

Sonics and Gattini-DomeA manual

For installation at Dome A by PRIC

Version 3

by Anna Moore, Reed Riddle, Nick Tothill and Tony Travouillon



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CONTACT DETAILS FOR HELP DURING INSTALLATION

The following people can be contacted via the Iridium satellite connection for assistance during the installation of the Gattini and sonic system at Dome A.

Software:

Reed Riddle
+1 626 395 8956
After hours : +1 626 796 7376
riddle@tmt.org

Sonic anemometer hardware:

Tony Travouillon,
+1 626 395 5863,
After hours : +1 626 380 5148
tonyt@caltech.edu

Gattini hardware:

Anna Moore,
+1 626 395 8918
After hours : +1 626 378 4291
amoore@astro.caltech.edu

Nick Tothill
nfht@astro.ex.ac.uk

ORIENTATION OF THE PLATO INSTRUMENT MODULE AT DOME A

The following schematic by John Storey shows the nominal layout of the PLATO instrument module and instruments at the Dome A site.

The Gattini-Domea cameras (there are 2 camera enclosures) are attached to the roof of the PLATO instrument module. The cameras as best as possible should be aligned to the South Pole. There is no way of adjusting the azimuth and elevation of the camera enclosures relative to the PLATO module. Therefore the PLATO instrument module should be aligned to the North-South direction, as shown, as close as is permitted using the tractor. In addition it should be as level as possible.

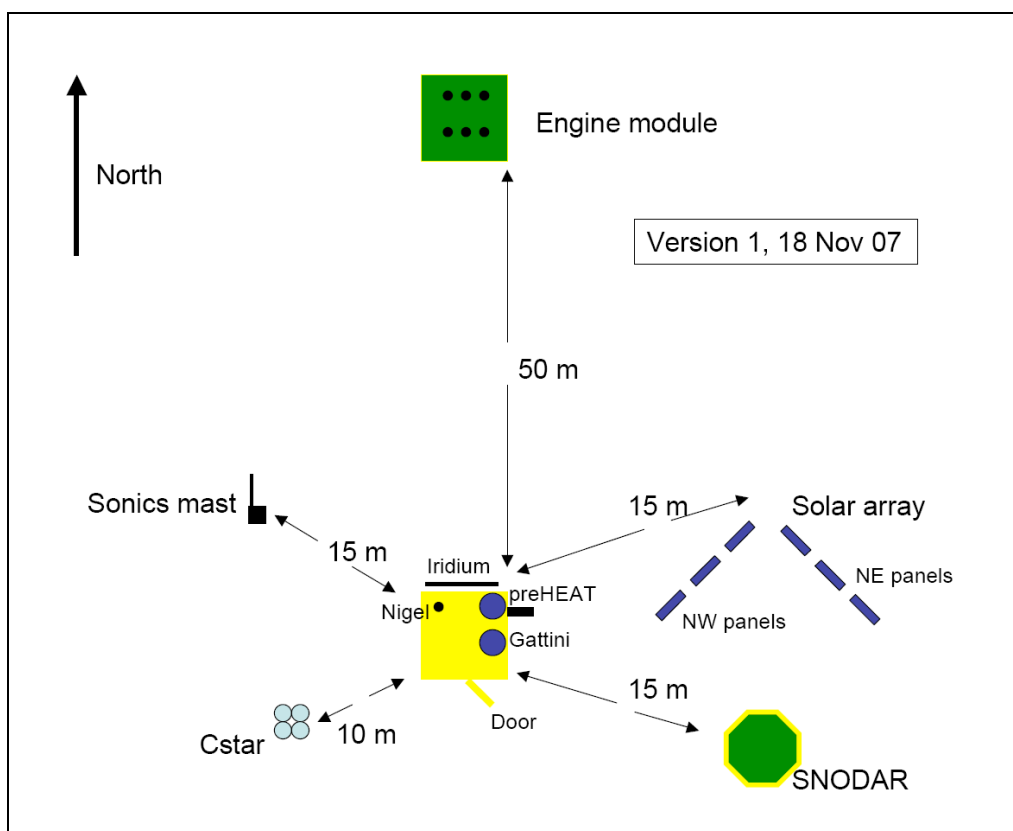


Figure 1 : A schematic of the PLATO layout at the Dome A site.

GATTINI/SONIC COMPUTER RACK DESCRIPTION

The sonics and Gattini-DomeA cameras are controlled via 2 racks located in the PLATO instrument module. The racks are already installed in the PLATO instrument module. As shown in Figure 2 the bottom one (labeled rack 1) contains all the power management electronics while the top one (labeled rack 2) contains the computer and data processing electronics.

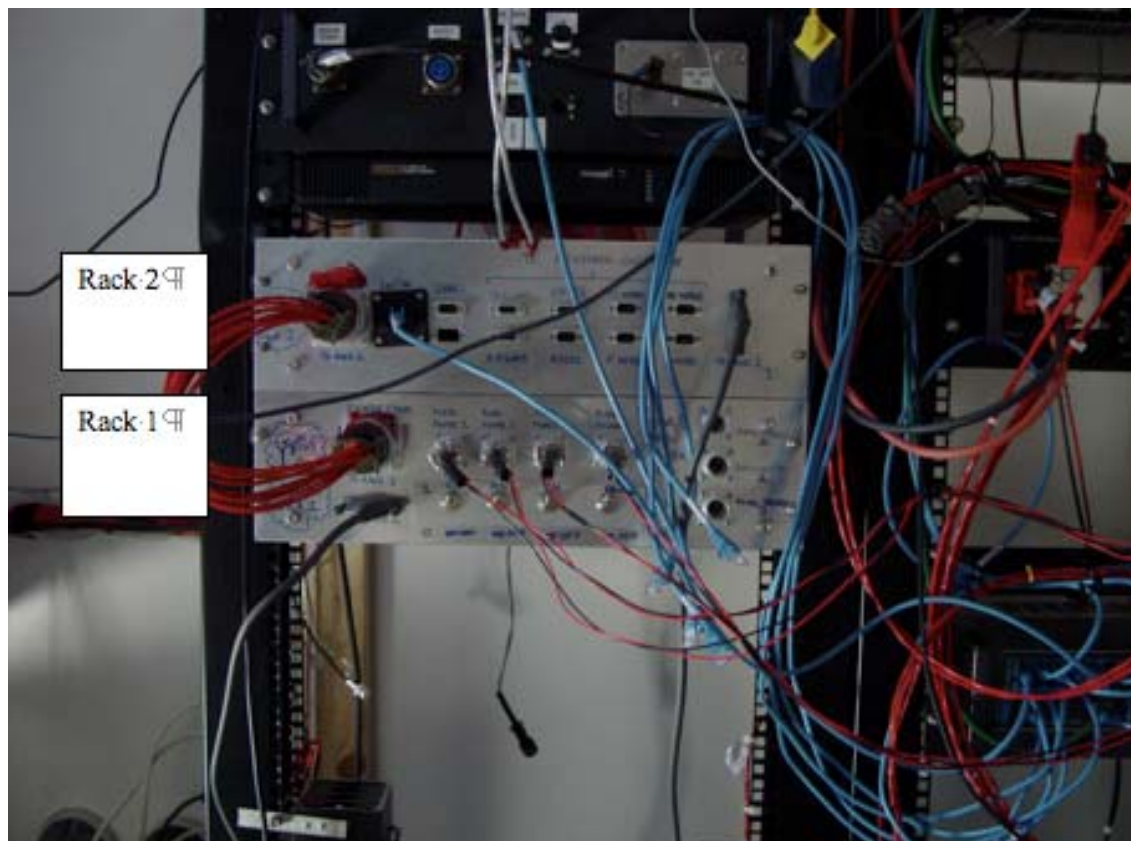


Figure 2 : The Gattini/sonics computer racks located in the PLATO instrument module

Cables exit the front and back of racks 1 and 2 and travel to the Gattini camera enclosures (red cables), the sonic anemometer heaters (black cables) and via the ethernet (blue cable) to the PLATO supervisor computer.

THE GATTINI CAMERA HARDWARE INSTALLATION GUIDE

By Anna Moore

The following step by step guide will guide you through the camera installation procedure

Set-up

1. Locate the 2 camera shipping boxes in the PLATO instrument module, as shown in Figure 3

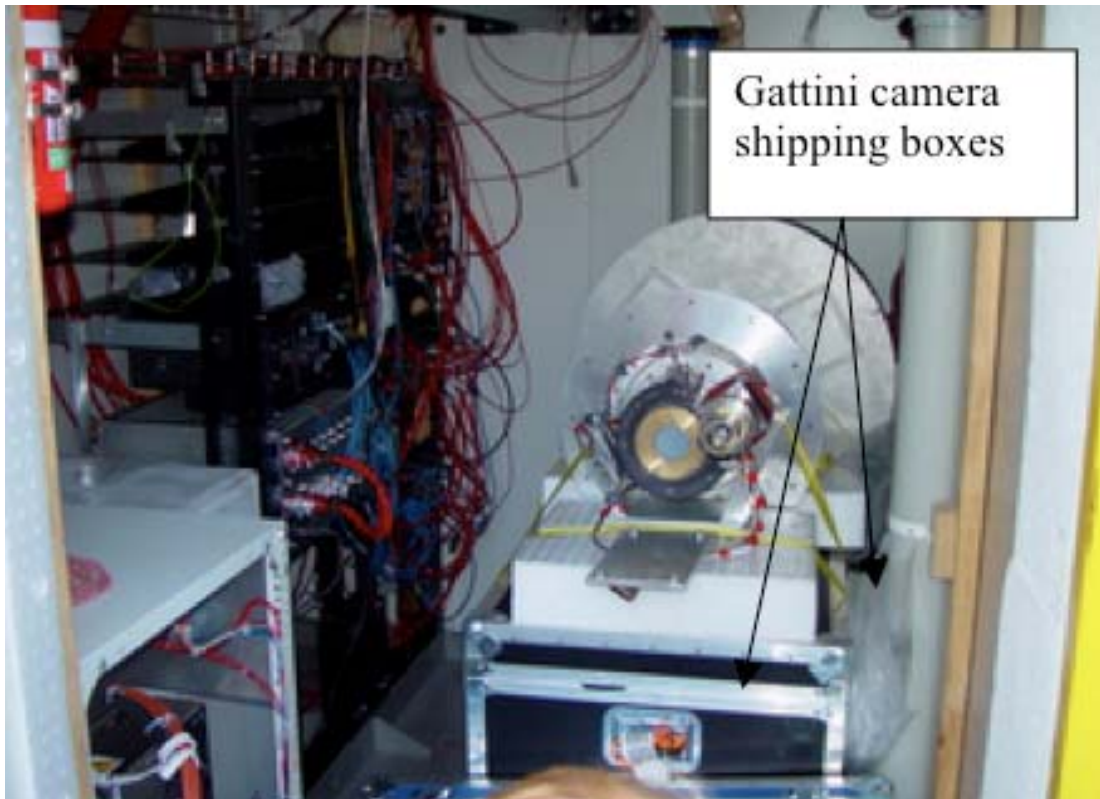


Figure 3 : The location of the Gattini camera shipping boxes underneath the pre-heat instrument

2. Unpack the necessary tools for camera installation. The tools are located in a black toolbag located inside the documentation pouch of one of the two camera shipping boxes.
 - a. 16 (approximately) 15mm long M8 screws for attachment to PLATO roofport
 - b. Metric T-bar for M8 screws for roofport

The toolkit is shown in Figure 4.



Figure 4 : The Gattini camera toolkit

3. Unpack the Gattini camera enclosures and look through the acrylic domes to check for obvious damage. The Gattini DomeA SBC camera enclosure is shown on the right of Figure 5 and the Gattini DomeA allsky camera enclosure is shown on the left hand side of Figure 5. The lenses for both cameras should be roughly centered on the acrylic dome and there should be no moving parts. The Gattini DomeA allsky should look like the photo in Figure 6. The Gattini DomeA SBC camera is shown without the acrylic dome in place in Figure 7.
 - a. **IF THERE IS OBVIOUS DAMAGE TO EITHER CAMERA PLEASE CONTACT ONE OF THE PEOPLE LISTED ON PAGE 3 BEFORE PROCEEDING**



Figure 5 : The Gattini DomeA allsky enclosure is shown in the left hand picture and on the right is the Gattini DomeA SBC camera enclosure.

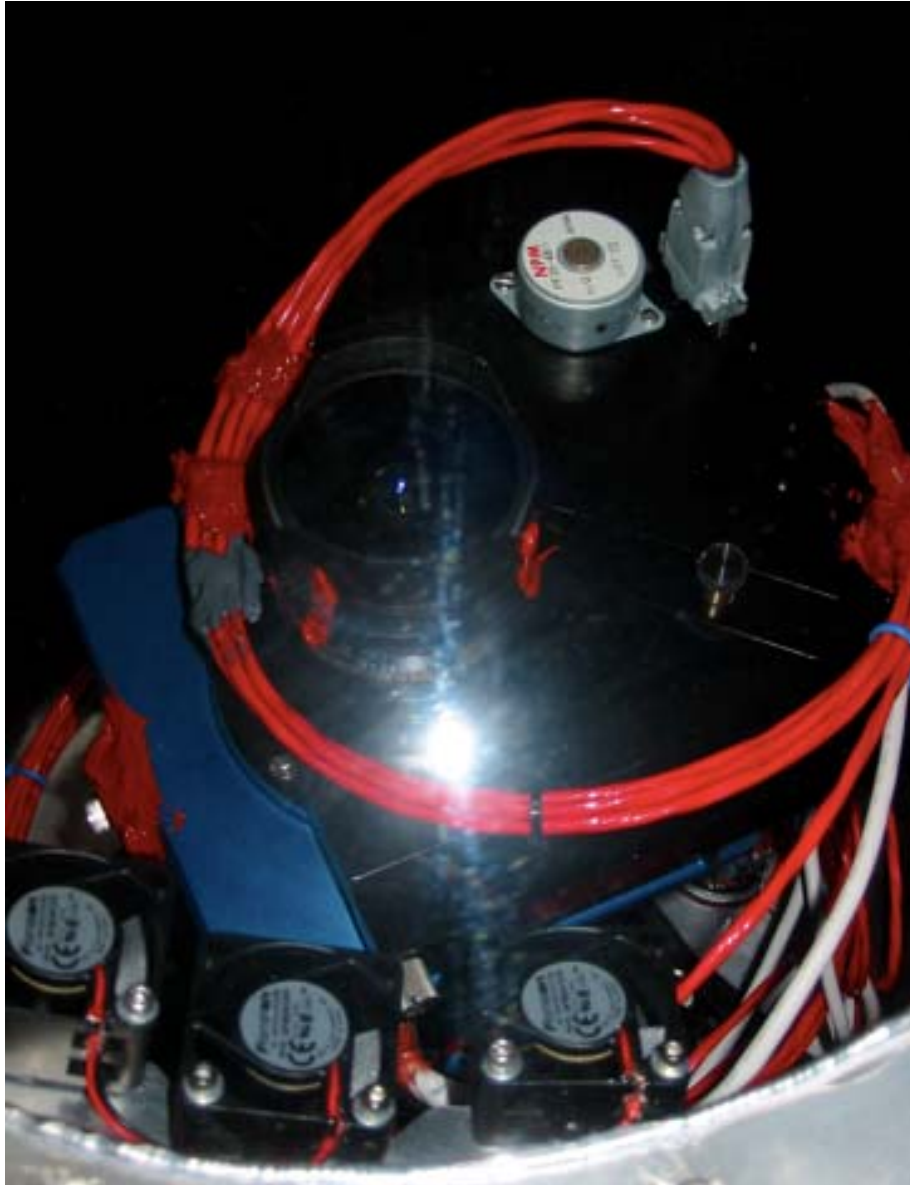


Figure 6 : The Gattini DomeA allsky as seen through the acrylic dome. The fans are also visible.



Figure 7 : The Gattini DomeA SBC camera seen without the acrylic dome in place.

Assuming there is no damage to the cameras the installation of the camera enclosures on the PLATO roof can begin.

Camera installation on the PLATO roof

4. Move the camera enclosures to the roof of PLATO. A minimum of 2 people are required for this. Care should be taken when lifting the camera enclosures as the inside assemblies are delicate.
5. Remove the waterproof roofports of the 2 camera ports, as shown in Figure 1. The removal of the waterproof roofport is shown in Figure 8 below.

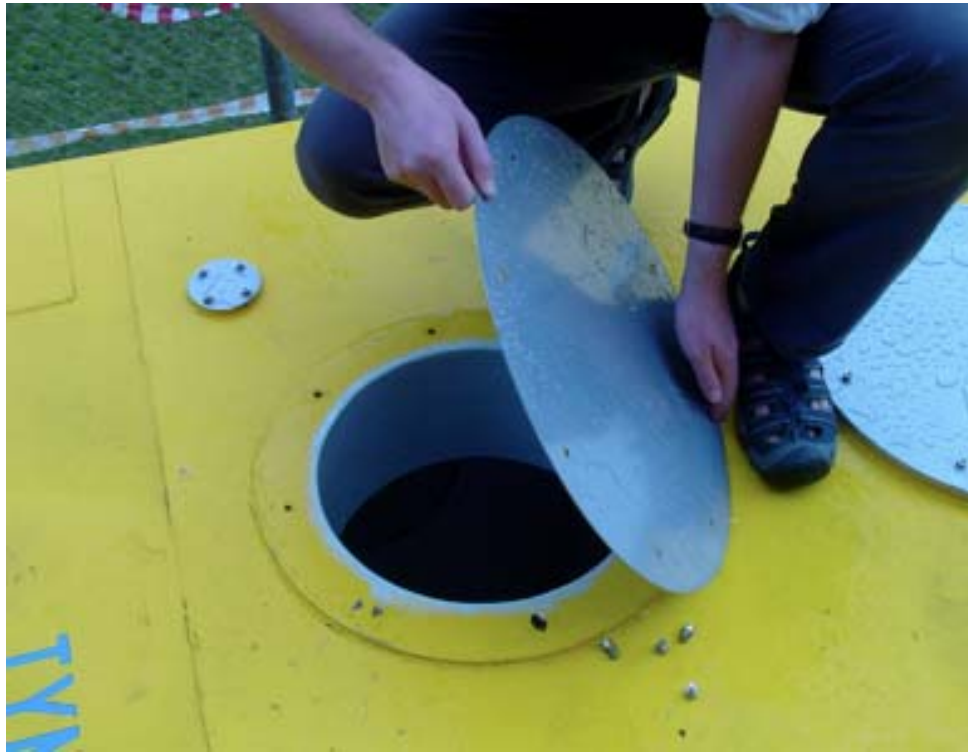


Figure 8 : Removal of the waterproof roofport for one of the Gattini cameras.

6. The Gattini camera enclosures should be placed on the PLATO roof as shown in Figure 9 . Each camera should be orientated as close as possible to the South Pole, therefore each camera should be pointing in the exact same direction as the CSTAR telescopes.
7. Screw each enclosure in place using the 15mm M8 screws and supplied T-bar.

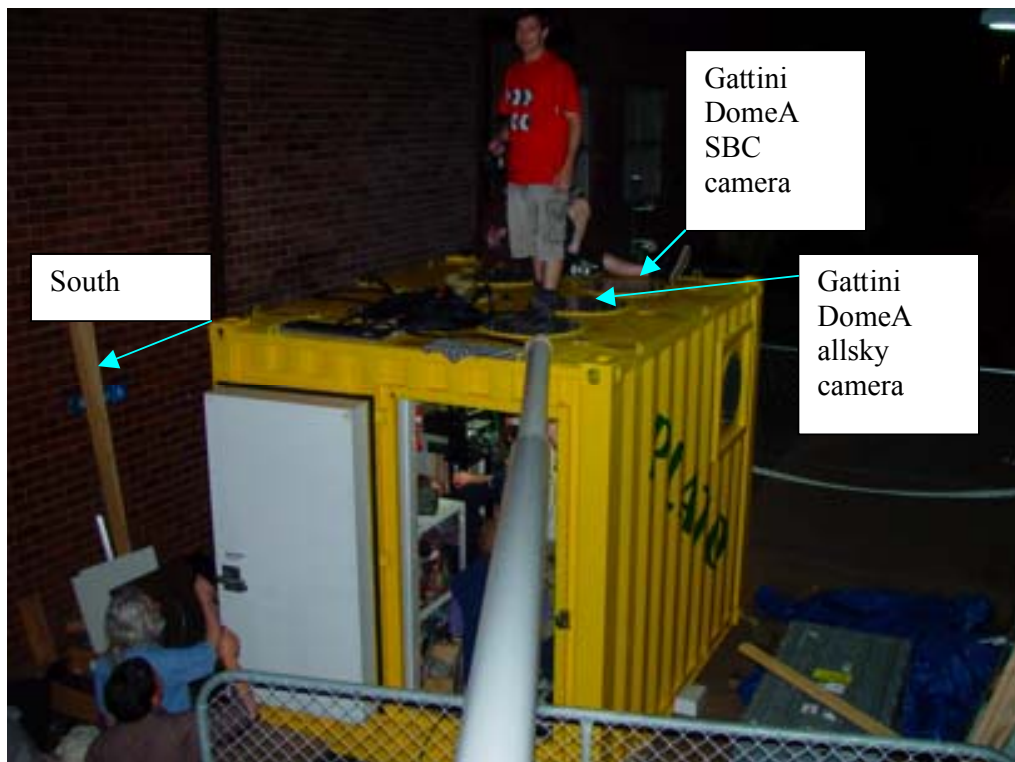


Figure 9 : The PLATO instrument module and relative locations of the Gattini camera enclosures

8. Return to the inside of the PLATO instrument module
9. Connect the red teflon camera cables to the underneath of the camera enclosures. The cables are color coded and for each camera enclosure are distinct. A photo of the connectors *before* color coding is shown in Figure 10.



Figure 10 : The cable connectors for the camera enclosures shown *before* color coding

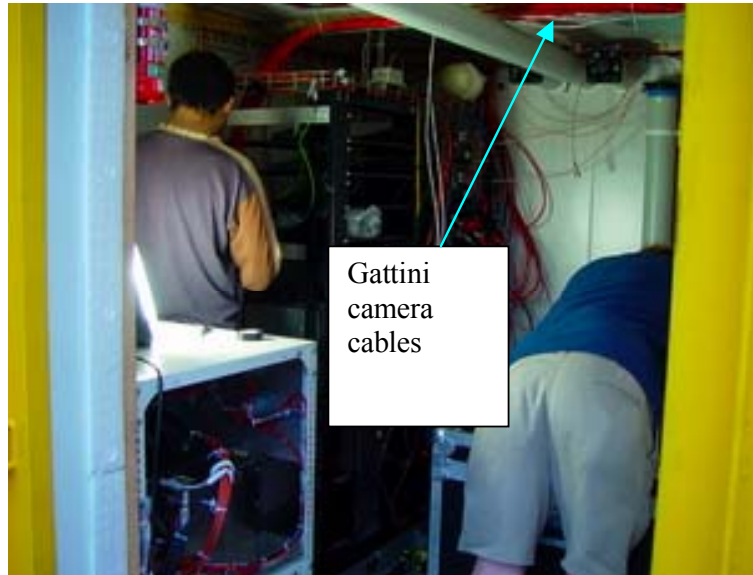


Figure 11 : The location of the Gattini camera cables in the shipped PLATO module.

10. At this point the cameras are installed and ready for software testing.

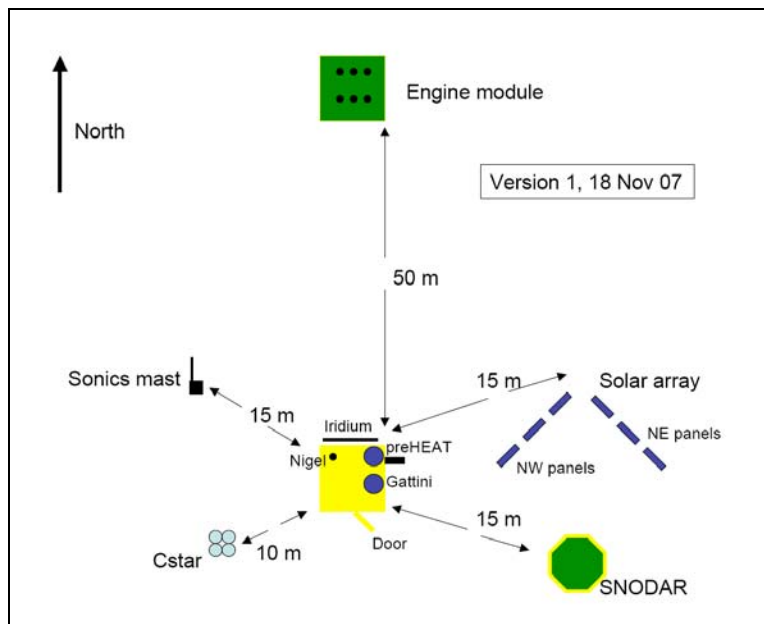
END OF GATTINI CAMERA HARDWARE INSTALLATION

SONICS ANEMOMETERS INSTALLATION GUIDE

By Tony Travouillon

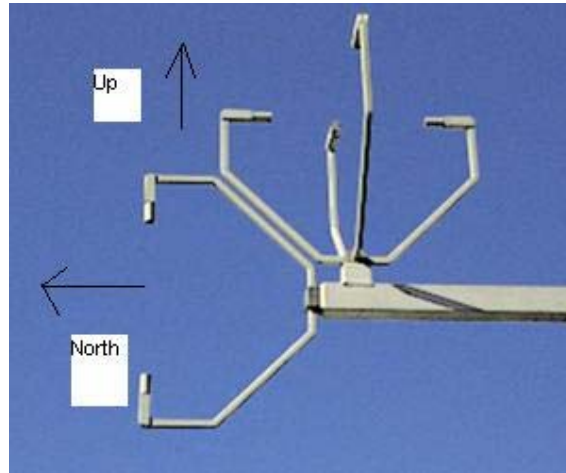
Setting up the pole

According to the picture below, the pole needs to be erected 15m North-West of PLATO. It consists of three 1.5 m sections of 50 mm square-section galvanized steel. It assembles in a flash, with two bolts inserted at each joint and the whole thing color coded to avoid mistakes. It will be hammered about a meter into the ice using a post-hole driver (supplied).



Installing the sonics

Locate the sonics and the cables (one data cable and one heater cable per sonic) in the blue boxes. U-bolt clamps are provided to attach the sonics to the pole. They should go at 1 m, 2 m and 4 m above the ice. The sonics should face North according to the picture below. Do not forget to plug them to their heater cables before attaching them to the tower.

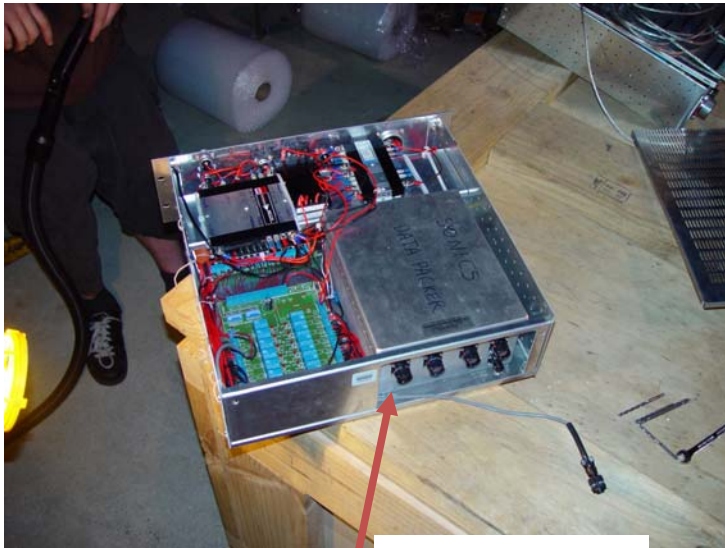


The sonics heaters plug at the back of the Gattini rack 1. The lowest sonic (1m) is called “sonic 1” and so on. The heaters follow the same order according to the picture below:

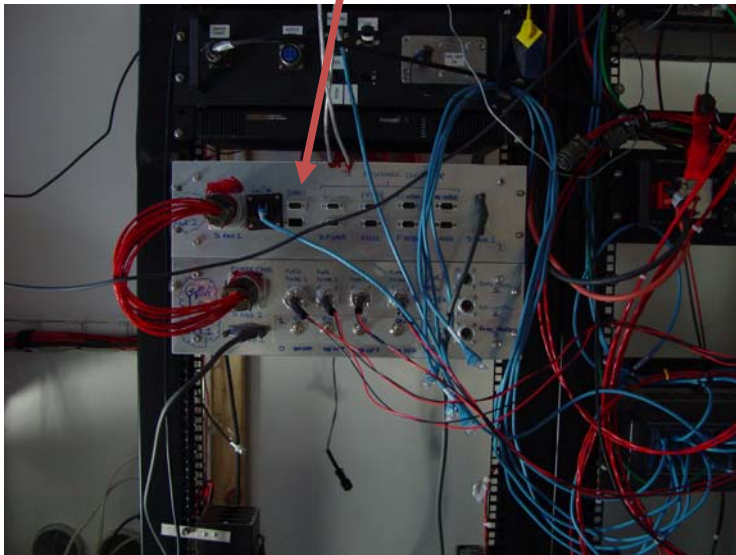


- ← Heater Sonic 1
- ← Heater Sonic 2
- ← Heater Sonic 3

The sonic data lines plug to the other end of the Gattini rack 1 going in the building through the small hole on the side of the PLATO building. Sonic 1 plugs to the left most plug and so on. There is also a serial cable that needs to be plugged from the front of rack 2 to rack 1, to the left of where you just plugged the three sonics (see picture below)



Connect the two
with provided



Once they are all plugged in, please move on to the software manual where it is explained how to check them.

END OF SONIC ANEMOMETERS HARDWARE INSTALLATION GUIDE

GATTINI/SONICS SYSTEM CHECK

By Reed Riddle

First steps

Connect all equipment before doing any power or computer testing.

Turn on the power to the equipment by flipping on the four power switches. This should start the computer automatically (you should hear it beep).

Leave the system alone for 15-30 minutes to allow it to start up properly.

After letting it start for 15-30 minutes, log into the Supervisor Computer (SC).

From the SC, log into the Gattini computer with the following information:

username: sugar

password: dome_a

Check the disk mounting by typing the following command:

```
df -a
```

There should be three disks mounted: /data0, /data1 and /data2.

If they are not mounted, type the following to attempt to mount them:

```
manage_drives startup
```

The drives will attempt to fix themselves every fifteen minutes, so if the drives still are not mounted do the rest of the steps below and then check again.

Check the computer date (it should be set to the current UT time):

```
date -u
```

Gattini DomeA SBC checkout

Turn on the power to the SBC CCD camera and filter wheel:

```
switch on 14
```

Wait a minute for the CCD to settle down.

Check the connection by checking the filter wheel position:

```
filter /dev/ttyUSB2 get
```

If the filter wheel connection is good, a 1 will be printed, otherwise a -1 will be printed.

Move the filter wheel to position 4:

```
filter /dev/ttyUSB2 set 4
```

If the filter wheel connection is good, a 4 will be printed, otherwise a -1 will be printed.

Check the connection to the CCD camera by checking the cooler status:

```
cooler -u 1 -n sbc
```

If there is no connection, a message stating that will be printed. If the connection is good, a long list of items will be printed, including a set of variable statements. The variable statements show that the camera is communicating properly.

Turn off the power to the SBC CCD camera and filter wheel:

```
switch off 14
```

Gattini DomeA Allsky checkout

Turn on the power to the Allsky CCD camera and filter wheel:

```
switch on 15
```

Wait a minute for the CCD to settle down.

Check the connection by checking the filter wheel position:

```
filter /dev/ttyUSB1 get
```

If the filter wheel connection is good, a 1 will be printed, otherwise a -1 will be printed.

Move the filter wheel to position 4:

```
filter /dev/ttyUSB1 set 4
```

If the filter wheel connection is good, a 4 will be printed, otherwise a -1 will be printed.

Check the connection to the CCD camera by checking the cooler status:

```
cooler -u 2 -n allsky
```

If there is no connection, a message stating that will be printed. If the connection is good, a long list of items will be printed, including a set of variable statements. The variable statements show that the camera is communicating properly.

Turn off the power to the Allsky CCD camera and filter wheel:

```
switch off 15
```

Sonic anemometer checkout

Check if there is a sonic_stop_file or sonic_pause_file for the sonic_anemometers present:

```
ls Status
```

If it is there, remove it:

```
rm Status/sonic_stop_file Status/sonic_pause_file
```

Wait about five minutes to allow the sonics to start running.

Removing the sonic_stop_file above should have started the sonic anemometer operations. To check this, look for the sonic data taking process (the | character is a vertical line (the UNIX pipe character), not a lower case L):

```
ps ax | grep sonic_data
```

Check that the sonic anemometers have already taken some data

Get a list of files from the sonic data directory:

```
ls /data2/Sonic
```

Examine the last data file in the list (the file here is an example file name):

```
tail -n 20 /data2/Sonic/sonic.20070923-083700.dat
```

There should not be any -99.99 values in the data file. If there are, there is a bad connection to one of the sonics, or the sonic is broken.

Turn off the power to the sonics:

```
switch off 16 off 3 off 4 off 5
```

Final steps

Make sure that the stop files for the instruments are present:

```
touch Status/sonic_stop_file
```

```
touch Status/newmark_stop_file
```

```
touch Status/sbc_stop_file
```

```
touch Status/allsky_stop_file
```

Log out of the computer:

```
logout
```

Contact the Gattini team with the results of the tests.

END OF GATTINI/SONICS SYSTEM CHECK

REFERENCE DIAGRAMS

System power diagram

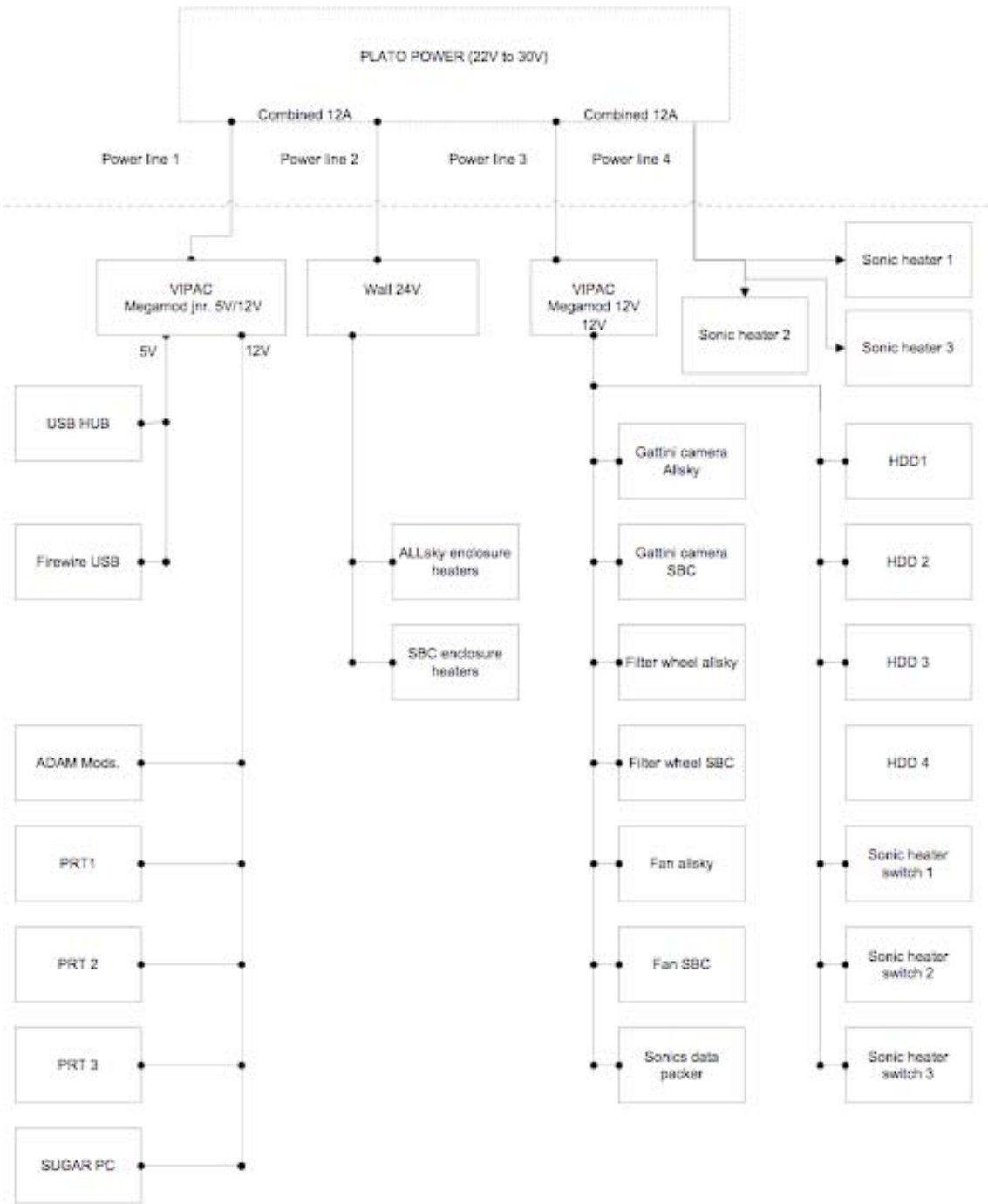


Figure 12 : Gattini/sonics power distrinution diagram

END OF MANUAL