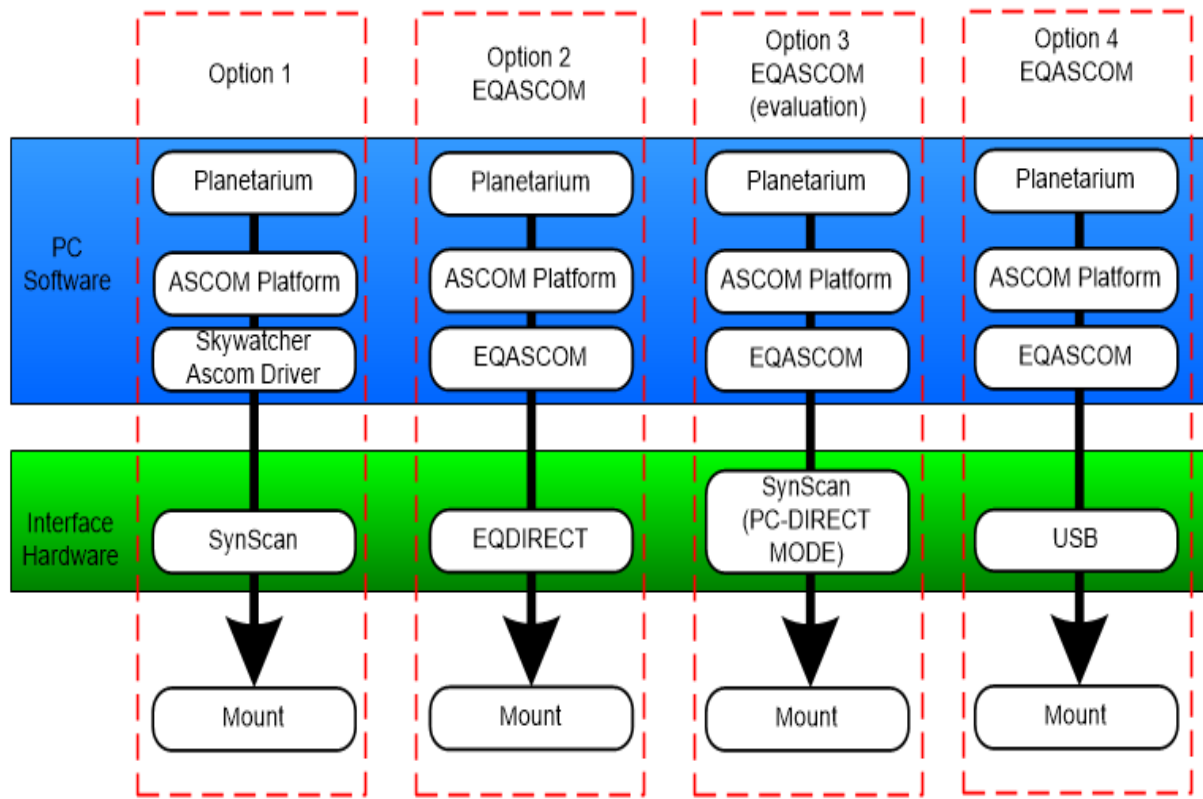# Planetarium Control Options for Synta EQ Mounts
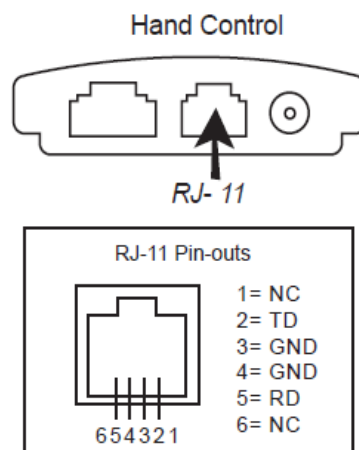

Notes:

Option 1: ASCOM & Skywatcher ASCOM Driver

In this mode the SynScan unit provides the alignment and goto algorithms and must be configured with time, date and location.

Connections:

      The Synscan is connected to the mount in the usual way

      The PC is connected to the Synscan via the serial to RJ-11 cable

Equipment Required:
- Serial connection to the RJ-11 (4 pin port) of the Synscan Hand Control. This cable should have been supplied with your mount.
- If your PC does not have an RS232 serial port then you will also need a USB-Serial converter.

Option 2: EQDIRECT

EQASCOMs control the mount via a dedicated hardware interface (EQDIRECT) that converts RS232 or USB communications to TTL signals. The EQASCOM driver takes full control of the mount alignment and goto functions.

Connections:
- In this mode the EQDIRECT interface connects direly to the mount and replaces the Synscan hand control. The EQDIRECT plugs into the same port that the Synscan would have used.

Equipment Required:
There are two types of EQDIRECT device that can be used, EQDIRECT-USB or EQDIRECT-232. The choice of which is most suitable depends on whether your mount has a dedicated serial port and the distance between the PC and the Mount (R2-232 is good for up to 25m, USB only 5m max.)

EQDIRECT-USB
Or
EQDIRECT_232

If using an EQDIRECT-232 and your mount does not provide an RS232 port then you will need a USB-Serial converter.

Option 3: PC-DIRECT

This option shows how EQASCOM may be evaluated using the SynScan (V3.21 or later) operating in PC-Direct mode. To date the only application that we are aware of that can make use of PC-Direct mode is EQASCOM. Please note that PC-Direct mode is an undocumented feature of the SynScan hand controller and reliable operation with EQASCOM cannot be guaranteed. This option is recommended **for evaluation only** and should not be used where the mount is left unattended.

Connections:
The Synscan is connected to the mount in the usual way
The PC is connected to the Synscan via the serial to RJ-11 cable

Equipment Required:
- Serial connection to the RJ-11 (4 pin port) of the Synscan Hand Control. This cable should have been supplied with your mount.
- If your PC does not have an RS232 serial port then you will also need a USB-Serial converter.

Option 4: USB
Some of the newer Skywatcher mounts now come with an integrated USB port allowing a direct connection between PC and mount. When using this the mount will appear as a windows COM Port and to use it with EQASCOM you will need to set the baud rate as 15200 bp

General:
Control of the mount by the SynScan and EQASCOM represents two mutually exclusive methods each operates with its own private parameter sets and data. We would strongly advise against any attempt to swap between operating modes "on the fly" as this is liable to lead to a situation where the mounts status and position becomes out of synch with the unit controlling it.

Q & A

Q: Do I need EQASCOM to control my mount from a Planetarium program?
A: No you don't. Any Planetarium program that supports ASCOM can exert some control over mount positioning/tracking etc by using the Skywatcher ASCOM driver.

Q: If I can use the Skywatcher ASCOM driver what's the point of EQASCOM?
A: Because EQASCOM drives the mount directly this has allowed us to write our own advanced alignment, tracking, PEC and limit protection algorithms that provide greater functionality than that provided by the SynScan.

Q: So what is PC-Direct mode?
A: PC Direct Mode was introduced with handcontroller V3.21. When placed in PC direct mode the SynScan handcontroller effectively becomes 'transparent' and simply passes messages received by its serial port directly to the mount (and vice versa). All handcontroller control functions are bypassed. Currently the only application we know of for PC-Direct mode when used in conjunction with the EQASCOM driver.

Q: Why is PC-Direct mode not recommended for general use other then EQASCOM evaluation?
A: For those folks who own a SynScan V3 handcontroller PC-Direct represents a good way to try out the features of EQASCOM driver without the need to purchase or build an EQDIRECT interface. However use of PC-Direct is not advised for unattended mount operation as its reliability cannot be guaranteed.

The protocol to the mount is, as far as we know, a Master slave type protocol. EQASCOM was therefore designed to operate in an environment where it is the sole master of the mount. When using PC-Direct mode there are potentially two active masters (PC and synscan) that can talk simultaneously. Unfortunately Synta have yet to provide any explanation as to what PC-Direct is intended for, how it works, how to use it correctly, and its limitations (if any). Against this background the EQMOD Project cannot assure the reliability of EQASCOM communications (and hence mount control) when this method is used.

Q: If using PC-Direct mode with EQASCOM, do I need to perform SynScan time/date synchronisation and Alignment.
A: If you're using EQASCOM then all SynScan configuration settings are irrelevant.

Q: Can I switch between EQASCOM and SynScan control?
A: Firstly you should not under any circumstances switch between an EQDIRECT and SYNSCAN device whilst the mount is powered. At the beginning of your session you should decide which method of control you want to use and stick with it. EQASCOM and SynScan control are mutually exclusive each requires its own alignment and location settings.