

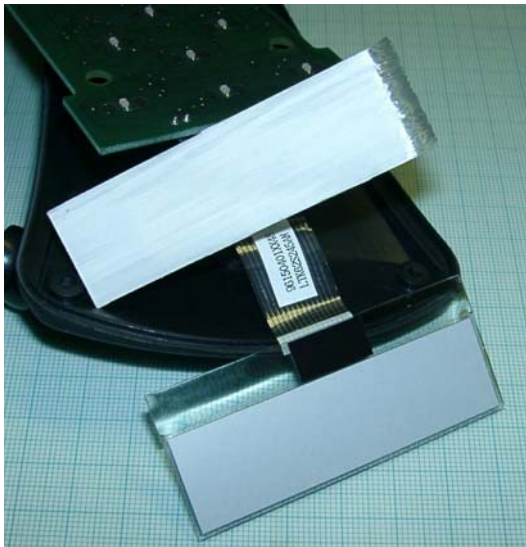
Heating of the hand-controller of the NexStar N5/N8 telescopes

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It is entirely possible that Celestron will change circuitry inside the hand control at any time. You must use a voltmeter to insure the correct voltage is found across pins 3 and 4 of the connector for the spiral interface cable.

All NexStar models suffer from problems using the hand-controller at low temperatures. Different solutions have been discussed in the NexStar Yahoo Group, one of them is heating of the hand-controller display internally.

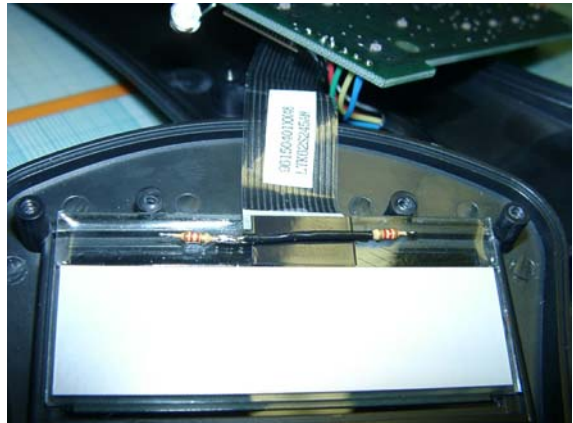
The following pictures show how to modify the hand-controller to heat it permanently with approx. 240mW by using two 1200Ohms resistors connected in parallel to 12V and while being glued to the back of the LCD-display. This heating power was tested during several cold nights (ambient temperatures down to -15°C) and has proved to be sufficient. If someone needs even more power more resistors can be connected in parallel to the two already used here.



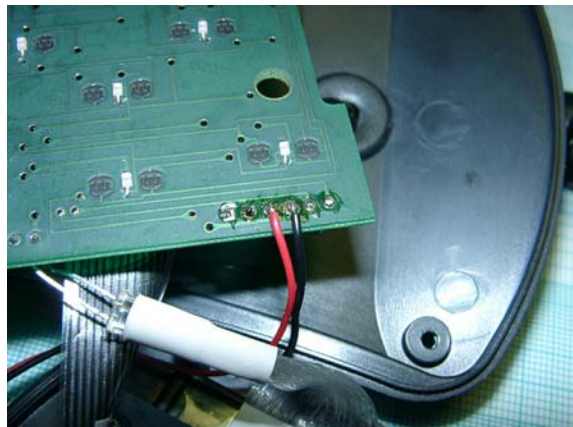
In the upper half of the picture the optical fibres guiding the light from the LED on the PCB to the LCD-display for the backlight are shown. Below the LCD-display is shown from its back.



This is the front of the LCD display. The chip-on-glass controller (brown rectangle) can be seen with the white flex-cable connecting the display to the PCB behind.



The two small wired resistors which are glued to the back of the LCD-Display are shown here. After attaching them to the display they are connected in parallel to the +12V supply of the hand-controller.



Next shown is the PCB of the hand-controller with the 2 (black and red) wires going to the heating resistors. The wires are soldered to the 6 pin connector for the spiral cable going to the NexStar base. Pin 3 of the 6 pin connector is the +12V supply (I actually measured +11.3V) and Pin 4 is the ground pin. You can exchange the polarity because the resistors do not care ;-)

The pictures showed the modifications for the N5 and N8 hand-controllers. It is entirely possible that Celestron will change circuitry inside the hand control at any time. You must use a voltmeter to insure the correct voltage is found across pins 3 and 4 of the connector for the spiral interface cable.

Modifications for the N5i/N8i/N8GPS/N11GPS can be found on my homepage at <http://www.dd1us.de>

Modifications for other hand-controllers including the GT models should be very similar but the correct pins on the connectors / PCBs have to be identified carefully.

Many thanks to Mike Swanson for reviewing these instructions and giving me helpful hints for improvements.

As usual I cannot take any guarantee for the modifications nor held responsible for any damage. Questions and comments are always welcome. Please send them to dd1us@amsat.org.

Kind regards

Matthias Bopp