

NIRC2 Quick Facts and Troubleshooting

- NIRC2 is a near infrared imager and spectrograph that only works behind AO.
- The inside of NIRC2 is kept cold (30 to 50 degrees Kelvin) by a CCR cooling system. The compressor for this system is in the Keck II machine room. From there helium lines run up to the instrument.
- It is used mainly as an imager, but it can do low to moderate resolution spectroscopy and is being increasingly used for this.
- NIRC2 never moves from its location in the Keck II AO house and so has been kept to very stringent cleanliness standards. One must put on a full clean room suit with boots, mask, and hat if going in to the AO house to work near it.
- NIRC2 uses the same detector and communications architecture as NIRSPEC and as a result can be prone to some of the same problems.
- The computer that runs NIRC2 is called waikoko and is located in the Keck II computer room. The picture below shows waikoko in its location on the far side of the computer room with respect to the Keck II control room.



Problem 1: Power cycle of computer room black box needed.

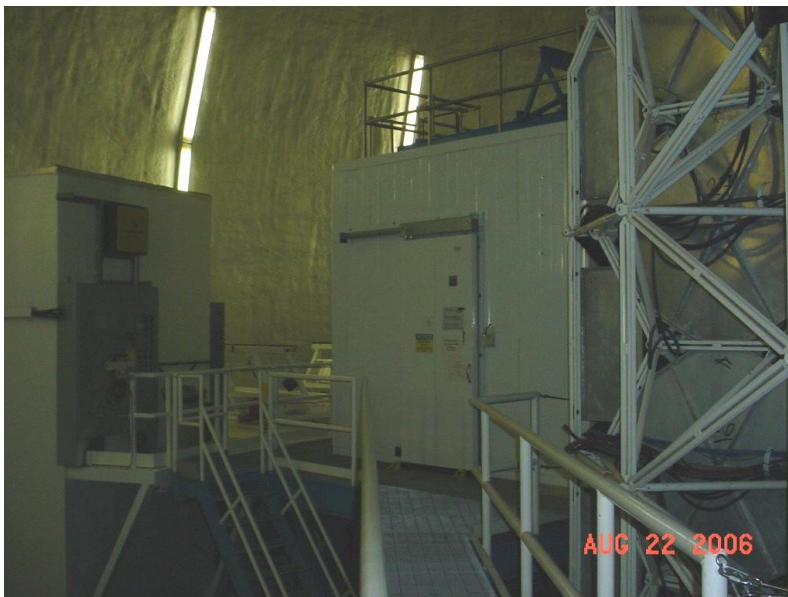
The picture above shows the instrument host waikoko. Immediately above it is a device made by a company called black box. This device provides the interface between SCSI from the host and the fibers running up to the AO house. Occasionally NIRC2 suffers from a server crash and a power cycle of this device is necessary. The power switch is a rocker accessed from behind the rack. Be careful not to disturb the seating of any cables connected to the back of the black box.

Problem 2: Power cycle of on-instrument black box/match box needed.

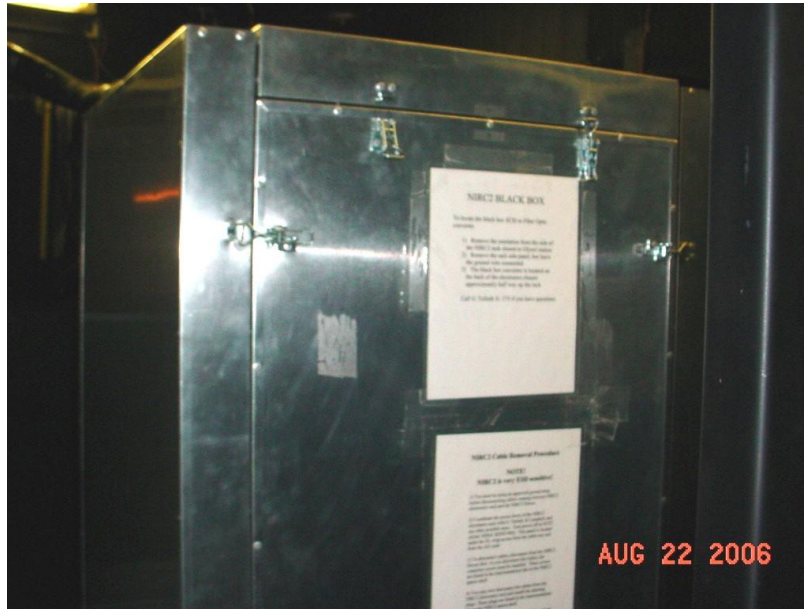
Another black box (see above) is needed to convert communications between fiber and SCSI at the instrument. There is a device called a match box that converts from SCSI to protocol that can talk to the transputers which run the NIRC2 detector. These boxes live in the UCLA power rack. This entire rack can be cycled via a breaker on the outside of the Keck II AO house. The pictures below shows the breaker panel. To find it:

- Go to the side of the AO house that has the sliding door leading directly in to the electronics vault. In other words: not the side to enter the “bunny suit room”.
- Don't be fooled by the breaker panels right beside the sliding door: wrong ones!
- Go to the left of the door (towards the telescope) and look in between the corner of the AO house and the elevation wrap. You will see two panels down low.
- You want the panel labeled NPC-2. Note the other label about barcode and encoder breakers. Inside this panel you will be asked to cycle circuit 16. It also is labeled NIRC2.

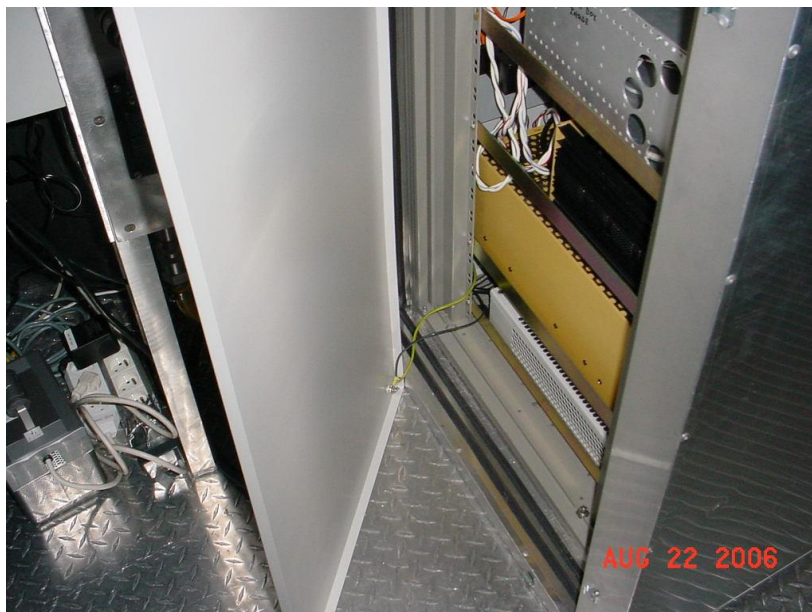




Cycling circuit 16 on NPC-2 will cycle the entire rack but may not solve the problem since power up order may matter. Getting to the match box and black box at NIRC2 requires going all the way in to the AO house and removing panels from the rack. The picture above shows the entrance to go through to get inside the Keck II AO house. Once through this door, you will be in the anteroom where clean room garb is stored. This anteroom is separated from the main part of the AO enclosure by a plexiglass wall. NIRC2 and its power rack will be right in front of you at this point. The next picture (below) shows the UCLA power rack as viewed from the anteroom side.



To get to the black box and/or the match box you must enter the main enclosure and remove a panel from the power rack on the opposite side from that pictured above. Remove the panel shown below. Note the quick release latches. Once this aluminum panel is removed another panel will be revealed. This one requires a large bladed screwdriver to remove. There are two quarter turn latches that need to be undone to allow removal of this (off-white colored) panel. This inner panel is attached via a ground wire to the rack so you must be careful not to try to remove the panel too far. The second picture below shows this ground wire with the inner panel removed.



Once the two panels have been removed as discussed and pictured above you have access to the black box and match box. The black box is easily accessible and can be power cycled via a rocker switch. The match box is inside a metal cage. To power cycle it you will have to either power cycle the entire cage via a switch on its side or take the top off the cage. You will need an allen wrench set to take the cage apart. Here is a wide angle shot showing the cage with the black box just barely visible behind it:



Problem 3: You need to inspect on-instrument vacuum pump.

NIRC2 is equipped with its own vacuum pump, designed to come on during certain circumstances such as power failures. You may be asked to inspect this pump to make sure it is running or take a reading from it. In the previous section a view of the power rack was shown, as seen from the antechamber. If you look to the right of that rack, you will see NIRC2 itself which has a stiff grey colored rubber skirt around its lower half. The skirt is held in place by knobs easily removed by hand. The picture below shows views with the skirt in place, and removed. The cabling between the power rack and NIRC2 is covered in foil to help shield against noise pickup. Be careful not to disturb this foil when removing and replacing the skirt. A close up picture of the pump controller is shown below as well.



Problem 4: Terminal server or Lakeshore temperature monitor

The Keck II AO enclosure has an electronics vault which one can enter without putting on a clean room suit. The entrance is shown in the very first picture of this document, the one which shows the breaker panels. If one goes through that door, immediately turn to

the right. Walk a few steps then turn left and walk a step or two. Look to you left and you will see the rack pictured below. With respect to the panel labeled NIRC2 CALIBRATION LAMP POWER SUPPLY COMPUTER SUPPLY, the terminal server is on the shelf below, and a Lakeshore temperature controller and monitor are above. The terminal server has a single green light lit in this picture. It is possible that you may be asked to go to one of these devices to power cycle it.

