

ACU0002

User Guide



Table of Contents

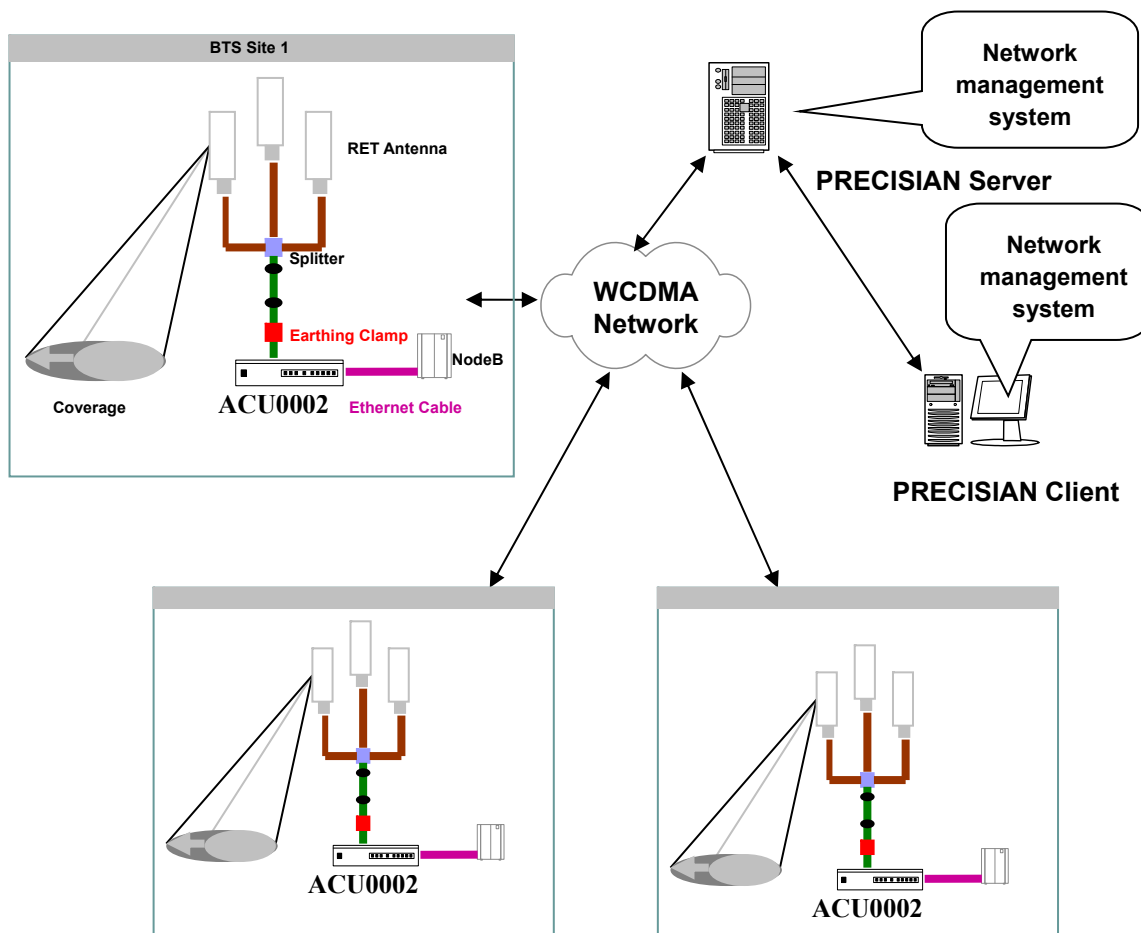
1. System Description.....	4
1-1. Role of the ACU0002 in RET System	4
1-2. Controller Hardware.....	5
1-3. Device Connections.....	6
1-4. Access to the Controller	6
2. Installation Instructions.....	8
2-1. Hardware Installation	8
2-2. Set IP on the PC for Direct Access.....	8
2-3. Log In to Access the Controller.....	9
3. System Configuration	11
3-1. Configure System Settings	11
3-1.1 Network Setting.....	12
3-1.2 System Information	16
3-1.3 Power Setting	16
3-1.4 Device Setting	17
3-1.5 System Time Setting	18
3-2. Setup and Manage User Accounts.....	19
3-2.1 Add a User Account	19
3-2.2 Modify a User Account	21
3-2.3 Delete a User Account.....	22
4. Using the ACU0002	23
4-1. Scan for AISG Devices	23
4-1.1 Scan Operation	25
4-1.2 Add a Device	26
4-1.3 Refresh Operation	27
4-1.4 Save Operation	28
4-1.5 Reset a Device	29
4-2. Manage and Adjust AISG Devices.....	30
4-2.1 Antenna Data.....	32
4-2.2 RET Data & Tilt Adjustment.....	34
4-2.3 TMA Data & TMA Adjustment	37
4-3. Site Information.....	41
4-4. Summary Report	41
5. Antenna Configuration File	44
5-1. Vendor Management	44
5-1.1 Add a Vendor.....	44

5-1.2	Delete a Vendor	46
5-2.	Antenna Model Management	47
5-2.1	Upload Antenna Configuration	47
5-2.2	Delete an Antenna Model.....	49
6.	Appendix	50
6-1.	Reset of IP and Password	50
6-2.	Error/Alarm Codes and Messages.....	50
6-3.	Compatible USB Modems	53

1. System Description

The ACU0002 is a controller for AISG antenna line devices. The controller provides control and management functions for a group of connected AISG devices as well as provide power to them. Examples of controllable devices include Remote Electrical Tilt (RET) antenna and Tower Mounted Amplifier (TMA). The controller provides a web interface which allows for remote control and management over a network.

1-1. Role of the ACU0002 in RET System



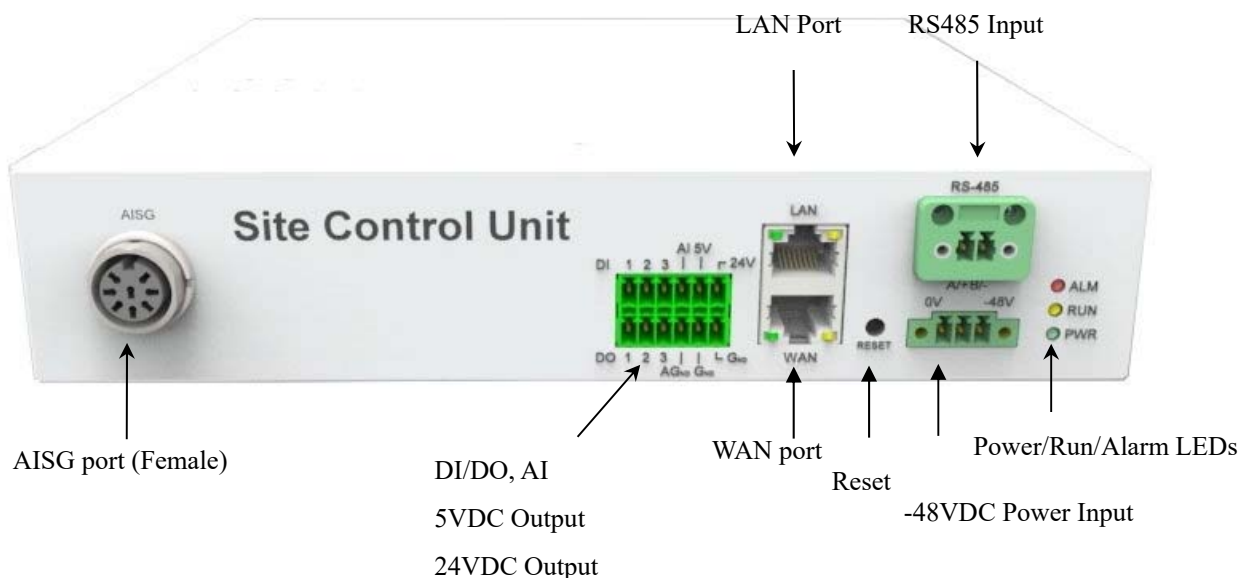
ACU0002: AISG Device Controller
PRECISIAN: O&M AISG Device Management System
RET: Remote Electrical Tilt

In a typical scenario as shown in the above diagram, a ACU0002 controller is installed at each base station site. The ACU0002 controller is connected to the RET antennas and to the Node B via an Ethernet cable. At the mobile operator's Operations Management Center, the Precisian server and client allows remote control of the ACU0002. Many site controllers can be managed from one central location.

Product features:

- Controls AISG line devices
- Remote adjustment of RET antenna tilt angle
- RET antenna calibration
- Management of antenna information
- Remote setting of TMA gain and mode
- Management of base station site information such as location, contact, site name and owner
- Configuration of the operating environment of the ACU0002 system using a web interface
- Management of user accounts which allows for users with different security levels to access the ACU0002 system
- Power saving mode

1-2. Controller Hardware

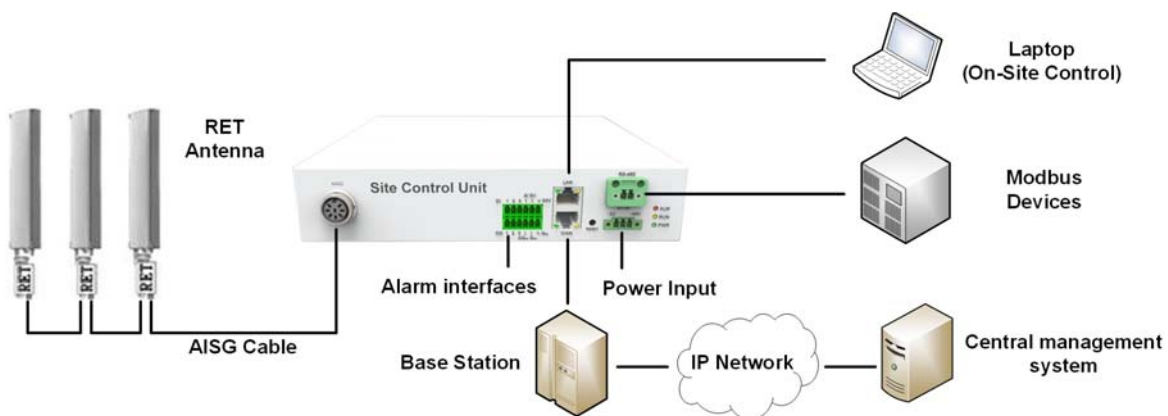


The above figure shows the front view of the ACU0002 controller.

The front panel of the ACU0002 controller has the following connectors:

- AISG female port used to connect to AISG antenna line devices.
- Power port used to connect to the -48VDC power source.
- 3 x Digital input/output, 1 x Analog Input, 1 x 5VDC Out, 1 x 24VDC Out
- Reset button. Press to restart the ACU0002 controller.
- RS485 serial port to communicate with Modbus slave clients
- Alarm LED indicator. Lights up or blinks when there is a warning condition.
- Power LED indicator. Lights up when the power is connected.
- Run LED Indicator. Blinks when the system is running.
- LAN port (set 192.168.0.30 by default) used to connect to a laptop or local network.
- WAN port will request a dynamic IP address over the outgoing port WWW network.

1-3. Device Connections



1-4. Access to the Controller

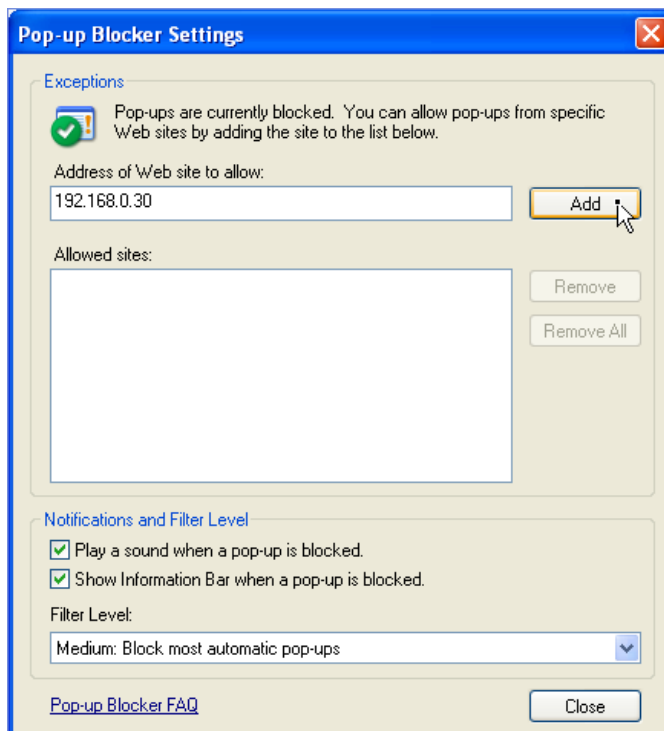
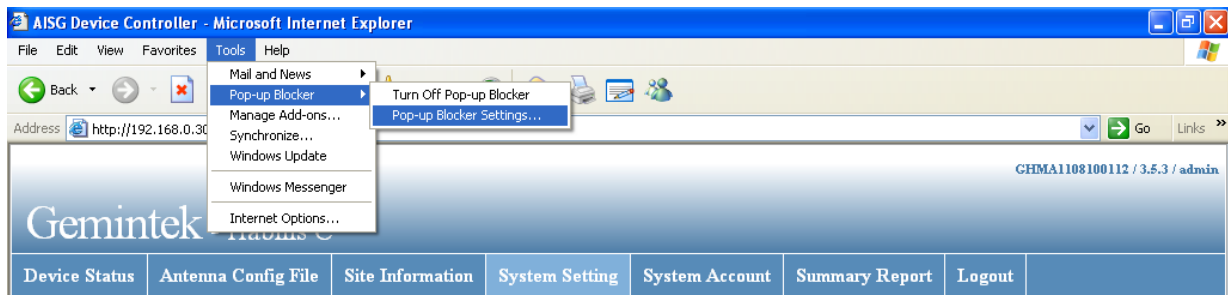
The ACU0002 controller can be accessed through the network or Internet by using the web-based interface. Direct access can be achieved by using a cross-over network cable to connect a PC to the ACU0002 controller.

Required: Internet Explorer 6.0 or above.

Recommended: Screen resolution of 1024 x 768 or higher.

Warning regarding the Blocking of Pop-ups feature in your browser:

The web-based interface does make use of pop-up windows to display messages. If your browser has the pop-up blocking feature turned on then you may not see all of the messages. Either turn off the blocking of pop-ups or configure the blocking to allow pop-ups that originate from the ACU0002 controller's IP.



For console access, the procedure is described in a separate section.

2. Installation Instructions

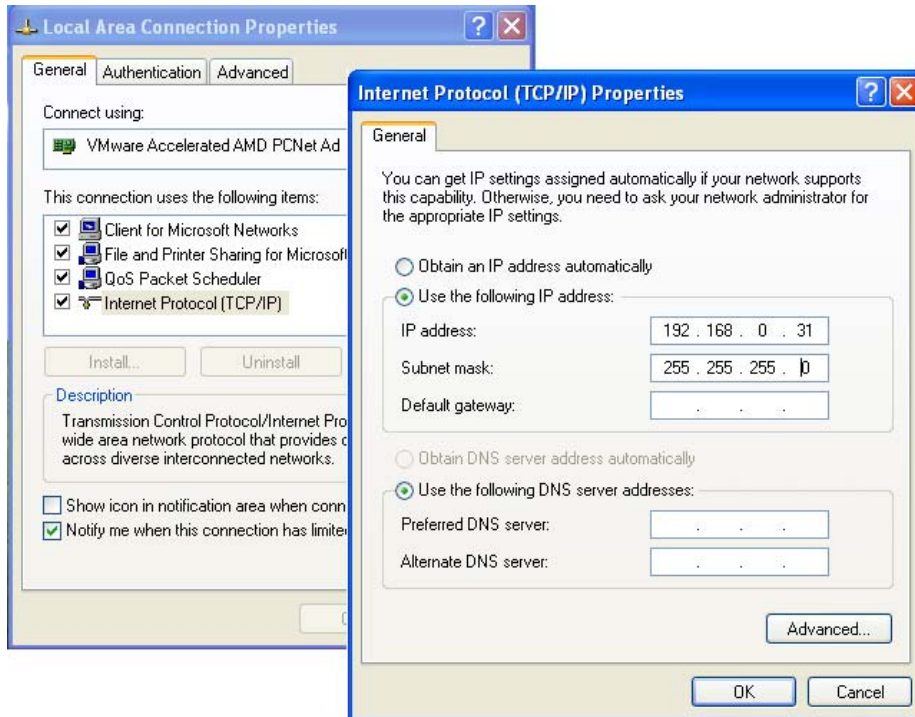
This section describes how to setup the controller. The procedure is to first connect the ACU0002 controller to the antenna and the Base Station. To access the ACU0002 controller for the first time we need to connect to a PC directly using a cross-over network cable.

2-1. Hardware Installation

1. Affix controller unit using brackets.
2. Connect Ethernet port on the ACU0002 controller to the PC with cross-over network cable.
3. Connect -48V DC power to the power port on the ACU0002 controller. The power LED indicator should light up. Wait for the RUN LED to turn on.
4. Connect AISG female port on the ACU0002 controller to the AISG line device with AISG cable.

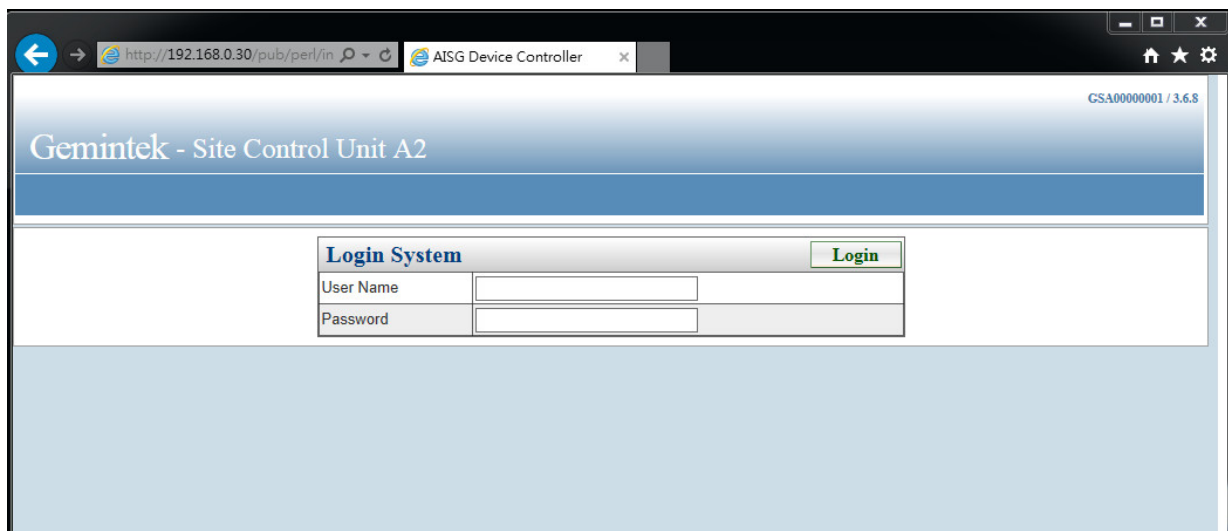
2-2. Set IP on the PC for Direct Access

The ACU0002 controller has been factory preset with an IP address of 192.168.0.30. In order to access the ACU0002 controller from a PC connected directly by a cross-over network cable, the PC's IP address must belong to the same network. For example, set the PC's IP address to 192.168.0.31 and the SubNetwork Mask to 255.255.255.0. To change the PC's IP address, go to Network Connections | Properties and look under TCP/IP | Properties.



2-3. Log In to Access the Controller

To access the ACU0002 controller, you need to first log in. From your terminal, launch Internet Explorer and type the IP address of the ACU0002 controller in the Address Bar. The default IP address of the controller has been preset to 192.168.0.30. Enter this IP address for now. It can be changed later. The browser should display the Login page as shown below.



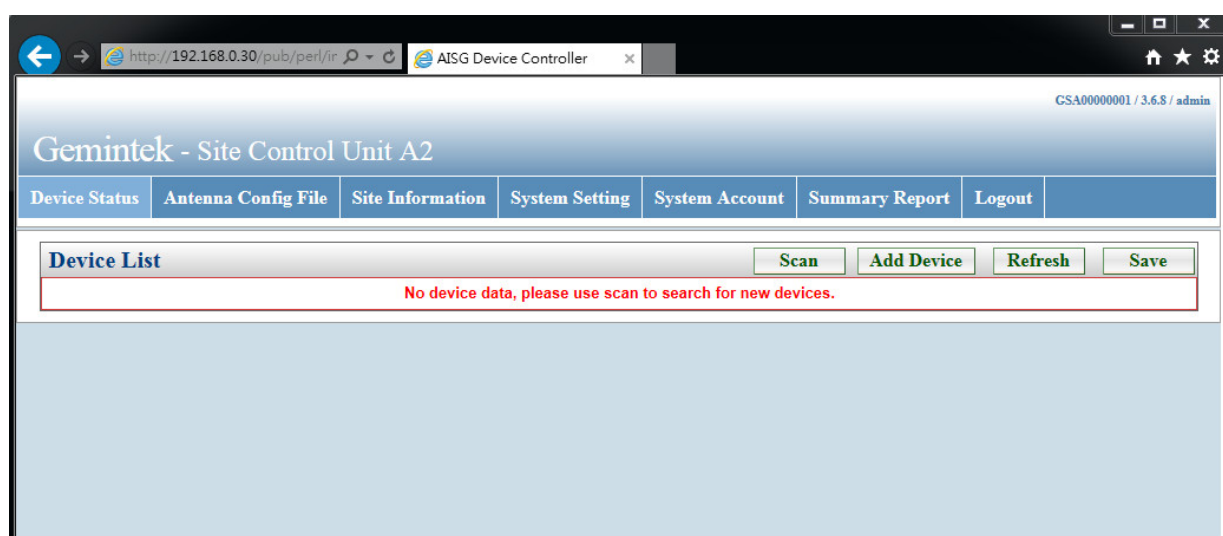
Enter “admin” for the User Name and enter “admin” for the Password. These are default values. This user account is the default system administrator account which has full access

privileges. You should change the password of the default administrator account after you first log in. You should create other accounts for doing general operations.

3. System Configuration

Once access to the ACU0002 controller is established, obtain the new IP address for the ACU0002 controller for use in the site network. To access the ACU0002 controller through the site network, the ACU0002 controller's IP address should be changed to this new IP.

After you log in, the following page is displayed. In the upper right corner, the current user name is displayed. In this case it is "admin".



3-1. Configure System Settings

Click on the System Setting tab to open the System Setting panel. The System Setting panel is further divided into seven sections: IPv4 Network Setting, IPv6 Network Setting, System Information, Power Setting, Device Setting, System Time Setting.

GSA00000001 / 3.6.8 / admin

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Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

Software Upgrade Reboot

IPv4 Network Setting

Wireless Connection Network Test Save

Data Name	Data Value	Data Name	Data Value
NIC IPv4 Mode	☐ Static ☒ DHCP	IPv4 Address	
SubNetwork Mask		Gateway IPv4	
SNMP Server IP	10.1.1.1	Site ID	0000

IPv6 Network Setting

Save

Data Name	Data Value	Data Name	Data Value
NIC IPv6 Mode	☒ Static	IPv6 Address	
IPv6 Link-local Address	fe80::202:6bff:fe1c:7009	Subnet Prefix Length	0
Link-local Subnet Prefix Length	64	Gateway IPv6	2001:db8:0::1

System Information

Data Name	Data Value	Data Name	Data Value
Product Model	SCU A2	Hardware Version	
Serial No.	GSA00000001	Software Version	3.6.8
UI Language	English ▼ Set		

Power Setting

Set

Data Name	Data Value	Data Name	Data Value
Power Supply	☒ DC 24V	Power Mode	☒ Always On ☐ Power Save
Power Supply Status - DC 24V	Normal Reset		

Device Setting

Data Name	Data Value
Scan Length	4 ▼ Set

System Time Setting

Set

Data Name	Data Value	Data Name	Data Value
Date	8/21/2019 Select Date	Time - 24hr clock	15:12:57

3-1.1 Network Setting

The Network Setting section is where the values for IP address, SubNetwork Mask, Gateway IP and SNMP server IP can be changed. Obtain the new IP for the ACU0002 controller from the site network administrator.

In this example, the default settings are:

Network Setting

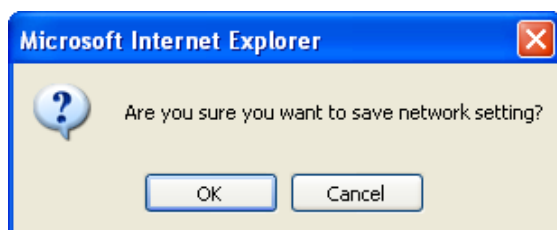
Wireless Connection Network Test Save

Data Name	Data Value	Data Name	Data Value
NIC IP Mode	☒ Static IP ☐ DHCP	IP Address	192.168.1.30
SubNetwork Mask	255.255.255.0	Gateway IP	192.168.1.30
SNMP Server IP	192.168.0.30	Site ID	

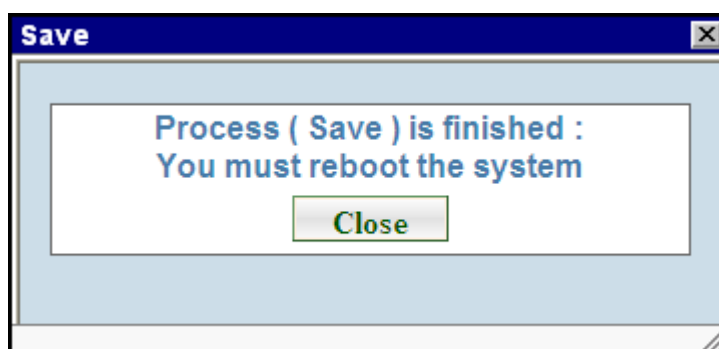
The data fields are explained in the following table:

NIC IP Mode	To select a manual way of obtaining an IP address by static IP or allow ACU0002 to automatically obtain IP address from DHCP server.
IP Address	To specify to the new static IP address assigned to the ACU0002 controller at the site station network.
SubNetwork Mask	Change to the new SubNetwork Mask used at the site network.
Gateway IP	Change to the new Gateway IP used at the site network.
SNMP Server IP	Change to the IP address assigned to the Precisian server at the Operations Management Center.
Site ID	Current site id of this ACU0002 located.

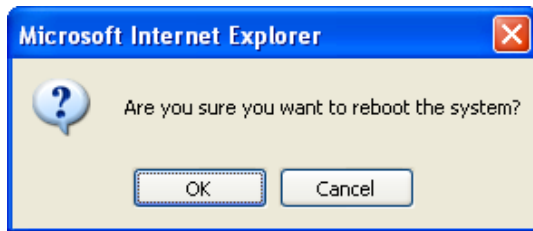
Click on the Save button once you have finished changing the values.



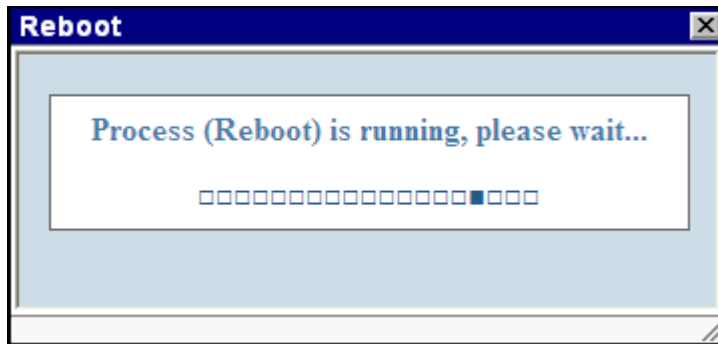
Click on the OK button to confirm.



After saving, the new settings will only take effect after the system is rebooted.
Click on the Reboot button.



Confirm and initiate the reboot process.



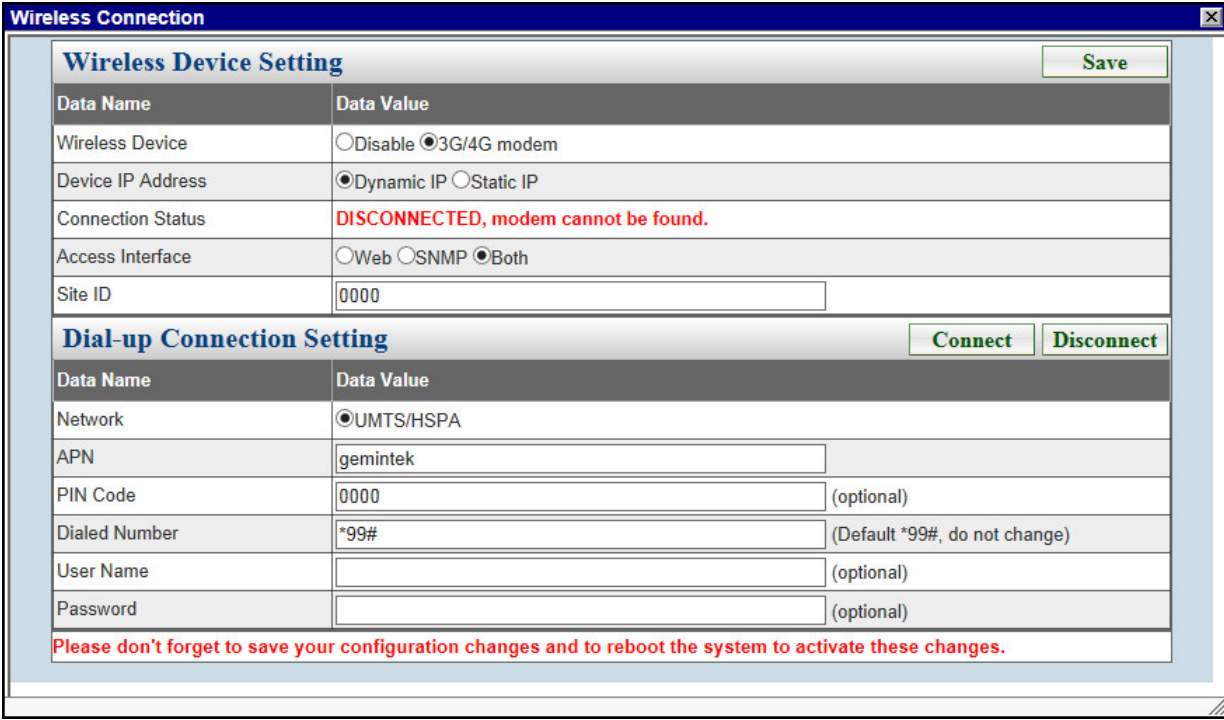
Wait for the process to end.

Wireless modem connect is an alternative connectivity instead of the line system.

Wireless Connection

In Wireless Connection Setting, ACU0002 can connect to GPPR or 3G cellular network through a variety of modems.

In case you are having problems connecting, make sure that your 3G modem is on the compatibility list. The compatibility list is available on Appendix A.



Wireless Connection

Wireless Device Setting Save

Data Name	Data Value
Wireless Device	☐ Disable ☒ 3G/4G modem
Device IP Address	☒ Dynamic IP ☐ Static IP
Connection Status	DISCONNECTED, modem cannot be found.
Access Interface	☐ Web ☐ SNMP ☒ Both
Site ID	0000

Dial-up Connection Setting Connect Disconnect

Data Name	Data Value
Network	☒ UMTS/HSPA
APN	gemintek
PIN Code	0000 (optional)
Dialed Number	*99# (Default *99#, do not change)
User Name	(optional)
Password	(optional)

Please don't forget to save your configuration changes and to reboot the system to activate these changes.

The data fields are explained in the following table:

Wireless Device	Select the type of USB modem or router that ACU0002 is using
Device IP Address	Select IP connection, either static IP or dynamic IP of the wireless connection.
Connection Status	Display current connection status or wireless IP address.
Access Interface	Choose access method. Choose Web to allow to ACU0002 to be accessed its web-based control interface. Choose SNMP to allow ACU0002 to be only controlled via COMET. Or allow both access methods.
Site ID	Site ID of ACU0002 installed site. This is essential data and must be entered correctly to identify ACU0002 itself.
Network	Type of 3G network
APN	The name of the carrier access point network
PIN Code	Enter PIN code of the SIM card or leave this field blank if none
Dialed Number	APN access number
User Name	The user name to connect to the access point
Password	The password to connect to the access point

Press [Connect], the wireless profile will be saved and the ACU0002 will connect to the set 3G/4G network. Once connected the connection status will appear wireless IP address.

Network Test is a function to verify the connection between ACU0002 and the Precisian Server.

Test Item	Test Result
☒ Step 1. Controller to Gateway connection test	
☒ Step 2. Controller to SNMP Server (RET Server) connection test	
☒ Step 3. Controller to SNMP Server (RET Server) SNMP protocol test	
☒ Step 4. RET Server verifies Site ID: N12354 and IP mapping	
☒ Step 5. RET Server verifies RET data	

Error Message

Test Download Test Results Close

3-1.2 System Information

The System Information section shows the Product Model, Serial No., Hardware Version and Software Version of the ACU0002 system. The selected user interface language can also be changed here. Select the preferred language from the drop-down list and click the Set button to apply the change.

System Information			
Data Name	Data Value	Data Name	Data Value
Product Model	SCU A2	Hardware Version	1.0.0
Serial No.	GSA00000001	Software Version	3.6.8
UI Language	English Set		

3-1.3 Power Setting

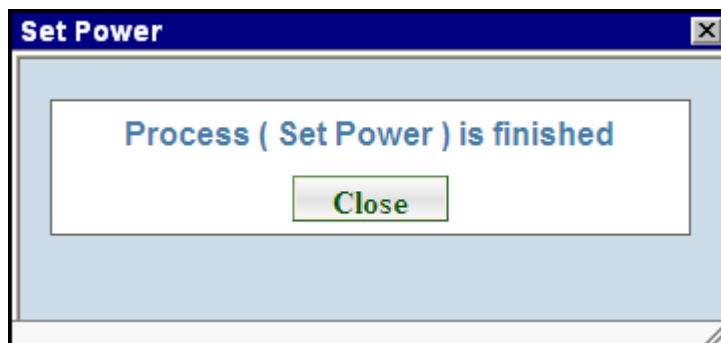
The power voltage and supply mode provided to the connected AISG devices can be changed in the Power Setting section.

Power Setting Set			
Data Name	Data Value	Data Name	Data Value
Power Supply	☒ DC 24V	Power Mode	☒ Always On ☐ Power Save
Power Supply Status - DC 24V	Normal Reset		

The data fields are explained in the following table:

Power Supply Status	Current status of power supply output. In case of over current or shortage, it'll cut off power output automatically and display an alarm message. Eliminate cables or devices malfunction and use [Reset] button to put the power supply back on.
Power Mode:	- Always On: Check to supply power continuously. - Power Save: Check to supply power only when a command is initiated; otherwise power is not supplied.

Click on the Set button to apply the changes. When the Set Power process is completed, the following pop-up window is displayed. Click on the Close button to close it.



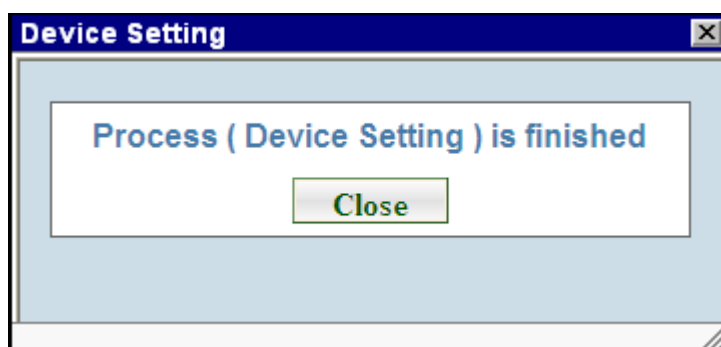
3-1.4 Device Setting

In the Device Setting section, select the Scan Length value used when scanning for devices. The default value is 4. This value can be increased if a connected device is not being distinguished from another during a scan.

Device Setting			
Data Name	Data Value		
Scan Length	4	Set	

Note: Increasing the [Scan Length] value will increase the time required to complete a scan.

Click on the Set button to apply the changes. Click on the Close button when the process is finished.



3-1.5 System Time Setting

This section is used to set the system date and time. The date uses the mm/dd/yyyy format. By clicking on the Select Date button, a calendar pop-up appears which can be used to select the date. The time setting uses the 24-hour format.

System Information			
Data Name	Data Value	Data Name	Data Value
Product Model	SCU A2	Hardware Version	1.0.0
Serial No.	GSA00000001	Software Version	3.6.8
UI Language	English	Set	

Power Setting	
Data Name	Data Value
Power Supply	☒ DC 24V
Power Supply Status - DC 24V	Normal Reset

Device Setting	
Data Name	Data Value
Scan Length	4 Set

System Time Setting			
Data Name	Data Value	Data Name	Data Value
Date	01/10/2019 Select Date	Time - 24hr clock	15:33:27 Set

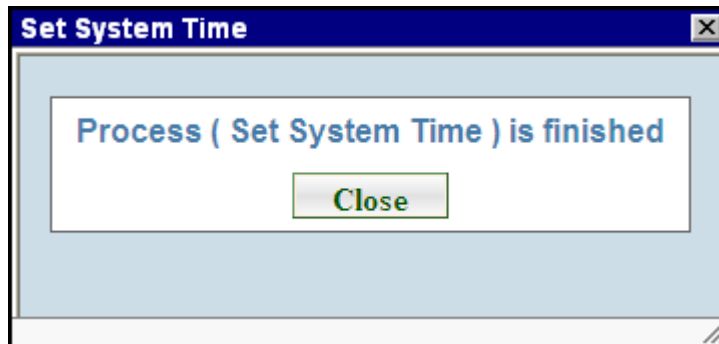
Select Date

2019 Year 1

Month

<<	>>				
S	M	T	W	T	F
		1	2	3	4
5	6	7	8	9	10
11	12	13	14	15	16
17	18	19	20	21	22
23	24	25	26	27	28
29	30	31			

Click on the Set button on the System Time Setting to apply the changes. Click on the Close button when the process is done.



3-2. Setup and Manage User Accounts

Click on the System Account Tab to open the user accounts management panel. This is used to setup and manage user accounts that are allowed to access the ACU0002 system.



The default System Administrator account has the User Name “admin” and its default password is “admin”. To change the password, click on the Modify button. The System Administrator account may be modified but cannot be deleted. To add other user accounts that can access the system, do as described below.

3-2.1 Add a User Account

Click on the Add User button and the following window appears.

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Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

User List			Add User
User Name	Security Level	User Description	
admin	Level 1		Modify

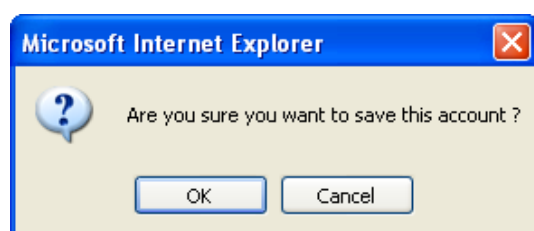
Add User
Save
 Close

Data Name	Data Value
User Name	John
User Description	Field Engineer
Password	*****
Verify Password	*****
Security Level	Level 1 ▾

Type in the appropriate values in the data fields which are explained below:

Column Name	Description / Constraint
User Name	Must be unique in the ACU0002 system. Required.
User Description	Describe the role of the user
Password	Password for this user account. Required.
Verify Password	Must be the same value as entered for Password. Required.
Security Level	Level 1 : Full privileges for accessing the ACU0002 system Level 2 : Allows access to Device Status, Site Information and Summary Report panels only

Click on the Save button and then confirm when prompted.



The User List will be refreshed. If an account already exists, the following warnings window is displayed.



3-2.2 Modify a User Account

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Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

User List			Add User
User Name	Security Level	User Description	
admin	Level 1	System Administrator	Modify
John	Level 1	Field Engineer	Modify Delete

The Security Level of the default System Administrator account cannot be changed.

CSA00000001 / 3.6.8 / admin

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Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

User List			Add User
User Name	Security Level	User Description	
admin	Level 1		Modify
John	Level 1		Modify Delete

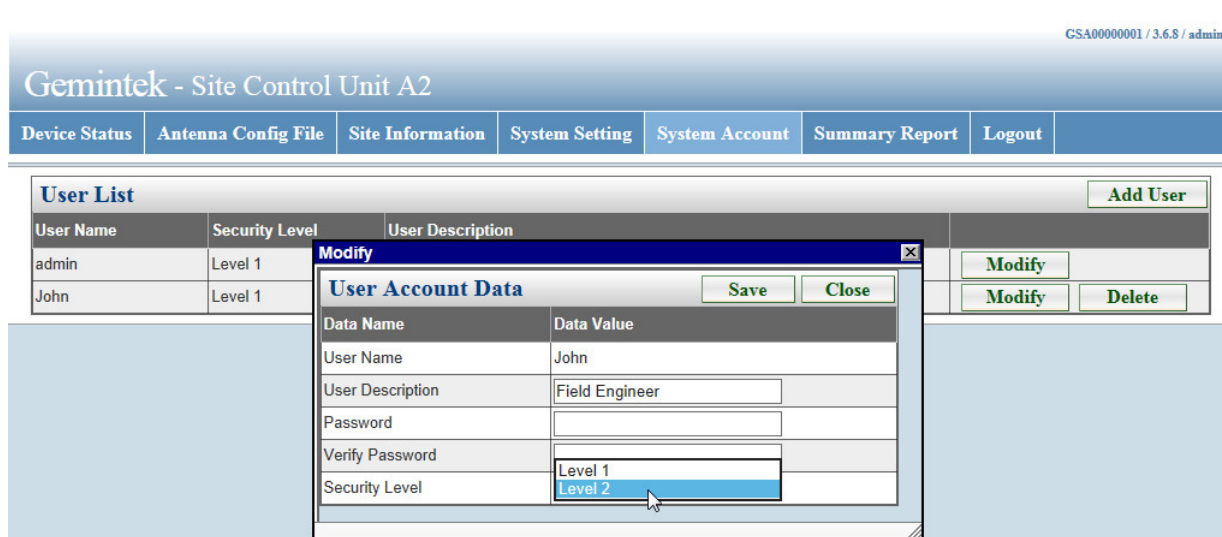
Modify

Data Name	Data Value
User Name	admin
User Description	System Administrator
Password	
Verify Password	

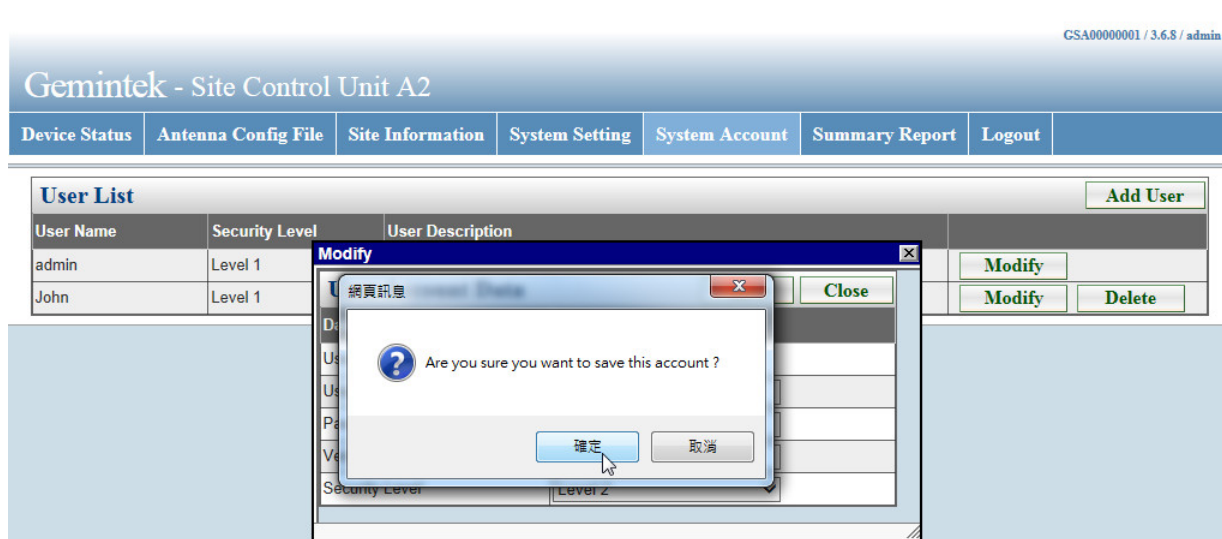
Save Close

For all user accounts, the User Name cannot be modified.

Click the Modify button corresponding to the account that you want to modify.



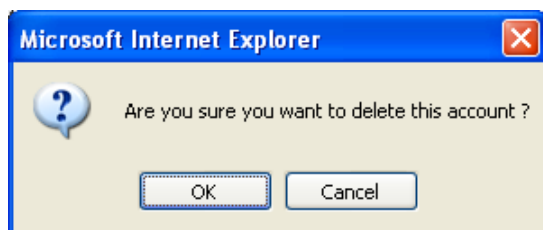
Make changes and click on the Save button to apply the changes.



Confirm to save the changes to this account. The User List will be refreshed.

3-2.3 Delete a User Account

Click the Delete button corresponding to the account that you want to delete.



Confirm and this user will be removed from the User List.

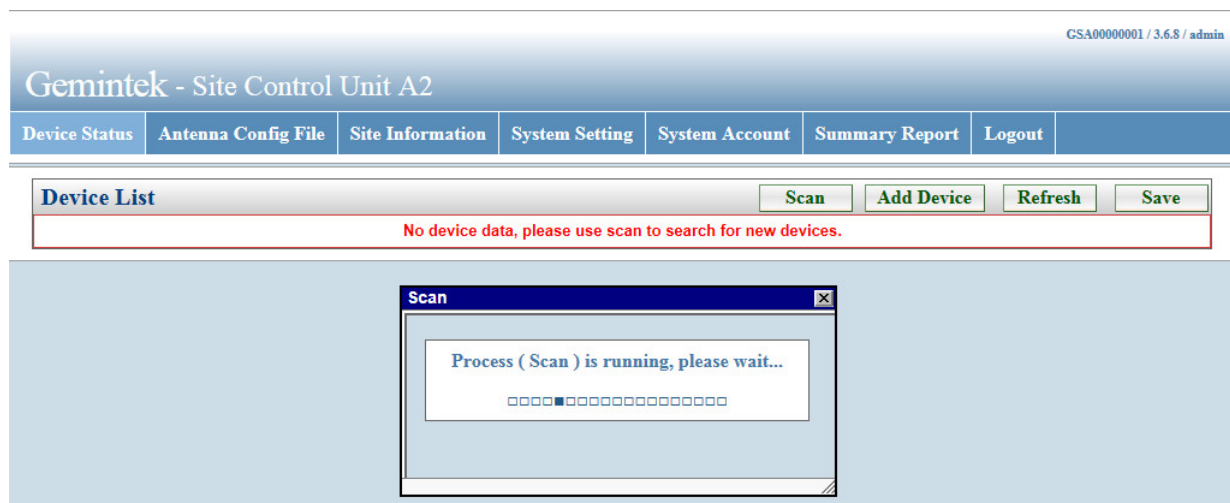
4. Using the ACU0002

Operation of the ACU0002 controller involves:

- Scanning for RET antennas and TMAs
- Changing the tilt angle of a RET antenna
- Changing the gain and mode of a TMA
- Viewing site information and summary report

4-1. Scan for AISG Devices

Click on the Device Status tab to open this panel. The Device List shows all connected AISG devices that has been recognized by the ACU0002 controller. If the Device List is empty then click on the Scan button to run a scan for the connected devices.



A recognized device is listed in the RET or TMA device list according to its device type. Scanning retrieves information previously stored on each recognized device. The Device List is updated after each Scan, Add Device, and Refresh action.

The following tables explain the various device information items.

RET Device

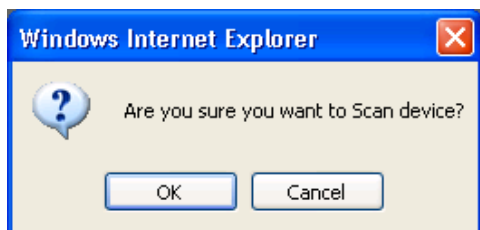
Column Name	Description / Constraint
Sector ID	A label which identifies a particular sector.
Band	The currently applied frequency band(s).
Detail	A link that brings up the RET adjustment page.
Vendor	Name or code of a particular vendor.
Antenna Model	Antenna model name.
Antenna Serial No.	Antenna serial number.
Electrical Tilt	Current electrical down tilt angle.
Total tilt	Sum of the mechanical tilt and the electrical tilt.
Device Status	Status can be either “OK” or alarm messages.

TMA Device

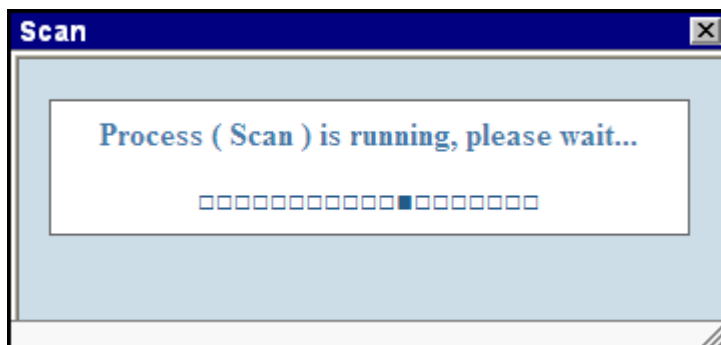
Column Name	Description / Constraint
Sector ID	Sector ID
Band	Currently applied band(s)
Detail	Links to the TMA adjustment page.
Vendor	Vendor name.
Antenna Model	Antenna model name.
Antenna Serial No.	Antenna serial number.
Current Gain	The current gain of the TMA.
Mode	TMA gain mode can be either “Bypass” or “Normal”.
Device Status	Status can be either “OK” or alarm messages.

4-1.1 Scan Operation

Click on the Scan button to scan for the currently connected AISG devices. Confirm when asked.

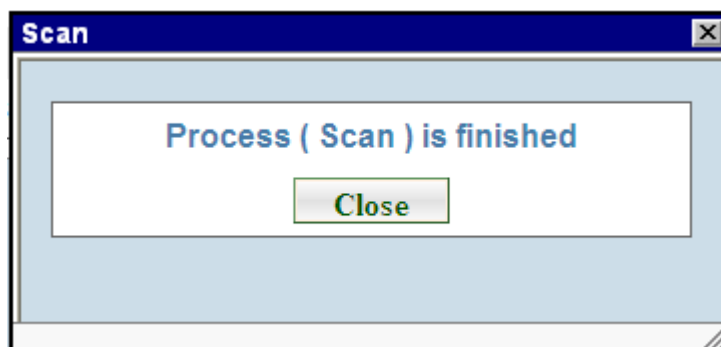


Click on the OK button to initiate the scan process.

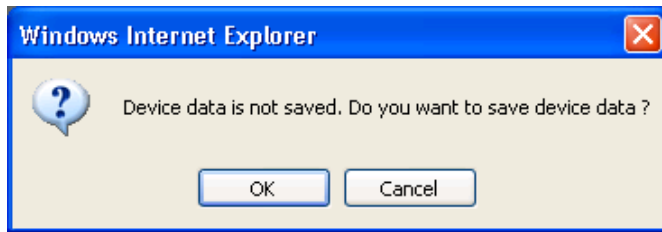


This process may take a while to complete depending on the number of connected devices. Once the scan is completed, the Device List will be updated.

Click on the Close button.



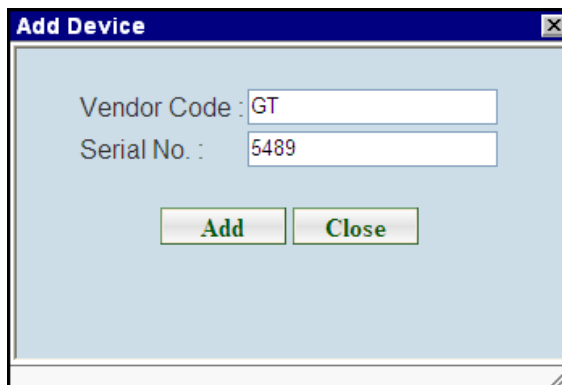
Before navigating to other web pages, store the device information on the ACU0002 controller by clicking on the Save button. If you forget to do so, you will be prompted when you click on another panel.



Click on the OK button to save device information before moving on.

4-1.2 Add a Device

Click on the Add Device button to manually add a specific device which was not recognized by the scan process. The following dialog appears.



Enter the serial number or last few digits of the serial number of the device you are adding. The Vendor Code is optional.

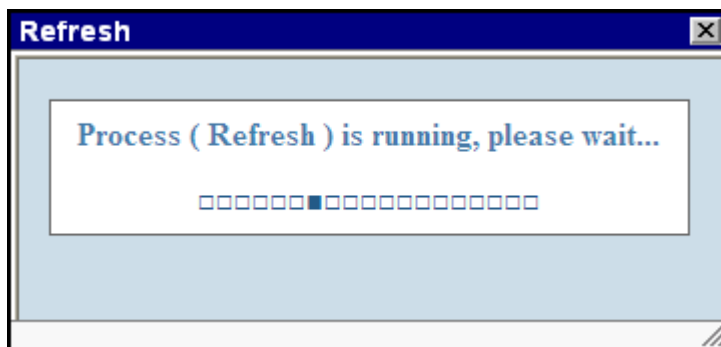
Click on the Add button to initiate the process.



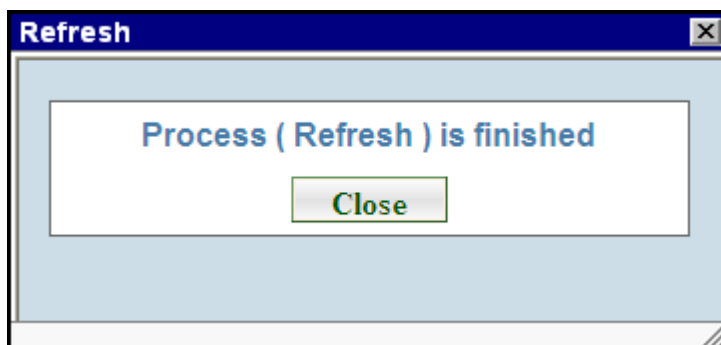
If the process is successful, the Device List will be updated. Save the device information before moving on.

4-1.3 Refresh Operation

Click on the Refresh button to retrieve the latest device information.

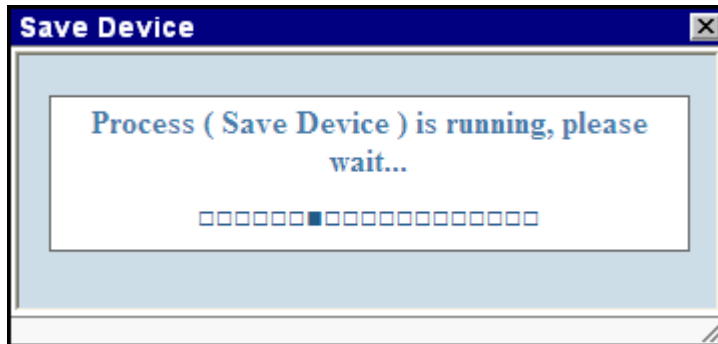


When the process is finished, close the message window.

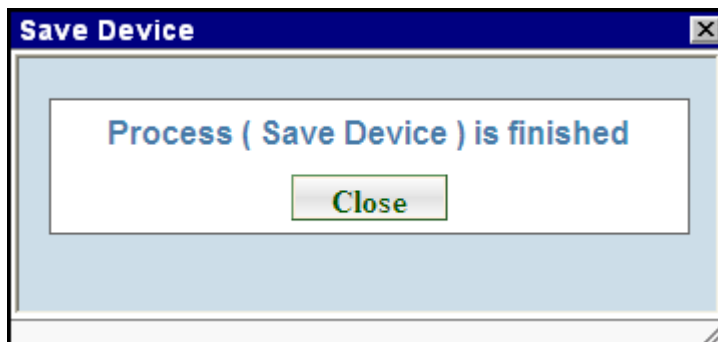


4-1.4 Save Operation

Click on the Save button to store the device information in the ACU0002 controller.



After the process is done, close the message window.



4-1.5 Reset a Device

Use the Reset function on a device that is not operating normally. Reset causes the software on the device to restart and place it in a state of initialization. Click on the Reset button for the device that you want to reset.

CSA0000001 / 3.6.8 / admin

Gemintek - Site Control Unit A2

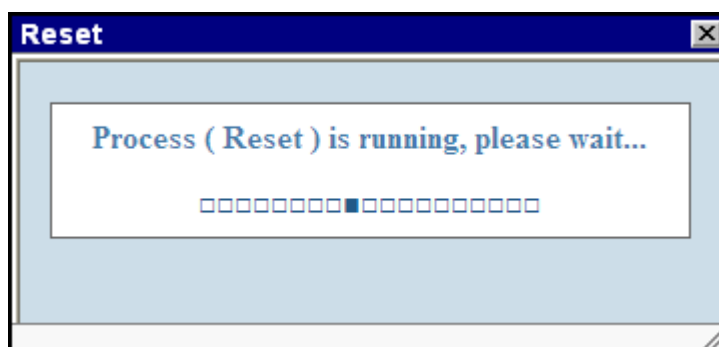
Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

Device List

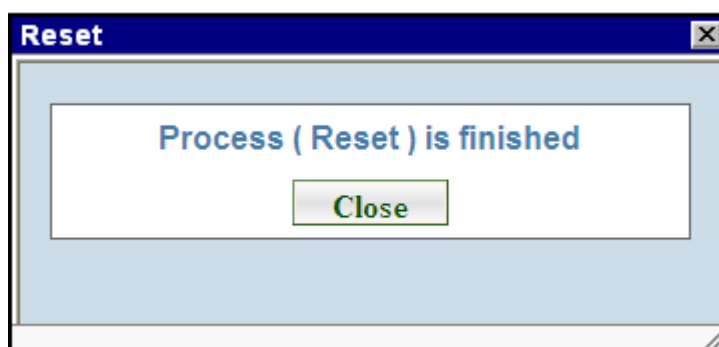
RET Device

Sector ID	Band	Detail	Vendor	Antenna Model	Antenna Serial No.	Electrical Tilt	Total Tilt	Device Status	
		Detail	Kathrein	742211		10.0	10.0	OK	Reset
1	2100	Detail	Andrew	DBXH2-6565A-VTM-HI	DESA074932252	6.0	12.0	OK	Reset
4	2100	Detail	Andrew	TBXLHB-6565A-VTM-LO	56789	6.0	8.0	OK	Reset

Wait for the process to finish.



Close the message window.



4-2. Manage and Adjust AISG Devices

To view the detailed information on a device, click on the Detail link of the listed device.

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Gemintek - Site Control Unit A2

Device Status

Antenna Config File

Site Information

System Setting

System Account

Summary Report

Logout

Device List

Scan

Add Device

Refresh

Save

RET Device

Sector ID	Band	Detail	Vendor	Antenna Model	Antenna Serial No.	Electrical Tilt	Total Tilt	Device Status	
1	2100	Detail	Andrew	HBX-6516DS-VTM		6.0	6.0	OK	Reset
2	2100	Detail	Andrew	HBX-6516DS-VTM		6.0	6.0	OK	Reset
3	2100	Detail	Andrew	HBX-6516DS-VTM	1234	6.0	6.0	OK	Reset

TMA Device

Sector ID	Band	Detail	Vendor	TMA Serial No.	Antenna Serial No.	Current Gain	Mode	Device Status	
1-Port0	2100	Detail	Argus	00000000096553346		12	Normal	OK	Reset
1-Port1	2100	Detail	Argus	00000000096553346		12	Normal	OK	Reset
2-Port0	2100	Detail	Argus	00000000096553347		12	Normal	OK	Reset
2-Port1	2100	Detail	Argus	00000000096553347		12	Normal	OK	Reset
3-Port0	2100	Detail	Argus	00000000096553348	1234	12	Normal	OK	Reset
3-Port1	2100	Detail	Argus	00000000096553348	1234	12	Normal	OK	Reset

This link opens a page that shows the information retrieved from the RET or the TMA device. The following figures show the pages for the selected RET and TMA devices.

RET Device Detail

GSA00000001 / 3.6.8 / admin														
Gemintek - Site Control Unit A2														
Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout								
Antenna Data Save Selected														
☐ Data Name	Data Value			☐	Data Value									
☐ Sector ID	3			☐ Antenna Model	HBX-6516DS-VTM									
☐ Site ID	N12354			☐ Antenna Serial No.	1234									
☐ Installer ID	JOHN			☐ Frequency Band	2100			Sel						
☐ Installation Date (mmddyy)	090113			☐ Beam Width (split by /)	65									
☐ Bearing	30			☐ Antenna Gain (split by /)	16.0									
☐ Mechanical Tilt	0.0													
AISG V2.x RET (address=1) Calibrate Download Software														
Data Name		Data Value		Data Name		Data Value								
Device Status		OK		Vendor		Andrew (AN)								
RET Model Name		ATM3		RET Hardware Version		01.00								
RET Serial No.		0000ASZP093912868		RET Software Version		2.0.20								
Min Electrical Tilt - Max Electrical Tilt		0.0 - 10.0		Current Electrical Tilt		8.0		Set Tilt Get Tilt						

TMA Device Detail

GSA00000001 / 3.6.8 / admin

Gemintek - Site Control Unit A2

Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

Antenna Data Save Selected

☐ Data Name	Data Value	☐ Data Name	Data Value
☐ Sector ID	3	☐ Antenna Model	HBX-6516DS-VTM
☐ Site ID	N12354	☐ Antenna Serial No.	1234
☐ Installer ID	JOHN	☐ Frequency Band	2100 Sel
☐ Installation Date (mmddyy)	090113	☐ Beam Width (split by /)	65
☐ Bearing	30	☐ Antenna Gain (split by /)	16.0
☐ Mechanical Tilt	0.0		

AISG V1.x TMA (address=3)

Data Name	Data Value	Data Name	Data Value
Device Status	OK	Vendor	Argus
TMA Model	MAX12-S2	TMA Hardware Version	103
TMA Serial No.	00000000096553346	TMA Software Version	1.02
Min - Max Receive Frequency Band	1920 - 1980	Type	VSWR
Min - Max Transmit Frequency Band	2110 - 2170	Mode	Normal Set Mode Get Mode

4-2.1 Antenna Data

The Antenna Data section shows detailed information about the antenna connected to the AISG device.

Antenna Data		Save Selected		
☐	Data Name	Data Value	☐	Data Value
☐	Sector ID	3	☐	Antenna Model HBX-6516DS-VTM
☐	Site ID	N12354	☐	Antenna Serial No. 1234
☐	Installer ID	JOHN	☐	Frequency Band 2100
☐	Installation Date (mmddyy)	090113	☐	Beam Width (split by /) 65
☐	Bearing	30	☐	Antenna Gain (split by /) 16.0
☐	Mechanical Tilt	0.0		

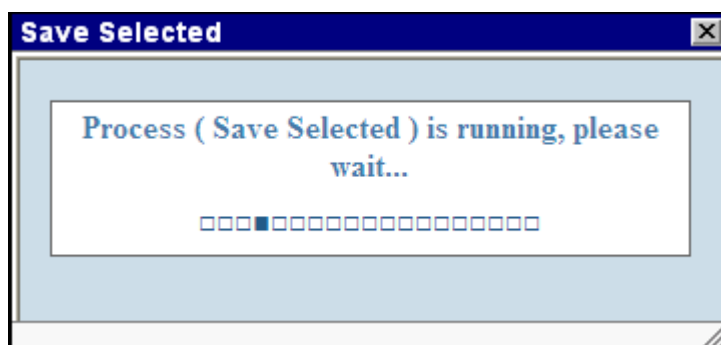
The following table explains the various information items.

Antenna Data

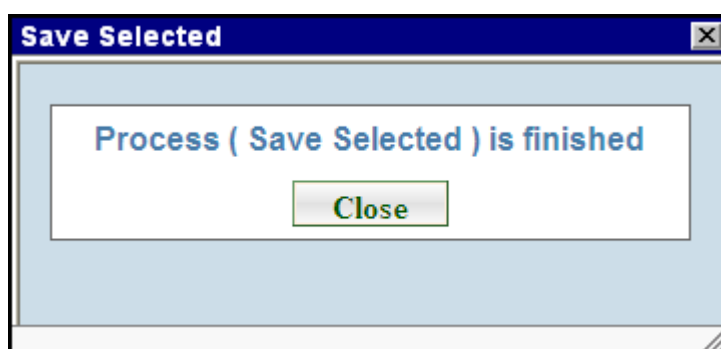
Column Name	Description / Constraint
Sector ID	Sector ID
Site ID	Base station site ID
Installer's ID	Installer's ID
Installation Date	Date in mmddyy format
Bearing	Antenna bearing in the range of 0-359 degrees
Mechanical tilt	Installed mechanical tilt in degrees
Antenna Model	Select the antenna model from the drop-down list. If a model is not in the list, please refer to the section on "Antenna Configuration File" on how to add a new antenna model.
Antenna Serial No.	Antenna serial number
Frequency Band	Frequency band(s) used by the antenna
Beam Width	Beamwidth for each band in frequency order. (separated by /)
Antenna Gain	Gain for each band in frequency order. (separated by /)

Make entries or changes and select the items to save to the device's storage. Click on the Save Selected button to store those data value(s) which have their checkboxes selected. For example, in the page shown below, the items within the red rectangle are selected. Only these values are to be uploaded to the device.

Antenna Data		Save Selected			
☐	Data Name	Data Value	☐	Data Name	Data Value
☒	Sector ID	3	☒	Antenna Model	HBX-6516DS-VTM
☐	Site ID	N12354	☐	Antenna Serial No.	1234
☐	Installer ID	JOHN	☒	Frequency Band	2100
☐	Installation Date (mmddyy)	090113	☐	Beam Width (split by /)	65
☒	Bearing	30	☐	Antenna Gain (split by /)	16.0
☒	Mechanical Tilt	0.0			



After the process is finished, close the message window.



4-2.2 RET Data & Tilt Adjustment

This section covers RET device details, RET device calibration and tilt angle adjustment.

AISG V2.x RET (address=1)				Calibrate	Download Software
Data Name	Data Value	Data Name	Data Value		
Device Status	OK	Vendor	Andrew (AN)		
RET Model Name	ATM3	RET Hardware Version	01.00		
RET Serial No.	0000ASZP093912868	RET Software Version	2.0.20		
Min Electrical Tilt - Max Electrical Tilt	0.0 - 10.0	Current Electrical Tilt	6.0	Set Tilt	Get Tilt

The following table describes the RET information items.

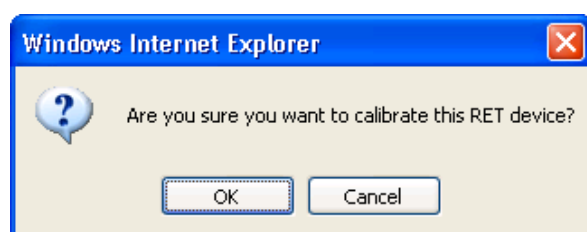
AISG V1.x RET (or AISG V2.x RET)

Column Name	Description / Constraint
Device Status	Displays “OK” or alarm messages
RET Model Name	RET model name
RET Serial No.	RET serial number
Vendor	Vendor name
RET Hardware Version	RET hardware version
RET Software Version	RET software version
Min Tilt - Max Tilt	Allowed electrical down-tilt range of the selected antenna model
Current Tilt	Tilt value must be in the Min Tilt - Max Tilt range.

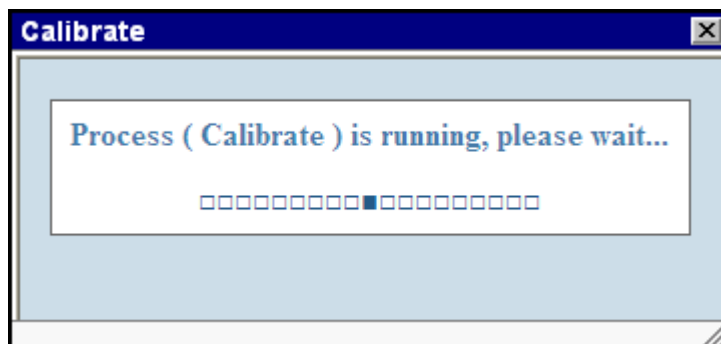
● Calibrate Device

After installation of a RET device, calibration causes the actuator to be driven through its whole tilt range. Also, sometimes unforeseen errors require calibration to return RET device to a normal status.

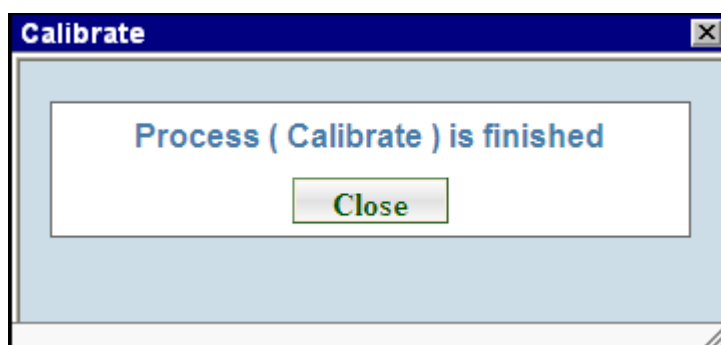
Click on the Calibrate button to calibrate the RET device.



Confirm to initiate the process.



After the process is done, close the message window.

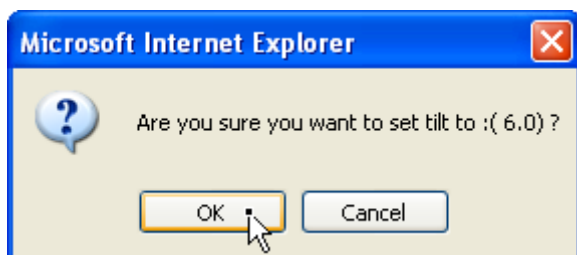


● Set Tilt

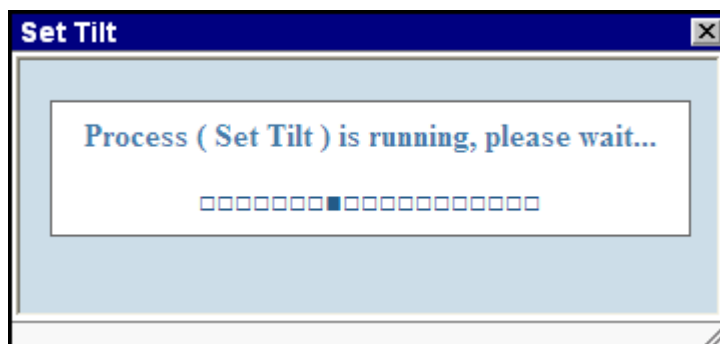
To change the electrical tilt angle of the antenna use the Set Tilt button.

Type in a value for the tilt angle within the allowed range and click on the Set Tilt button.

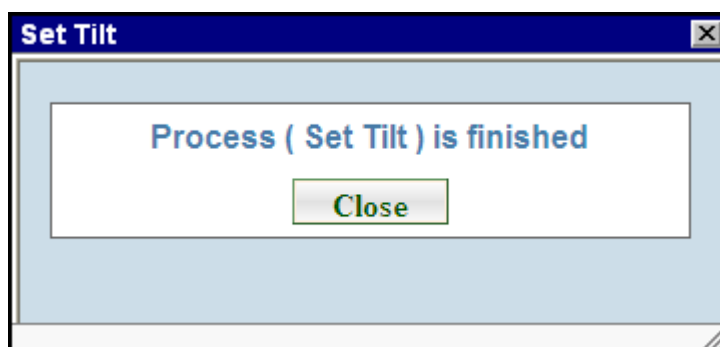
The following confirmation window is displayed.



Click on the OK button to initiate the process of changing the tilt angle.

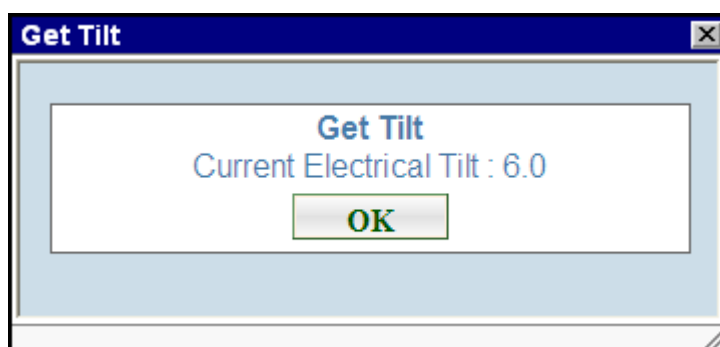


After the process is done, close the message window.



● Get Tilt

Click on the Get Tilt button to get the current electrical tilt angle of the antenna.
The current tilt angle is displayed in a popup window.



4-2.3 TMA Data & TMA Adjustment

This section covers TMA device details, TMA mode and gain adjustment.

AISG V1.x TMA (address=3)			
Data Name	Data Value	Data Name	Data Value
Device Status	OK	Vendor	Argus
TMA Model	MAX12-S2	TMA Hardware Version	103
TMA Serial No.	0000000096553346	TMA Software Version	1.02
Min - Max Receive Frequency Band	1920 - 1980	Type	VSWR
Min - Max Transmit Frequency Band	2110 - 2170	Mode	Normal Set Mode Get Mode
Min Gain - Max Gain	0 - 12	Current Gain	12 Set Gain Get Gain
Gain Resolution	12		

The following table explains the information items displayed.

AISG V1.x TMA (or AISG V2.x TMA)

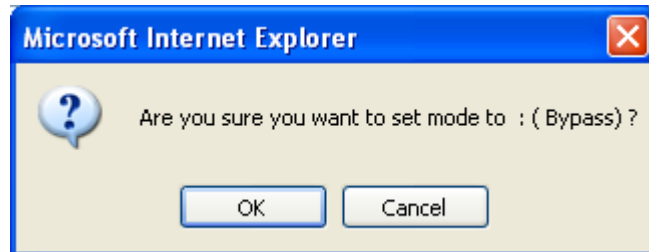
Column Name	Description / Constraint
Device Status	Displays “OK” or alarm messages
TMA Model Name	TMA model name
TMA Serial No.	TMA serial number
Vendor	Vendor name
TMA Hardware Version	TMA hardware version
TMA Software Version	TMA software version
Min - Max Receive Frequency Band	Allowed receive frequency band range
Min - Max Transmit Frequency Band	Allowed transmit frequency band range
Min Gain - Max Gain	Allowed gain range of the TMA model
Gain Resolution	Gain increment size between min. and max. gain. For fixed or non-linear gain TMA, this value is always zero.
Type	Either “Bypass” and/or “VSWR”
Mode	TMA mode can either be “Bypass” or “Normal”
Current Gain	Value should be in the range Min Gain - Max Gain.

Set Mode

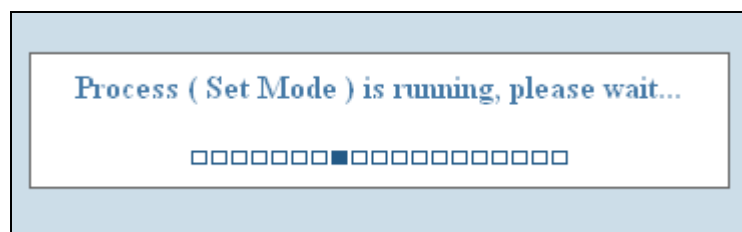
Select the mode from the drop-down list and click on the Set Mode button to set the

TMA mode.

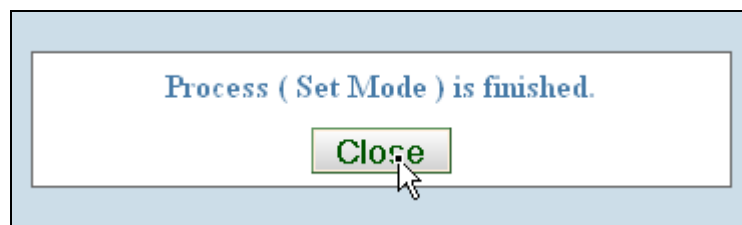
The following confirmation window appears.



Click on the OK button to initiate the process of changing the TMA mode.

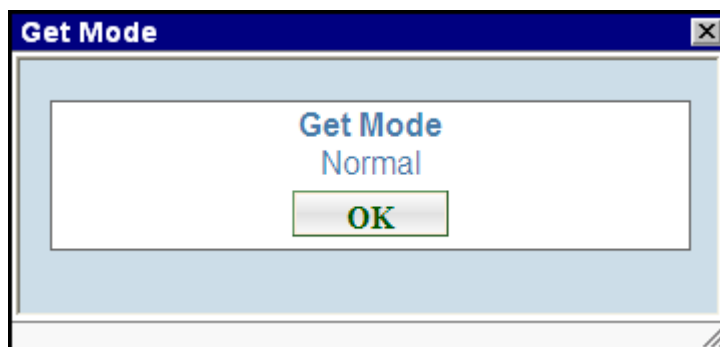


After the process is done, close the message window.



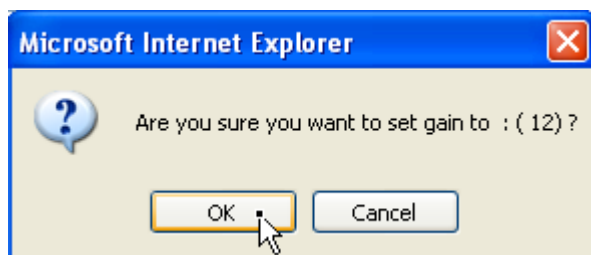
● Get Mode

Click on the Get Mode button to obtain the current TMA mode. The current TMA mode is displayed in a popup window.

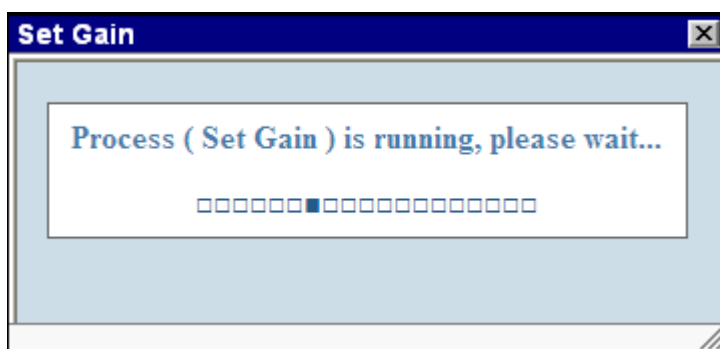


● Set Gain

Select a TMA gain value in the range Min Gain – Max Gain and click on the Set Gain button. The following confirmation window is displayed.

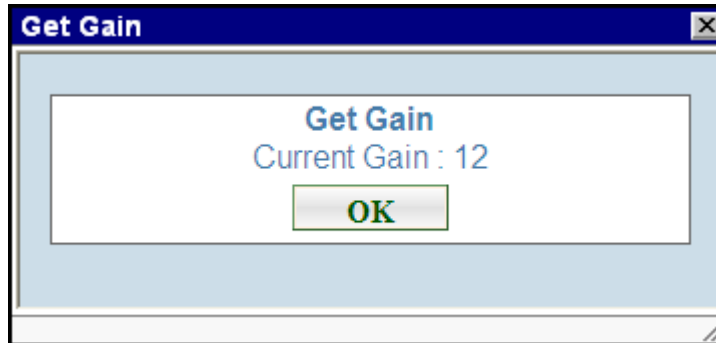


Click on the OK button to initiate the process of changing the TMA gain.



● Get Gain

Click on the Get Gain button to obtain the current TMA gain value.
The current TMA gain value is displayed in a popup window.



4-3. Site Information

The Site Information panel allows a user or an on-site engineer to record site information for future reference.

CSA00000001 / 3.6.8 / admin

Gemintek - Site Control Unit A2

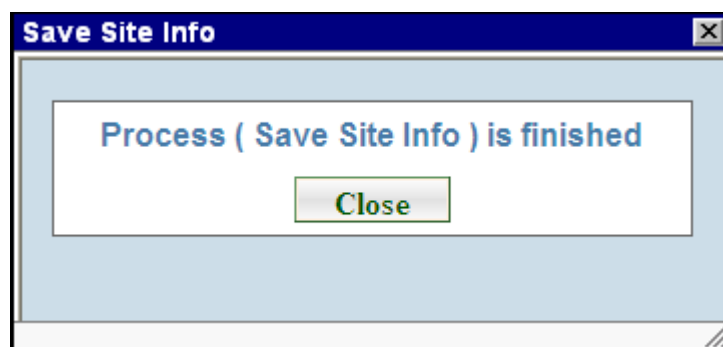
Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

Site Data
Save

Data Name	Data Value	Data Name	Data Value	Data Name	Data Value
Site ID		Site Name		Site Owner	
Leased Line		Longitude		Latitude	
BSC/RNC		Site Type		Device Type	
Room ID		Tower		Antenna Height	
Contact		Phone No		Mobile Phone	
Address					
Comment					
User Field 01					
User Field 02					
User Field 03					

After filling in the site data, click the Save button to store the information in the ACU0002 controller.

After the process is done, close the message window.



4-4. Summary Report

The Summary Report panel displays an information summary of the ACU0002 system and provides downloading of the report and the system access history.

The summary report includes the detailed information on each device, the site information, and system settings.

GSA00000001 / 3.6.8 / admin

Gemintek - Site Control Unit A2

Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
---------------	---------------------	------------------	----------------	----------------	----------------	--------

Summary Report 9/3/2013 18:04:28

[Download Report](#)
[Download Access Log](#)

RET Device List	
Data Name	Data Value
Sector ID	1
Site ID	N12354
Installer ID	JOHN
Installation Date (mmddyy)	090113
Bearing	30
Mechanical Tilt	0.0
Antenna Model	HBX-6516DS-VTM
Antenna Serial No.	1234
Frequency Band	2100
Beam Width (split by /)	65
Antenna Gain (split by /)	16.0
AISG Version	V 2 .x
Device Status	OK
Vendor	Andrew (AN)
RET Model Name	ATM3
RET Serial No.	0000ASZP093912868

Click on the Download Report button to store a copy of the summary in html format.

Click on the Download Access Log button to download a copy of the system access history in *.txt format. The access log records the time, the user and the type of action that has taken place. Only actions that pertain to system setting changes, user account addition and deletion, and device setting changes are recorded. The actions and the corresponding information recorded in the log are described in the following table.

System Setting		
Action	Information Recorded	Description
SET_NET	Current IP, Gateway, Submask, SNMP setting	Network Setting
SET_SCAN_LENGTH	Current scan length setting for device scan	Set Scan Length
SET_POWER	Current DC 12V/24V setting and power mode	Power Setting
SET_SYS_TIME	Current system date and time setting	System Time Setting
REBOOT		System is rebooted

System Account		
Action	Information Recorded	Description
ADD_USER	Which user account is added	Add User Account
DELETE_USER	Which user account is deleted	Delete User Account
Device Information Initialization		
Action	Information Recorded	Description
SCAN		A scan process is initiated.
ADD_DEV	Vendor code and serial no. of added device	Add Device
SAVE_DEV		A save process is initiated for storing device information to the ACU0002 system.
RESET_DEV	Device identified by Sector ID is reset	Reset Device
Device & Antenna Data Setting		
Action	Information Recorded	Description
SAVE_SELECTED	Selected antenna data of the device identified by Sector ID is saved	Save Antenna Data
CONFIGURE_MODEL	Antenna configuration data of the device identified by Sector ID is changed.	Antenna Configuration Data
CALIBRATE	Device identified by Sector ID is calibrated	RET Calibrate
SET_TILT	The electrical tilt value of the device identified by Sector ID	Set RET Electrical Tilt
SET_GAIN	The gain value of the device identified by Sector ID	Set TMA Gain
SET_MODE	The mode value of the device identified by Sector ID	Set TMA Mode

Notes:

The key word under the Action column is used in the log to represent the recorded action.

Information related to an action under the Information Recorded column is also recorded in the log.

5. Antenna Configuration File

The Antenna Config File panel is used to manage antenna configuration files.

An antenna configuration file establishes the relationship between the movement of a drive system and the beam tilt position of the antenna. If the model of an antenna connected to a device is not in the ACU0002 system, then its configuration file must be uploaded.

The screenshot shows the 'Gemintek - Site Control Unit A2' web interface. At the top right, it says 'CSA00000001 / 3.6.8 / admin'. Below the title bar is a navigation menu with tabs: 'Device Status', 'Antenna Config File' (selected), 'Site Information', 'System Setting', 'System Account', 'Summary Report', and 'Logout'. The main content area displays the 'Upload Antenna Config File' form. This form has a 'View' button at the top right. It contains a table with two columns: 'Data Name' and 'Data Value'. The rows are: 'Vendor' with a dropdown menu showing 'Andrew (AN)' and 'Add'/'Del' buttons; 'Config File' with a text input 'C:\HBX-6517DS-VTM.dat' and a '浏览...' (Browse) button; 'Antenna Model Name' with a text input 'HBX-6517DS-VTM'; 'AISG Model Name' with a text input 'HBX-6517DS-VTM'; and 'Version' with an empty text input. An 'Upload' button is at the bottom right of the form.

5-1. Vendor Management

5-1.1 Add a Vendor

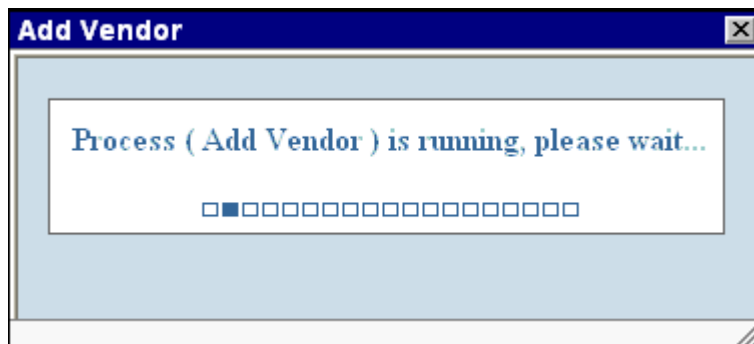
A vendor's name must exist in the Vendor drop-down list before we can upload one of its antenna model configuration files. To add a new vendor, click on the Add button.

The screenshot shows a small dialog box titled 'Add'. It has a text input field labeled 'Vendor Code :'. Below the input field are two buttons: 'Add' and 'Close'.

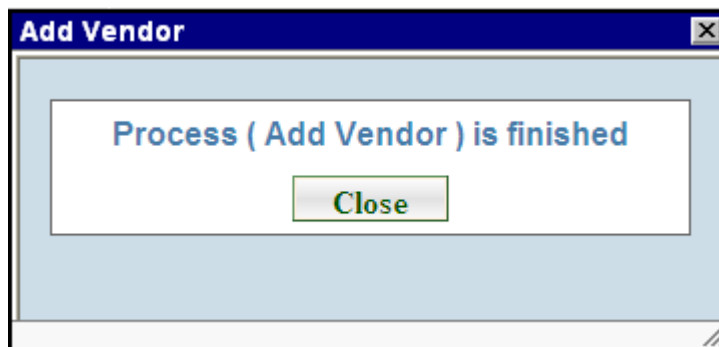
This window asks for the two character vendor code assigned by AISG for use in identifying products. (Note: The combination of Vendor Code and product Serial Number form a unique identity for every antenna line device. Please visit AISG website for complete list of vendor codes.

<http://www.aisgweb.net/Website/IndexDocs/Vendors.htm>) The vendor name is automatically generated based on this vendor code.

Type in the vendor code and click on the Add button.



After the process is finished, close the message window.

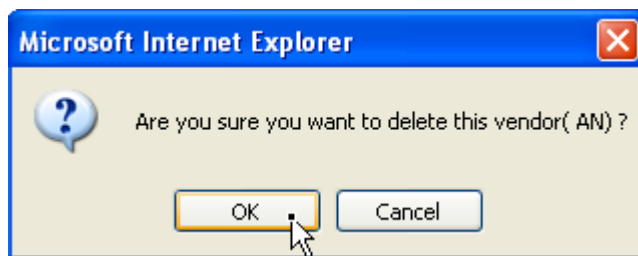


The vendor name should be added to the drop-down list.

5-1.2 Delete a Vendor

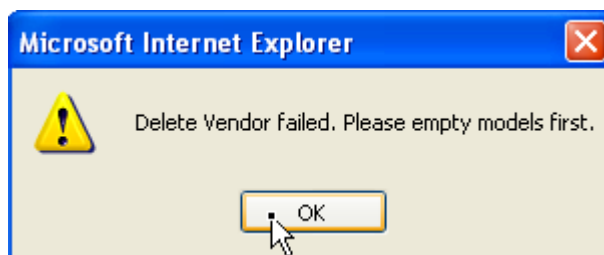
To remove a vendor from the drop-down list, use the Del button. Note that before deleting a vendor, make sure there are no antenna model configurations from this vendor in use.

From the drop-down list, select the vendor that is to be deleted and click the Delete button. The following confirmation window is displayed.



Confirm and the selected vendor is removed from the drop-down vendor list.

If the vendor's antenna model configuration is in use, the following warning message will appear and the vendor is not deleted.



5-2. Antenna Model Management

5-2.1 Upload Antenna Configuration

The vendor's name must be in the vendor drop-down list before its antenna model configuration files can be uploaded.

Upload Antenna Config File		View	
Data Name	Data Value		
Vendor	Andrew (AN) 	Add	Del
Config File			
Antenna Model Name			
AISG Model Name			
Version			
		Upload	

The following table explains what information must be provided for the other fields.

Column Name	Description / Constraint
Vendor	Vendor name
Config File	A filename with its full path should be provided. Use the Browse button to locate the file. Only files with an extension of .bin, .acf, .dat or .ACU0002 are allowed. File size must be less than 0.5KB.
Antenna Model Name	The configuration file's filename is automatically used as the Antenna Model Name. This name may be longer than 15 characters.
AISG Model Name	This model name is limited to 15 characters according to the AISG standard. Antenna Model names that are longer should be mapped to a 15 characters version and entered manually. This mapping should be recorded for future reference.
Version	The antenna model version (Optional)

CSA00000001 / 3.6.8 / admin

Gemintek - Site Control Unit A2

Device Status	Antenna Config File	Site Information	System Setting	System Account	Summary Report	Logout
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Upload Antenna Config File View

Data Name	Data Value	
Vendor	Andrew (AN)	Add Del
Config File	C:\HBX-6517DS-VTM.dat	浏览...
Antenna Model Name	HBX-6517DS-VTM	
AISG Model Name	HBX-6517DS-VTM	
Version		
Upload		

Click on the Upload button after filling in all the required information. The confirmation window is displayed with the entered information.

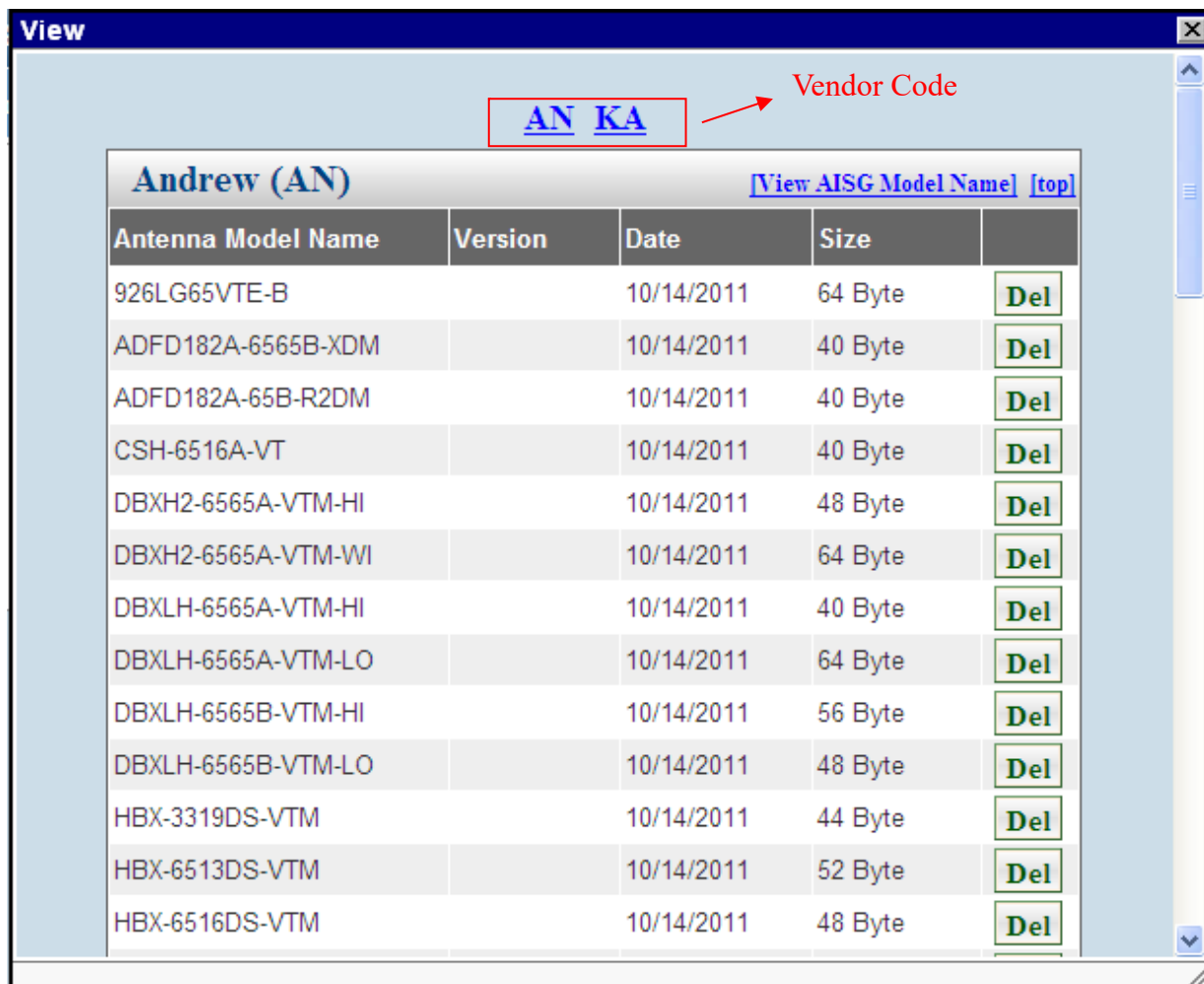


Click the OK button to initiate the upload process. When the process is finished, click the Close button to close the message window.

5-2.2 Delete an Antenna Model

This section describes how to delete an antenna model from the ACU0002 system.

Click the View button to bring up the entire list of antenna models stored in the ACU0002 system. Click on the vendor code to go to the listing belonging to that vendor.



The screenshot shows a web application window titled "View". At the top, there are two vendor codes: [AN](#) and [KA](#), which are highlighted by a red rectangular box. A red arrow points from the text "Vendor Code" to this box. Below the vendor codes, the window displays a table of antenna models for the selected vendor, "Andrew (AN)". The table has columns for "Antenna Model Name", "Version", "Date", "Size", and a "Del" button for each row. The table lists 14 different antenna models, all with a date of 10/14/2011. At the top right of the table, there are links for "[View AISG Model Name]" and "[top]".

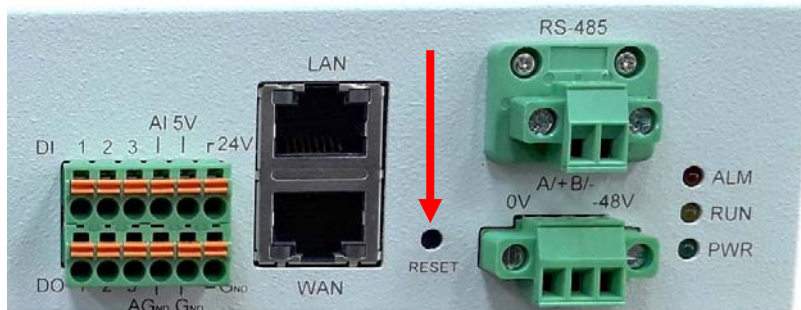
Antenna Model Name	Version	Date	Size	
926LG65VTE-B		10/14/2011	64 Byte	Del
ADFD182A-6565B-XDM		10/14/2011	40 Byte	Del
ADFD182A-65B-R2DM		10/14/2011	40 Byte	Del
CSH-6516A-VT		10/14/2011	40 Byte	Del
DBXH2-6565A-VTM-HI		10/14/2011	48 Byte	Del
DBXH2-6565A-VTM-WI		10/14/2011	64 Byte	Del
DBXLH-6565A-VTM-HI		10/14/2011	40 Byte	Del
DBXLH-6565A-VTM-LO		10/14/2011	64 Byte	Del
DBXLH-6565B-VTM-HI		10/14/2011	56 Byte	Del
DBXLH-6565B-VTM-LO		10/14/2011	48 Byte	Del
HBX-3319DS-VTM		10/14/2011	44 Byte	Del
HBX-6513DS-VTM		10/14/2011	52 Byte	Del
HBX-6516DS-VTM		10/14/2011	48 Byte	Del

To delete an antenna model from the system, click the Del button corresponding to that model.

6. Appendix

6-1. Reset of IP and Password

In the event that the ACU0002 controller's IP and the "admin" user's password is forgotten, there is a way to reset the IP and user password to factory preset is by pressing and hold RESET button for more then 5 seconds until you hear 3 beeps.



The IP and "admin" user's password are reset to factory preset values.

IP: 192.168.0.30

Subnetwork mask: 255.255.255.0

User / Password: admin / admin

6-2. Error/Alarm Codes and Messages

Please refer to AISG standard for description of code 0x00 ~ 0x27.

Code	Message	Alarm	Description
0x00	OK		
0x01	Actuator Detection Fail	X	
0x02	Actuator Jam Permanent	X	
0x03	Actuator Jam Temporary	X	
0x04	Block Number Sequence Error		
0x05	Busy		

0x06	Checksum Error		
0x07	Command Sequence Error		
0x08	Data Error		
0x09	Device Disabled		
0x0A	EEPROM Error	X	
0x0B	Fail		
0x0C	Flash Erase Error	X	
0x0D	Flash Error	X	
0x0E	Not Calibrated	X	
0x0F	Not Scaled	X	
0x11	Other Hardware Error	X	
0x12	Other Software Error	X	
0x13	Tilt out of Range		
0x14	Position Lost	X	
0x15	RAM Error	X	
0x16	Segment Number Sequence Error		
0x17	UART Error	X	
0x19	Unknown Command		
0x1A	TMA Alarm Minor	X	
0x1B	TMA Alarm Major		
0x1C	Gain out of Range		
0x1D	Read Only		
0x1E	Unknown Parameter		
0x1F	Bypass Mode		
0x21	Software Missing		
0x22	Invalid File Content		
0x24	Format Error		
0x25	Unsupported Proc		
0x26	Invalid Proc Sequence		
0x27	Actuator Interference	X	
0x51	Uninitialized	X	Cannot get device information after a scan process
0x52	Bad Responding	X	Bad communication between the

			ACU0002 system and the device
0x53	No Responding	X	Lost connection between the ACU0002 system and the device
0x54	Function Fail		Unexpected result from the ACU0002 system
0x59	Timeout		The response time from the device to the ACU0002 has timed out
0x70	Default Result		Unexpected or unknown result
0x71	Error		General error
0x72	File I/O fail		File access fails
0x73	System Timeout		Waiting for response from the ACU0002 has timed out
0x77	Add device fail		Failed to add a device
0x78	Value is empty		Input field does not allow empty value
0x79	Field name is null!		Invalid field name is used on the web interface
0x7A	Antenna model config file does not exist!		The antenna configuration data file doesn't exist.
0x7B	Device exists!		The device already exists in the ACU0002 system.
0x7C	Size is too large!		The file size of antenna configuration data is too large.
0x7D	The max. number of files reached!		The number of antenna configuration data files has reached the limits defined in the ACU0002 system.
0x7E	Total file size exceeds		The total file size of antenna configuration data files in the ACU0002 system has reached the limits defined in the system.

6-3. Compatible USB Modems

4G wireless modem compatible list for ACU0002 for wireless support firmware.

Telit Model	Driver support
LE910C1-EUX	OK

ZTE Model	Driver support
ZM8620, ME3630	OK

Quectel	Driver support
EC21-AU	OK