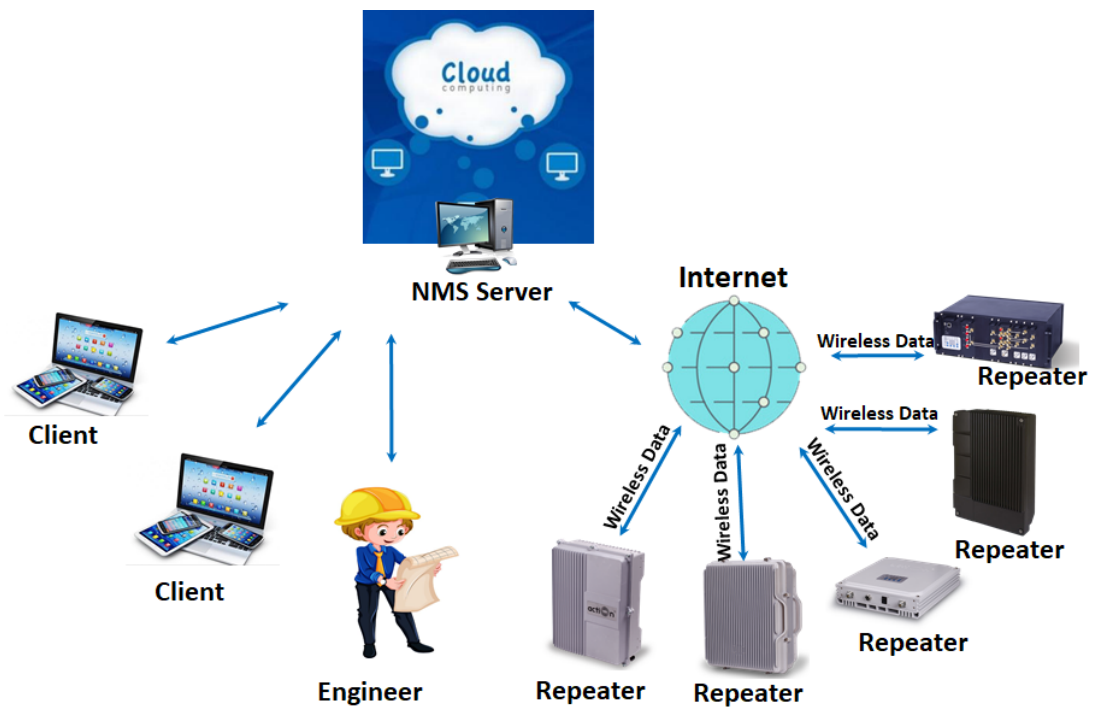


Cloud Network Management System Manual of Tetra Repeater

Cloud Network Management System is built on the B/S framework, with features like low cost, mobility, faster speed and easy to operate. Its system architecture is shown below:



First, we installed the management software on the cloud service platform, then connect the repeater to the cloud server platform via the Internet, in this way, we can log in to the cloud service platform anywhere to operate the repeater, including querying the real-time status of the repeater, setting the parameters of repeater remotely and so on; Please refer to the instructions below for detailed operation:

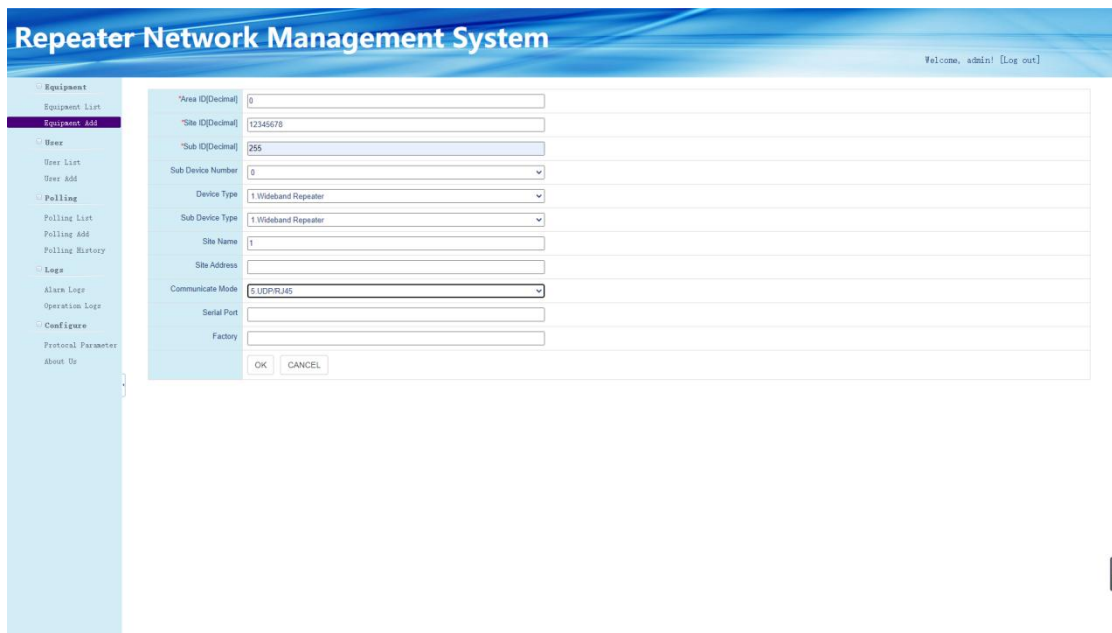
i. Log In the Cloud Monitoring Platform

- a) Open a browser on your computer or mobile phone and type in the URL((http://118.163.153.117) this is the test platform, and we usually recommend that clients rent cloud server and install monitoring software as their own monitoring platform) in the browser address bar, and enter the user name(Admin) and password(123456) to log in.



ii. **Create the Monitoring Site/Repeater**

- a) To add Site/Repeater, click the **Equipment Add** on the left Menu Bar, fill in Site ID, SUB ID and Site Name, the Site ID must be the same as the ID of the repeater itself (which was set by local before), and Sub ID must be 255 for RF repeater, select UDP as the communication mode, keep the default values for the other parameters, finally click OK to save.



The screenshot shows the 'Repeater Network Management System' interface. The main title is 'Repeater Network Management System' and the user is logged in as 'admin!'. The left sidebar contains a menu with 'Equipment Add' selected. The main content area is a form for adding a new site/repeater. The form fields are as follows:

*Area ID[Decimal]	0
*Site ID[Decimal]	12345678
*Sub ID[Decimal]	255
Sub Device Number	0
Device Type	1 Wideband Repeater
Sub Device Type	1 Wideband Repeater
Site Name	1
Site Address	
Communicate Mode	5 UDP/RJ45
Serial Port	
Factory	

At the bottom of the form are 'OK' and 'CANCEL' buttons.

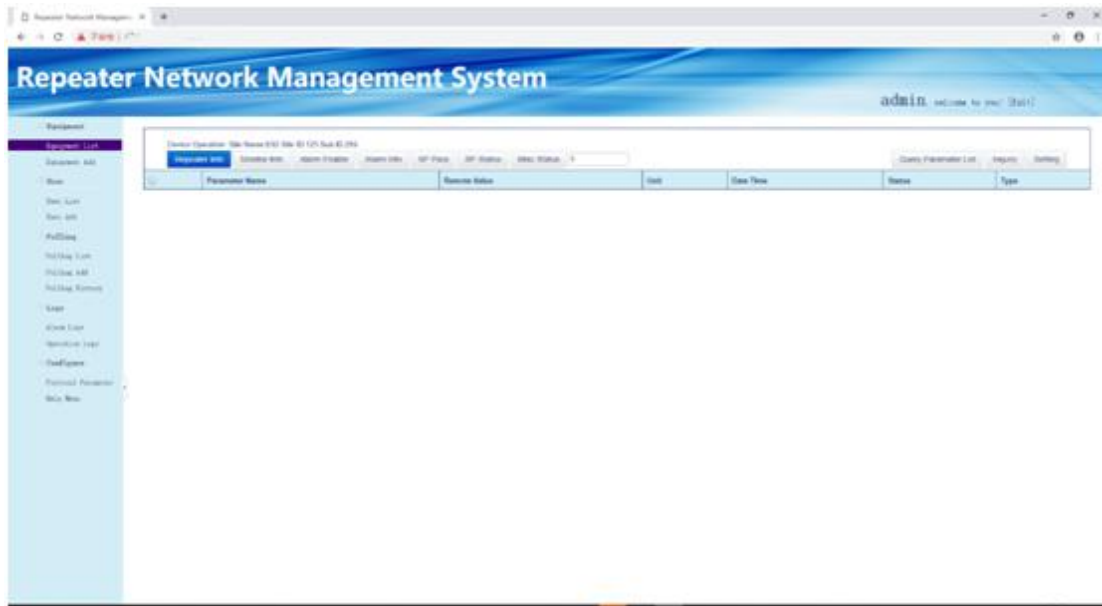
- b) After adding a Site, it will appear automatically in the Equipment List. Then we can operate repeater: the **Edit** button on the right of the corresponding Repeater to rewrite the properties, and the **Delete** button to remove the selected Repeater.



Area ID	Site ID	Sub ID	Site Name	Status	Operation
0	0000001	000	000 Office	0	0:00 Details Operation
0	0000002	000	000002 (0000001) 000002	0	0:00 Details Operation
0	0	0	0:0	0	0:00 Details Operation
0	0	0	0:0	0	0:00 Details Operation
0	0000002	000	00000002	0	0:00 Details Operation
0	0000003	0	0:00 - Apolo	0	0:00 Details Operation
0	0000003	1	0:00 - Apolo	0	0:00 Details Operation
0	0000003	2	0:00 - Apolo	0	0:00 Details Operation
0	0000003	3	0:00 - Apolo	0	0:00 Details Operation
0	0000003	4	0:00 - Apolo	0	0:00 Details Operation
0	0000003	5	0:00 - Apolo	0	0:00 Details Operation
0	0000003	6	0:00 - Apolo	0	0:00 Details Operation
0	0000003	7	0:00 - Apolo	0	0:00 Details Operation
0	0000003	8	0:00 - Apolo	0	0:00 Details Operation
0	0000003	9	0:00 - Apolo	0	0:00 Details Operation
0	0000003	0	0:00 - Apolo	0	0:00 Details Operation
0	0000003	1	0:00 - Apolo	0	0:00 Details Operation
0	0000003	2	0:00 - Apolo	0	0:00 Details Operation
0	0000003	3	0:00 - Apolo	0	0:00 Details Operation
0	0000003	4	0:00 - Apolo	0	0:00 Details Operation
0	0000003	5	0:00 - Apolo	0	0:00 Details Operation
0	0000003	6	0:00 - Apolo	0	0:00 Details Operation
0	0000003	7	0:00 - Apolo	0	0:00 Details Operation
0	0000003	8	0:00 - Apolo	0	0:00 Details Operation
0	0000003	9	0:00 - Apolo	0	0:00 Details Operation
0	0000003	0	0:00 - Apolo	0	0:00 Details Operation
0	0000003	1	0:00 - Apolo	0	0:00 Details Operation
0	0000003	2	0:00 - Apolo	0	0:00 Details Operation
0	0000003	3	0:00 - Apolo	0	0:00 Details Operation
0	0000003	4	0:00 - Apolo	0	0:00 Details Operation
0	0000003	5	0:00 - Apolo	0	0:00 Details Operation
0	0000003	6	0:00 - Apolo	0	0:00 Details Operation
0	0000003	7	0:00 - Apolo	0	0:00 Details Operation
0	0000003	8	0:00 - Apolo	0	0:00 Details Operation
0	0000003	9	0:00 - Apolo	0	0:00 Details Operation
0	0000003	0	0:00 - Apolo	0	0:00 Details Operation
0	0000003	1	0:00 - Apolo	0	0:00 Details Operation
0	0000003	2	0:00 - Apolo	0	0:00 Details Operation

iii. Repeater Configuration Management

- a) Click **Operation** button on the right of the corresponding Repeater to set the Repeater with the following details, Click **Query Parameter List** to get the list of parameters from the repeater.



The process of getting the parameter list is shown in the figure below



- b) To query/set the Repeater with the following details: The **Repeater Info** page can be inquired of some basic parameters of the Repeater.

Repeater Network Management System

Welcome, admin! [Log out]

- Equipment
 - Equipment List**
 - Equipment Add
- User
 - User List
 - User Add
- Polling
 - Polling List
 - Polling Add
 - Polling History
- Logs
 - Alarm Logs
 - Operation Logs
- Configure
 - Protocol Parameter
 - About Us

Device Operation: Site Name: 1 Site ID: 2 Sub ID: 255

<input type="checkbox"/>	Parameter	Remote Value	Unit	Time	Status	Type
<input type="checkbox"/>	Manufacturer				Success	3
<input type="checkbox"/>	Device Type				Success	3
<input type="checkbox"/>	Model Number				Success	2
<input type="checkbox"/>	Product SN				Success	2
<input type="checkbox"/>	Actual Channel Counts				Success	3
<input type="checkbox"/>	Longitude		'		Success	6
<input type="checkbox"/>	Latitude		'		Success	7
<input type="checkbox"/>	Firmware Version		0		Success	2

- c) The **Monitor Info** page can be inquired of and set the monitor parameters of the Repeater. For setting, it needs to double click the blank space corresponding to the item under the **Remote Value**. For example, to modify the **Site ID** needs to double click the below red marked field, then input the new Site ID and click **Setting** to save changes.

Repeater Network Management System

Welcome, admin! [Log out]

- Equipment
 - Equipment List**
 - Equipment Add
- User
 - User List
 - User Add
- Polling
 - Polling List
 - Polling Add
 - Polling History
- Logs
 - Alarm Logs
 - Operation Logs
- Configure
 - Protocol Parameter
 - About Us

Device Operation: Site Name: 1 Site ID: 2 Sub ID: 255

<input type="checkbox"/>	Parameter	Remote Value	Unit	Time	Status	Type
<input type="checkbox"/>	Site ID	2		2019-12-16 17:16:43	Success	5
<input type="checkbox"/>	Equipment Number	255		2019-12-16 17:16:43	Success	3
<input type="checkbox"/>	Monitor IP Address	3		2019-12-16 17:16:43	Success	9
<input type="checkbox"/>	Monitor IP Port	20750		2019-12-16 17:16:43	Success	4
<input type="checkbox"/>	GPRS Enable	1		2019-12-16 17:16:43	Success	11
<input type="checkbox"/>	GPRS APN	0		2019-12-16 17:16:43	Success	8
<input type="checkbox"/>	GPRS ???	0		2019-12-16 17:16:43	Success	8
<input type="checkbox"/>	GPRS ??	0		2019-12-16 17:16:43	Success	8
<input type="checkbox"/>	Remote Communication Mode	5		2019-12-16 17:16:43	Success	10
<input type="checkbox"/>	Report Date	0070/01/01 00 01 45		2019-12-16 17:16:43	Success	23

- d) The **Alarm Enable** page can be query of and set alarm enable/disable. For setting, it needs to double click the corresponding alarm item under the Remote Value, and select **Enable** or **Disable** (alarm blocked) in the dropdown menu. Generally the status will be **Enable** (alarm activated) by default.



The screenshot shows the 'Alarm Enable' page in the Repeater Network Management System. The page title is 'Repeater Network Management System' and it includes a navigation menu on the left and a main content area. The main content area displays a table of alarm parameters with columns for Parameter, Remote Value, Unit, Time, Status, and Type. The 'Remote Value' column is currently set to 'Disable' for all items, and the 'Status' column shows 'Success' for all items.

Parameter	Remote Value	Unit	Time	Status	Type
Master Power Failure Enable	Disable			Success	11
Power Module Alarm Enable	Disable			Success	11
Over Temp. Alarm Enable	Disable			Success	11
PLL Unlock Enable	Disable			Success	11
UL PA Failure Enable	Disable			Success	11
DL PA Failure Enable	Disable			Success	11
Band1/ CH1 DL Over I/P Alarm Enable	Disable			Success	11
Band1/ CH1 DL Low I/P Alarm Enable	Disable			Success	11
Band1/ CH1 DL Over O/P Alarm Enable	Disable			Success	11
Band1/ CH1 DL Low O/P Alarm Enable	Disable			Success	11
Band1/ CH1 DL PA VSWR Alarm Enable	Disable			Success	11
Band1/ CH1 UL Over O/P Alarm Enable	Disable			Success	11
Door Open Alarm Enable	Disable			Success	11

- e) The **Alarm Info** page can be query of the realtime alarm status of the repeater. Select the all alarm item and click Inquiry to check. Under good running circumstances, it will display Normal; but when certain parameter alarms, it will display Alarm instead.



The screenshot shows the 'Alarm Info' page in the Repeater Network Management System. The page title is 'Repeater Network Management System' and it includes a navigation menu on the left and a main content area. The main content area displays a table of alarm parameters with columns for Parameter, Remote Value, Unit, Time, Status, and Type. The 'Remote Value' column shows 'Alarm' for the 'Door Open Alarm' and 'Normal' for all other items. The 'Status' column shows 'Success' for all items.

Parameter	Remote Value	Unit	Time	Status	Type
Master Power Failure	Alarm		2019-12-17 10:03:02	Success	12
Power Module Alarm	Normal		2019-12-17 10:03:02	Success	12
Over Temp. Alarm	Normal		2019-12-17 10:03:02	Success	12
PLL Unlock	Normal		2019-12-17 10:03:02	Success	12
UL PA Failure	Normal		2019-12-17 10:03:02	Success	12
DL PA Failure	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 DL Over I/P Alarm	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 DL Low I/P Alarm	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 DL Over O/P Alarm	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 DL Low O/P Alarm	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 DL PA VSWR Alarm	Normal		2019-12-17 10:03:02	Success	12
Band1/ CH1 UL Over O/P Alarm	Normal		2019-12-17 10:03:02	Success	12
Door Open Alarm	Alarm	0	2019-12-17 10:03:02	Success	12

- f) The **RF Para** page can be inquired of and set the frequency /gain and alarm threshold of the Repeater.



The screenshot shows the 'Repeater Network Management System' interface. The main content area is titled 'Device Operation: Site Name 1 Site ID 2 Sub ID 255'. Below this, there are tabs for 'Repeater Info', 'Monitor Info', 'Alarm Enable', 'Alarm Info', 'RF Para', 'RF Status', and 'Misc Status'. The 'RF Para' tab is selected, displaying a table of parameters.

Parameter	Remote Value	Unit	Time	Status	Type
<input type="checkbox"/> Output Signal Switch	OFF			Success	14
<input type="checkbox"/> PA 1 Switch	OFF			Success	14
<input type="checkbox"/> PA 2 Switch	OFF			Success	14
<input type="checkbox"/> Channel 1				Success	4
<input type="checkbox"/> Channel 2				Success	4
<input type="checkbox"/> Channel 3				Success	4
<input type="checkbox"/> Channel 4				Success	4
<input type="checkbox"/> Channel 5				Success	4
<input type="checkbox"/> Channel 6				Success	4
<input type="checkbox"/> Channel 7				Success	4
<input type="checkbox"/> Channel 8				Success	4
<input type="checkbox"/> Band1/ CH1 DL PA VSWR Limit				Success	25
<input type="checkbox"/> PA Temp. Limit		°C		Success	17
<input type="checkbox"/> Band1/ CH1 DL Low I/P Limit		dBm		Success	17
<input type="checkbox"/> Band1/ CH1 DL Over I/P Limit		dBm		Success	17
<input type="checkbox"/> Band1/ CH1 DL Low O/P Limit		dBm		Success	17
<input type="checkbox"/> Band1/ CH1 DL Over O/P Limit		dBm		Success	17

- g) The **RF Status** page can be inquired of the real-time status of the repeater, including RF input/output power, etc.



The screenshot shows the 'Repeater Network Management System' interface with the 'RF Status' tab selected. The main content area displays a table of real-time status data.

Parameter Name	Remote Value	Unit	Time	Status	Type
Band1/ CH1 DL I/P	35	dBm	2015-05-05 15:28:15	Success	17
Band1/ CH1 DL O/P	5	dBm	2015-05-05 15:28:15	Success	17
Band1/ CH1 UL I/P	5	dBm	2015-05-05 15:28:15	Success	17
Band1/ CH1 UL Res. Gain	15	dB	2015-05-05 15:28:15	Success	17
Band1/ CH1 DL Gain	15	dB	2015-05-05 15:28:15	Success	17

User Management

a) **User List** can be checked and modify the user list.



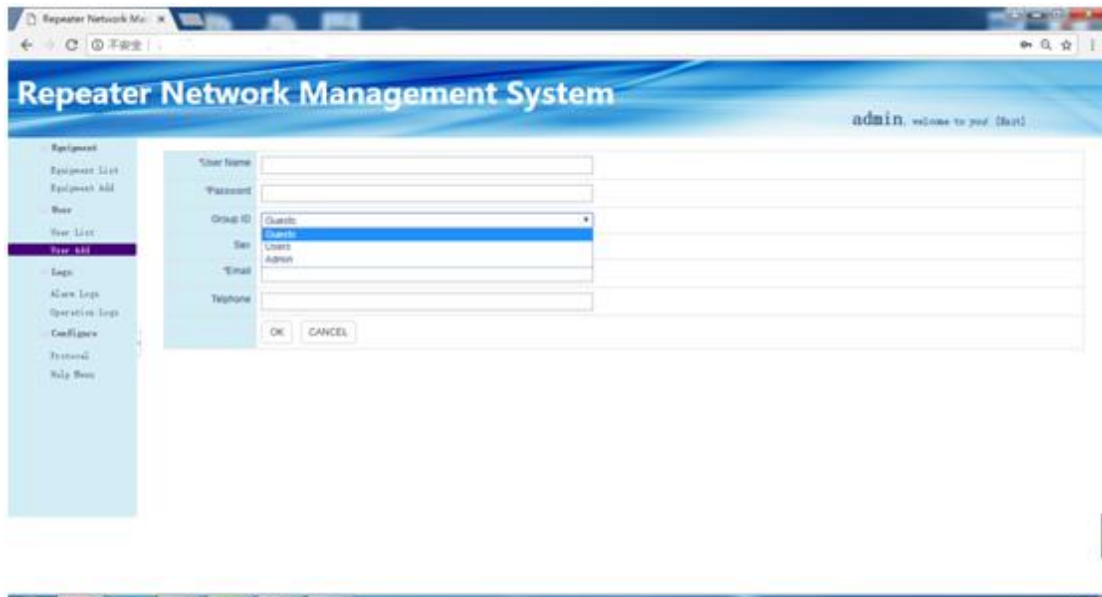
User Name	Password	Group ID	Sex	Email	Telephone	CreateDate	Operation
ADMIN	123456	Admin	Male	admin		2011-05-04 21:15:11	Admin
GUEST	123456	Guest	Male	guest		2011-05-04 21:16:52	Admin

b) **User Add** can be used to add new user, which involves three permission levels:

First, Admin – Administrator permission, it can either add or delete repeaters, or set and inquiry of the repeater parameters, as well as add/modify other users.

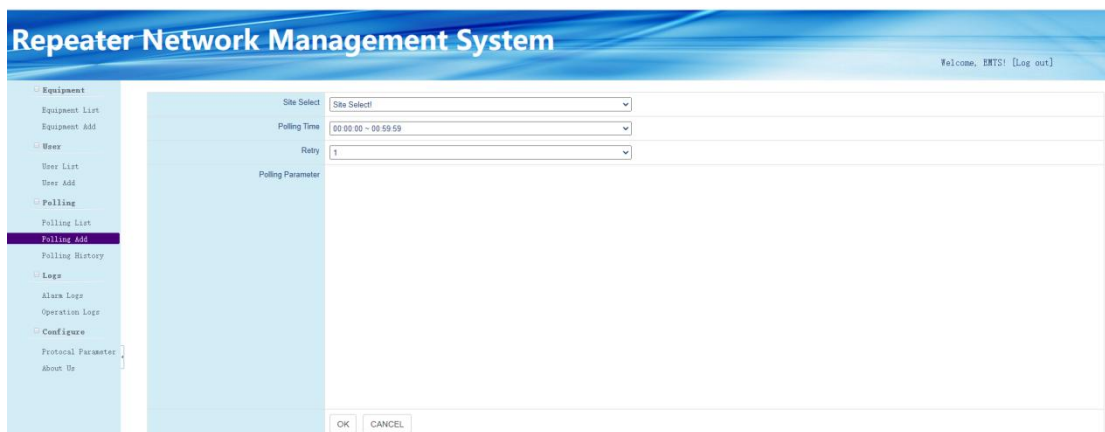
Second, User – User permission, can set and inquiry of the Repeater parameters;

Third, Guests – Guest permission, can only read the Repeater parameters but unable to set and modify them.



iv. **Site/Repeater Polling**

- a) Polling Add, select the repeater and parameters to be polled, then select the polling time, and then automatically query the selected repeater parameters in the set time period.



- b) Polling List, the parameters for successful polling can be checked in the polling history.



Repeater Network Management System

Welcome, BRTS! [Log out]

- Equipment
 - Equipment List
 - Equipment Add
- Users
 - User List
 - User Add
- Polling
 - Polling List
 - Polling Add
 - Polling History**
- Logs
 - Alarm Logs
 - Operation Logs
- Configure
 - Protocol Parameter
 - About Us

Polling History

ID: Start: End:

<input type="checkbox"/>	Site ID	Sub ID	Site Name	Mod	Parameter	Value	Time	Operation
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0506	Band1/ CH1 DL PA VSWR	1.2	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0505	Band1/ CH1 DL Gain	89	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0504	Band1/ CH1 UL Max. Gain	62	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0500	Band1/ CH1 UL O/P	0	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0503	Band1/ CH1 DL O/P	39	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0502	Band1/ CH1 DL V/P	-50	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0501	PA Temp	49	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0328	Door Open Alarm	Normal	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0315	Band1/ CH1 UL Over O/P Alarm	Normal	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0314	Band1/ CH1 DL PA VSWR Alarm	Normal	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0313	Band1/ CH1 DL Low O/P Alarm	Normal	2021-05-17 10:00:31	Delete
<input type="checkbox"/>	10000004	255	Keppel Shipyards	0x0312	Band1/ CH1 DL Over O/P Alarm	Normal	2021-05-17 10:00:31	Delete

Total: 2147 Records 12 Records/Page 1-12 Page 1/12

Repeater Network Management System

Welcome, BRTS! [Log out]

- Equipment
 - Equipment List
 - Equipment Add
- Users
 - User List
 - User Add
- Polling
 - Polling List**
 - Polling Add
 - Polling History
- Logs
 - Alarm Logs
 - Operation Logs
- Configure
 - Protocol Parameter
 - About Us

Polling List

ID	Area ID	Site ID	Sub ID	Site Name	Polling Time	Attempts	Status	Operation
27	1	10000001	255	Grandlink Square	10:00:00 - 10:59:59	3	Success	Details Delete
30	1	10000004	255	Keppel Shipyards	10:00:00 - 10:59:59	3	Success	Details Delete

v. **Log Management**

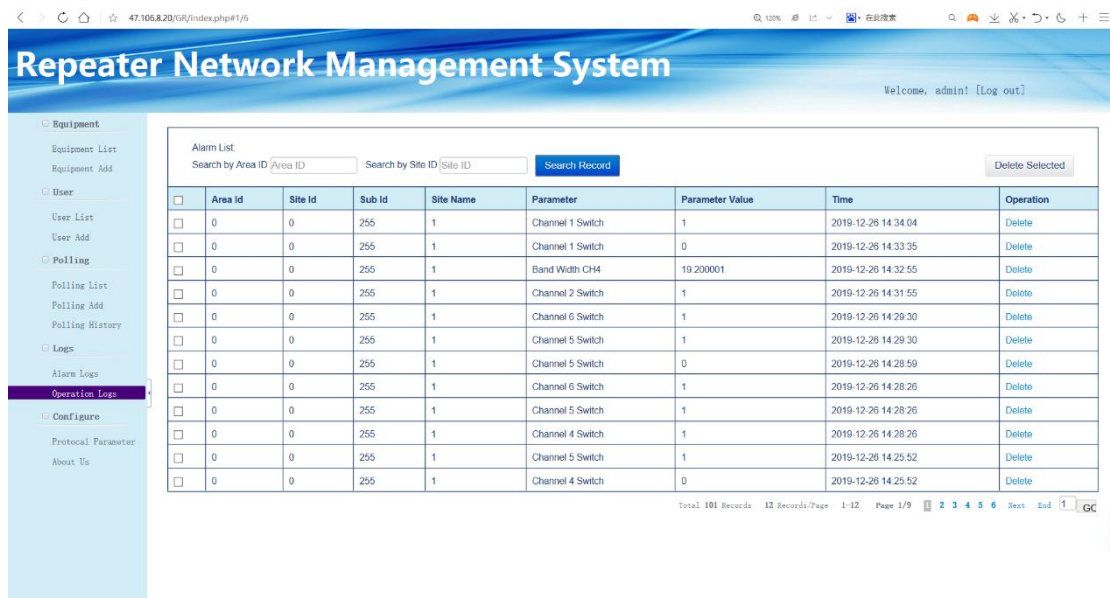
a) **Alarm List** lists out the alarm history.



The screenshot shows the 'Alarm List' page in the Repeater Network Management System. The page title is 'Repeater Network Management System' and it includes a navigation menu on the left with options like Equipment, User, Polling, Logs, and Configuration. The 'Alarm List' section is active, displaying a table of alarm records. The table has columns for Status, Area, Site ID, Sub ID, Site Name, Alarm Name, Time, and Operation. The data shows various alarms such as 'Master Power Failure', 'Band3 CH3 DL, Low O/P Alarm', and 'Over Temp Alarm' with their respective timestamps and 'Delete' operations.

Status	Area	Site ID	Sub ID	Site Name	Alarm Name	Time	Operation
Red	0	0	255	1	Master Power Failure	2019-12-26 14:38:31	Delete
Red	0	0	255	1	Band3 CH3 DL, Low O/P Alarm	2019-12-26 14:37:45	Delete
Green	0	0	255	1	Band3 CH3 DL, Low O/P Alarm	2019-12-26 14:37:22	Delete
Red	0	0	255	1	Band2 CH2 DL, Low O/P Alarm	2019-12-26 14:36:29	Delete
Green	0	0	255	1	Band2 CH2 DL, Low O/P Alarm	2019-12-26 14:35:10	Delete
Green	0	0	255	1	Band3 CH3 DL, Low I/P Alarm	2019-12-26 14:28:15	Delete
Red	0	0	255	1	Band3 CH3 DL, Low I/P Alarm	2019-12-26 14:28:19	Delete
Green	0	0	255	1	Band3 CH3 DL, Low I/P Alarm	2019-12-26 14:26:18	Delete
Red	0	0	255	1	Band3 CH3 DL, Low I/P Alarm	2019-12-26 14:26:00	Delete
Red	0	0	255	1	Band3 CH3 DL, Low O/P Alarm	2019-12-26 14:22:57	Delete
Red	0	0	255	1	Band2 CH2 DL, Low O/P Alarm	2019-12-26 14:22:57	Delete
Green	0	0	255	1	Over Temp Alarm	2019-12-26 14:00:01	Delete

b) **Operation Logs** record the overall operation history to the Repeater.



The screenshot shows the 'Operation Logs' page in the Repeater Network Management System. The page title is 'Repeater Network Management System' and it includes a navigation menu on the left with options like Equipment, User, Polling, Logs, and Configuration. The 'Operation Logs' section is active, displaying a table of operation records. The table has columns for Area ID, Site ID, Sub ID, Site Name, Parameter, Parameter Value, Time, and Operation. The data shows various operations such as 'Channel 1 Switch', 'Channel 2 Switch', 'Channel 6 Switch', and 'Channel 4 Switch' with their respective parameter values and timestamps.

Area ID	Site ID	Sub ID	Site Name	Parameter	Parameter Value	Time	Operation
0	0	255	1	Channel 1 Switch	1	2019-12-26 14:34:04	Delete
0	0	255	1	Channel 1 Switch	0	2019-12-26 14:33:35	Delete
0	0	255	1	Band Width CH4	19.200001	2019-12-26 14:32:55	Delete
0	0	255	1	Channel 2 Switch	1	2019-12-26 14:31:55	Delete
0	0	255	1	Channel 6 Switch	1	2019-12-26 14:29:30	Delete
0	0	255	1	Channel 5 Switch	1	2019-12-26 14:29:30	Delete
0	0	255	1	Channel 5 Switch	0	2019-12-26 14:28:59	Delete
0	0	255	1	Channel 6 Switch	1	2019-12-26 14:28:26	Delete
0	0	255	1	Channel 5 Switch	1	2019-12-26 14:28:26	Delete
0	0	255	1	Channel 4 Switch	1	2019-12-26 14:28:26	Delete
0	0	255	1	Channel 5 Switch	1	2019-12-26 14:25:52	Delete
0	0	255	1	Channel 4 Switch	0	2019-12-26 14:25:52	Delete