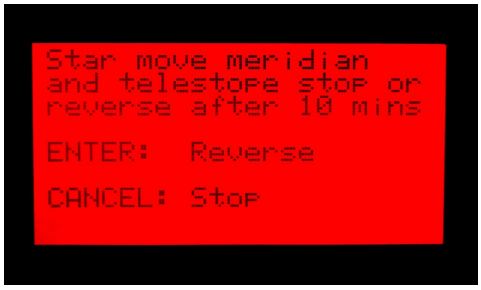
Bresser/Explore Scientific EXOS2-GT GoTo mount (firmware v2.3)

- Performing a Meridian Flip

The EXOS2-GT Instruction Manual published by Bresser (available online) does not contain any information on what happens when an object being tracked reaches the Meridian. Perhaps more importantly, there is no information in the manual about what happens when the DEC and RA motor housings approach a collision with each other just past the Meridian. We'll discuss our findings below. **To skip directly to the four simple steps needed to accomplish a Meridian Flip, see the bottom section of this document** (in red).

At 2.5° before the Meridian (10 minutes), we've observed that the mount emits a loud "BEEP, BEEP, BEEP" continuously at a rapid rate while the handset display shows a message as shown in the photo below.



Looking at this message on the handset, it appears as though we have two options – either press the "**Enter**" button or press the "**Cancel**" button (button marked as "-" on the handset).

After a number of tests, we've concluded that pressing "**Enter**" provides no response and the warning message remains on the handset while the loud beeping continues. On the other hand, pressing the "**Cancel**" button ("-") stops the loud warning beeps. The mount will then continue to track your object as it approaches the Meridian after pressing "**Cancel**" so this is the recommended user action. After the 10 minutes referenced on the handset Meridian warning message has elapsed, a single long beep sounds as tracking stops. The primary purpose of halting tracking at the Meridian is to keep the mount's motor housings from colliding into each other. Now the mount is ready for the next step, a Meridian Flip.

At this point, press the "**Enter**" button which will take you to the main menu – "Telescope Align", "Navigation", "Utilities", "Setup". Select "**Navigation**". From this Navigation menu, select the same object that you were observing and press the "**Enter**" button. The mount will now perform the GOTO slew by performing a Meridian Flip since this object has now passed to the other side of the Meridian. The mount slews all the way back around to the object by passing Polar Home and then pointing at the object now located on the opposite side of the Meridian. At the end of this GOTO slew, the mount begins tracking again. This completes the Meridian Flip operation.

Here are a few points worth mentioning:

1. When the mount begins beeping, pressing the "**Enter**" button provides no response. We assume this is a feature of this mount that requires a firmware update since pressing this button provides no noticeable change in mount behavior yet it should since it is a prompted option in the handset's Meridian warning message.
2. When you press the "**Cancel**" button ("**-**"), the beeping stops entirely yet tracking continues. Pressing "Cancel" seems to only cancel the loud warning beeps so we can continue to track toward the Meridian in silence. **This is the desired action since the "Enter" option provides no response.**
3. If you prompt a GOTO slew to the same object during the 10 minute Meridian warning period (*before* it passes the Meridian), then the mount does not GOTO anything because it is already currently tracking this object. A new GOTO to the same object during these 10 minutes will only prompt the loud beeping to begin again because we are still within 2.5° of the approaching side of the Meridian.
4. When prompted with this Meridian warning message on the handset, the mount will stop tracking on its own after 10 minutes with a long audible beep indicating tracking has been halted. This indicates we are now at the Meridian.
5. When tracking stops at the Meridian, you can successfully command the mount to GOTO the same target object again. The GOTO slew begins and the Meridian Flip occurs. The mount will slew to the object again on the opposite side of the Meridian.
6. Assuming the mount is properly Polar Aligned, Star Aligned, and Target Sync'd we've concluded that the EXOS2-GT mount has a reliable Meridian crossing warning system and, even if unattended, will safely stop tracking thereby preventing any accidental collision between DEC and RA motor housings. This is a great positive attribute. At this point all you need to do is perform a fresh GOTO operation to the same object and the mount performs Meridian Flip operation, points to the same object and begins tracking again.
7. Alternately, you can "Cancel" the Meridian warning prompt and initiate a new GOTO command to a *different object* if you don't feel like waiting the whole 10 minutes for the object to reach the Meridian. Simply "Cancel" at the Meridian warning prompt on the handset, then navigate to a new object in the database and initiate a GOTO slew.

We have found that this is a useful safety feature which is simple and effective. Here is the condensed step-by-step procedure:

1. When the Meridian message appears, **Press "Cancel"** ("-").
2. **After 10 minutes**, when the object being tracked crosses the Meridian, **tracking will stop**.
3. **Press "Enter"** to enter the menus --> **Select "Navigation"** --> **Choose the object you were tracking**.
4. The mount will now flip to the other side of the Meridian and slew to your chosen object and begin tracking again.

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