# TC-2000 AWS BAND SELECTIVE BASE STATION POWER AMPLIFIER

## **USER MANUAL**



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## 0.4 ISSUE CONTROL

Change No.	ENU	Details Of Change
1	1-0-0	This manual first created in June 2011 and referred to its Chinese manual TC-2000-1001YH released in June 2011.
2	1-1-0	Updated KOP, block diagram, equipment enclosure layout and OMT in September 2011.
3	1-1-1	Updated the HongKong office address and added frequency setting decription in section 4.5.7 in sep 2011.

### 0.5 SAFETY NOTICES AND ADMONISHMENTS

This document contains safety notices in accordance with appropriate standards. In the interests of conformity with the territory standards for the country concerned, the equivalent territorial admonishments are also shown.

Any installation, adjustment, maintenance and repair of the equipment must only be carried out by trained, authorized personnel. At all times, personnel must comply with any safety notices and instructions.

Specific hazards are indicated by symbol labels on or near the affected parts of the equipment. The labels conform to international standards, are triangular in shape, and are coloured black on a yellow background. An informative text label may accompany the symbol label.

Hazard labeling is supplemented by safety notices in the appropriate equipment manual. These notices contain additional information on the nature of the hazard and may also specify precautions.

#### Warning:

These draw the attention of personnel to hazards that may cause death or injury to the operator or others. Examples of use are cases of high voltage, laser emission, toxic substances, point of high temperature, etc.

#### Alert:

These draw the attention of personnel to hazards that may cause damage to the equipment. An example of use is the case of static electricity hazard.

Caution notices may also be used in the handbook to draw attention to matters that do not constitute a risk of causing damage to the equipment but where there is a possibility of seriously impairing its performance, e.g. by mishandling or gross maladjustment. Warnings and Cautions within the main text do not incorporate labels and may be in shortened form.

**Caution:** The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

To comply with FCC RF exposure requirements, the device and the antenna for this device must be installed to ensure a minimum separation distance of 5.2188 meters or more from a person's body. Other operating configurations should be avoided.

End of section

## **1 GENERAL INFORMATION**

TC-2000 AWS Band Selective Base Station Amplifier (hereinafter called "TC-2000") is designed to work for AWS band. It can improve BTS output power, effectively enlarge the coverage, reduce the investment and improve the network quality. It mainly uses in urban villages, rural areas, express ways and mountain areas, and also used in cellular merge, improve carrier utilization.

#### Main features

- Supports 1~4 carriers. Improves BTS output power and extends its coverage.
- High power output up to 120W.
- Spectrum TX module satisfies 3GPP.
- UL noise figure < 2.5dB.
- Multi-carrier power extend system adopts high efficiency technology, its efficiency is 2.5 times of traditional multi-carrier BS power extend system and is more energy saving and environment protection.
- With Form C Alarm.
- Can satisfy the current BTS antenna system and 2 in 1 out antenna way.
- TMA BATS function can cooperate with TMA.
- Automatic bypass switch, activate in case the equipment faults or power down to ensure BTS continous signal coverage.
- Local Operation and Maintenance Terminal (OMT): operating status and parameters can be set or monitored by OMT PC locally.
- Operation Maintenance Center (OMC): system working parameters and communication configuration can be set or inquired remotely through the build-in CDMA modem. If alarm is generated, the equipment will dial up to OMC automatically in the mode of SMS or datalink.

The following figure shows the enclosure of the TC-2000.





Figure 1: Equipment Enclosure Layout

End of section

## **2 EQUIPMENT DESCRIPTION**

## 2.1 BLOCK DIAGRAM



#### 2100M WCDMA TBS/TC2000

Figure 2: System Block Diagram

As it is show in figure2, the multi-channal carrier signal from BTS TX1/TX2 port goes into the system at the Input Duplexer. The duplexer filters out the out of band signals and combines the TX carriers in the Input Tray. The combiner signal is the sent through an adjustable attenuator that feeds into the MCPA for power amplification. The signal is then sent through the Output Duplexer and into the antenna at ANT1. In the event of a major fault in the PA or power failure, the bypass switch will be activated to ensure BTS continuous signal coverage.

The UL signal from antenna1 goes by ANT1 port into the Output Duplexer where the out-of-band signals get filtered out. The filtered signal then gets sent to the Input Tray where the user has the option of sending the signal through a LNA and adjustable attenuator or bypassing LNA altogether. The signal then gets sent out through the Input Duplexer to the base station.

## 2.2 EQUIPMENT INTERNAL LAYOUT

This system typically consists of the following sub modules.



## 2.3 KITS OF PART

For this system, the following are shipped:

Product Identifier	Description	Quantity
TC-2000	Enclosure	1
МСРА	PA-5350FCZ0	1
Mounting Rack	00-BPA1810M-3855	1
Power Supply Cable Connector Assembly		1
Grounding Cable	BVR10mm2,2m	1
Hex Socket Bolt	M8x20	4
Philips Pan Head Screw	M4x10	4
Massory Bolt	M8x10	
USB Cable	AM/BM,1.5m	1
N-M to N-M Cable	00-BPA1810M-3086	
Кеу	N/A	2
CD (Equipment manual & OMT software)		1
Power Supply Cable Connector Assembly Guide	N/A	1

End of section

## **3 INSTALLATION**

## 3.1 INSTALLLATION CHECKLIST AND PREPARATION

### 3.1.1 INSTALLATION CHECKLIST

Installation Location Requirement	Considerations	
Working Space required	Ample space on mounting wall surface or pole for unrestricted airflow, door opening and cable routing. Recommended wall surface: 1m x 1m x 1m	
Power Supply	Provided power cord length is about 4m. Use a dedicated AC breaker or fuse circuit with good access to an earthing point. Here is the power supply: AC110/220V	
EMC and Interference	Do not locate near large transformers or motors that may cause electromagnetic interference.	
Suitable operating environment	-25 °C to +50 °C and maximum 95% relative humidity.	

### 3.1.2 PREPARATIONS

• Open and check the content of the package received against the packing list. If any external damages, please report to shipping agent. If any items are missing, contact Comba Telecom System.

## 3.2 INSTALLATION PROCEDURE

### 3.2.1 SHELTER INSTALLATION



Figure 4: Shelter Installation1

There are 2 options to install the shelter to euiqpment as follow:

Option 1: use U bolt which available for <70mm diameter poles.

Option 2: use clamp for rountine poles



Figure 5: Shelter Installation2

### 3.2.2 EQUIPMENT GROUNDING INSTALLATION



Figure 6: Equipment Installation

Comba recommends installs TC-2000 in a platform and near the BTS.

In the consideration of delivery purpose, equipment might be divided into 2 parts (MCPA unit departs from the rest of parts) within one package.

In this case, please follow by the steps below:

Step 1: open the enclosure cover and attach MCPA unit in, and then tighten two black knobs as illustrated.



Figure 7: Attach MCPA Unit in Front Panel

Step 2: open the back panel, connect PA output port and DPX output port via high power cable, joint the system data port with MCPA unit.



Figure 8: Attach MCPA Unit in Back Panel

#### 3.2.3 GROUNDING CONNECTION

The enclosure must be grounded securely by connecting a copper wire (CSA 16mm<sup>2</sup>) to the grounding point on the mounting rack, and the other end to a protective ground (i.e. building earth point). The recommended grounding resistance is no more than  $10\Omega$ .

#### 3.2.4 POWER CONNECTION

The system provides power supply options of DC-48 or AC220V. The red/blue wire from the ground gland is to connect with the DC power connectors of BTS: the red wire connects to "+" and the blue wire connects to "-".

#### 3.2.5 OMT CONNECTION

Without the door open, the local commissioning cable is used to connect the serial port of PC to the USB connector on the bottom of equipment.



Figure 9: OMT Connection

#### 3.2.6 DRIP-LOOP

Comba recommends that every horizontal cable entry to the equipment forms a 'U' before its entry to the equipment. Any accumulated water on the cable will drip down at the bottom of the loop and will not climb up to the equipment.

## **4 OMT**

The equipment can be monitored and controlled by OMT software running on a local PC with local commissioning cable, remote connection to the equipment via wireless GSM network.

- OMT software running on a local PC with serial connection to the equipment.
- OMC (optional) software with remote connection to the equipment over wireless GSM network.

This chapter is to introduce how to apply local and remote connection to OMT for the first installation, for the detailed OMT information, please refer to OMT user manual and other references.

Notice: The OMC software with remote connection to the equipment over wireless GSM network is optional for customers.

## 4.1 LOCAL AND REMOTE CONNECTIONS TO OMT

After installing OMT software on the PC, connection to the equipment can be done locally or remotely.

Double click the OMT explorer icon, the OMT Explorer main screen window will appear.

## 4.2 OMT LOGIN

When starting OMT, the following figure will show.

🛄 Login	
Password:	
<u> </u>	

Figure 10: OMT Login

The default password is 888888.User can change it in the [set password] window.

### 4.3 OMT CONTROL PANEL

Click "Auto Connection" in the pop up window.

💭 OMT ¥5.00	
Control Panel	
Phone Book	
Auto <u>C</u> onnection	
Set Password	
Help	
About	

Figure 11: OMT V5.00 Control Panel

#### 4.3.1 LOCAL CONNECTION TO OMT

After database configuration is done successfully, the following window will pop up and select [Local connection via USB for local connection.

Auto Connection	
Communicate Set C Local Connection via RS232 Remote Connection via Modem(CSD) Modem Type:	Com Port: COM1  GSM Modem
Phone number: C Remote Connection via Modem(SMS) C Local Connection via USB C Connection via Ethernet(UDP)	
Listen Port: IP: Connection via IP Gateway (UDP) Connection via IP Gateway (TCP)	V IP Port:
O Wireless connection via Zigbee	
Return Information Device Type: Embedded Software Version:	
	2
✓ run OMT immediately after get device info ONLINE	a. successfully

Figure 12: Connection Type

Select the desired communication port and click "OK", it will enter into the main window of OMT.

#### 4.3.2 REMOTE CONNECTION TO OMT

If remote connection is needed, users can select [Remote connection via modem] in connection type window. Select desired serial port and click "OK" in [Serial Port Configuration] window to go to OMT main window and start modem initialization. Click "connect" and the [Remote Connection] window will show up.

🛩 Operation And Maintenance Term	inal		🗖 🗗 🗙
System • Communication • Maintenance •	Engironment * Data Manager * Windows * Help *		
Connect(F5)	Auto-Read(F4) Stop Executing(F3)	Synchronize Alarm(F2)	line Help(F1)
Equipment Information 🛛 🛛 🕸 兴	Parameter Information		
	Remote Connection		
	Phone Number:	•	
	Password:		
Current Alarm 🛛 🛛 🗘 🗙	Init Modern Connect		
Parameter Name 🕖 Status		Tech L Telb	
	Status Modern initialization OK		

Figure 13: Remote Connection

Config: Enter the correct phone number (Users don't have to enter the password) and click "connect", it will be connected remotely.

Notice: Please enable the SIM card to support Circuit Switch Data.

#### 4.3.3 CONNECTION FROM PC TO EQUIPMENT

Before accessing to the OMT, physical connection between the OMT software and the equipment must be made. A straight-through RJ45 cable shall be applied for the connection.

In order to access to equipment by IP protocol, the PC must be set with proper IP address, subnet mask and gateway.

Internet Protocol (TCP/IP) Properties 🛛 🛛 🛛 🥐 🔀			
General			
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.			
O Dbtain an IP address automaticall	y III		
O Use the following IP address: ──			
IP address:	192.168.1.3		
S <u>u</u> bnet mask:	255.255.255.0		
Default gateway:	192.168.1.1		
Obtain DNS server address autom	natically		
─⊙ Use the following DNS server add	resses:		
Preferred DNS server:			
<u>A</u> lternate DNS server:	· · ·		
Ad <u>v</u> anced			
	OK Cancel		

Figure 14: PC Protocol Setting

The default IP address of amplifier is 192.168.1.2, and default gateway is 192.168.1.1. To access the amplifier for the first time, the PC must be set with proper IP address: 192.168.1.X (X=3~254), subnet mask: 255.255.255.0, gateway: 192.168.1.1.

After the PC protocol has been properly set, please execute the IE browser and type 192.168.1.2 in the address bar. A pop-up window will be shown, requiring user name and password. The default user and password are the same: admin.

Connect to 192.168	.1.2 ? 🗙
	GE
Comba	
<u>U</u> ser name:	2
<u>P</u> assword:	
	Remember my password
	OK Cancel

Figure 15: Log in

Items	Default Value
PC IP Address	192.168.1.X (X=3~254)
PC Subnet Mask	255.255.255.0
PC Gateway	192.168.1.1
Amplifier IP Address	192.168.1.2
Amplifier Gateway	192.168.1.1
User name	admin (Capital sensitive)
Password	admin (Capital sensitive)

Table 1: IP Setting Quick Look-up Table

### 4.4 OMT CONFIGURATION

After entering the OMT main screen, click the "Connect" button on the toolbar, to connect the equipment to the OMT. Successful connection will be indicated by a message "Online Ok" and equipment parameters can be read and/or set.

Users can configure the parameters, and then offset the parameters according to desired coverage level and interference to other BTS signals.

OMT parameters include: Common Information, RF Information, Alarm Information, and Properties Information.



Figure 16: OMT Main Window



Figure 17: Auto-Read

### 4.5 RF PARAMETER

It is recommended to configure the following RF parameters for the first installation.

#### 4.5.1 SWITCH

Switch is to enable/disable power for internal PA modules. When user checks and sets non-RF parameters, such as checking physical antenna connection, switching off will disable equipment power temporarily to protect PA in operation. Below is a demonstration by single PA module.

Operation And Maintenance 1	Terminal E					
System * Communication * Maintenance * Ingironment * Data Wanager * Equipment Log * Yindows * Help *						
Connect (F5) Scannect (F6)	🛛 🦓 Auto-Read (F4) 🦉 Step Executing (F3) 😑 Synchronize Alarn (F2) 🥀 Online Help (F1)					
quipment Information 🛛 🛛 🗘 🗙	Switch					
∃▼ All Info.	RF Parameter Information					
⊟-▼ Common Info.	Parameter Grouping					
Auto-Read	Item Select Parameter Name 🛆 Status Setting MinYalue MaxValue Unit Remark					
B-V RFInfo.	Parameter Grouping : Bypass Status					
🏹 Switch	DL Bypass Status Normal N/A					
ATT	Parameter Grouping : LNA Switch					
💙 Alarm Threshold	UL LNA Switch OFF					
V Power	German Parameter Grouping: PA Switch					
🗸 Gain	PA Switch 01 ON					
Temperature						
V Frequency						
Trigger Control						
🐵 💜 Alarm Info.						
🐵 💙 Properties Info.						
Jurrent Alarm 🗆 🔍 🗙						
Parameter Name 🛕 Status						
DL Input Power Low Alarm 🛛 😣						

Figure 18: Switch

Config:

Select the required state in setting columns of RF information window for RF switch, then press [Enter] or [Config] button to finish the configuration operation.

### 4.5.2 ATT

Connect (95)	F6)	Auto-B	ead(F4) 🧐 Stop Execut	ing(F3)	Synchronize	Alars (F2)	N? Online )	felp(F1)	
quipment Information 🛛 📮	X ATT	te estate est							
All Info.	RF Pa	<sup>e</sup> Parame rameter G	rouping 斗						
Auto-Read	10	em Seleci	Parameter Name	Status	Setting	MinValue	MaxValue	Unit	Remark
BF Info.	6	Parameter	Grouping : ATT						
Switch			DLATT	15	and the second	0	15	dB	
	•		ULATT 01	13		0	13	dB	
Alarm Threshold			ULATT 02	13		0	13	dB	
✓ Gain     ✓ Temperature     ✓ Frequency     ✓ Trigger Control     ✓ Alarm Info.     ✓ Properties Info.									
Current Alarm 🗆 🛛	×								
Parameter Name Status DL Input Power Low Alarm 6									



Config:

Select the required value in setting columns of RF information window for ATT, and press [Enter] or [Config] button to finish the configuration operation.

### 4.5.3 ALARM THRESHOLD

Alarm Threshold includes Power threshold, Temperature threshold and VSWR threshold. Users can set alarm threshold according to the specific situation. If the measured value is lower than the threshold lower limit or more than the threshold upper limit, the appropriate alarm will be generated.



Figure 20: Alarm Threshold

Config:

Enter the required value in setting columns of RF information window for Alarm threshold, and press [Enter] or [Config] button to finish the configuration operation.

### 4.5.4 **POWER**

Power is referring to the reading of downlink input/output power.

Operation And Maintenance	Terminal							
System * Communication * Maintenance	e - Engironment	• Data Manager • E	quipment L <u>o</u> g	• Mindows • Help	-			
Connect (PS)	Auto-Re	ad(F4) 🥸 Stop E	ecuting(F3)	😑 Synchronize	Alara (F2)	No Online H	(elp(F1)	
quipment Information $\Box$ 4 $ imes$	Power							
-Y All Info.	RF Parame	ter Information						
Common Info.	Parameter Gr	ouping A						
V System Info.	T di dillietter di t	ouping						
	Item Select	Parameter Name	∆ Statı	s Setting	MinValue	MaxValue	Unit	Remark
B-▼ RF Info.	Parameter 6	Grouping : Input Power						
V Switch		DL Input Power		N/A			dBm	Detection low margin exc
Y ATT	Parameter 6	arouping : Output Power						
— Alarm Threshold		DL Output Power		N/A			dBm	Detection low margin exc
V Power								
V Gain								
Temperature								
¥ Frequency								
Trigger Control								
Alarm Info.								
Properties Info.								
urrent Alarm 🗆 🛛 🗸								
Parameter Name 🛆 Status								
		F	iaure 21	·Power				

### 4.5.5 GAIN

Operation And Maintenance 1	ferminal								
System * Communication * Maintenance	• Engironmen	t * ≧ata Manager * Equipa	ent Lgg * ¥i	ndows * Help *	•				
Gennect (FS)	🔯 Auto-Be	nad(F4) 🙁 Stop Executi	ng(F3) 😑	Synchronize #	Alarm (F2)	N Oaline M	alp(71)		
Equipment Information 🛛 🛛 🗘 🗙	Gain								
B-▼ All Info.	RF Parame	ter Information							
<ul> <li>Common Info.</li> <li>System Info.</li> </ul>	Parameter G	ouping 🛆							
V Auto-Read	Item Select	Parameter Name 💧	Status	Setting	MinValue	MaxValue	Unit	Remark	
BF Info.	Parameter	Grouping: Gain							
- ¥ Switch		DL Calculative Gain	0	N/A			dB		
-Y ATT		UL Calculative Gain 01	-2	N/A			dB		
Alarm Threshold		UL Calculative Gain 02	-2	N/A			dB		
- V Power									
Temperature									
- V Frequency									
<ul> <li>Trigger Control</li> </ul>									
Alarm Info.									
Properties Info.									
Current Alerm D # X									
Parameter Name 🛆 Status									
DL Input Power Low Alarm Alarm 😝									
			00	0 ·					

Figure 22: Gain

**Rating Gain**: be set before delivery. Comba recommends no change of rating gain value. **Gain**: User can set according to the real application.

#### 4.5.6 TEMPERATURE

Operation And Maintenance 1	erminal								- 7 🛛
System - Communication - Haintenance - Engironment - Data Manager - Equipment Log - Mindows - Malp -									
Connect (P5)	🛃 Auto-Read(F4)	🧐 Stop Executing (	F3) 🔒 Sy	nchronize Al	Larn (F2)	N? Online H	(elp(F1)		
Equipment Information	Temperature								
⊟-▼ All Info.	RF Parameter Info	mation							
<ul> <li>Common Info.</li> <li>System Info.</li> </ul>	Parameter Grouping 4								
	Item Select Param	eter Name 🔺 🧍	Status	Setting	Min∀alue	MaxValue	Unit	Remark	
BF Info.	Parameter Grouping:	PA Temperature							
V Switch	PA Tempe	rature	45	N/A			C degree		
V ATT	Parameter Grouping :	Temperature							
Alarm Threshold	Device Te	mperature	43	N/A			C degree		
V Power									
V Gain									
V Temperature									
Frequency									
Trigger Control									
Properties Info.									
Current Alarm									
Parameter Name 🛆 Status									
DL Input Power Low Alarm 🔒									

Figure 23: Teperature

## 4.5.7 FREQUENCY

Double click setting column can set the required frequency.

🖞 Operation And Maintenance 1	ferminal					_ 6
System * Communication * Maintenance * Engironment * Manager * Equipment Lgg * Mindows * Help *						
and Connect (F5) 🔛 Disconnect (F6) 👘 Auto-Read (F4) 🥝 Step Executing (F3) 😑 Synchronize Alars (F2) 🏘 Online Help (F1)						
Equipment Information 🛛 🗘 🗙	Frequency					
B-▼ All Info.	RF Parameter Information					
B-▼ Common Info.	Parameter Grouping					
✓ Auto-Read	Item Select Parameter Name	Status	Setting N	MinValue MaxValue	Unit	Remark
B-Y RF Info.	Parameter Grouping : Freq.	2120	21	2145	MUN	Duc 2120 MHz ~ 2140 h
ATT	Reconcise Size nine : Infortion Resolution	2150	21	2145	MILTZ	DW. 2120 MH2 2140 P
✓ Alarm Threshold	Working Bandwidth	20	N/A		MHz	
-Y Power						
▼ Gein						
Temperature						
Frequency						
Trigger Control						
E V Properties Info						
e v Propenes Illo.						
Current Alarm D 4 X						
Parameter Name 🛆 Status						
DL Input Power Low Alarm Alarm 😝						

Figure 24: Frequency

The system instance working bandwidth is 20MHz, thus the setting frequency = system instance working center frequency (system working bandwith = center frequency  $\pm 10$ MHz).

e.g. setting frequency = 2120MHz, then the working bandwidth ranges from 2110MHz-2130MHz.

#### 4.5.8 TRIGGER CONTROL

Click SET can reset MCPA.

Operation And Maintenance	ferminal			
System * Communication * Maintenance	• Environment * Data Manager * Equip	ment Log * Mindows * Help *		
Connect (F5)	Auto-Bead (F4) 🥝 Stop Execut	ting (F3) 😑 Synchronize Alarm (F2)	N? Online Help(F1)	
pulpment Information 🛛 🛛 🕸 🗵	Trigger Control			
All Info.	Parameter Grouping			
V Auto-Read	Parameter Name	Setting	Remark	
BF Info.	Parameter Grouping : Restart MCPA			
- ¥ Switch	Restart MCPA 1	Set		
ATT     Alarm Threshold     Power     Gain     Temperature     Frequency     Trigger Control      Alarm Into.				
Current Alarm 🛛 🕸 🗵				
Parameter Name   Status				
UL INDUI FORMET LORI REBITI				

Figure 25: Trigger Control

### 4.6 ALARM INFO

#### 4.6.1 MASTER ALARM

Alarm information operation is to select alarm parameters for monitoring. Alarm parameters include Master Alarm, Channel Alarm and Fan Alarm.

Click any tree node in [Alarm Info] group, [Alarm Parameter Information] window will appear in the right side. The picture below shows the master alarm information.

🕸 Operation And Maintenance 1	erminal
System - Communication - Maintenance	• Engironment • Data Manager • Equipment Log • Mindows • Help •
Connect (P5)	📸 Auto-Read (F4) 🥸 Stop Executing (F3) 😑 Synchronize Alara (F2) 🥀 Online Help (F1)
Equipment Information 🛛 🛛 🕂 🗙	Master Alarm
🛛 🗸 Auto-Read	Alarm Parameter Information
Info.	Parameter Grouping 🛆
Y ATT	Item Select Parameter Name 🛆 Status Enable Update Time
Alarm Threshold	B Parameter Grouping : Battery Alarm
Y Power	Li-ion Battery Fault Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
🏹 Gain	E Parameter Grouping : Master Alarm
Temperature	Auxiliary Module Alarm I Normal I 2011-9-6 9:37:22
Frequency	Parameter Grouping : PA Alarm
Trigger Control	DL PA Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
ia-▼ Alarm Info.	Parameter Grouping : Power Alarm
💙 Master Alarm	DL Input Power Low Alarm 😑 Alarm 🗹 2011-9-6 9:37:22
V Channel Alarm	DL Input Power Overload Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
🚽 Fan Alarm	DL Dutput Power Low Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
🗄 🔻 Properties Info. 🛛 🗹	B Parameter Grouping : Power Supply Alarm
Current Alarm 🗆 🛛 🗸 🛛	AC Power Failure Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
Parameter Name 🛆 Status	DC Power Fault Alarm 🕒 Normal 🗹 2011-9-6 9:37:22
DL Input Power Low Alarm Alarm 😝	Parameter Grouping : Temperature Alarm
	PA Over-Temperature Alarm 🕒 Normal 🗹 2011-9-6 9:37:22

Figure 26: Master Alarm

Operation And Maintenance 1	erminal		
System - Communication - Maintenance	- Environment - Data Managar - Equipment	og - Windows - Maln -	
	ingrioment gett minger ingriphent i	We Trucket werE	
Connect (75)	🔣 Auto-Bead (F4) 🥸 Stop Executing (F3	3) 🕒 Synchronize AlermÖ	2) 🏘 Online Help(F1)
Equipment Information 🛛 🕮 🗙	Channel Alarm		
Auto-Bead	Alarm Parameter Information		
BEInfo			
	Parameter Grouping 🛆		
Y ATT	Item Select Parameter Name	Status Enable	Update Time
Y Alarm Threshold	Parameter Grouping : Bypass Alarm		
Y Power	PA 01 Bypass Alarm	🕒 Normal 🗹	2011-9-6 9:37:22
🍸 Goin	Parameter Grouping : LNA Alarm		
Y Temperature	UL LNA 01 Alarm	\varTheta Normal 🗹	2011-9-6 9:37:22
¥ Frequency =	UL LNA 02 Alarm	😑 Normal 🗹	2011-9-6 9:37:22
Trigger Control			
E V Alarm Info.			
- Y Master Alarm			
Properties Info			
Current Alarm 🗆 🕮 🗙			
Parameter Name 🛆 Status			
DL Input Power Low Alarm 🛛 🔒			



Operation And Maintenance	Terminal		
System - Communication - Maintenance	· Environment · Data Manager · Equipment Log	• Windows • Help •	
Connect (75)	Auto-Read (F4) 3 Stop Executing (F3)	🕒 Synchronize Alars (F2)	N? Online Help(F1)
upment Information 🛛 🛛 🕂 🗙	Fan Alarm		
🗸 Auto-Read	Alarm Parameter Information		
BF Info.	Parameter Grouping		
	Item Select Parameter Name	Status Enable	Update Time
Alarm Threshold	Parameter Grouping : Fan Alarm		
V Power	📃 Fan 01 Alarm 🙆	Normal 20	011-9-6 9:37:22
🗸 Gain	Fan 02 Alarm	Normal 🗹 20	011-9-6 9:37:22
Temperature	📃 Fan 03 Alarm 😑	Normal 2	011-9-6 9:37:22
Y Frequency     Y Trigger Control     Y Alarm Info.     Y Alarm Info.     Y Channel Alarm     Y Fan Alarm     Y Fan Alarm     Y Properties Info.     Y Parameter Name			
	Figure 28: Fan Alarm		

Config:

Tick the check box of [Item select] and [Enable] of the desired parameters and click [config] button to finish configuration operation.

Notice: [Enable] box 🔽 is to enable the alarm monitoring for system. Only if users enable the alarm by ticking the [Enable] box, the alarms can be monitored by the OMT/OMC.

On the MCU, if any alarm is generated and this alarm is also enabled in [Enable] box, LED ALM turns RED; while it is OFF when normal working. On the OMT/OMC window, [Alarm Status] indicator keeps GREEN if no alarm and turns RED if an alarm is generated.

Alarm report can be set, users can allow or prohit the report. When alarm happens, if it is already inquired, alarm will not report; if not, alarm will dial up to OMC automatically in the mode of SMS or datalink till OMC receive the alarm and reply; if the device hasn't received and replyed, then wait 3min and redial to OMC 3 times continuously, if still no reponse, report again after 3 hours.

The device has FORM C alarm port, specific definition as follows:

Adopt 9-pin CPC connector (XM22K09K), supplies battery arlarm PA faulty alarm and bypass alarm. Terminal defined as:

Pin number	Name	Explanation
1	DC_NO	Power alarm open terminal
2	DC_COM	Power alarm public terminal
3	DC_NC	Power alarm closed terminal
4	PA_NO	PA alarm open terminal
5	PA_COM	PA alarm public terminal
6	PA_NC	PA alarm closed terninal
7	BYPASS_NO	Bypass alarm open terminal
8	BYPASS_COM	Bypass alarm public terminal
9	BYPASS_NC	Bypass alarm closed terminal

**Remark:** the system reset automatically every 24h, the alarm information is cleared after the reset.

Method of alarm report: there is a box on the right of the alarm indicator, it is used for select alarm to OMC, users can allow or prohibit the alarm report according to actual situation. Click the box on the right of the alarm, and the box shows " $\sqrt{}$ " meaning selection. Click "setting" button to set. After that, if alarm occurs, the selected alarm will dial up to OMC in the mode of SMS or datalink.

Please notice that if the desired alarm is not enabled in [Enable] box, even if this alarm is generated, it keeps in GREEN in the OMT/OMC interface and LED H2 on MCU keeps OFF as well.

## 4.7 PROPERTIES INFO.

#### 4.7.1 EQUIPMENT ID

Equipment ID is to be configured after local commission has been completed, which includes Site ID, and Site Sub ID.

😃 Operation And Mainte	mance 1	ferminal						
System - Communication - Ma	aintenance	<ul> <li>Engironment</li> </ul>	• Data Manager • Equipm	ent l <u>o</u> g - <u>Y</u>	indows - Help -			
Connect (75) 🛛 🖉 Disco	anect (F6)	🐻 Auto-Rea	d(F4) 🥴 Stop Executi	ng (F3) 🛛 🌔	🔵 Synchronize J	(lam (F2) 🛛 N? 0:	nline Help (F	1)
Equipment Information	0 <b>4</b> ×	Equipment ID						
	^							
<ul> <li>Trigger Control</li> </ul>	-	Parameter Gro	uning A					
E-V Alerm Info.			aping of					
🍸 Master Alarm		Item Select	Parameter Name		Status	Setting	Unit	Remark
		😑 Parameter Gr	ouping : Site ID					
Fee Alerm			Site ID		00000000			
Properties Info		Image:	Site Sub ID		FF			
- Firmware Into.								
<ul> <li>Y Equipment Info.</li> </ul>								
Site Location								
🏹 System Clock								
🏹 Comm. Config								
🝸 Trigger Report								
<ul> <li>V Update Info.</li> </ul>	*							
Current Alarm								
Parameter Name 🔺 S	talus							
DL Input Power Low Alarm Alarn	n 😑							

#### Figure 29: Equipment ID

See the table below for configuration details of each parameter.

Item	Description
Site ID	Site ID is the unique equipment identification. It is a hexadecimal string of eight characters in the range of [00000000~FFFFFFF]. e.g. 00000000
Site Sub ID	Site Sub ID is used for Master-Slave System. It is the unique identification of each Master/ Slave Unit and is a hexadecimal string of two characters in the range of [00~FF]. For the system located with single equipment, the Site Sub ID should be FF. For Master-Slave system, the Site Sub ID for Master Unit is 00, and the Site Sub ID for each Slave Unit is represented in the range of [01~FE] in ascending order. e.g. Master Site ID: 00. Slave Site ID: 01

### 4.7.2 FIRMWARE INFO.

4						
Uperation And Laintenand	e ferminal					
System - Communication - Mainten	ance - Engiro	nnent - Data Manager - Equipa	ent Log - Yindows - Help -			
Connect (75)	(76) 🔯 Au	to-Read(F4) 🧐 Stop Executi	.ng(F3) 🕒 Synchronize Al	.arn (72) 🥀 🥐	Online Help (F	11)
Equipment Information 🛛 📮	× Firmware In	nfo.				
	Paramet	er Grouping 🛆				
🍸 Master Alarm	Item S	Select Parameter Name	∆ Status	Setting	Unit	Remark
	🕨 🖃 Paran	neter Grouping : Firmware Info.				
🝸 Fan Alarm		Firmware Information	V1101.377	N/A		
Properties Info.		Firmware Version	M63TC200053GH10V10	N/A		
<ul> <li>Y Equipment ID</li> <li>Y Equipment Info.</li> <li>Y Equipment Info.</li> <li>Y Site Location</li> <li>Y System Clock</li> <li>Y Comm. Config</li> <li>Y Trigger Report</li> <li>Y Update Info.</li> </ul>	-					
Current Alarm 🗆 🖡	×					
Parameter Name 🛆 Status						



### 4.7.3 EQUIPMENT INFO.

Operation And Main	tenance T	erminal						
gystem * Communication *	Maintenance	<ul> <li>Engironment</li> </ul>	* Data Manager * Equipment L	ng * <u>W</u> indows * Hel <u>p</u> *				
Connect (75) 🔊 Biscennect (76) 🚯 Auto-Bead (74) 🥝 Step Executing (73) 🕒 Synchronize Alare (72) 🥀 Online Halp (71)								
pment Information	0 4 ×	Equipment Info.						
Frequency     Trigger Contro	al 🔼	Parameter Gro	uping 💧					
<ul> <li>Alarm Into.</li> <li>Master Alarm.</li> </ul>		Item Select	Parameter Name	Status	Setting	Unit	Remark.	
- V Channel Alarm	1	🗏 Parameter Gr	ouping : Equipment Info.					
V Fan Alarm			Equipment Model	TC2000,53	N/A			
Properties Info.			Equipment Type	BTS Power Amplifier	N/A			
EquipmentID		•	Remote Communication Module	GSM MODEM				
<ul> <li>Firmware Info.</li> </ul>			Serial No.	000000000	N/A			
- Y Equipment Info	D.							
<ul> <li>V Site Location</li> </ul>								
<ul> <li>Y System Clock</li> </ul>								
- V Comm. Contig								
<ul> <li>Ingger Report</li> </ul>	π							
· · · · · · · · · · · · · · · · · · ·	×							
rent Alarm	0 th ×							
Parameter Name	Status							
L Input Power Low Alarm Al	an 🤮							



### 4.7.4 SITE LOCATION

System Control And Intritational Territoria Systes * Communication * Maintenance * Enginement * Data Manager * Equipment Lige * (Endows * Help * Connect (05) Connect (05) Connect (05) Control = 0 × Status Setting Unit Remark * Frequency * Trigger Control = 0 × Status Setting Unit Remark * Alarm Into. * Alarm Into. * Channel Alarm * Channel Alarm * Channel Information III - Information IIII - Information IIII - Information IIII - Information IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Connection and Maintenance
Systes * Consumination * Maintenance * Engineerent * Data Manager * Equipment Lag * Yindows * Halg *  Connect (193)	operation And maintenance
Internation     Image: Connect (P)     Image: Connect (P) <t< td=""><td>System * Communication * Maintenanc</td></t<>	System * Communication * Maintenanc
Apprent Information       I       Image: Ste Location <ul> <li>             Y Frequency             <li>             Trigger Control             </li> <li>             Y Alarm Info.         </li> <li>             Y Channel Alarm             </li> <li>             Y Channel Alarm             </li> <li>             Y Fon Alarm             </li> <li>             Y Fon Alarm             </li> <li>             Y Equipment ID             </li> <li>             Y Equipment Info.             </li> </li> <li></li></ul>	Connect (P5)
Y Frequency     Y Trigger Control     Alarm Into.     Y Adarm Into.     Y Channel Alarm     Y Channel Alarm     Y Channel Alarm     Y Fan Y Fan Alarm     Y Fan Y Fan Y Fan     Y Fan Y Fan     Y Fan Y	aupment Information 🛛 🛛 🗘 🗙
Y Trigger Control     Alarm Info.     Y Master Alarm     Y Channel Alarm     Y Channel Alarm     Y Fan Alorm     Y Fan Alorm     Y Fan Alorm     Y Fan Alorm     Y Fan Location     Y System Clock     Y Comm. Config     Y Trigger Report     Y Updete Info.     Y Updete Info.     Y	-V Frequency
<ul> <li>Alarm Into.</li> <li>✓ Mester Alarm</li> <li>✓ Channel Alarm</li> <li>✓ Fan Alarm</li> <li>✓ Properties Into.</li> <li>✓ Equipment ID.</li> <li>✓ Equipment Into.</li> <li>✓ System Clock.</li> <li>✓ Trigger Report</li> <li>✓ Updete Into.</li> </ul>	Trigger Control
Moster Alarm     Vens telect     Parameter Name     Status     Setting     Unit     Hemaik     Parameter Scoping: Site Location     Vens     Latitude     N23.12345678     Longitude     Equipment ID     Vens     Firmware Info.     Vens     Status     Vens	B-▼ Alarm Info.
Channel Alarm     Fan Alarm     Fan Alarm     Channel Alarm     Fan Alarm     Latitude     N23 12345678     Longitude     E103.12345678     Longitude     Comptonent Info.     Stat Locention     Y System Clock     Comm. Config     Trigger Report     Update Info.     Vupdate Inf	<ul> <li>Master Alarm</li> </ul>
Y Fan Alerm     Y Fan Ale	Channel Alarm
Y Properties Info.     Y Equipment ID     Y Equipment Info.     Y Equipment Info.     Y System Clock     Y Trigger Report     Vlpdete Info.     Y Updete Info.     Y	<ul> <li>Fan Alarm</li> </ul>
Equipment ID     Firmware Info.     Equipment Info.     Stat Locetion     System Clock     Trigger Report     Updete Info.     Vodete Inf	Properties Info.
Firmware Info.     Equipment Info.     Ste Location     System Clock     Comm. Contig     Trigger Report     Update Info.     Vigate Info.	<ul> <li>Equipment ID</li> </ul>
✓ Equipment Into.     ✓ Site Locetion     ✓     ✓ System Clock     ✓ Comm. Contig     ✓     Trigger Report     ✓     Update Into.     ✓	<ul> <li>Firmware Info.</li> </ul>
✓ Site Locebon     ✓     ✓ System Clock     ✓     ✓ Comm. Config     ✓     Trigger Report     ✓     Update Info.     ✓	<ul> <li>Equipment Into.</li> </ul>
✓ System Clock     ✓ Comm. Config     ✓ Trigger Report     ✓ Updete Info.     ✓	Site Location
✓ Comm. Conlig     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓     ✓	- V System Clock
Vinger Heport	- V Comm. Config
Update into.	<ul> <li>Ingger Report</li> </ul>
	Update Into.
urrent Alarm 🛛 0 ×	urrent Alarm 🗆 🛛 🗘 🗙
Parameter Name 👍 Status	Parameter Name 🔬 Status
DL Input Power Low Alarm 😝	DL Input Power Low Alarm 🛛 😣

Figure 32: Site Location

[Site Location]: input the current longitude and latitude in the blank.

### 4.7.5 SYSTEM CLOCK

ten * Communication * Mainten	unce . Engirement .	Data Manager * Equipment Lg	g * Mindows * Help *			
Connect (75)	(P6) 🚺 Auto-Read	(F4) 🥝 Stop Executing(F3)	🕘 Synchronize Alar	n (P2) 197 (	Online Help(F1)	
ent Information 🛛 📮	X System Clock					
- Y Frequency	A					
Trigger Control	Parameter Grou	ping 🕹				
🛛 💙 Alerm Info.	Item Colect	Daramatar Nama	Ctabus	Cotting	Heit	Domark
Master Alarm	P Patameter Gro	uning : Sustem Time	atatus	Secong	Onix	nemark
Fee Alerm		Current Date/Time	2011-9-6 9:36:01			
V Pronerties Info	and the second of					- di
V Equipment ID						
Firmware Into.						
<ul> <li>✓ Equipment Info.</li> </ul>						
-V Site Location	=					
V System Clock.						
V Comm. Config						
Trigger Report						
<ul> <li>Vpdate Info.</li> </ul>	× .					
nt Alarm 🛛 🕮	×					
arameter Name 💧 Status						
nput Power Low Alarm 🛛 🔞						
And a second						

Figure 33: System Clock

[System Clock]: it shows the current time/date information. It is settable.

#### 4.7.6 COMM. CONFIG

If the equipment is to be monitored by OMC software over Wireless GSM / CDMA network, users must finish the [Comm. Config.] in the next step.

The Comm. Config information requires to be manually entered by users after successful connection to the equipment.

Operation And Maintenance	Terminal					
System * Communication * Maintenance	e * Engironment	* Bata Manager * Equipment 1	ag * Windows * Help *			
Connect (75)	) 🤯 Auto-Be	ad (F4) 🥴 Stop Executing (F	3) 😑 Synchronizs Al	arn (72) 🥀 Os	dine Me	lp(F1)
quipment Information 🛛 🗘 🗙	Comm. Config					
Frequency     Trigger Control     Alarm Info.	Parameter Gr	ouping 🛆	Status	Setting	Unit	Remark
Channel Alarm	E Parameter 0	Trouping : Network Parameters/Equips	nent)	S accord		
V Eap Alarm		Equipment Default GateWay	192.168.1.1			
E-Y Properties Info		Equipment IP Address	192.168.1.2		-	
-V Equipment ID		Equipment MAC Address	00-00-00-00-00-00			
<ul> <li>Firmware Info.</li> </ul>		Equipment SubNet Mask	255.255.255.0			
— Y EquipmentInfo.		Equipment TCP Part No	28709			The range of IP Port No. is 7
— V Site Location	E Parameter 0	arouping : Network Parameters(DMC)				
– V System Clack		OMC Server IP	58.248.22.60			
-V Comm. Config		OMC Server IP Port	28673			The range of IP Port No. is 7
Trigger Report	E Parameter 0	Brouping : Network Parameters(PSD)				
🚽 Update Info.		Heartbeat Detect Interval	16		secor	
rrent Alarm 🛛 🕮 🗙		PSD Access Point	111111111		_	
Parameter Name 🛆 Status		PSD Logon: Password	USER		_	
L Input Power Low Alarm 🛛 🔒		PSD Logon: User Name	USER			
		PSD Transmission Protocol	IP+TCP			
	E Parameter 0	Brouping : Query/Config IP				
		Query/Config IP 01	192.168.1.11		_	
		Query/Config IP 02	192.168.1.12			
	E Parameter 0	Brouping : Query/Config Phone No.				
		Query/Config Phane No. 01	13800138001			
		Query/Config Phone No. 02	13800138002			

Figure 34: Com. Config.

See the table below for configuration details of each parameter.

Item	Description
Phone No.	This is designed for authentication purpose when remote connection via modem is required. It is the phone number to dial the equipment. Only the phone number pre-defined in this field, will it be allowed to dial the equipment. It is required to manually enter the phone number. Up to 5 phone numbers are allowed. The use of phone number authentication can avoid unauthorized use of the OMT. In addition, it can prevent the equipment receiving piles of spam short messages, thus help the operator greatly reduce the cost.
Report Config	The Report No. is the SIM card number of the modem built into the OMC Server computer. The equipment will send alarm SMS to this number. If remote communication is needed via modem, users have to enable SMS mode and set the report phone No. by entering the SIM card number of the equipment built-in modem.
SMSC No.	It specifies the SMS centre. Users have to set the service No. of SMSC for the first installation, so that the alarms can be sent to OMC.

### 4.7.7 TRIGGER REPORT

Syster + Generation - Baintenance - Brightoment + Data Ranger + Repipent Log - Endows + Help +         Image: Disconnect (75)       Image: Auto-Read(74)       Stop Executing (73)       Synchronics Alarn (72)       Image: Help (71)         Connect (75)       Image: Report       Image: Report       Image: Report         Image: Connect (76)       Image: Report       Image: Report (76)         Image: Connect (76)       Image: Report (76)       Image: Report (76)         Image: Report (76)       Image: Report (76)       Image: Report (76)         Image: Report (76)       Image: Report (76)       Image: Report (76)         Image: Report (76)       Image: Report (76)       Image: Report (76)         Image: Report (76)       Image: Report (76) <th>🗿 Operation And Maintenance )</th> <th>erminal</th> <th></th>	🗿 Operation And Maintenance )	erminal	
Connect (75)       Image: Report         Louise et (75)       Image: Report         Image: Report       Image: Report Status         Image: Report Status       Image: Report Status         Image: Report Report       Image: Report Status         Image: Report	System - Communication - Buintenance	• Engironment • Data Wanaper • Equipment Lag • Eindows • Help •	
Louisneyt Orfonnation       I Nger Report <ul> <li> </li> </li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></ul> <li> </li> <li> </li> <li> <li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li>	Connect (75) 🛃 Disconnect (76)	👘 Auto-Read (74) 🥝 Stop Executing (73) 😝 Synchronize Alarm (72) 🕅 Online Hely (71)	
✓ Frequency     ✓ Trigger Control     ✓ Adom Info.     ✓ Master Alarm     ✓ Channel Alarm     ✓ Channel Alarm     ✓ Pan Alarm     ✓ Pan Alarm     ✓ Pan Alarm     ✓ Sis Repoil Result     ✓ Unreported N/A      ✓ Equipment D     ✓ Firmwere Info.     ✓ Equipment Info.     ✓ Site Location     ✓ Site Location     ✓ System Clock     ✓ Comm. Conlig	Equipment Information 🛛 🕀 🙁	Trigger Report	
Mester Alarm     ✓ Mester Alarm     ✓ Charnel Alarm     ✓ Charnel Alarm     ✓ Charnel Alarm     ✓ Fon Alarm     ✓ Fon Alarm     ✓ Fon Alarm     ✓ Fon Marm     ✓ Fon Marm     ✓ Site Location     ✓ System Clock     ✓ Comm. Conlig	Frequency     Trigger Control	Parameter Grouping 💧	
Channel Alorm     Fon Alarm     Fon Alarm     New Site Report Result     Unreported     N/A      Yequipment ID     Yequipment Info     Yequip	- V Mester Alarm	Item Select Parameter Name & Statuz Setting Unit Remark	
Y Fon Alarm     New Site Report Result     Unreported     N/A      Y Equipment ID     Y Equipment Info     Y Equipment Info     Y Site Location     Y System Clock     Y Comm. Conlig	- 💙 Channel Alerm	Parameter Grouping: Report Status	
Y Properties Info.     Y Equipment D     Y Equipment Info.     Y Equipment Info.     Y Site Location     Y System Clock     Y Comm. Config	Fan Alarm	New Sits Report Result Unreported N/A	
Vpdete info.	Properties Info.     Vequipment D     Vequipment Info.     Vequipment Info.     Vequipment Info.     Vequipment Info.     Vequipment Info.     Vequipment Info.     Vequipment Clock     Vequipme		
Current Alarm 0 0 x Parameter Name A Status OL Input Power Low Alarm Alarm 😝	Current Alarm D 0 x Parameter Name A Status OL Input Power Low Alarm Alarm		



### 4.7.8 UPDATE INFO.

ysten * Communication * Maintenane	e · Ingirment ·	Inta Banager + Resignant Los	<ul> <li>T. Mindawa T. Mala T.</li> </ul>			
	o S. Antonio		. Transa . werd .			
Conset (75)	0 100 Mator Meta	1074) 🥝 Step Executing(073)	😑 Synchronize Ale	ara (92) 🥀 a	aline Melp(F	0
upment Information 🛛 🛛 🕸 🗙	Update Info.					
Frequency     Trigger Control     Alarm Into.	Parameter Grou	aping 🛆	Fisher	Falling		Benet
<ul> <li>Master Alarm</li> </ul>	Rean Select	Parameter Mane -	51809	setting	Unit	FEERAL
Fas Alarm		Equipment Firmeware Remote Linguar	MCP: B	N/A		
Pan Alam		Equipment Firmware Remote Upgrad	Upgrade completed	N/A		
Equipment D		Firmware Running Mode	Manitoring	N/A		
- Firmware Info.	🗏 Parameter Gro	puping : Firmware Update Info (MCP:8)				
<ul> <li>Equipment Into.</li> </ul>		AP:C Protocol Max. Length	255	NUG.		
Y Site Location		Confinuous Transmit Coefficient	255	N/A		
- V System Clock		Conversion Time between Monitoring	2	N/A	18C07	
- V Comm. Config		Equipment Response Divertime	15	N/A	secor	
<ul> <li>Trigger Report</li> </ul>		MCP.8 Data Frame	Single ACK	N/A		
🚽 Updete Info. 🗹		Transmit Interval	255	N/A	mS	
ment Alem D. B ×		Transmit Pause Duration	2	N/A	0000F	
Parasecter Hanse Assem						
		Bead Cogfig	Clear Selection	Relyest		Heb

Figure 36: Update Info.

End of section

## **5 COMMISSIONING**

## 5.1 PRE-COMMISSIONING TASKS

After equipment installation, perform the following steps before equipment powering and commissioning:

- Check the expected voltage, current and power levels do not violate any ratings.
- Visually inspect the power connection within the equipment. Ensure that the power cable is correctly and securely connected, including grounding wire, RF cable and other cables.
- Check grounding connection and verify that the ground resistance is less than  $10\Omega$ .

## 5.2 LED INDICATORS

Diagnostic LEDs of each unit are located on the chassis; each indicates the status of a particular function.

#### Monitoring Panel LEDs

Identifier	Colour	Indication
MOD	Red	Modem status indicator. Flash while initiating, after that OFF when the initiation completes. ON=initiation failed, OFF= initiation success, can realize remote monitoring.
ALM	Red	System Alarm indicator. ON = Failure Alarm; OFF = normal operation.
RUN	Green	Operation indicator. ON = normal operation; Flashes at a rate of 1 flash/sec = normal operation starts; OFF = no power supply / MCU operating problem.

#### PA Unit Panel LEDs

Identifier	Colour	Indication
PWR	Green	ON= normal operation
MIN ALM	Yellow	ON= PA failure, alert only. OFF when there is no alarm.
MAJ ALM	Red	ON when PA is over amplified, alarm while PA shuting down. OFF when there is no alarm.

#### Integrated DPX and PSU Unit Panel LEDs

Identifier	Colour	Indication
PWR	Green	ON= normal operation
ALM	Yellow	ON= duplexer unit failure or power down. OFF when there is no alarm.

All diagnostic LEDs will flash simultaneously when power is initially supplied to the equipment, which indicates system self-check. Then all LEDs are on for about 1 minute; when "Run" LED begins to flash, which indicates successful initialization.

### 5.3 COMMISSIONING PROCEDURE

System commissioning can commence after the monitoring system has completed self initialization. The commissioning procedure is as follows:



Commissioning Tasks	Observation
1. Install OMT	<ul> <li>Activate the OMT Main window. The system Initialization will completed in about 2 minutes.</li> <li>Click "Connect" button to enquire the amplifier's status. Proceed if there is no alarm; else check the failure and attend to the alarm.</li> </ul>
2. Adjust DL ATT	<ul> <li>Observe DL input power from measured value and adjust according accordingly via the ATT1/2 on the front panel.</li> <li>Note: To ensure that the measured DL input power is accurate, one should set the DL ATT to "0" before performing the check.</li> </ul>
3. Configure [Equipment ID]	• Go to [Properties Info] and set [Equipment ID].
4. Comm. Config	• Enable the power supply by selecting "On" in [RF] -> [Switch]; go to [Properties Info.] -> [Comm. Config.] and set OMC Phones No. , the service No. of SMSC, Report Mode.
5. Select Monitoring Parameters	<ul> <li>Select the equipment controlled and monitored parameters.</li> <li>If the external devices are connected to the equipment for management, please enable in the [External Alarm Info.] Interface.</li> </ul>
<ol> <li>Test coverage area field intensity and adjust service antenna.</li> </ol>	<ul> <li>Use test-handset to verify field intensity within the coverage area. If needed, realign the service antenna to achieve the desired coverage.</li> <li>Note: If during operation, the equipment gain could not be set to maximum or the output power is not high enough due to insufficient donor and service antennas isolation, then the antennas' position should be changed to increase isolation. If the output power is too high and ALC is activated, then adjust the DL ATT to achieve optimal DL Gain.</li> </ul>
<ol> <li>Verify UL gain and ensure test call produces good voice quality and there is no interfering BTS</li> </ol>	<ul> <li>Adjust UL gain on TMA if required and perform test calls. Typically, the UL gain is set around 5dB less than DL gain. Perform test calls in the coverage area while adjusting UL gain on TMA if required.</li> <li>Verify again that there is no unacceptable interference to BTS.</li> </ul>

## 6 TROUBLESHOOTING

Following installation and commissioning, troubleshooting tasks to handle alarms may be required. Here below is the alarm list of the equipment and diagnosis.

Alarm	Diagnosis
AC Power Failure Alarm	• Check AC power cable and verify AC mains supply is normal. During power failed alarm, DC power supply has no output.
DC Power Fault Alarm	• Check if DC output power is overload or short-circuited, if not, it would be the fault of PSU.
Li-ion Battery Fault Alarm	<ul> <li>Check if the Li-ion Battery connection is correct or any damage of the battery;</li> <li>Replace the fault Li-ion Battery if it couldn't be energized.</li> </ul>
DL PA Alarm	<ul> <li>Check power and signal connections of respective modules;</li> <li>If the power and signal wire connections are OK, then the respective modules may be faulty;</li> <li>Replace the fault modules and return for repair.</li> </ul>
DL Output Power Low Alarm	<ul> <li>Reset the output power low threshold;</li> <li>Reset the ATT value to increase the Gain;</li> <li>Check if Channel No. setting is correct;</li> <li>Check the cable connections;</li> <li>If alarm can not be cleared, check the equipment.</li> </ul>
DL Input Power Overload Alarm	<ul> <li>Eliminate alarm by correct setting of the input power overload threshold;</li> <li>Check if the intensity of signal source is large enough;</li> <li>If alarm can not be cleared, check the equipment.</li> </ul>
Chassis/PA Over- temperature Alarm	<ul> <li>Eliminate alarm by setting of temperature threshold;</li> <li>If alarm can not be cleared, apply climatic protection to the equipment.</li> </ul>
DL VSWR Alarm	• Check MT antenna system if there is downlink VSWR alarm.

## 7 APPENDICES

### 7.1 APPENDIX A: SAFTY NOTICES AND ADMONISHMENTS

This document contains safety notices in accordance with appropriate standards. In the interests of conformity with the territory standards for the country concerned, the equivalent territorial admonishments are also shown.

Any installation, adjustment, maintenance and repair of the equipment must only be carried out by trained, authorized personnel. At all times, personnel must comply with any safety notices and instructions.

Specific hazards are indicated by symbol labels on or near the affected parts of the equipment. The labels conform to international standards, are triangular in shape, and are colored black on a yellow background. An informative text label may accompany the symbol label.

Hazard labelling is supplemented by safety notices in the appropriate equipment manual. These notices contain additional information on the nature of the hazard and may also specify precautions.

#### Warning:

These draw the attention of personnel to hazards which may cause death or injury to the operator or others. Examples of use are cases of high voltage, laser emission, toxic substances, point of high temperature, etc.

#### Alert:

These draw the attention of personnel to hazards which may cause damage to the equipment. An example of use is the case of static electricity hazard.

Caution notices may also be used in the handbook to draw attention to matters that do not constitute a risk of causing damage to the equipment but where there is a possibility of seriously impairing its performance, e.g. by mishandling or gross maladjustment. Warnings and Cautions within the main text do not incorporate labels and may be in shortened form.

### 7.2 APPENDIX B: SERVICE POLICY AND RETURN OF EQUIPMENT

The repair of individual units and modules of this equipment is not considered practicable without factory facilities. It is, therefore, the policy of Comba whereby faulty units or modules are returned to the local agent for repair. To enable an efficient, prompt after sales service to be provided for the diagnosis, repair and return of any faulty equipment, please comply with the following requirements.

Items to be sent for repair should be packaged so as to provide both electrostatic and physical protection and a Repair Material Authorization (RMA) should be completed giving the required information. A sample RMA form is provided in Appendix C.

This request must be included with the item for repair, items for repair should be sent to the nearest Comba office:

COMBA TELECOM LTD.

Hong Kong Office Address: Room 5, 13/F., Vanta Industrial Centre, No 21-33 Tai Lin Pai Road, Kwai Chung, N.T. Hong Kong Tel: +852 2636 6861 Fax: +852 2637 0966 Singapore Office Address: No. 1 Kaki Bukit View, #02-10 Techview, Singapore 415941 Tel: + 65 6345 4908 Fax: + 65 6345 1186 Thailand Office Address: 240/34 Ayothaya Tower 18th Floor, Ratchadapisek Road, Huaykwang, Bangkok 10320, Thailand Tel: +66 2274 1618-9 Fax: +66 2274 1620 India Office Address: Suite No. 2, E-172, TSH House, Greater Kailash - I, New Delhi - 110 048, India Tel: + 91 11 4173 9997 / 8 Fax: + 91 11 4173 9996 Sweden Office Address: Gustavslundsvagen 147, S- 167 51 Bromma, Stockholm, Sweden Tel: +46 8 25 38 70 Fax: +46 8 25 38 71 Brazil Office Address: Avenida Engenheiro Luiz Carlos Berrini 1297, cj 122, 04571-090 Brooklin Novo, São Paulo, Brazil Tel: +55 11 35093700 Fax: +55 11 35093720 Dubai Office Address: P.O. Box 450583, DUBAI, U.A.E. Tel: +971 0 4 433 5320 Fax: +971 0 4 422 6774 US Office Address: Comba Telecom Inc. 2390 Bering Drive, San Jose, CA 95131, USA Tel: +1 408 526 0180 Fax: +1 408 526 0181 China Office

Address: No.10, Shenzhou Road, Guangzhou Science City, Guangzhou, China

Tel: + 86 20 2839 0000 Fax: + 86 20 2839 0136

## 7.3 APPENDIX C: RMA (RETURN MATERIAL AUTHORIZATION) FORM

		Tel: +852 2636 680	nue, Hong Kong Science 61 Fax: +852 2637 0966	Park,Tai P	o, Hong Kong
				RMA I Date:	Request Form
From:	Address: Tel:	Fax:			
	E-Mail: ATTN:		_		
Produ	ct Information:				
Item 1	Model	Serial Number	Return Category	Qty	Problem Description
2					
4	5. 				
5					
7					
8					
10					
Trans Tra Note:	portation Information Location of Product Insportation Methor Shipping Forwarde Location of Product' m not determined.	on: t: d: r: uust be stated, while 'Transp	portation Method' or 'Ship	bing Forwa	arder' can be left blank if
Trans Tra Note:	portation Information Location of Production Insportation Methor Shipping Forwarde Location of Product' m not determined.	on: t: r: uust be stated, while 'Transp	portation Method' or 'Ship Signature:	bing Forwa	arder' can be left blank if
Trans Tra Note:	portation Information Location of Production Insportation Methor Shipping Forwarde Location of Product' m not determined.	on: it: r: uust be stated, while ' <b>Trans</b>	sortation Method' or 'Shipp Signature:	bing Forwa	arder' can be left blank if
Trans Tra Note: For Co Return Recor Shipm Appro	portation Informati Location of Produc Insportation Metho Shipping Forwarde Location of Product' m not determined.	on: :t: 	Signature: MA#):	bing Forwa	arder' can be left blank if
Trans Tra Note: For CC Return Recor Shipm Appro	portation Informati Location of Produc Insportation Methor Shipping Forwarde Location of Product' m not determined.	on: :t: :: :: :: :: ust be stated, while 'Transp horization Number (Ri Cost to be paid by:	Signature: MA#):	Ding Forwa	arder' can be left blank if

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