Sidereal Technology Time Server Manual

First Time Setup of the Time Server

First time setup of the SiTech TimeServer:
1. Install the SiTech TimeServer Software. You can download it here:
http://siderealtechnology.com/SiTechTimeServerInterface1_1.exe

2. Make sure you have the FTDI USB to serial driver installed on your computer. If not, you can install it from the FTDI website: http://www.ftdichip.com/Drivers/CDM/CDM20830_Setup.exe

3. Connect the Ethernet port of the SiTech Time Server to your local area network, via a cat5 (or compatible) cable.

4. Connect the USB port of the SiTech Time Server to your computer.

5. Power up the SiTech TimeServer using the included *wallwart* power supply

The Power LED should light immediately. After the other 3 LED's are flashing, the SiTechTimeServer is ready to go. This may take a minute or two, as the time server boots, and the GPS *finds* the satellites.

6. Right click the SiTech desktop Icon, and select **Run as administrator**. When window appears, Click the **Configure Time Server** tab.

7. Select the proper com port (top left drop-down box)

8. Click **Get Mac and IP address**

9. Probably best to use a static IP address. The IP address displayed will be the IP handed to the SiTechTimeServer by your DHCP router. You can probably use this IP as your static address.

10. Click **Get Settings from SiTech Time Server**

11. Uncheck the **Use DHCP and Host Name**

12. Make sure the Static IP address has the IP that was handed off by your DHCP server (or another IP address of your choice).

13. Click **Send Settings to SiTech TimeServer**

14. You need to reboot the SiTech TimeServer for the changes to take effect. There is a button for this, or simply unplug and plug in the SiTech TimeServer power.

OK, now you can test it:

1. Click the **Configuration** tab.

2. Make sure the text box labeled **IP Address or Host Name of Primary SiTech Time** is set properly.

3. Make sure the text box labeled **IP Address or Host Name of Time Server** is set properly.

4. If you want to compare times to another time server, make sure the text box labeled **IP Address or Host Name of Secondary Time Server** is set properly.

5. Click the button labeled **Test SiTechTime Connection**, make sure you have success.

6. Click the button labeled **Test Primary NTP Connection**, and make sure you have success.

7. If you have an address or IP in the Secondary NTP text box , Click **Test Secondary NTP**.

8. Set how often you want to update your system time (default is every 60 seconds).

9. Set the maximum correction you want the software to correct your system time. Default is 60 seconds.

10. Click the **Save Configuration** button.

11. OK, you should be ready to go.... Click the **NTP Server** tab, and you'll see it adjusting your clock, at the interval you specified.

USING THE SITECH TIME SERVER SOFTWARE:

as of Version 1.0

General Info:
This software is designed to work with the SiTech Time Server, although you can access other time servers under the configuration tab.

The SiTech Time Server uses a reliable and accurate GPS chip, that has a PPS (pulses per second) signal. The firmware in the SiTech Time Server uses this PPS signal (the rising edge) to align it's time to the nearest second.

The accuracy of the SiTech Time Server is better than 1/2 of a millisecond. As far as setting the clock on your PC, your mileage may vary. If you have a lot of traffic on your network, the accuracy can degrade some.

NTP Server Tab:
In order for this software to update the time on your PC, you MUST run this software as administrator. If you don't, you can still configure, check, log, etc, the SiTech Time Server, but you won't be able to set the PC clock.

If you want to make it permanently run as administrator, you can browse to the SiTechTimeServerInterface.exe file, right click, Properties, Compatibility, and check the **Run this program as an administrator**.

It's located here:
C:\Program Files (x86)\SiTech\SiTechTime

The large text box at the top left is updated each time this software reads the **Primary Time Server**. During the update, the background changes to light blue. The second line lets you know if the time was set or not, and the difference between your PC time and the **Primary Time Server**.

You can set the time any time you want, by clicking on the **Set Time** button. You must run this software by right clicking on the shortcut, and selecting **Run as Administrator**.

If you want to check the time, but not set, Click the button labeled **Check Time**.

There are 3 time indicators that are based on your PC clock. The first one is labeled **LT**, the second **UTC**, and the 3rd **Local Sidereal Time**. The **Local Sidereal Time** will only work if you're using the SiTech Time Server, and this software *knows* your longitude.

LED's:
There's 4 Green LED's on the time server. The Power LED should always be on steady.

Next is the PPS LED. When first powered up, or if the GPS chip can't find satellites, this will be off. Normally, it will be pulsing, once per second.

Following is the Program Running for the GPS firmware. Once the SiTech Time Server boots and the GPS firmware starts, this will toggle, about once per second.

The last LED is the Program Running indicator for the Serial Configuration firmware. Once the SiTech Time Server boots, and the Serial Configuration firmware starts, this will toggle, about once per second.

So, when all things are working properly, power will be on steady, the other three will be flashing.

Time Server Control Tab:
If you're using this software with the SiTech Time Server, then this screen is useful for auxiliary items.
If you're using this software with other time servers, then this screen is not too useful.

First of all, there is a text box that gets the time from the Time Server (not via NTP). This time is based on the GPS, and the PPS.

When this software finds the SiTech Time Server, the Latitude, Longitude, Elevation, and number of satellites will be updated. If you want to update them again, Click the button labeled **Update Location and Satellites from Time Server**.

If you use our Telescope Control Software (SiTechExe), you can update the **SiteLatitude**, **SiteLongitude**, and **SiteElevation** in **SiTechExe** by clicking on the button labeled **Send Location to SiTechExe**.

You can view the strings from the GPS chip by clicking on the **Get Most Recent GPS RMC string**, and **Get Most Recent GPS GGA string**.

If you want to reboot the SiTech Time Server, you can click the button labeled **Reboot SiTech Time Server.**

Configuration Tab:
Configuration Help
as of Version 1.0

There are three IP addresses or Host Names to configure on this screen, using the Text boxes.
The first one is for the SiTech Time Server auxiliary control functions, and is labeled **IPAddress or HostName of SiTechTime**. The auxiliary Control tab is used for finding the GPS Latitude/Longitude/Elevation, or checking on the communications with the GPS chip, and is accessed using the **Time Server Control** functions.

The next Text Box is for the NTP portion of the SiTech Timeserver. It's labeled **IP Address or Host Name of Time Server**, and is the **Primary** NTP Time Server. Normally, it will be the same as the first IP address, since this software is designed for the SiTech Time Server. If you want to use this software with other time servers, you can simply put in the host name or IP of another server in this Text Box.

The third Text Box is for a different time server (called the Secondary) IP address or host name, so you can compare times. The secondary time server will not be able to set your computer clock, but is useful for logging for comparison purposes.

To the right of both time server Text boxes there is a check box. If checked, when the time is read from the NTP time server(s), then the time and time difference will be logged. You can view the log files by clicking on the **Open Log Folder** button.

You can test each of the three IP addresses or Host Names, by clicking on the buttons above the text boxes.

You can set the **Update System Time Interval**, so it will update your computer clock (or at least check the time), every seconds that you specify. For astronomy, we like to use 60, which is usually good enough to keep the error less than a millisecond or so.

The next option, is used to safeguard your PC clock. If the time from the NTP Time Server is different from your PC clock by this many seconds, the PC clock will not be changed.

Next is a check box. labeled **Only Check, don't set time**. Check this if you simply want to log your system time deviation. Very useful to see how accurate your PC clock is.

Finally, you can display tenths of a second by checking the check box. labeled **Use Tenths of Seconds on display**. This can be annoying, so that's why there's an option.

Once you like your configuration, you should Click **Save Configuration** button.

There are two ways to find the IP address if you're not sure what it is.

1. If you know the first 3 numbers of your local network IP, then you can Click the button near the bottom of this tab, labeled **Find IP Address**

2. The MAC address of the time server is on a label on the time server. Enter that in the text box labeled **MAC Address** (separated by ':', '-' or ' ')

3. Enter the starting and ending IP address, then click the **Start** button. It can take a couple of seconds to check each IP address, so this may take a while to find.

5. You can also connect a USB cable to the SiTech Time Server, and use the **Configure Time Server** tab to find the IP address.

6. One last button, **Click the Open Data Folder** button to browse your log files, etc.

Configure Time Server Tab:
SiTechTimeServer Configuration Help
as of Version 1.0

The Configure Time Server tab is only used if you have a SiTech Time Servetab uses the USB port of the SiTech Time Server, so you can use this to configure the IP address, make it static, or DHCP, find the MAC address, and/or the IP Address of the time server, and Upgrade the GPS and PPS firmware or the Serial Communications Firmware.

We think it wise to use a static IP address if you're able to. It will always be there, and never change. If you use DHCP, it could change at some point, and you'll have to "find" the IP address again.

Comm Port Setup:
First thing you need to do is setup the Comm Port. Click in the drop down box, and you'll see a list of valid comm ports. If the USB cable is plugged in, the comm port should appear here.

If you have several comm ports,
1. Unplug the USB.
2. Click the drop-down, and note all available ports.
3. Plug in the USB
4. Click the drop-down, and note all available ports. The new port is the SiTech Time Server.

This port will be saved in your configuration for next time.

The USB chip on the SiTech Time Server, uses the FTDI USB to Serial chip. On older windows systems, you may have to manually install the driver. You can get it here:

Click the Windows Operating system, but over on the very right it says **Available as a setup executable**. That's the easiest solution, and is always the latest driver.

Once you have your comm port selected, you can see if it's working. Click the button labeled **Get ManageSerial Version**.

You should see the message **ManageSerial Version = 1**
.0 (or possibly a later version).
If you Click the button labeled **Get Mac and IP address**, the message will display the Mac address and the IP Address. The IP address is also placed (not saved) in the Primary Time Server and SiTech Time Server IP Address text boxes under the configuration tab. If you want to save these for next time, you should Click the Configuration tab, then Click **Save Configuration**.

It will also save the MAC address to the text box labeled **Mac Address**. This text box is on the Configuration tab, but is only visibly if you Click the **Find IP Address** button. Again, if you want to save this to the configuration, you should Click the **Save Configuration** button, in the **Configuration** Tab.

TCP and IP Address Settings:
There is the section on TCP settings. You can read the settings from the SiTech Time Server or load the Default settings.

Once you've loaded the settings, you can edit them, and then you can **Send Settings to SiTech Time Server**.

You can't edit the static IP address or other static items unless you turn off the DHCP.

Once you send the configuration to the SiTech Time Server, you'll have to reboot it, for the new settings to take effect.

Upgrading the firmware in the SiTech Time Server:

There are two firmware programs that are running at all times in the SiTech Time Server. One program reads the GPS chip, along with the PPS (pulse per second) signal, to align the SiTech Time Server clock within 1/2 of a millisecond of the correct UTC time.

The other firmware program is used to communicate with the serial port, and is controlled using this **Configure Time Server** tab.

Both of these programs are run automatically on boot up of the SiTech Time Server. You can see that they're running by looking at the Program Run LED's.

Normally, you will upgrade if you hear about a new release, or if you just want to check to see if there's a new release.

There is a **DownGrade** button for both programs, if you want to go to a version that is in your **SiTechTime Data Folder** under **Upgrades**. There is a file browser for this. You will be provided with a Yes/No window, which will show you the new version you can upgrade.

The **Upgrade** button will download the latest from our website, install it in your SiTechTime/Upgrades folder, and then send it to the time server.

The Serial Communication software takes about a minute to upload to the time server, while the GPS+PPS will take about 3 minutes to upload.