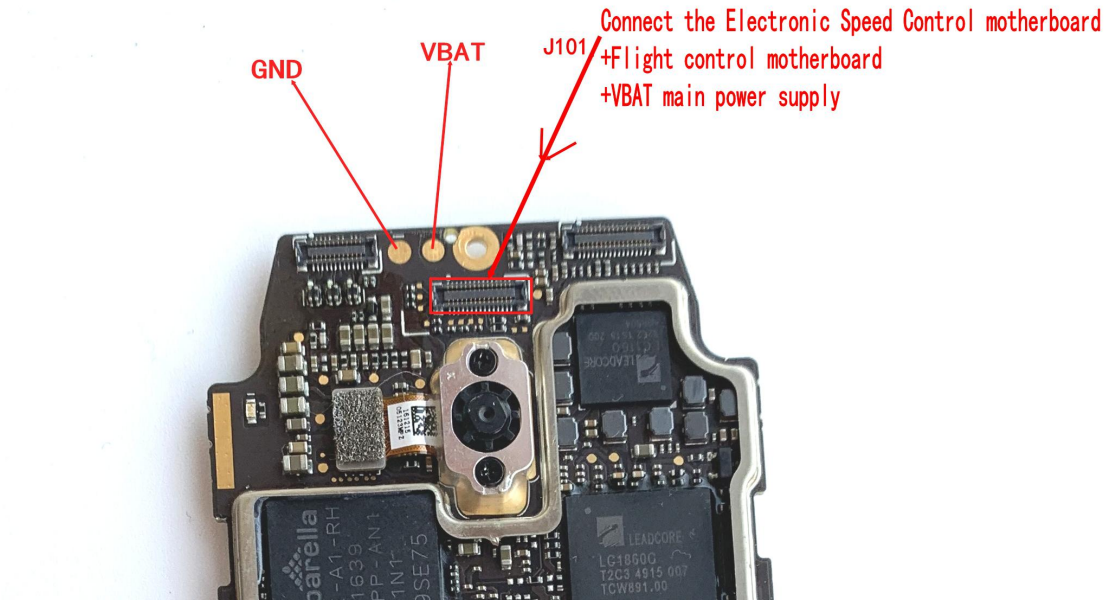
The cradle head camera of DJI Mavic pro consists of U4 Amba camera CPU, U5 camera power supply, U8 cache CPU register and U10 camera NAND.

Failure phenomena after damage: black screen, no camera parameters, camera not connected.



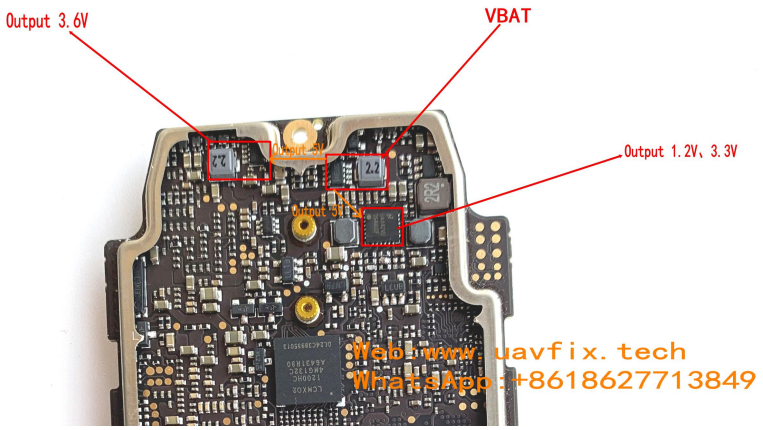
DJI Mavic pro core motherboard power supply process:

The battery voltage VBAT,12V or so the main power supply passes through Electronic Speed Control motherboard and then connects with the main power supply connection seat J101 of the core motherboard through FPC wiring.



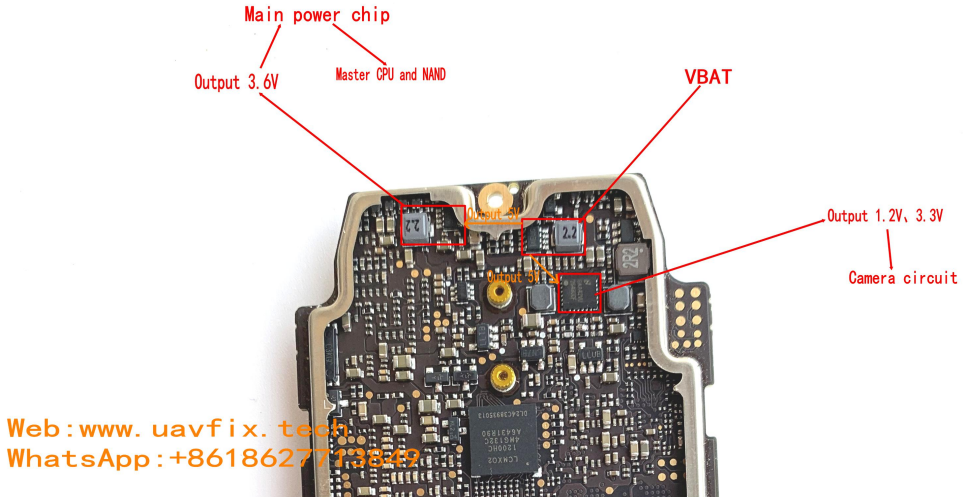
After the VBAT battery voltage is sent to the core motherboard, the battery voltage is converted to 5V through the first step-down voltage stabilizing circuit.

5V is then output to 3.6V voltage regulator circuit and camera power supply circuit, as well as other circuits on the core board.



If when repairing a faulty core motherboard, the single board is powered on without current, the indicator light is not on, and the whole motherboard is not powered, at this time, it is necessary to check whether there is a step-down output of 5V after the Vbat voltage is input to the core motherboard. With 5V, other power supply circuits can work.

Control the power supply of CPU and NAND: VBAT supplies power to 5V step-down voltage regulator circuit, 5V power supply to 3.6V step-down voltage regulator circuit, 3.6V power supply to the main power supply chip, and the main power supply chip supplies power to the main control CPU and NAND.



Therefore, if the operation system status indicator is not on, the whole logic operation part is not working. Check the input and output voltage of the main power supply first:

The main power chip does not output voltage to the main CPU and NAND, either the main power chip is broken, or it does not get 3.6V power supply.

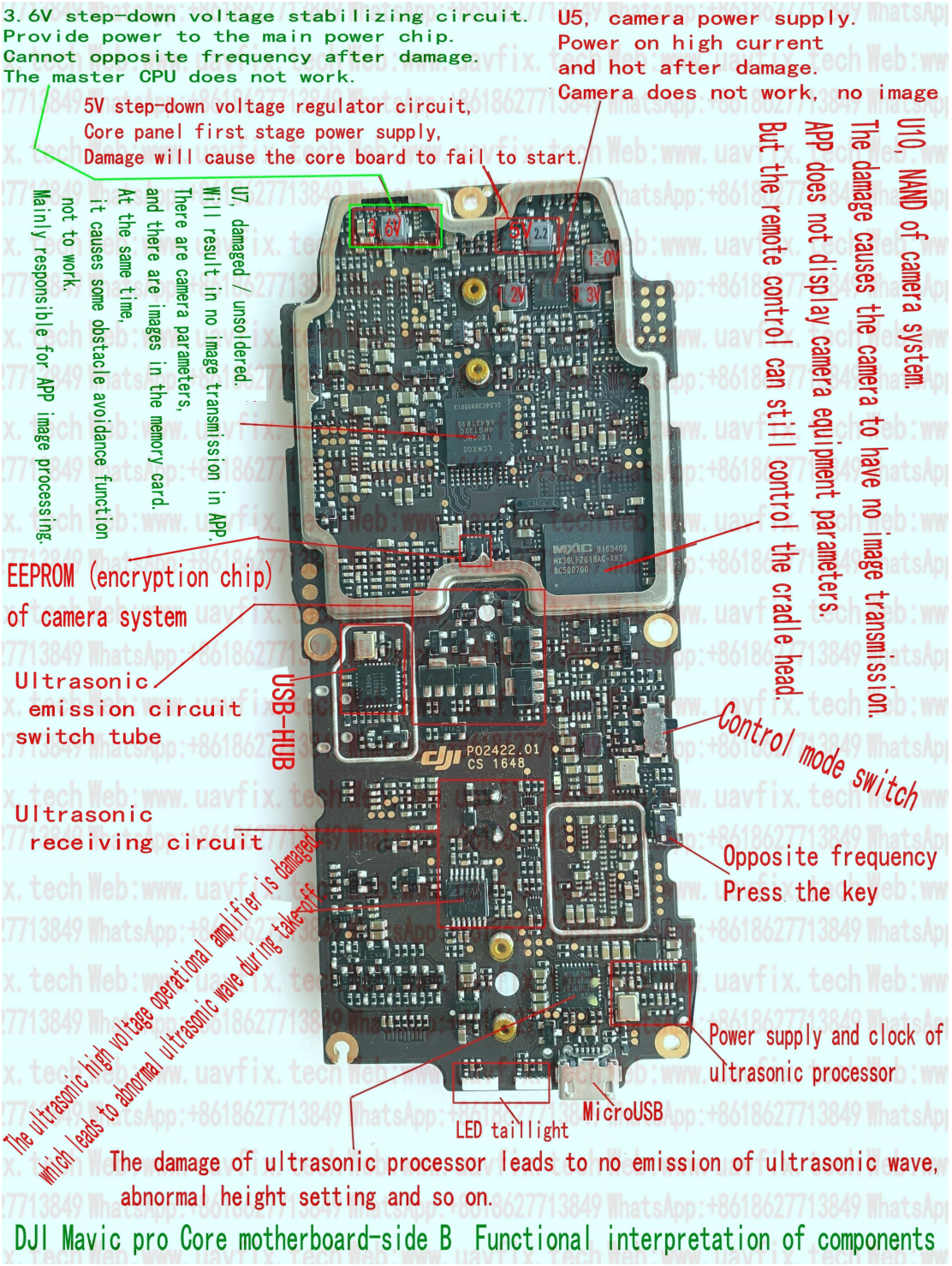
If the 5V output is normal and 3.6V has no output, then measure the resistance to the ground of 3.6V and measure whether the successor circuit of 3.6V is short-circuited (load short-circuit).

In addition, the Vbat step-down output is 5V, and the 5V step-down output is 3.6V. This step-down voltage stabilizing circuit is a small circuit composed of energy storage inductor, six pin voltage stabilizing tube and other capacitors, resistors and inductors. The damage of any component will lead to no output voltage, especially the voltage stabilizing tube.

Reminder: whether the logic operation part is damaged has nothing to do with the camera circuit.

Case: after the fault motherboard is powered on, the red light will be turned on, the light will not go out, and the light will not turn green. In the general direction, it is certain that the logic operation part can not be started, it may be the damage of the NAND system, it may be the abnormal power supply, or it may be the main CPU de-soldering.In a small direction, first

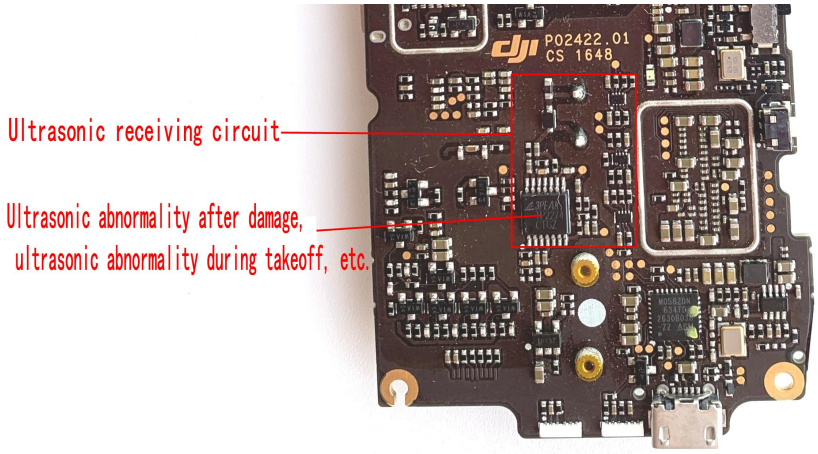
measure whether the voltage output of the main power supply is normal，Then check whether all the components in the logic operation part, including the small components, are damaged or not,Whether there is a short circuit fever or not, after all the above are excluded, consider whether the NAND program is damaged.If you can connect the computer to upgrade the system, it is definitely not a hardware failure, but the underlying data of NAND is damaged.If you can connect to the computer, you are 100% sure that the main control CPU is working normally. If the main control CPU is damaged or the working conditions are not available, you can't connect to the computer.In this case, the master CPU and NAND are directly replaced (replacement kit), because there is no tool to repair the damaged NAND underlying data.



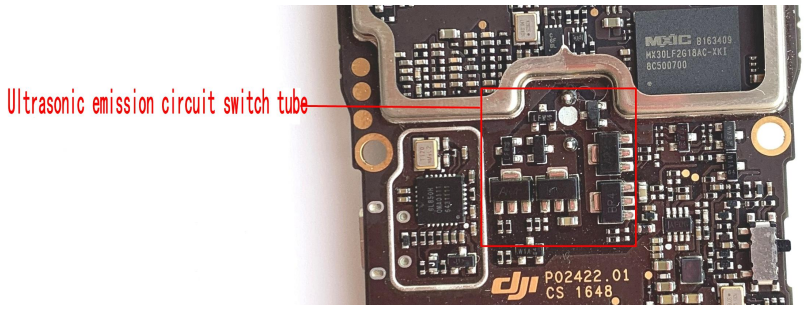
After either of the DJI Mavic pro ultrasonic emission and reception is damaged, it will not indicate the ultrasonic abnormality, but it will prompt the elevation abnormality.

And the ultrasonic prompt bar in the middle of the bottom of the DJGO4 APP displays the real-time parameters of the ultrasound.NA will be displayed after ultrasonic damage, and the red 01.0.2 mark will be displayed normally by ultrasound.As long as the core motherboard is powered on, the ultrasonic will vibrate. As long as the sound of "dada" can be heard, the transmitting end of the ultrasonic must be good.If there is no vibration, the ultrasonic

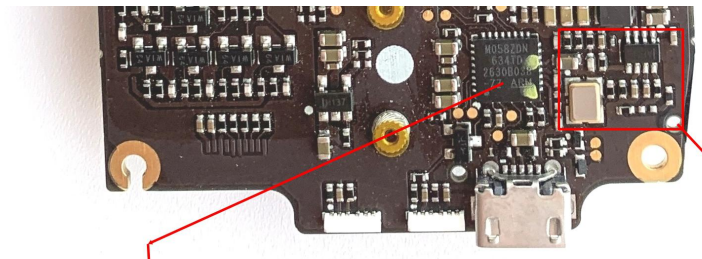
transmitting end is damaged or the 30V boost circuit is abnormal.Ultrasonic fault has emission, then replace the ultrasonic receiver, replace the receiver is still not good, then check the ultrasonic receiver chip (ultrasonic high voltage operational amplifier):



If the ultrasonic sound is low and the power is insufficient, check whether the 30V boost is normal, check the switch tube of the ultrasonic transmitting circuit, replace the transmitting end, and try again:



Under the condition that the ultrasonic 30V is normal and the ultrasonic transmitting end is also normal, there is still no ultrasonic emission, abnormal height setting, etc., it is necessary to further check whether the ultrasonic processor and its working conditions are available:



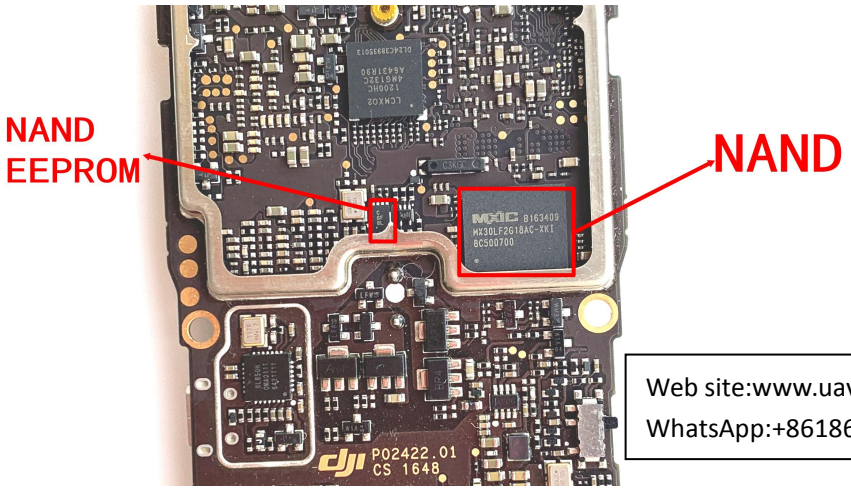
Power supply and clock of ultrasonic processor

Ultrasonic processor.
After damage, the ultrasonic wave does not emit.
Abnormal height setting, etc.

The radio frequency part of DJI Mavic pro is only 2.4G, which is mainly composed of radio frequency, filter, power amplifier and antenna interface. the damage of power amplifier will lead to weak signal of remote control and very short distance. Even if the power amplifier is dismantled, it can still take off, but it can only fly a distance of about 1 to 2 meters.
The DJI Mavic pro radio frequency (if) processes the received and transmitted signals and then sends them to the main CPU.
If there is something wrong with the DJI Mavic pro RF (intermediate frequency) chip, it will also cause the logic operation part not to work properly, and the status indicator light of the computing system will turn on the red light. Therefore, in the repair to the computing system status indicator (opposite frequency indicator) long red light, not only to check the logic operation part, but also to exclude the radio frequency circuit.

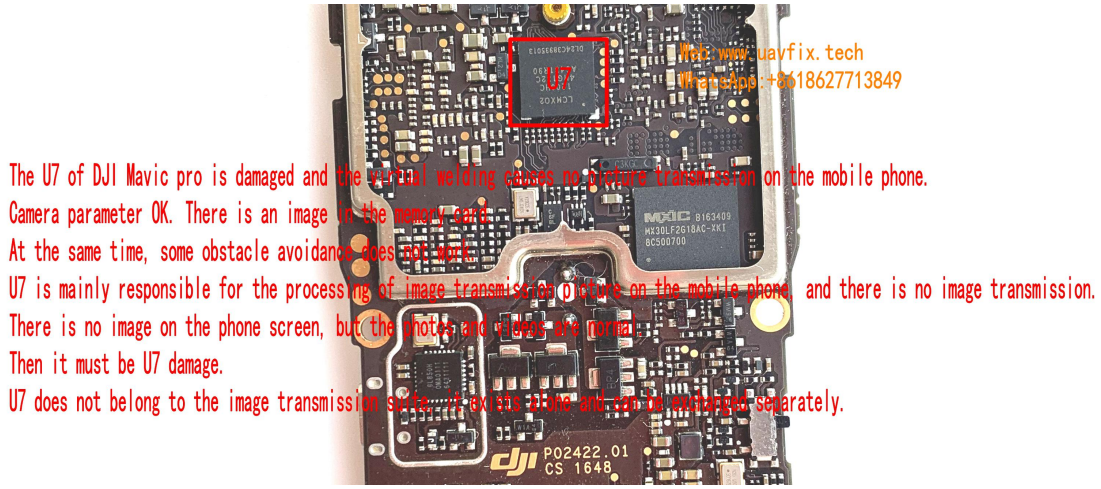
The visual circuit of DJI Mavic pro is the same as Phantom4, 4A, 4pro and 4proV2.0.A visual processor controls front, back, up and down obstacle avoidance.After the visual processor is damaged, it will indicate that the visual system is abnormal, but it will not clearly indicate which visual obstacle avoidance is faulty. In this case, directly check the power supply of the visual processor, clock, and replace the visual processor chip.If the prompt is a pre-visual obstacle avoidance error, or a lower visual obstacle avoidance error, then the visual processor must be good in this case.At this time, the repair idea should be to report the error of the visual interface connection seat as the center, first replace the visual camera, and then check the interface to the ground resistance value, power supply, the connection seat itself, small components around the connection seat, and so on.

DJI Mavic pro remote control can control cradle head pitch, but no image transmission, APP does not give camera equipment parameters, U10 camera system NAND damage. If the NAND is damaged, when replacing the NAND, it must be replaced with the camera EEPROM.



The damage to U7 of DJI Mavic pro results in no picture transmission on the phone, camera parameters OK, images in the memory card, while some obstacle avoidance does not work. U7 is mainly responsible for the processing of image transmission picture on the mobile phone, no image transmission, no image transmission on the phone screen, but the photos and videos are

normal, so it must be U7 damage. U7 does not belong to the image transmission suite, it exists alone and can be exchanged separately.



The camera circuit of DJI Mavic pro also has indicator lights, which are not lit at all. the fault range is in the camera processor and register circuit, and most of the weak green lights are U7, NAND damage and so on. The repair idea is the same as the main control circuit.