

Smart Antenna Selector



Instruction Manual



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Chapter 1 - Introduction

The Smart Antenna Selector is equipped with a pre-installed graphical user interface, designed to add lot of fuctions compared to the rack unit front panel.

There are two installed GUI. One is designed for Windows PC and allow the user to make changes on basic configuration and manage the Smart Antenna Selector functions. The other one is designed for Apple Ipad and allow the user to manage only the Smart Antenna Selector funtions, no configuration can be changed from this GUI.

In both GUIs the user can find the same “buttons” of the rack unit front panel, plus some informations about the antenna status. The values which can be viewed from both GUIs are:

- Antennas A.C.U. ethernet link status, with visible IP address. ¹
- Antennas tracking status: with visible tracking satellite and status. ²
- Antenna signal level: with visible AGC and S/N Ratio (for HD11, and TV Series) or BER (for HD7 antennas).³
- Antenna position: with visible azimuth relative and elevation
- Antenna model: selected from user.

In the following chapters there's a guide of how to use both kind of GUIs.

1 The Smart Antenna Selector can take values from antenna control unit only via TCP/IP link, so the ethernet link status in one of the most important parameters to observe.

2 The values of the tracking status are the same of the antenna web interface or A.C.U. display.

3 The model is a user selection only via Windows PC GUI. By selecting the model the system react automatically to have the corrent informations shown. (S/N Ratio or BER).

Chapter 2 - Windows PC Application

2.1 – First Access

This GUI is the most complete way to manage and/or use the functions of the Smart Antenna Selector.

The “brain” behind all the processes is a Crestron DIN-AP3 automation processor which carry onboard a GUI made by the Crestron Xpanel technology.

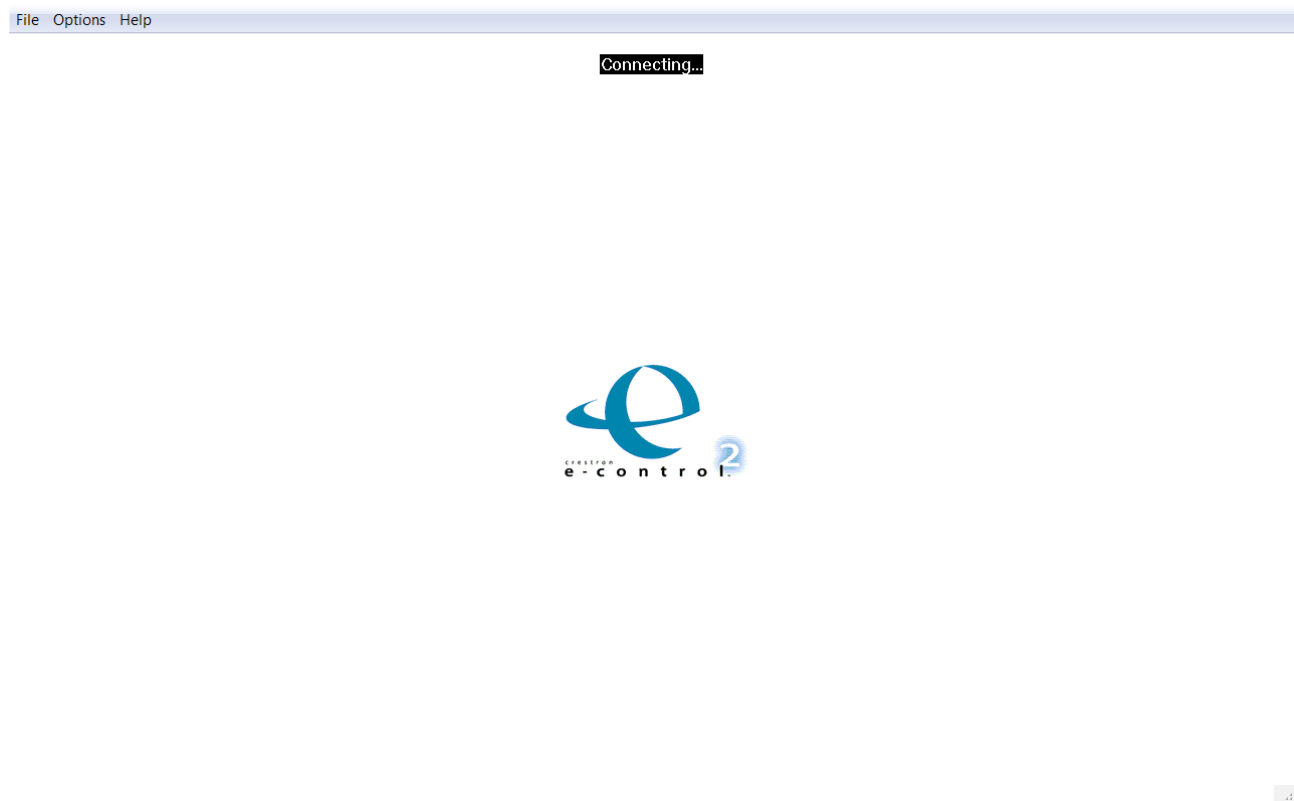
This GUI allow you to:

- Select the target IP addresses of both antennas ACU/TV Hub, to allow the processor to link them and decode the data stream incoming.⁴
- Configure the azimuth limits of both antennas, or better to set the “blind” sector.
- Select the antennas models.⁵
- Configure the IP address, netmask and default gateway of the S.A.S. Itself
- Select the operation mode, or better SMART (manual or automatic) and DIRECT.

The first installation is quite simple.

The S.A.S. is configured to have a default IP address of: 192.168.1.100

Open the folder with the Windows PC application inside (is an .exe file). The following page will appear:



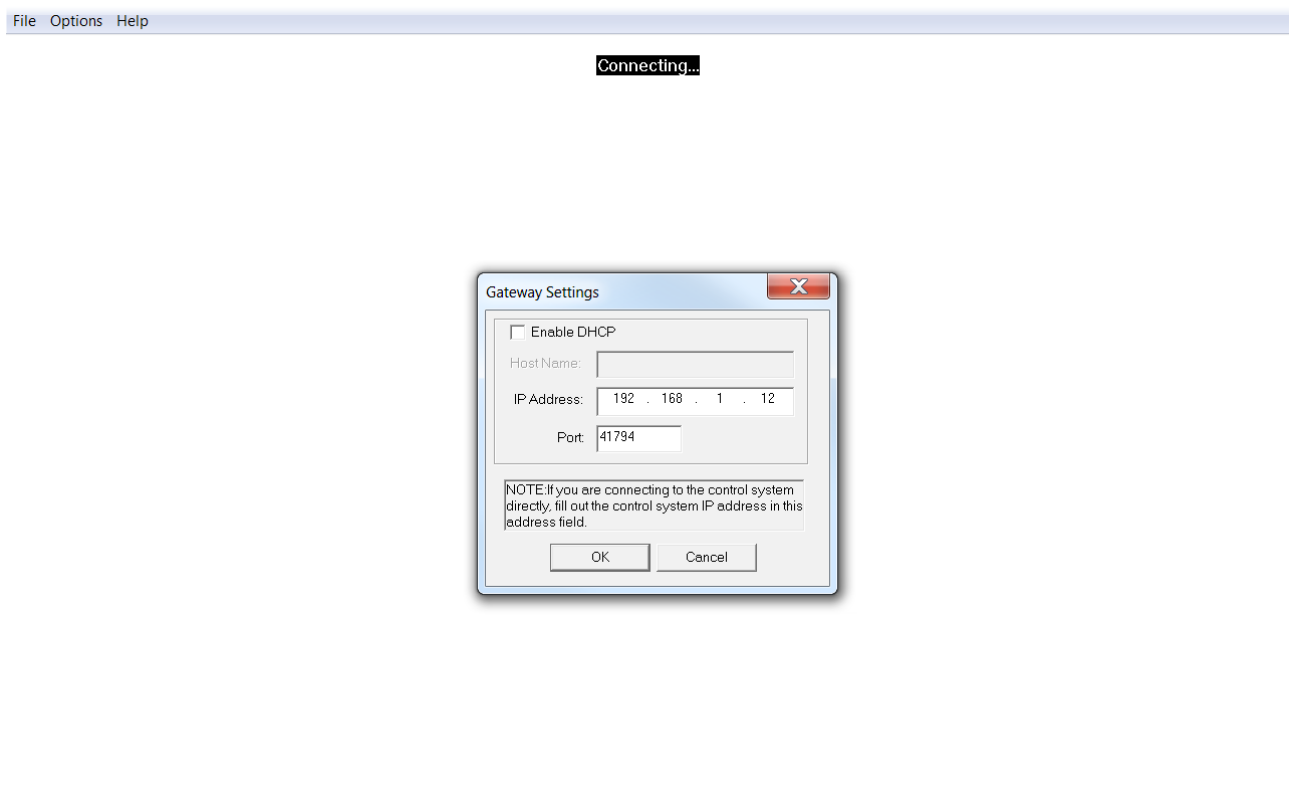
⁴ This means that the IP address of both ACUs/TV Hub has to be set before configuring the Smart Antenna Selector target IP addresses.

⁵ The Smart Antenna Selector is available only for antennas with TCP/IP link, so the G and M series cannot be linked

In the upper menu you have to select “Options” and then “Settings”:



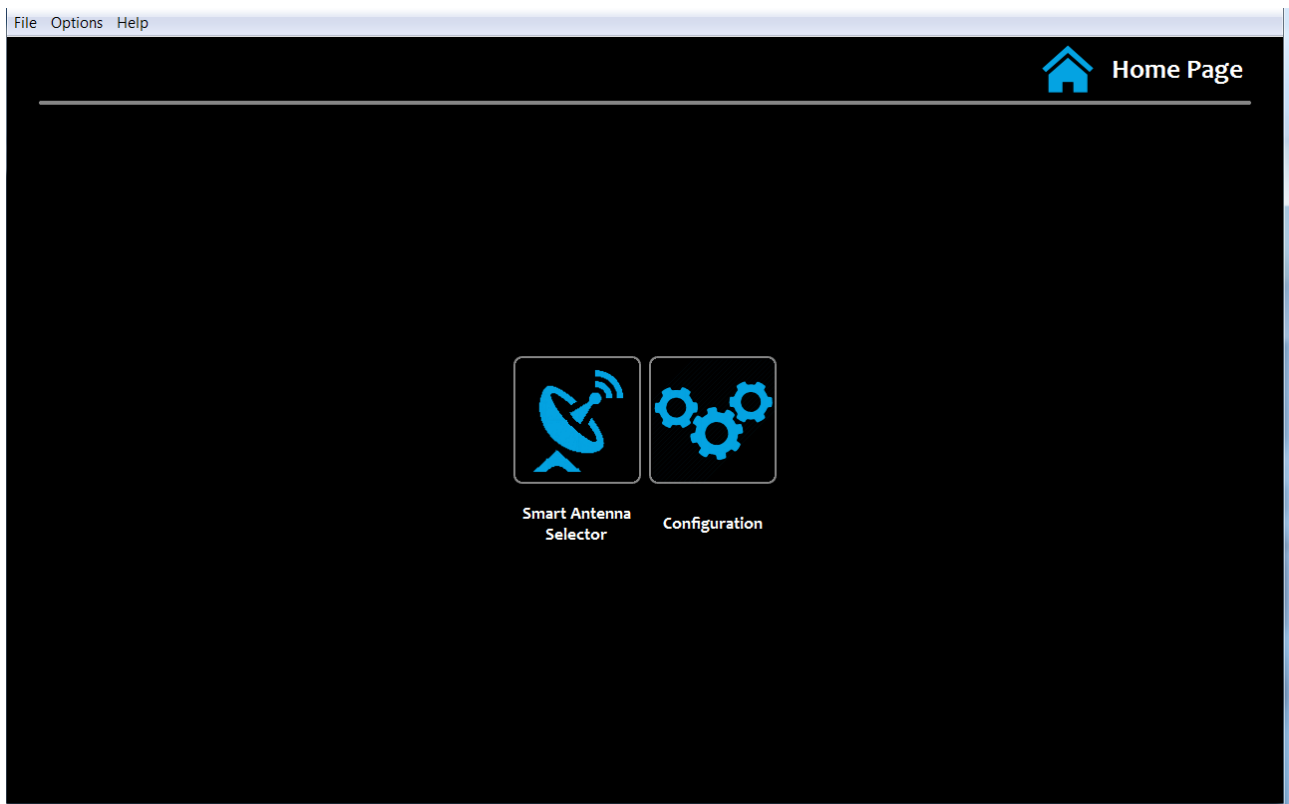
Now you have to digit the IP address of the S.A.S.



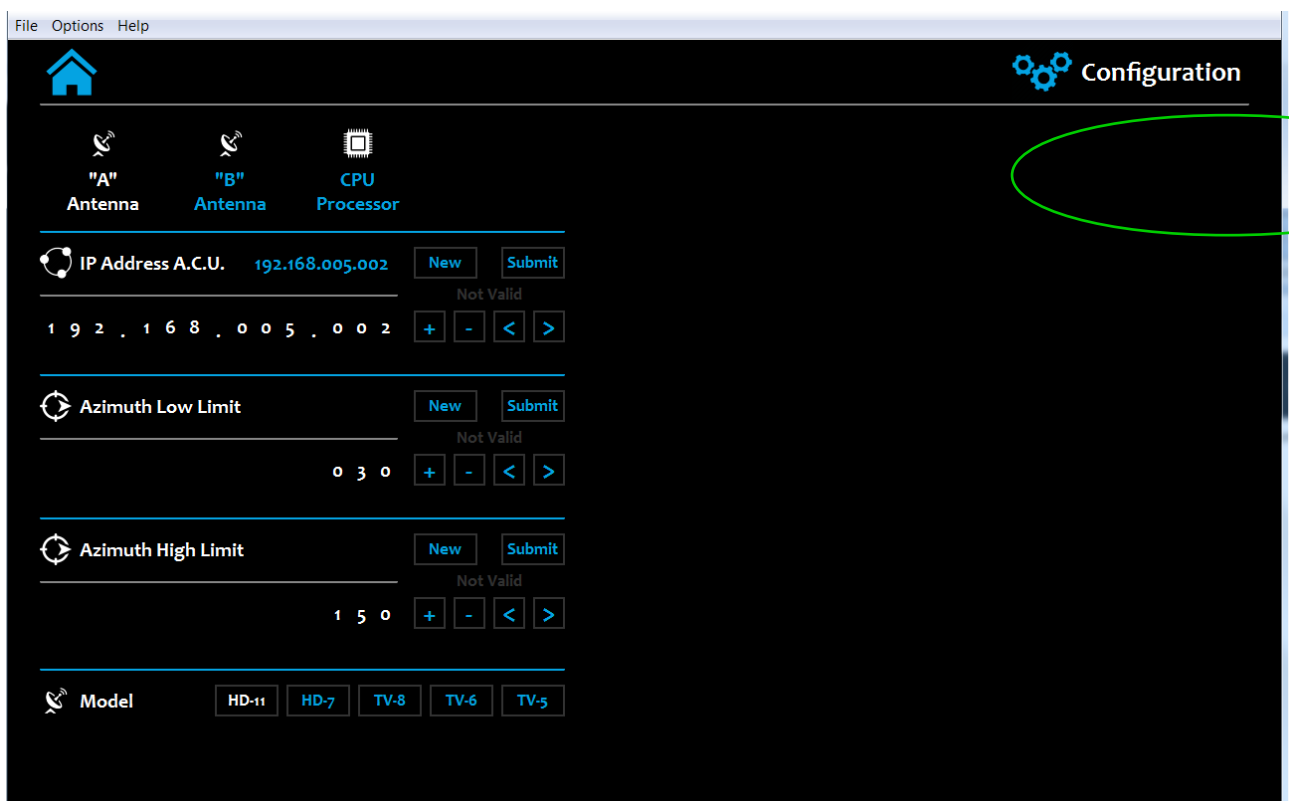
If is the default one just digit 192.168.1.100, otherwise use the current IP address.

2.2 – Configuration

If the S.A.S. Is correctly connected to a network (through a ethernet switch and/or router) and you set the correct IP address the following page will appear:



This is the “Home Page” where you can access the configuration page or the operational page. If you click on “Configuration” the following page will appear:



In this case the “A Antenna” page is shown, the default one is empty, so you have to select one of the options of the upper menu (green circle).

If you click on the home icon (red circle) you will be back to the Home Page.

The “A Antenna” and “B Antenna” are the same pages, with of course, different values. You have to associate the “A” antenna and “B” antenna with the ones installed and remember this decision. In fact when you have to configure the azimuth limits you need to know the position of the antenna (stb or ptb side, or sometimes, fwd or aft) to set the correct angles. Same for the IP address of the ACU.

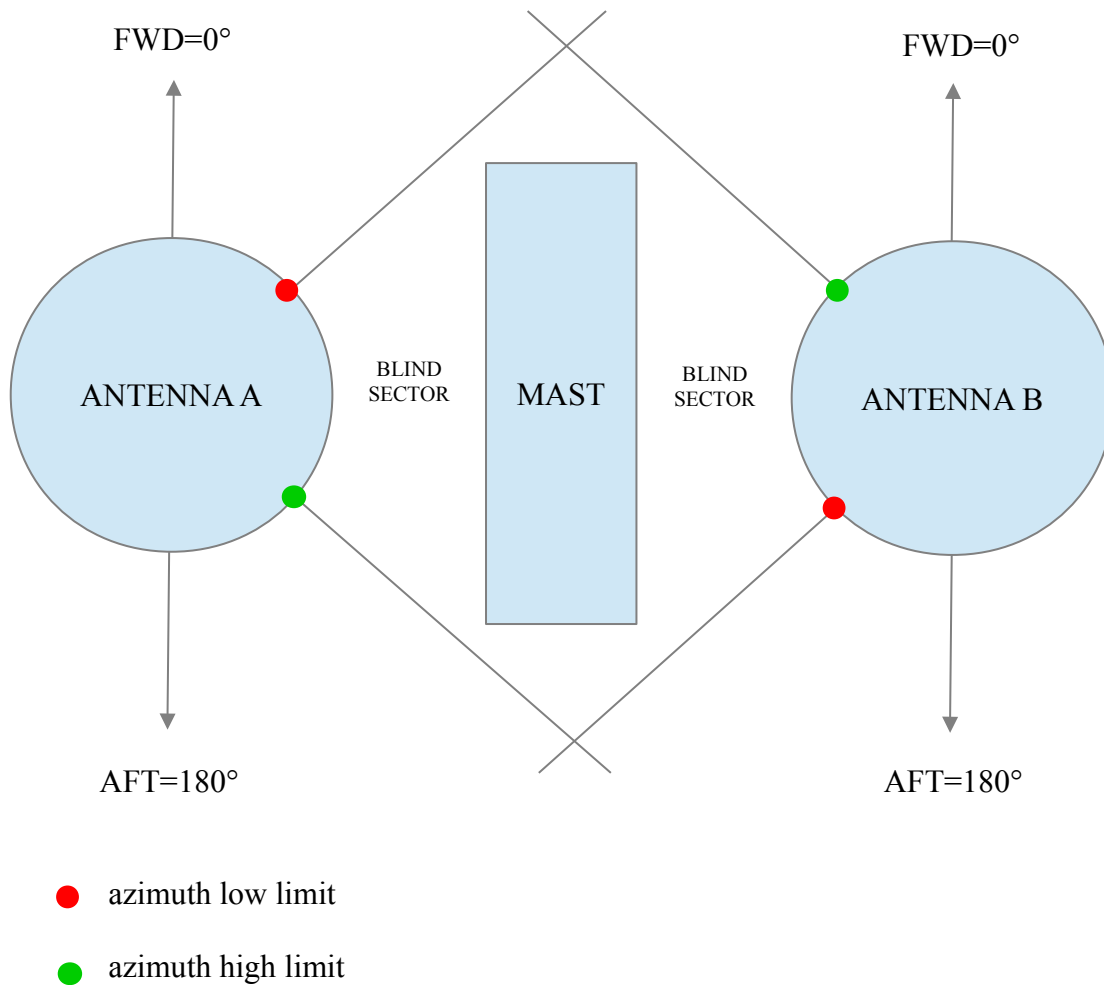
If you want to change some values just click on “New” buttons (yellow circle) and use the cursors to make your changes:

The screenshot displays the 'Configuration' interface with a dark background. At the top, there is a menu bar with 'File', 'Options', and 'Help'. Below the menu, a navigation bar features a home icon (circled in red) and three tabs: '"A" Antenna', '"B" Antenna', and 'CPU Processor'. The main content area is divided into sections for configuration. The first section, 'IP Address A.C.U.', shows the value '192.168.005.002' and a 'New' button (circled in yellow). Below the input field, the digits '1 9 2 . 1 6 8 . 0 0 5 . 0 0 2' are displayed with navigation buttons (+, -, <, >). The second section, 'Azimuth Low Limit', shows the value '0 3 0' and a 'New' button (circled in yellow). The third section, 'Azimuth High Limit', shows the value '1 5 0' and a 'New' button (circled in yellow). All 'New' buttons and the 'Submit' buttons are circled in yellow. At the bottom, the 'Model' section shows a list of antenna models: HD-11, HD-7, TV-8, TV-6, and TV-5. The 'HD-11' button is circled in green.

Once you set the value you want just click on “Submit” button (yellow circle).

In the “Model” section just click on the model button (green circle) to select the installed antenna model.

Setting the azimuth limits values is very simple. Below you can find a simple schematic:



In this case both antennas are installed facing the FWD. In some cases one of the antennas is installed facing the AFT. In this case adjust the angles following this consideration.

Just to give an example, in the previous schematic the values for Antenna A are around:

- low limit : 30°
- up limit : 150°

For Antenna B:

- low limit : 210°
- up limit : 330°

The values that you can insert are filtered by the logic and if you change something with a not correct value the system will activate the flag “not valid” which can be found below the buttons “New” and “Submit”. For example the azimuth limits are limited to 0° to 359° and the IP address cannot go over 255.255.255.255. Inside the green circle you can find the Not Valid flag active and the reason of the activation.

In this case a not valid IP address was been inserted (392.xxx.xxx.xxx).

File Options Help

 Configuration

"A" Antenna **"B"** Antenna **CPU** Processor

IP Address A.C.U. 392.168.005.002
 Not Valid
 3 9 2 . 1 6 8 . 0 0 5 . 0 0 2


Azimuth Low Limit
 Not Valid
 0 3 0

Azimuth High Limit
 Not Valid
 1 5 0

Model

Concerning the CPU Processor IP configuration is necessary to introduce something more. If you click on "CPU Processor" page you will see the following subpage:

File Options Help

 Configuration

"A" Antenna **"B"** Antenna **CPU** Processor

IP Address C.P.U. 192.168.5.5
 Not Valid
 . . .

Subnet Mask C.P.U. 255.255.255.0
 Not Valid
 . . .

Gateway C.P.U. 192.168.5.1
 Not Valid
 . . .

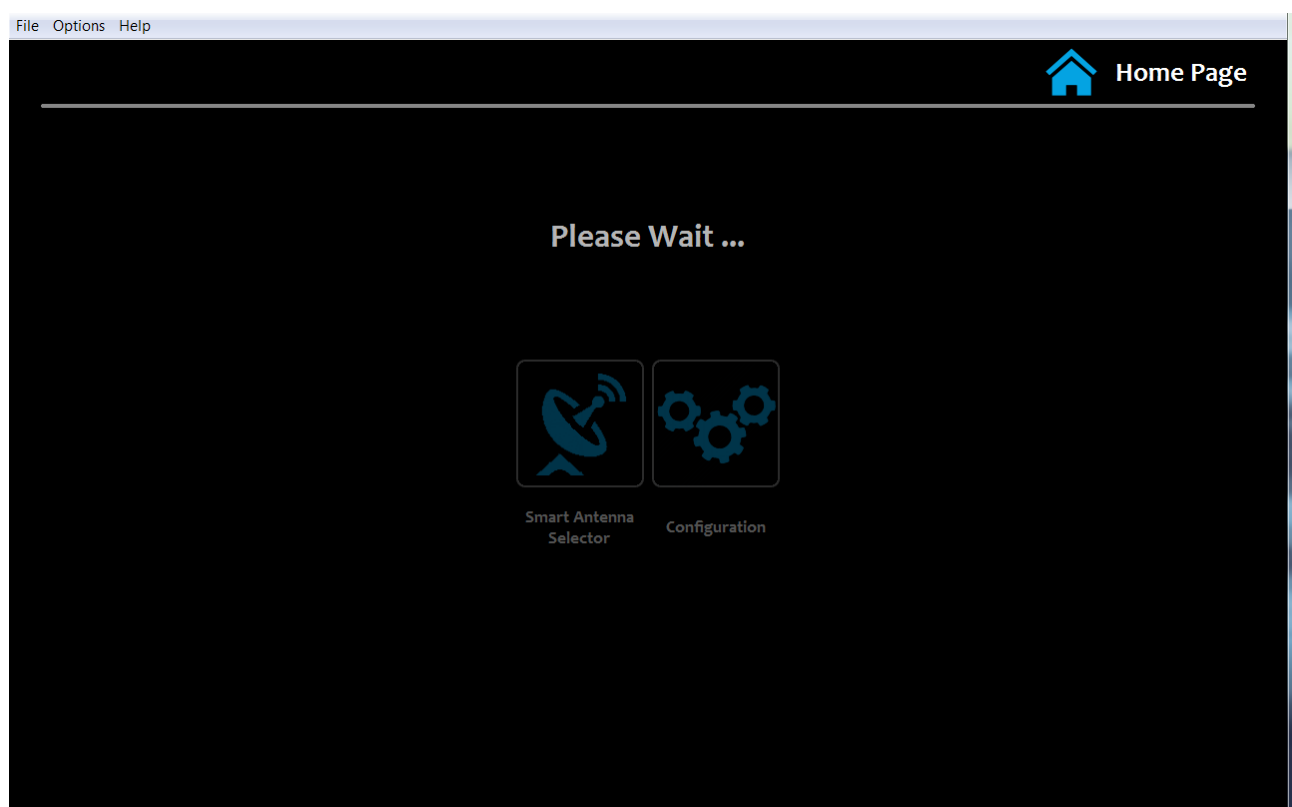
As you can see the addresses fields are empty. You can see only the current IP config (green circle). This is due to the fact that if there's "something" on one of that strings, the CPU will set that values to its ethernet board after a reboot.

So, if you need to change the IP address of the CPU (of course is the IP address of the S.A.S. Itself), you have to be sure about the parameters to insert. If you set something wrong or an IP which is no more reachable from your network, the only way to come back is to use the USB interface and Crestron Toolbox.

To set new values for CPU, just click on “New” button of one of the fields and wait until you can see the blue cursor on the first number. After that use the cursor to change the values and at the end click on “Submit” button. After clicking submit be absolutely sure that the values are correct and click on “Apply”. This button reboot the system so the interface cannot be more used for around five minutes.

After that time, open again the .exe file of the Windows PC GUI and replace the old IP address with the one you set before. If you did everything correct you will see again the GUI. If not you need to check your network and if you cannot find the S.A.S. you need support from a Crestron Technician to restore a factory configuration.

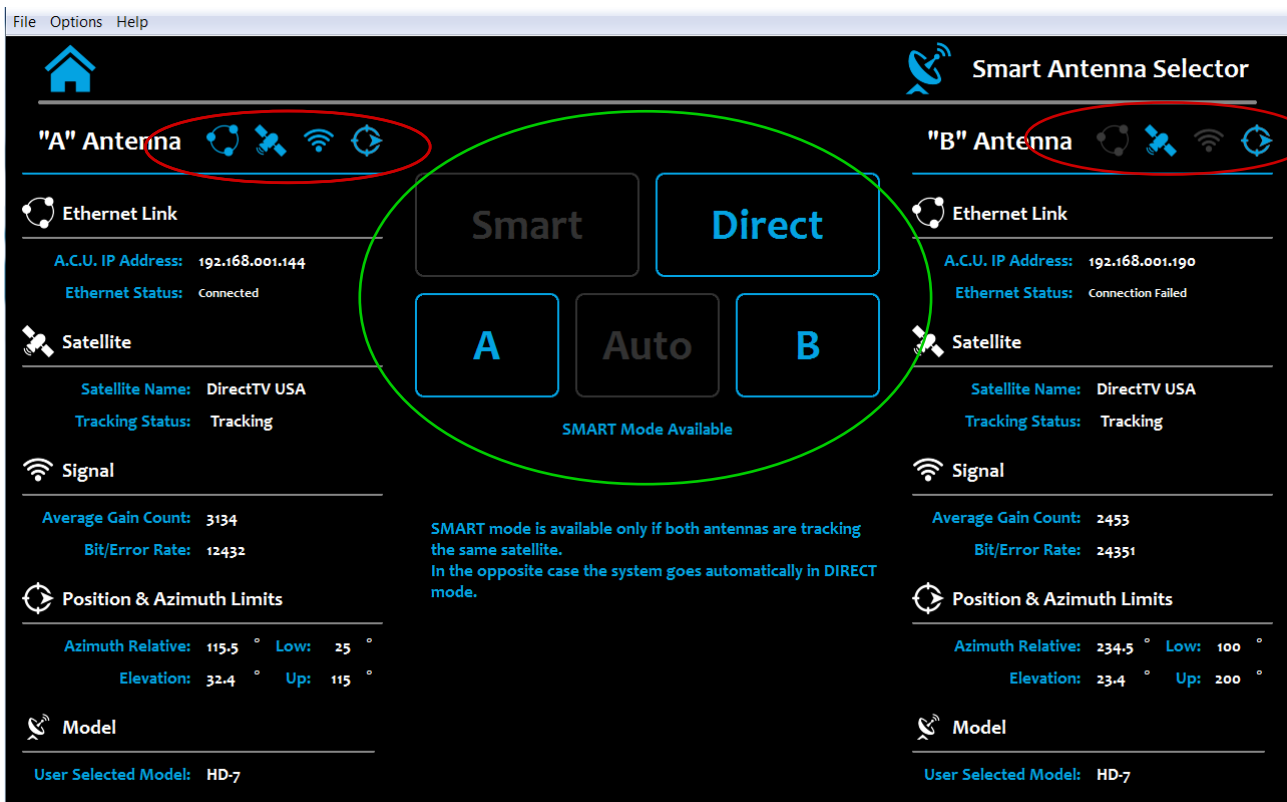
Once you open again the Windows PC GUI and the processor is still initializing you can see this page:



After the wait time, which is around one minute you can access again the GUI.

2.3 – Smart Antenna Selector Page

In the following section you can find a guide of the Smart Antenna Selector operational behaviour. If you click on “Smart Antenna Selector” button from the Home Page the following page will appear:



Inside the green circle you can find a “copy” of the rack unit front panel. Following a resuming of the buttons actions:

- Direct Mode: in this case the antenna “A” signal is routed to output “A” distribution and same for antenna “B” and output “B” distribution. This mode is useful when the antennas are tracking different satellites and you want to watch both distributions satellite receivers contemporary. In this case the system acts as a simple RF signal distributor. This mode is automatic selected by the CPU when the antennas are tracking different satellites. In this case the “SMART Mode Available” row becomes dark gray. To enable again SMART mode just select same satellites on both antennas.
- Smart Mode: in this case the system acts as automatic/manual best antenna selector, or better, it distributes the best antenna signal to both outputs. You can use Auto mode to allow the system to calculate which is the best antenna, taking in consideration the following parameters listed in priority order:

- tracking status: “Tracking” or “Sleeping” enable the system to consider the antenna as available. Other status like “Searching” or “Idle” put the antenna outside the availability. If both antennas are not available (both in Searching for example), the system goes automatically on “A” antenna.
- azimuth position: if the antenna is inside the blind azimuth sector the system considers it as not available, and selects automatically the other antenna, if available. If not the system goes automatically on “A” antenna.
- signal level: considering AGC value, the system calculates which is the higher value. To do this it

consider as best signal antenna the one which has an AGC value higher of 200 AGC points compared to the other one. If the signals are similar, or better, their difference is below 200 AGC point, the system goes automatically on antenna “A”.

You can see both antennas status observing the icons next to the antenna title (red circle).

- The first icon (Ethernet Link) indicate that the ACU is connected or not to the SAS. If is dark grey the ACU cannot be reached from SAS and therefore check the connection and/or network parameters.
- The second icon (Satellite) indicate that the antenna is tracking the below listed satellite. If is dark grey means that the antenna is not tracking the satellite and of course is not available.
- The third icon (Signal) indicate that the antenna has the best signal compared to the other one. If is blue means that that antenna has the best AGC level, if is dark gray the opposite. If both antennas has this icons dark grey means that they have a similar AGC level.
- The fourth icon (Position & Azimuth Limits) indicate that the antenna is inside/outside the blind sector. If is dark grey the antenna azimuth is inside the blind sector, if is blue the antenna is outside the blind sector and of course available.

In any cases you can check the values observing the list, and if you want you can force the system to select one of the antennas in a stable way. The manual selection is useful when the boat is docked in a stable position and one (or both) antennas can see clearly the satellite. In this case the Auto mode could be not very useful.

To select Auto mode or manual, just click on “SMART” button and then:

- “Auto” to select automatic selection (the best antenna button will highlight together with “Auto” button).

The screenshot displays the 'Smart Antenna Selector' software interface. It features a central control area with buttons for 'Smart', 'Direct', 'A', 'Auto', and 'B'. The 'Auto' button is highlighted in blue. Below these buttons, a message states: 'SMART Mode Available' and 'SMART mode is available only if both antennas are tracking the same satellite. In the opposite case the system goes automatically in DIRECT mode.'

On the left, the 'A' Antenna panel shows the following status:

- Ethernet Link:** A.C.U. IP Address: 192.168.001.144, Ethernet Status: Connected
- Satellite:** Satellite Name: DirectTV USA, Tracking Status: Tracking
- Signal:** Average Gain Count: 3134, Bit/Error Rate: 12432
- Position & Azimuth Limits:** Azimuth Relative: 115.5 °, Low: 25 °, Elevation: 32.4 °, Up: 115 °
- Model:** User Selected Model: HD-7

On the right, the 'B' Antenna panel shows the following status:

- Ethernet Link:** A.C.U. IP Address: 192.168.001.190, Ethernet Status: Connection Failed
- Satellite:** Satellite Name: DirectTV USA, Tracking Status: Tracking
- Signal:** Average Gain Count: 2453, Bit/Error Rate: 24351
- Position & Azimuth Limits:** Azimuth Relative: 234.5 °, Low: 100 °, Elevation: 23.4 °, Up: 200 °
- Model:** User Selected Model: HD-7

In this case “A” antenna is the best one.

- The manual mode can be selected by clicking on the antenna button you want to select. The antenna button will highlight alone.

Everytime you select SMART remember to click also on the mode you want. In case of automatic DIRECT mode selection, once you select again the same satellites the system comes back to SMART mode, if it was the last selected. If you select manually DIRECT mode, of course the system remain in that mode even if you select the same satellites.

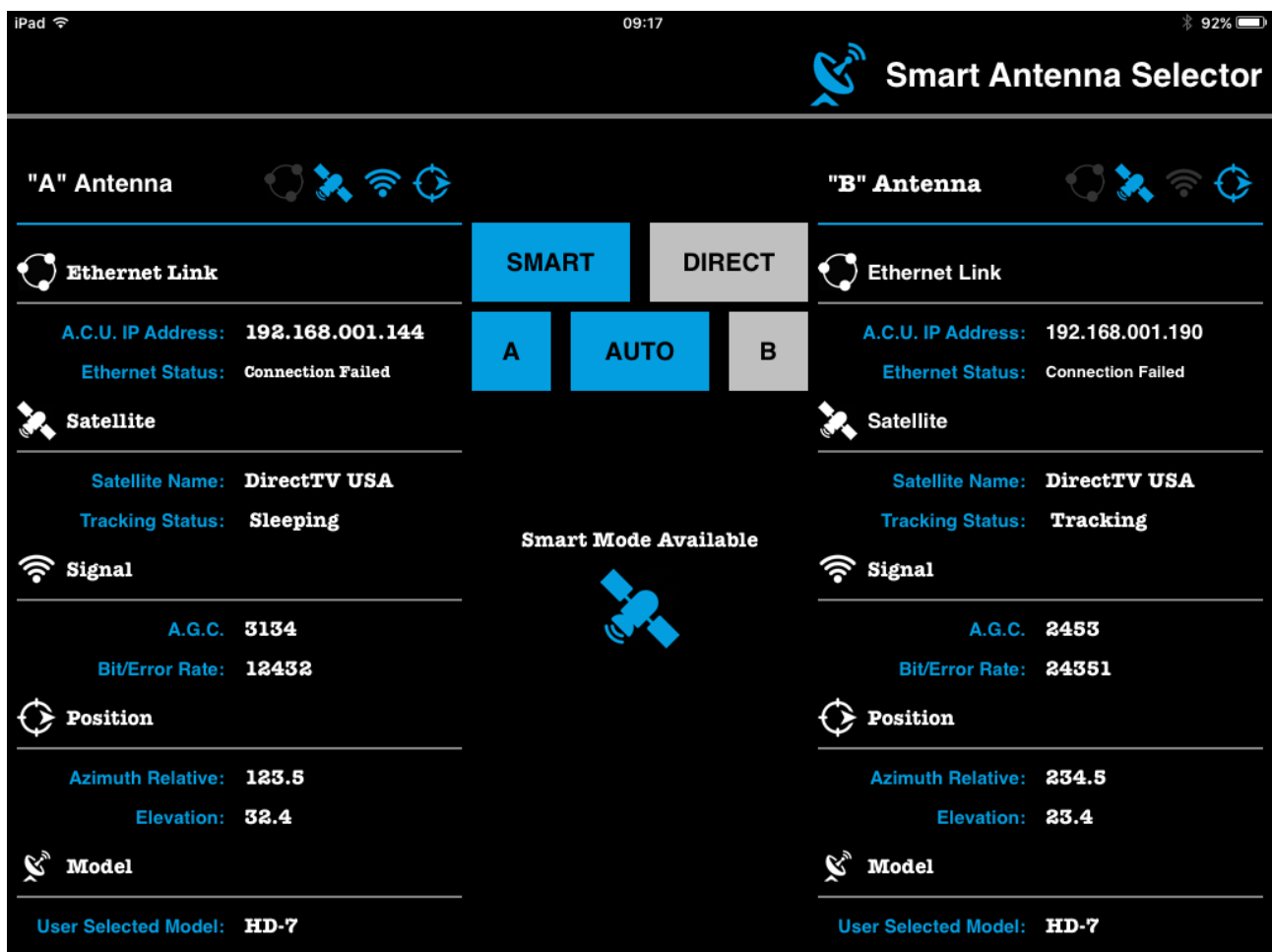
Chapter 3 – Ipad Crestron App

A simple Graphical User Interface made for Apple Ipad is also embedded inside Crestron control processor. To use it you need to download from App Store the “Cretron Mobile” App (the free one).

After installation you need to configure the App to connect to processor. The parameters are the following:

- Friendly Name/Location: no matter but we suggest to type “Smart Antenna Selector”
- Use Local File: NO
- Host Name or IP Address: type the S.A.S. Processor IP address configured before
- HTTP Port: leave 80
- Port A: 60001
- Port B: leave blank
- Passcode: 1234

After this configuration click on save and the App go back to main page. Now select the “Smart Antenna Selector” button and tap on connect. After few seconds you will see the following page:



As you can see is equal to the Smart Antenna Selector page of the Windows PC application. You can only manage the working mode from here, but not the configuration.