Tellumat

PubliCell Manual

Tellumat (Pty) Ltd

Table of Contents

Glossary of Terms

A	AT Command	Command between the System SW & the GSM Module
B	Build State	A collection of sub items that make up the finished item
G	GSM	Global System Mobile
H	HTTP	Hyper Text Transfer Protocol
I	IBO	Installed Base Owner
	IC Card	Integrated Circuit Card, Means of payment for Payphones
	ID	Phone Identification Number
	IMEI	International Mobile Equipment Identity
	IP	Internet Protocol
	ISP	Internet Service Provider
L	LAN	Local Area Network
	LCD	Liquid Crystal Display
M	MS	Mobile Station – In the application refers to the PubliCell
	MS ISDN	Mobile Station-Integrated Services Digital Network
	MCC	Mobile Country Code – identify country
	MNC	Mobile Network Code – 2 digit code that identifies the GSM network
O	ORACLE Application Server	Server interfacing between the ORACLE data Base & the Web
P	PIN	Personal Identification Number.
	PMS	Payphone Management System: This is based in SA and is administered by TELLUMAT on behalf of the users.
	PUK	Personal Unblocking Key
S	SIM	Subscriber Identity Module
	SIM Card	Subscriber Identity Module - Card
	SIM PIN	Subscriber Identity Module - Personal Identity Number
	SME	Short Message Entity
	SMS	Short Message Service
	SMS SC No.	Short Message Service - Service Counter Number
	Spin Test	A test that checks the top level functionality of the PubliCell
T	TCP/IP	Transmission Control Protocol / Internet Protocol
W	WAN	Wide Area Network

Chapter 1: PubliCell Overview

PubliCell is a supervised public Payphone designed for GSM networks.

- ETSI Type Approved
- Supports multiple payment (IC phone cards, SIM cards, optional coin operation)
- Make and receive calls
- Dual Band – GSM 900, 1800 MHz
- Phonebook, SMS and Voicemail with SIM card
- 12V ac/dc power supply
- Internal Battery for backup power
- Rugged and vandal-resistant Payphone
- Customised colour logo plate and case colour
- Cable Antennae, optional High Gain Antennae
- Modular design for ease of maintenance
- Reports to internet based Management System:
    - Allows grouping of phones
    - Fault reporting and –logging
    - Payphone operator reports on individual web page
    - Custom configuration parameters
    - Remote software download
- User interface includes:
    - Graphic Display with backlight
    - Function Keypad
    - Keypad (Dial buttons)
    - Voice

--- End of Chapter Overview ---

Chapter 2: Operation

This chapter consists of 2 parts. The first part focuses on the Phone User and the second part on the Management of the phone.

User Operation

This part will show you how to use the PubliCell Payphone as a personal cell phone or to just make a phone call.

Using PubliCell to make a phone call

To make a call either a valid **SIM -** or **IC card** can be used.

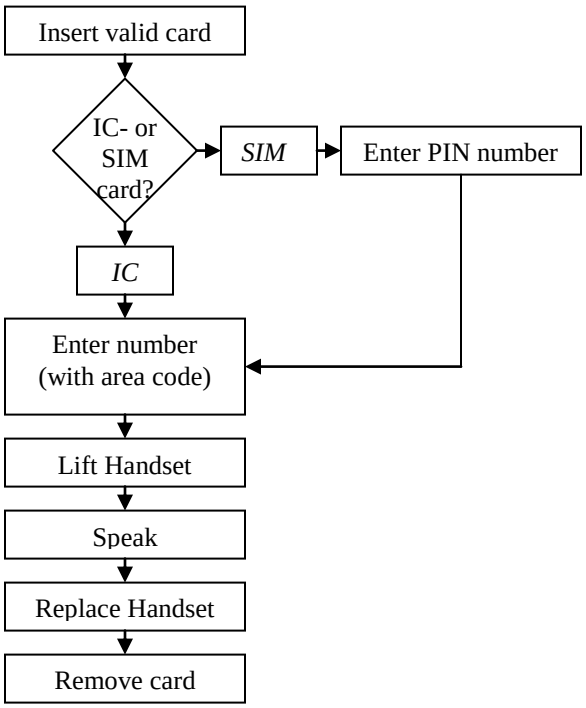
IC *card:* ***I****ntegrated* ***C****ircuit card.*
An IC card is a prepaid telephone card with a fixed amount of available credit on it that cannot be reloaded. A valid card would be one that is supplied by an acknowledged telephone company and has enough credit on it to make a phone call.

SIM *card:* ***S****ubscriber* ***I****nterface* ***M****odule*
Valid SIM cards would be prepaid or contract cards bought from the service provider on whose network this phone is going to operate on.
The list of cards accepted by the phone can be configured by the phone owner by means of black- and white lists.
If an invalid or faulty card is placed in the card reader, the following will be displayed:

Invalid Card

Please remove card

Figure 1: Flow diagram of how to make a call



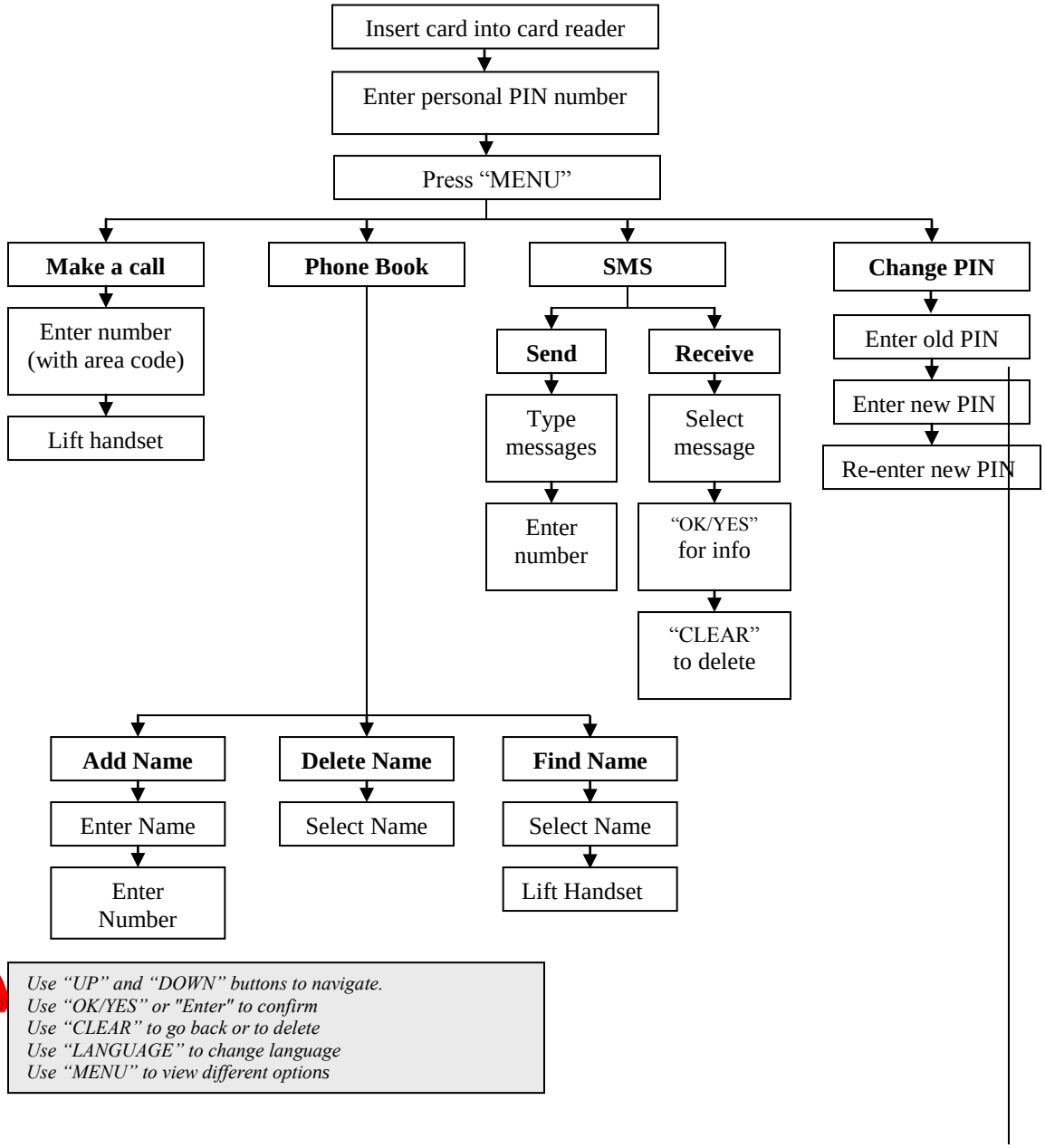
Using the PubliCell as you personal cell phone

All you need is a valid ***SIM card***.

When you insert your SIM card into the PubliCell you'll be able to ***make and receive calls*** from your own cell phone number, receive ***voice mail***, send and receive ***SMS***s and store phone numbers of friends and associates in your ***phone book***.

SMS: ***S****hort* ***M****essages* ***S****ervice*
SMS is a text message that you can send from your phone to another cell phone.

Figure 2: Flow diagram on using a SIM card



Use "UP" and "DOWN" buttons to navigate.
Use "OK/YES" or "Enter" to confirm
Use "CLEAR" to go back or to delete
Use "LANGUAGE" to change language
Use "MENU" to view different options

Waiting times

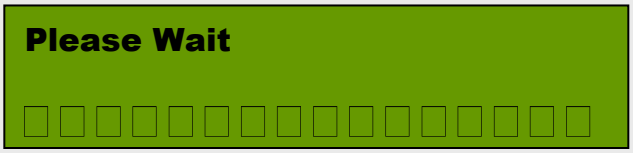
When interacting with the PubliCell there will be times when the phone needs to perform activities taking a number of seconds. These times are indicated below:

When	Duration	Reason
Insert Card	± 6 seconds	Verify that it is a valid card
Entered PIN number	± 6 seconds	Verify correct PIN number
Choose Phone Book options	± 20 seconds	Update names in Phone Book

There are also short waiting periods in the region of 1 to 10 seconds when:

- *A SMS is being sent*
- *Updating received messages*
- *Saving a new name in the Phone Book*
- *Deleting a name from the Phone Book*
- *Storing a new PIN number*
- *A card is removed*

The following is displayed during this waiting time:



Management System Operation

This part gives a brief overview of the Payphone Management System.

All the PubliCell Payphones are managed by the PMS. All phone information like software, configuration, location and fault reports are stored in the PMS database. The PMS resides on a dedicated Server with Microsoft SQL Server OR Microsoft Desktop Engine. The PMS is pre-loaded with default reports on the faults and usage of the phones which can be run and viewed based on user specified parameters.

System Architecture

Note: Read more about the PMS in chapter 10 of this Technical Manual.

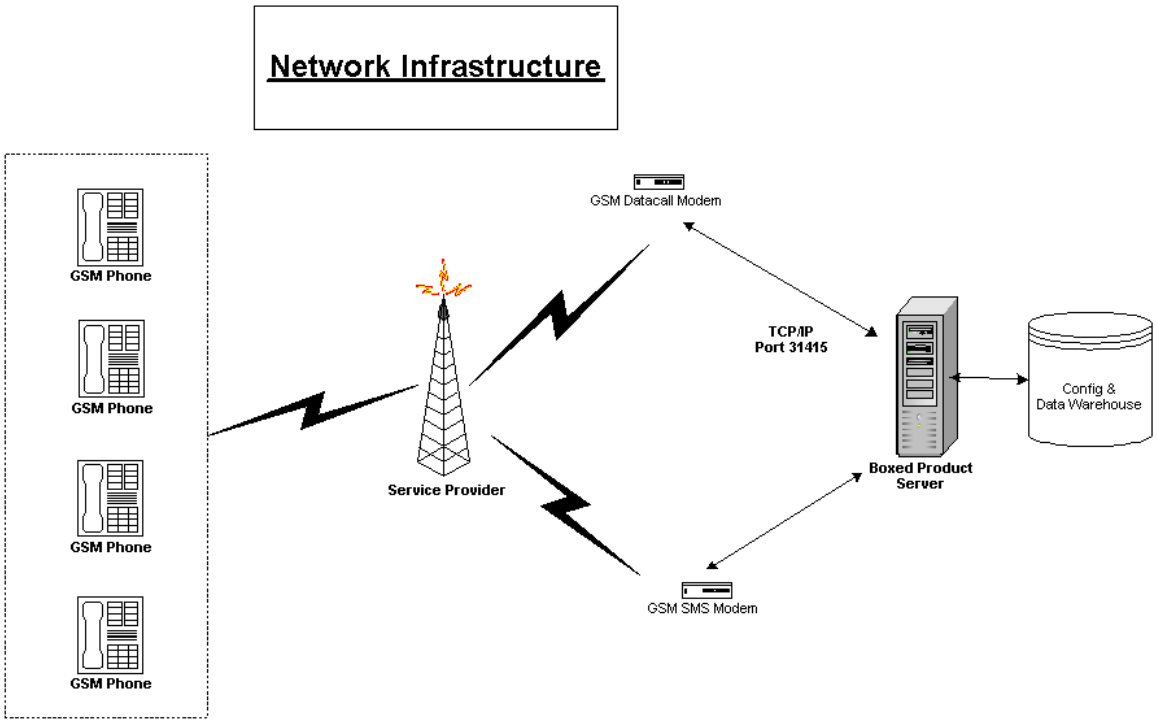


Figure 3: System Architecture

Core System Elements

For successful communication between the Payphone Management System (PMS) and the PubliCell the following system elements are required:

SMS Server (GSMModem.exe)

- Communication between the PMS and the Payphone will be initiated by the sending of a SMS from the PMS to the Payphone. This process is referred to as **polling**.
- The SMS server is the gateway for sending SMS's to the Payphone and receiving SMS's back from the Payphone.
- A dedicated GSM modem is required for the SMS Server's operation.

Session Manager (DataComms.exe)

- The session manager is responsible for accepting incoming data connections from Payphones through which new configurations can be downloaded and phone performance, behaviour and 'health' characteristics are uploaded.
- The session manager requires dedicated modem(s). Depending on call volume, a modem should be added for every 150 to 350 payphones managed by the system.
- The session manager listens for TCP/IP connections on port 31415 through existing Windows remote access functionality. Authentication and security is therefore also managed by the operating system.

--- End of Chapter Operation ---

Chapter 3: Configuration Guide

This chapter explains the configuration parameters that an owner of the Payphone needs to specify when purchasing and managing these Payphones.

For example: Colour of the phone, messages on the phone screen (LCD), card accepted, etc.

Some of these parameters can be changed from the phone keypad; other parameters can be changed via the Management System. Some parameters can only be changed by Tellumat.

The following areas of parameters will be discussed:

- Advertising messages (Example: Advertising SMS.)
- SIM Card configuration. (Example: Networks to accept.)
- IC Card configuration. (Example: Charge per minute.)
- Management System contact configuration. (Example: ISP password.)
- Phone specific parameters. (Example: Phone telephone number.)
- Messages on phone screen (LCD). (Example: Welcome message.)

NB: All of these parameters need to be specified by the customer to ensure that the phone operates as required by the customer.

A form to complete is provided in this Manual. See Appendix A

Advertising Configuration

The advertising configuration consist of the following 3 sections:

- Advertising SMS.
- Graphic picture slides.
- Scrolling message while busy with a call.

Advertising SMS.

Note: These SMS messages can currently only be changed by Tellumat.

When a phone user inserts a SIM card and reads his SMS messages a number of pre-configured messages are displayed to the user.

Number of messages supported: 3
Length of each message: 160 characters.

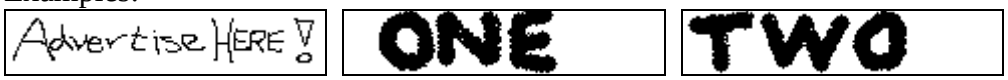
Example:

Advertise here One Advertising SMS for the Tellumat PubliCell GSM phone.

Graphic picture slides.

Note: These slides can currently only be changed by Tellumat.

Examples:



Scrolling message.

This message will scroll across the LCD when the phone user is busy with a voice call.

Number of characters: 250

Example

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
	T	H	I	S		I	S		Y	O	U	R		P	E	R	S	O	N	A	L		C	E
L	L		P	H	O	N	E	.		S	E	N	D		S	M	S	,		M	A	N	A	G
E		Y	O	U	R		O	W	N		P	H	O	N	E		B	O	O	K		&		R
E	C	E	I	V	E		V	O	I	C	E	M	A	I	L	.		T	H	E		S	M	A
R	T		W	A	Y		T	O		B	E		C	O	N	N	E	C	T	E	D	.		*
	T	H	I	S		I	S		Y	O	U	R		P	E	R	S	O	N	A	L		C	E
L	L		P	H	O	N	E	.		S	E	N	D		S	M	S	,		M	A	N	A	G
E		Y	O	U	R		O	W	N		P	H	O	N	E		B	O	O	K		&		R
E	C	E	I	V	E		V	O	I	C	E	M	A	I	L	.		T	H	E		S	M	A
R	T		W	A	Y		T	O		B	E		C	O	N	N	E	C	T	E	D	.		*

SIM Card Configuration

The SIM card configuration consists of:

- Network providers allowed.
- SIM card serial numbers allowed.

Network Providers allowed.

The Network name or the MCC and MNC numbers of the networks that must be allowed to use the phone must be specified.

Note : If all SIM cards must be accepted, please specify: ALL

Example

Network Name or MCC and MNC Number	SMS Service Centre Number	Allows voice calls
Vodacom	2786121346	Yes
6551	2786121346	Yes
MTN-SA	278812345	No

SIM card serial numbers allowed

This specifies which SIM cards that will be allowed to be used in the phone.

- **Start of range:** This is the first card serial number that will be accepted.
- **End of range**: The last card serial number that the will be accepted.

Example

Start of range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End of range	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

IC Card Configuration

The IC card configuration consist of:

- Rate table.
- Zone definition.
- Peak time definition.
- Accepted IC cards.
- Rejected IC cards.
- Public Holidays.
- Free Numbers.
- Barred numbers.
- Currency symbol to display on LCD.

Rate Table *(IC Card only)*

Note: For the Zone number refer to the Zone definition section below.

For every Zone the customer can charge different rates

Definition:

- **Metering Period**: Time duration for which a user is charged to make a call.
- **Charge Amounts**: Amount charged per metering period during a call.

Example

Zone number		Metering Period (in seconds)					Charge Amounts (in cents)				
		1st	2nd	3rd	4th	5th & on	1st	2nd	3rd	4th	5th & on
01	peak	0	60	30	30	30	150	70	60	50	40
02	off-peak	10	60	50	50	50	100	30	30	30	30
03	peak	0	20	40	30	30	150	70	60	50	40
04	off-peak	0	50	100	150	150	100	30	30	30	30
05	peak	0	10	30	50	50	100	50	20	10	10
06	off-peak	0	30	30	30	30	100	30	30	30	30
07	peak	0	20	20	20	20	250	50	50	50	50
08	off-peak	40	40	40	40	40	160	40	40	40	40

Zone definition *(IC Card only)*

Zones specify regions (by dial code).

Note: These Zone definitions are used in the Rate Table above.

Number of Zones allowed: 16
Maximum number of digits in prefix: 10

Example:

PREFIX										Zone number
1	2	3	4	5	6	7	8	9	10	
0	1	0								01
0	1	1								01
0	1	2								01
0	1	3	4	5						02
0	1	4								02
0	1	5								03
0	1	6								04
0	1	7								05
0	1	8								06
0	1	9								07
0	2	0								08

Note: Must contain ALL area codes that will be dialled.

Peak time definition *(IC Card only)*

The owner of the phone can decide what to charge for calls made on the phone using an IC card. Normally calls made when there is a lot of network traffic (Peak time), cost more than calls made during times when the network is not so busy (Off-Peak time).

The peak times for each day of the week and for public holidays need to be specified.

Example

Day of week	Start Time				End Time				
	Hours		Minutes		Hours		Minutes		
Sunday	0	0	0	0	0	0	0	0	*no peak period*
Monday	0	8	0	0	2	0	0	0	*peak period from: 08:00 → 20:00*
Tuesday	0	8	0	0	2	0	0	0	*peak period from: 08:00 → 20:00*
Wednesday	0	8	0	0	2	0	0	0	*peak period from: 08:00 → 20:00*
Thursday	0	8	0	0	2	0	0	0	*peak period from: 08:00 → 20:00*
Friday	0	8	0	0	2	0	0	0	*peak period from: 08:00 → 20:00*
Saturday	0	8	0	0	1	3	0	0	*peak period from: 08:00 → 13:00*
Holiday	0	0	0	0	0	0	0	0	*no peak period*

Note: No peak days must all be 0's.

Accepted IC cards *(IC Card only)*

This specifies the IC cards that will be allowed to make calls on the phone.

The manufacturer code, range and token to monetary value conversion factor must be specified for each card type to be used.

Definitions:

- **Manufacturer code**: Manufactured into IC card. Code for specific manufacturer
- **Start of range:** This is the first card serial number in the range.
- **End of range**: The last card serial number in the range.
- **Tokens to value**: Amount of currency per token

Example

Manufacturer code	b	e	4	f	a	c	6	4												
Start of range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
End of range	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Tokens to value				5	*=5 cents per token*															

Rejected IC cards *(IC Card only)*

This specifies which IC cards will NOT be allowed.

The manufacturer code and range for each group of cards that must not be allowed to be used in the phones, can be specified.

Definitions:

- **Manufacturer code**: Manufactured into IC card. Code for specific manufacturer.
- **Start of range:** This is the first card serial number in the range.
- **End of range**: The last card serial number in the range.

Example

This example shows that no cards are blacklisted.

Manufacturer code	b	e	4	f	a	c	6	4												
Start of range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End of range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Example

This example shows card range that is blacklisted.

Manufacturer code	b	e	5	g	a	c	6	4												
Start of range	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
End of range	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1

Public Holidays *(IC Card only)*

Note: This section may be left blank if no off-peak rates on public holidays are required.

Public Holidays are days during which call tariffs are charged at the off-peak rate.

Number of public holidays allowed: 20

Example:

	Day		Month		
Holiday 1	0	1	0	1	*1 January*
Holiday 2	1	9	0	5	*19 May*
Holiday 3	2	5	1	2	*25 December*

Free Numbers *(IC Card only)*

Note: This may be left blank.
A free number is a number that can be dialled from the Payphone, with an IC card inserted in the card reader, and no money will be deducted from the IC card. The user therefore is not charged for the call.

The customer must list all the numbers that a user can call for free.

Number of Free numbers allowed: 10
Length of each number: 15 digits.

Example:

Free	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number 1	0	8	6	5	7	8	1	2	5	8					
Number 2	0	0	2	7	2	1	1	0	2	2	3	4	5		
Number 3	1	0	2	3	6										
Number 4	2	5	6	7	8	9	4								

Barred Numbers.

Note: This may be left blank.

A barred number cannot be dialled from the Payphone, using an IC card.
The customer must list all the numbers that users are not allowed to call.

Number of Barred numbers allowed: 10
Length of each number: 15 digits.

Example:

Barred	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number 1	0	9	2	6	4	6	1	2	5	8	9	6	3		
Number 2	0	7	9	1	2	5	7	8	9	4					
Number 3	2	2	2	0	2										
Number 4	0	4	4	3	2	9	8	5	1	6					

Currency symbol *(IC Card only)*

For example in South Africa R is used and in Uganda Ush.

Management System Contact Information

- **Internet service provider (ISP) Telephone number**: Telephone number listed by Internet service provider. Number PubliCell dials for a data call.
- **Internet (ISP) user name**: Customer defined username.
- **Internet (ISP) password**: Customer defined password.
- **Internal SIM SMS Service Centre Number**.

The telephone will use this to log into the ISP (Internet Service Provider) chosen by the customer.

Example:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Internet Service Provider Telephone Number	0	2	1	9	8	7	6	5	4	3										
Internet User Name	T	E	L	L	U	M	A	T	1	2	3									
Internet Password.	p	a	s	s	w	o	r	d												

Phone specific parameters

Each phone has a number of parameters that are specific and unique to that phone.

- **Internal SIM PIN**: This number must stay secret to prevent theft of the SIM.
- **Location**: This is important for managing the phone later.
- **Allow Incoming Calls to Internal SIM**: Allows incoming calls to phone. (No SIM card or IC card in card reader.)
- **Allow Incoming Calls to External SIM**: Allows incoming calls to a user (to his/her SIM card number) when user SIM card is inserted into card reader.
- **Ring Volume**: Ring Loud or Soft when receiving a incoming call. (Loud=255 Soft=10)

Example

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Location	B	l	o	u		R	o	t	e		H	o	t	e	l	.				
Internal SIM PIN	1	2	3	4																
Phone Telephone number	0	8	2	1	3	4	5	6	7	8	9									
Allows Incoming Calls to Internal SIM	N																			
Allows Incoming Calls to External SIM	Y																			
Ring Volume	2	0	0																	

*PIN: **P**ersonal **I**dentity **N**umber*
*PUK: **P**IN **U**nblock **K**ey*
After you have entered a wrong PIN for 3 times in a row your SIM card will be blocked. To unblock the SIM card vou need to enter vour PUK number.

Messages on the phone screen (LCD)

The Message section consists of:

- Number of Languages required. (1 or 2 or 3)
- Phone Idle messages. (Example: Welcome)
- Messages during Calls. (Example: Dial number)
- Menus. (Example: Emergency 911)

Number of Languages required

When the phone user presses the Language button on the phone the Message on the LCD is displayed in another language. The phone can support up to 3 languages.

The customer must translate all the messages into each of the languages required.

Note: If 1 only English is required, NO translations by the customer are required.

Phone Idle messages (Welcome message)

1.

						T	E	L	L	U	M	A	T				
	P	l	e	a	s	e		I	n	s	e	r	t		C	a	r	d	

2.

						W	E	L	C	O	M	E					
	P	l	e	a	s	e		I	n	s	e	r	t		C	a	r	d	

3.

				0	8	0	1	2	3	4	5	6	7				
	P	l	e	a	s	e		I	n	s	e	r	t		C	a	r	d	

Note:
The 3 messages above (1, 2 & 3) are alternate and are displayed for one second each on the LCD when there is no card in the card reader and the handset is on hook.

Messages during a Call

1. Enter phone number of person you want to add in the Phone Book, or the person's phone number you want to send the SMS to.

				E	n	t	e	r		N	u	m	b	e	r		

2. Ask user to enter his/her PIN number

		E	n	t	e	r		P	I	N		n	u	m	b	e	r		

3. PIN was entered incorrectly and user should enter PIN again

			E	n	t	e	r		P	I	N		a	g	a	i	n		

4. Phone busy verifying that correct PIN was entered.

		W	a	i	t		t	r	y	i	n	g		P	I	N		

5. Ask user to enter his/her PUK number

		E	n	t	e	r		P	U	K		n	u	m	b	e	r	

6. Reminder to remove card from card reader

	P	l	e	a	s	e		r	e	m	o	v	e		c	a	r	d

7. Informs user of status of phone. Phone is connected to PMS.

					R	E	P	O	R	T	I	N	G					
				P	l	e	a	s	e		w	a	i	t				

8. Ask the user to be patient while phone is busy

				P	l	e	a	s	e		w	a	i	t				

9. Informs user that phone is busy

								B	u	s	y							

10. Display when ending a call.

				T	h	a	n	k		Y	o	u						

11. The number the user dialled is invalid and will not be connected

			I	n	v	a	l	i	d		n	u	m	b	e	r		

12. The card was put into the card reader the wrong way or the card used is an invalid card.

			I	n	v	a	l	i	d		c	a	r	d				

13. When the "UP" button is pressed during a call the user increases the volume

					V	o	l	u	m	e		U	P					

14. When the "DOWN" button is pressed during a call the user decreases the volume

					V	o	l	u	m	e		D	O	W	N			

Incoming Call message

15. When phone is receiving a call it will display:

			I	N	C	O	M	I	N	G		C	A	L	L			

Making a Call messages

16. Enter the telephone number of the person you want to call.

				D	i	a	l		N	u	m	b	e	r				

17. After entering the telephone number press “OK/YES” to dial

		a	n	d		p	r	e	s	s		O	K	/	Y	E	S	

18. Phone prompts user to lift handset to speak

P	l	e	a	s	e		l	i	f	t		h	a	n	d	s	e	t

19. Phone dials the number and waits for connection

						D	i	a	l	l	i	n	g					

20. Informs user that connection is made

							S	p	e	a	k							

21. Ask user to dial a telephone number (IC card)

				P	l	e	a	s	e		d	i	a	l				

22. Phone displays credit available on phone card (IC card)

							C	r	e	d	i	t	=	R				

23. Informs user that a free number has been dialled (IC card)

				F	r	e	e		n	u	m	b	e	r				

24. Informs user that failing to connect call and that the user should try again later

		P	**l**	**e**	**a**	**s**	**e**		**t**	**r**	**y**		**a**	**g**	**a**	**i**	**n**	

Phone book messages

25. While new name is added to the phone book

				S	**a**	**v**	**i**	**n**	**g**		**N**	**a**	**m**	**e**				

26. To enter a name in the Phone Book

					E	**n**	**t**	**e**	**r**		**N**	**a**	**m**	**e**				

27. Confirmation of entry into Phone Book

						T	**h**	**e**		**n**	**a**	**m**	**e**					
						i	**s**		**s**	**a**	**v**	**e**	**d**					

28. Confirmation of removal of entry from Phone Book

						T	**h**	**e**		**n**	**a**	**m**	**e**					
		h	**a**	**s**		**b**	**e**	**e**	**n**		**d**	**e**	**l**	**e**	**t**	**e**	**d**	

29. Message to inform that the entry was not removed from Phone Book

				T	**h**	**e**		**n**	**a**	**m**	**e**		**h**	**a**	**s**			
		N	**O**	**T**		**b**	**e**	**e**	**n**		**d**	**e**	**l**	**e**	**t**	**e**	**d**	

30. Informs user that there are no saved names in Phone Book

	T	**h**	**e**	**r**	**e**		**a**	**r**	**e**		**n**	**o**		**n**	**a**	**m**	**e**	**s**	
	i	**n**		**t**	**h**	**e**		**p**	**h**	**o**	**n**	**e**		**b**	**o**	**o**	**k**		

31. Informs user that no more names can be stored in Phone Book because it is full

	T	**h**	**e**	**r**	**e**		**i**	**s**		**n**	**o**		**s**	**p**	**a**	**c**	**e**		
	i	**n**		**t**	**h**	**e**		**p**	**h**	**o**	**n**	**e**		**b**	**o**	**o**	**k**		

32. Informs user that phone is busy reading information in Phone Book

U	**p**	**d**	**a**	**t**	**i**	**n**	**g**		**p**	**h**	**o**	**n**	**e**		**b**	**o**	**o**	**k**	

33. Phone book was not updated and is not ready for use

					P	**h**	**o**	**n**	**e**		**b**	**o**	**o**	**k**				
					n	**o**	**t**		**r**	**e**	**a**	**d**	**y**					

SMS messages

34. To write the SMS

				T	**y**	**p**	**e**		**m**	**e**	**s**	**s**	**a**	**g**	**e**			

35. After reading a received SMS, option to delete this message.

		D	**e**	**l**	**e**	**t**	**e**		**M**	**e**	**s**	**s**	**a**	**g**	**e**	**?**		

36. Status of phone when sending a SMS

		S	**e**	**n**	**d**	**i**	**n**	**g**		**m**	**e**	**s**	**s**	**a**	**g**	**e**		

37. Confirmation that SMS has been sent

				M	**e**	**s**	**s**	**a**	**g**	**e**		**s**	**e**	**n**	**t**			

38. Informs user that SMS was not successfully sent

		M	**e**	**s**	**s**	**a**	**g**	**e**		**N**	**O**	**T**		**s**	**e**	**n**	**t**	

39. Confirmation that SMS was deleted

		T	**h**	**e**		**m**	**e**	**s**	**s**	**a**	**g**	**e**		**h**	**a**	**s**		
				b	**e**	**e**	**n**		**d**	**e**	**l**	**e**	**t**	**e**	**d**			

40. Informs user that there are no received or saved SMS's.

					T	**h**	**e**	**r**	**e**		**a**	**r**	**e**		**n**	**o**			
							m	**e**	**s**	**s**	**a**	**g**	**e**	**s**					

41. Informs user that the messages could not be retrieved and therefore cannot be read.

						M	**e**	**s**	**s**	**a**	**g**	**e**	**s**					
			n	**o**	**t**		**a**	**v**	**a**	**i**	**l**	**a**	**b**	**l**	**e**			

42. Informs user that phone is busy retrieving SMS received and saved for user to read.

	U	p	d	a	t	i	n	g		m	e	s	s	a	g	e	s	

43. Message to inform that the SMS was not deleted

			T	h	e		m	e	s	s	a	g	e		h	a	s	
	N	O	T		b	e	e	n		d	e	l	e	t	e	d		

Change PIN messages

44. Enter OLD PIN number that user used until now

			E	n	t	e	r		o	l	d		P	I	N			

45. Enter the NEW PIN number that the user wants to use from now on

			E	n	t	e	r		n	e	w		P	I	N			

46. Confirm the NEW PIN number

E	n	t	e	r		n	e	w		P	I	N		a	g	a	i	n	

47. Inform user to be patient while PIN number is changed

	P	l	e	a	s	e		w	a	i	t		w	h	i	l	e	
		P	l	N		i	s		c	h	a	n	g	e	d			

48. Confirmation that PIN was changed successfully and that user must from now on use new PIN

				T	h	e		P	I	N		h	a	s				
				b	e	e	n		c	h	a	n	g	e	d			

49. The changing of the old PIN to a new PIN was not successful. User must retry changing PIN

	T	h	e		P	I	N		h	a	s		N	O	T			
	b	e	e	n		c	h	a	n	g	e	d		r	e	t	r	y

Menu Messages

The telephone numbers to be dialled from some of the Menus must also be specified.

50. When the MENU button was pressed. This menu will be displayed

					S	**I**	**M**		**U**	**s**	**e**	**r**					
		E	**m**	**E**	**r**	**g**	**e**	**n**	**c**	**y**		**C**	**a**	**l**	**l**	**s**	
					S	**e**	**r**	**v**	**i**	**c**	**e**						
					m	**a**	**k**	**e**		**C**	**a**	**l**	**l**				

51. Menu for SIM User

				P	**h**	**o**	**n**	**e**		**B**	**o**	**o**	**k**				
				V	**o**	**i**	**c**	**e**		**M**	**a**	**i**	l				
							S	**M**	**S**								
		B	**a**	**l**	**a**	**n**	**c**	**e**		**E**	**n**	**q**	**u**	**i**	**r**	**y**	
			R	**e**	**c**	**h**	**a**	**r**	**g**	**e**		**S**	**I**	**M**			
				C	**h**	**a**	**n**	**g**	**e**		**S**	**I**	**M**				

52. Telephone numbers to be dialled for each of these Menu items:

			V	o	i	c	e		M	a	i	l				1	2	1			
B	a	l	a	n	c	e		E	n	q	u	i	r	y		*	1	0	0	#	
		R	e	c	h	a	r	g	e		S	I	M			1	0	0	#		

53. This is the Phone Book menu that is displayed:

				F	**i**	**n**	**d**		**N**	**a**	**m**	**e**					
					A	**d**	**d**		**N**	**a**	**m**	**e**					
			D	**e**	**l**	**e**	**t**	**e**		**N**	**a**	**m**	**e**				

54. This is the SMS menu that is displayed:

			S	**e**	**n**	**d**		**M**	**e**	**s**	**s**	**a**	**g**	**e**			
			N	**e**	**w**		**M**	**e**	**s**	**s**	**a**	**g**	**e**	**s**			

55. Options for Emergency

				E	**m**	**e**	**r**	**g**	**e**	**n**	**c**	**y**					
						P	**o**	**l**	**i**	**c**	**e**						
							F	**i**	**r**	**e**							
				A	**m**	**b**	**u**	**l**	**a**	**n**	**c**	**e**					

56. Telephone numbers to be dialled for each of these Menu items:

	E	m	e	r	g	e	n	c	y		9	1	1			
			P	o	l	i	c	e			1	0	0			
					F	i	r	e			1	4	1	2	2	3
	A	m	b	u	l	a	n	c	e		9	1	1			

57. Options for “Service”

				H	**e**	**l**	**p**		**D**	**e**	**s**	**k**				
						H	**o**	**t**	**e**	**l**						
						T	**a**	**x**	**i**							
					D	**o**	**c**	**t**	**o**	**r**						

58. Telephone numbers to be dialled for each of these Menu items:

				H	e	l	P		9	1	1					
			H	o	t	e	l		1	0	0	5	9	1	4	
				T	a	x	i		1	4	1	2	2	6	5	
		D	o	c	t	o	r		9	1	1					

--- End of Chapter Configuration Guide---

Chapter 4: Commissioning Guide

This chapter will guide the user through the commissioning of the phone procedure. This will register the phone on the database of the Management System.

Commissioning

GSM Payphones need to be "commissioned" prior to delivery to the installation site. A "Trusted Centre" office with a clean work area and anti static precautions, temporary mounting racks, valid and adequate GSM network reception and mains power is required. The "Trusted Centre" staff have access to restricted information which if leaked can result in fraud.

Commissioning includes:

- Spin Test: Checking of various functions in the phone
- Initial Set Up: Entering of Telephone number, SMS SC number, SIM PIN, Management System SMS number, ISP Tel number, ISP user name, ISP Password, Location, Time and Date.
- Insertion of the internal SIM
- Registration on the Management system
- Download of the Configuration Software.
- Functional test

Detailed Commissioning Instruction

1. **Unpack** – It is recommended that the GSM Payphones are unpacked in a "Trusted Centre". The phones can be mounted temporarily on a rack or stand.

2. **Open** the front case using the keys provided

3. **Connect Antenna** – The GSM Payphone antenna is supplied with the phone. Release the two black buttons on the right hand side of the plastic case & swing the case out. The ANTENNA I/O is seen towards the top of the plastic case. Screw the connector into the socket & gently tighten up.

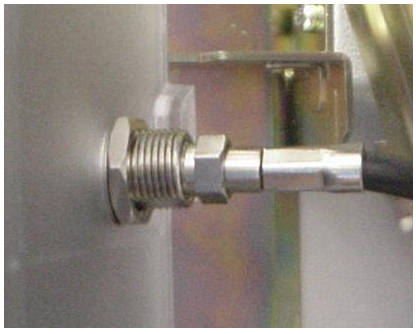


Figure 4: Antenna connector at back of plastic case

4. **Connect Battery** - The GSM Payphone battery (6V) is supplied with the phone. Place the battery in the battery bracket and tie it with the supplied cable tie. The battery is connected to the control board by the loom with the fuse. (See Power Supply Installation page 39)

5. **RTC On** – Set the RTC switch to "ON". The RTC switch is on the Control Board

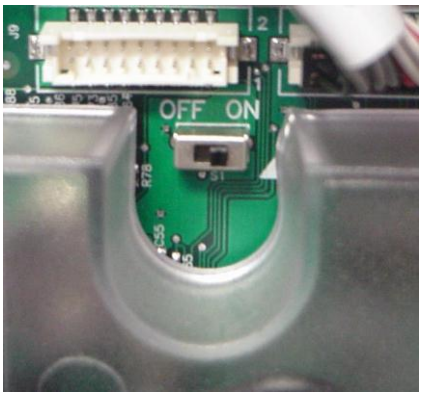


Figure 5: Real Time Clock Switch on Control Board

This provides back up power from the Real Time Clock Lithium battery to the Real Time Clock circuit. The Real Time Clock is used to determine time periods for on and off peak charge rates. The RTC switch should be in the "OFF" position for air transportation.

6. **Apply Power** –The Mains Power Supply Unit should be used to provide the 12Vac @ 2A required to power the GSM Payphone. Connect the 12Vac supply - through the slot in the rear case- to the Termination Board.
(See Figure 6)

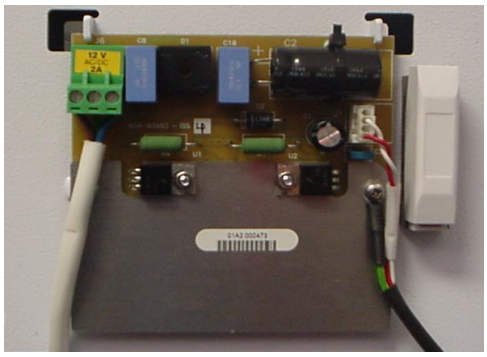


Figure 6: Power from Power Supply Unit – J6 on Termination Board

7. **Wait ~40 seconds** - On application of power the GSM Payphone "system initialisation" takes about 40 seconds. Only when display reads: "please insert card" go on to step 8.

After system initialisation the display will show the following: " Starting", "Power on, Wait" and then "Please Wait" with task completion bar graph. Now the phone will display the "please insert card" message:

Default

Please insert card

1. **Maintenance Mode** -Enter ***007#** on the keypad to get into the Maintenance Mode
   NOTE: Normal Payphone operations are not possible in Maintenance Mode.

2. **Configuration Mode**: is a secure mode only to be used at the "Trusted Centre" for initial configuration set-up. To enable this mode press **12345#**. The access code should be restricted to "Trusted Centre" staff only, to prevent fraud.

3. **Press *27** – This allows the user to enter basic configuration data to allow the GSM Payphone to communicate with the Management System. The display prompts for Data to be entered for each field from the keypad, after completing press the " **OK**" button and the display prompts for data entry for the next sequential field. The process is repeated until all fields are complete.

   Data Fields, which must be completed, are:
   - Telephone number – This is the telephone number of your SIM.
     - This is the MSISDN number (The Mobile Subscriber's telephone number as per, the ISDN numbering plan specified in the ITU-T E.164 recommendation), which is supplied with the SIM card and is the telephone number of the SIM (or GSM Payphone once the SIM is fitted into the GSM Payphone).
   - SMS SC number – The SMS Service Centre Number the GSM Payphone dials when sending an SMS.
     - The Service Center (SC) is responsible for the relaying and store-and-forwarding of a short message between a Mobile Station and a SME (**S**hort **M**essage **E**ntity is a facility, which sends or receives Short Messages). An incorrect number will have the result that the Phone would not be able to communicate with the Payphone Management System.
   - SIM PIN – The **P**ersonal **I**dentification **N**umber is used to protect against unauthorised use of The GSM Payphone "Internal SIM".
     - The Internal SIM is used by the GSM Payphone to support payment other than Pre Paid SIM, Incoming Calls and for service calls. The four-digit PIN number supplied with the SIM to be used as the "Internal SIM" is entered. This number should be changed to a secure PIN after commissioning is complete. Refer to "**Changing the GSM Payphone Internal SIM PIN**" procedure. When this number is entered incorrectly the phone would not be able to operate using IC cards. It will also be unable to communicate with Payphone Management System.

- PMS SMS number
  - The GSM Payphone uses this number to send SMS servicing requests to the Management System. This must be the dedicated SMS Modem number. When an incorrect number is stored the GSM Payphone will not be able to communicate with the Management System.
- ISP Tel number
  - This is the dedicated Data Modem number of the management system. Any valid number can be used if more than one modems are configured.
  - A data call is use to download Payphone software and configuration to the phone.
  - The calls can also be routed via a Internet Service Provider (ISP) for VERY remote payphones.
- ISP user name - is used to identify the user name configured on Remote Access of the operating system (or ISP if used).
- ISP Password - is used to identify the password configured on Remote Access of the operating system (or ISP if used).
- Location – Is the **installation site** reference. (e.g. Lift, floor2, Grand Hotel) and should be entered to allow service personnel to locate phones in need of attention. It can also be used to determine the relative profitability of various sites and assist with GSM Payphone management.

NOTE: Press "OK/YES" after each prompt for confirmation on what was entered.

4. **Pressing** the **"CLEAR"** button returns the phone to "Normal Mode"& the display will read: "Please insert card".

5. **Remove Power** – Disconnect the "Power " connector J6, from the Termination Board. (See Figure 6)

6. Remove the Control Board from the phone by first disconnecting the cables from: J10,J11,J13,J15, J17, & J18. Then, lift the Control Board from the Phone and remove the screws as shown in Figure 7.

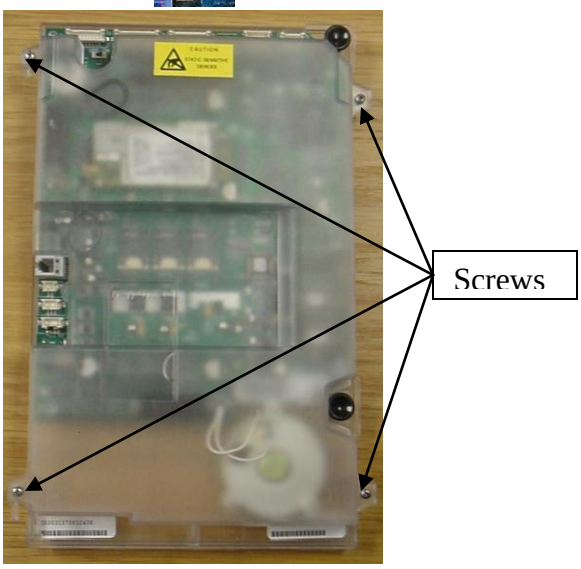


Figure 7: Plastic cover

7. **Fitting the SIM** - The Internal SIM is fitted to the Control Board. The SIM is inserted to the SIM holder marked "SIM".

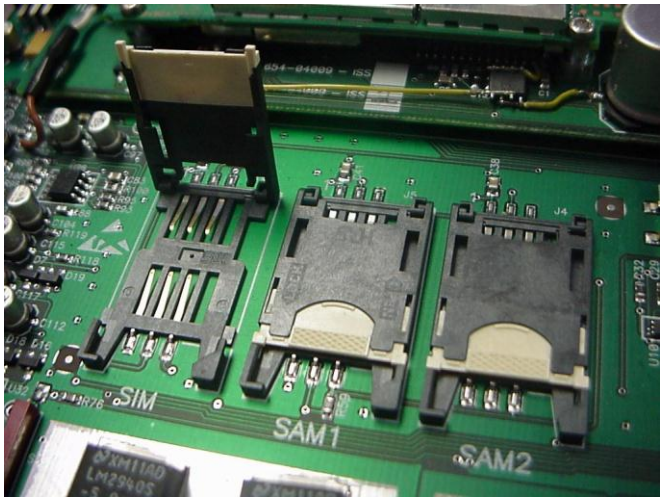


Figure 8: Internal SIM socket on Control Board

8. **Refit the Control Board,** reversing the procedure described in **12.**

9. **Apply Power**– Connect the "Power " connector J6 to the Termination Board. (See Figure 6)

10. **Close the door** and lock.

11. **Wait** - ~40 seconds (to allow phone to Boot Up) Once GSM Payphone displays "Please Insert Card", enter the following key-combinations on the keypad:

12. ***007#** - Maintenance Mode

13. ***51** - Commission SMS. The phone sends a SMS to the Payphone Management System and with this the phone is registered on the Payphone Management System database.

14. Wait until phone displays "**SMS OK**"

15. **0** - Spin Test runs through all diagnostic tests.

16. **CLEAR** - Normal Mode

17. **Make Call –** to check Normal functional operation

Changing the GSM Payphone Internal SIM PIN

Note: The internal SIM PIN needs to be **extremely secret** and all the internal SIM PIN numbers should be different.
Therefore to change the number to a unique PIN number, for security reasons, it is necessary to take the SIM out of the SIM socket and change the Number as follows:

- Take the internal SIM card from socket in the Publicell Phone and insert it into *ANY* GSM Hand Set.
- Enter old –original-PIN.
- Scroll through "MENU" and choose "Change PIN" option.
- Change to new PIN on GSM Phone.
- Switch GSM Phone off and remove SIM card.
- Insert SIM card into SIM socket of control board (see Figure 8)
- NB: It is necessary to change the internal SIM's PIN number in the memory of the phone. Do this in "Maintenance Mode/Configuration Mode " test number *27 (See paragraph 8 on "Configuration Mode")

Summery on commissioning

- **Unpack**
- **Open Case**
- **Connect Antenna**
- **Connect Battery**
- **RTC ON** Switch ON
- **Apply Power**
- ***" Wait "*** 40 seconds
- ***007#** Maintenance Mode
- **#12345** Configuration Mode
- ***27** Initial Set Up; Enter the following:
  - Telephone number
  - SMS SC Number
  - SIM PIN
  - SM SMS Number
  - ISP Tel Number
  - ISP User Name
  - ISP Password
  - Location
- **CLEAR** Normal Mode
- **Remove Power**
- **Remove Control Board cover**
- **Fit SIM**
- **Refit Control Board cover**
- **Apply Power**
- **Close door**
- ***" Wait "*** 40 seconds (allow phone to complete initialisation)
- ***007#** Maintenance Mode
- ***51** Commission SMS; The following will happen in this time:
- ***" Wait "*** Until phone sends confirmation that SMS was send successful.
- **0** Spin Test (Acceptable faults: "Battery Fault". This is when battery is not fitted or run down, that is: under 6 V.)
- **CLEAR** Normal Mode
- **Make Call**

--- End of Chapter Commissioning Guide---

Chapter 5: Installation

This chapter will guide the user through all the necessary steps to install the phone.

Site preparation

Check the following to ensure you have a suitable site to install the phone:

Traffic (Phone Users):

- ☐ Are there enough users in the vicinity of the phone?
- ☐ *Is phone visible to users?*
- ☐ *Is the surrounding ambient noise low enough to be able to use the phone?*
- ☐ *Is the illumination at the site adequate enough to be able to use the phone?*

Supervision (Coin Only)

- ☐ *Is the phone semi- supervised?*

Semi-supervised: Supervised by person within 200m of the phone e.g.

- Security
- Arcade
- Hotel foyer
- Forecourt

Un-supervised: Unattended, for instance on a street corner.

Weather (Environment):

- ☐ *Protected from direct sunlight?*
- ☐ *Protected from direct rain?*
- ☐ *Is phone visible to users?*

Power

- ☐ *Mains power supply within 100m?*

Network Coverage

- ☐ **Location: Is there an adequately strong signal?**
- ☐ *Is the availability of the network such that the phone will always be able to use it?*

(When the network coverage is bad or the network is over-utilised use a high-gain antenna so that phone will have sufficient signal.)

When the site is chosen, the next step is to prepare the site.

Mounting the PubliCell

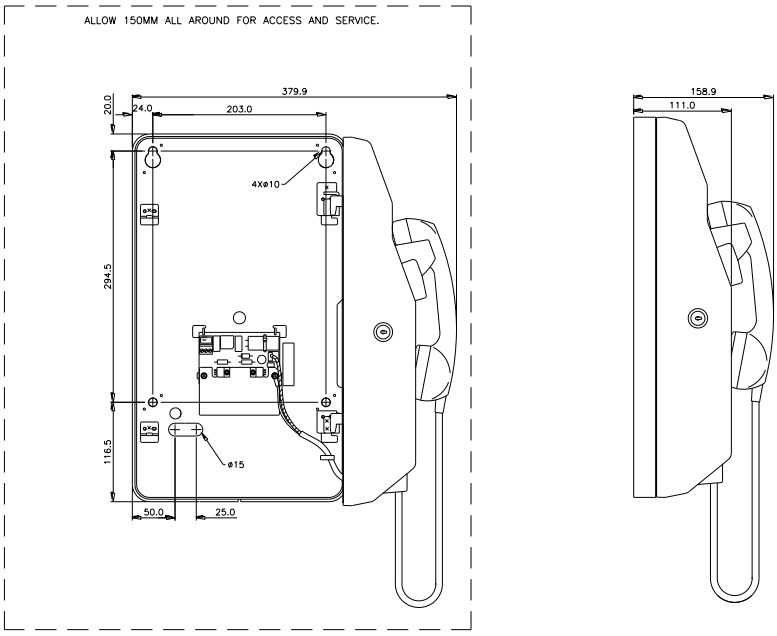


Figure 9: Dimensions of PubliCell

Important Considerations for Mounting of PubliCell

1. Primary weather protection should be provided by a covered installation or booth.

2. The mounting surface must be flat. Uneven surfaces can cause the PubliCell locking mechanism to jam.

3. Ducting should be provided for power (12Vac) and Antenna (RG58 coaxial) Cable.

4. All the cables enter the phone through a hole in the rear case. (See Figure 13)

5. The display should be at the user's eye level or slightly lower to accommodate for children. The recommended height is 150cm from floor level.

6. The 12Vac power cable run should be less than 100m.

7. The Power Supply Unit should be mounted indoors and close to a mains (230Vac) outlet. (The PSU is not weather proof and ingress of water can be hazardous).

Mounting in a Phone Booth

The normal mounting practice is booth based. Custom booths to suit the PubliCell are available from specialist booth manufactures.

Figure 10: PubliCell in Phone Booth

Four M8 mounting holes should be incorporated into the booth as well as a cable entry point, which must have sharp edges removed and be adequately de-burred. The positions relative to the phone rear case are shown in Figure 11.

The booth should be mounted using the manufactures instructions.
Conduit/ducting for the 12Vac power cable must be laid from the PSU installation to the booth.

PubliCell Mounting

The PubliCell must be commissioned at a trusted centre PRIOR to installation. See chapter 4

Note: The Booth must be drilled & tapped as per fig 3 to take four M8 screws.

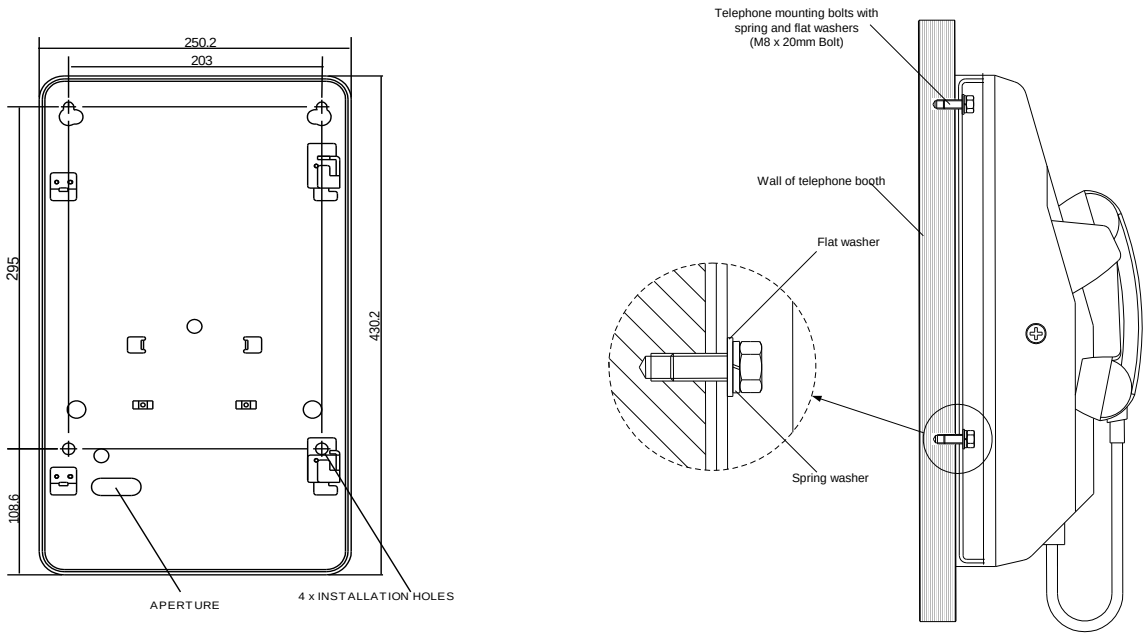


Figure 11: Mounting Dimensions

1. Insert two M8 mounting Screws into the top holes of the Booth or the Mounting plate.
2. Remove Phone from packing box and place rear case down on a horizontal surface.
3. Unlock and open the phone to 90º by lifting the Front Case & opening from left to right, away from the rear case.
4. Disconnect connector J17 from the Control Board and the earth (green) connector from the spade terminal on the front unit.
5. Slide Front Case off Rear Case Hinges & put aside.
6. Hang Rear Case on mounting screws and insert the two lower screws.
7. Use a size 13 spanner to tighten the screws. Check that the Rear Case is not distorted due to over tightening.
8. If the mounting surface is uneven use the large diameter M8 washers as packing under the base (See Figure 12).

9. Hang Front Case on to Rear Case Hinge Brackets, Close the case and check the lock action. If this is stiff then check to see that the Rear Case has not been distorted while fitting.

Figure 12: Mounting Screws and Washers

11. Route the Power Supply cable and Antenna cables through the aperture on the Rear Case leaving sufficient slack to allow the connector to plug into the Termination Board. (See Figure 13)

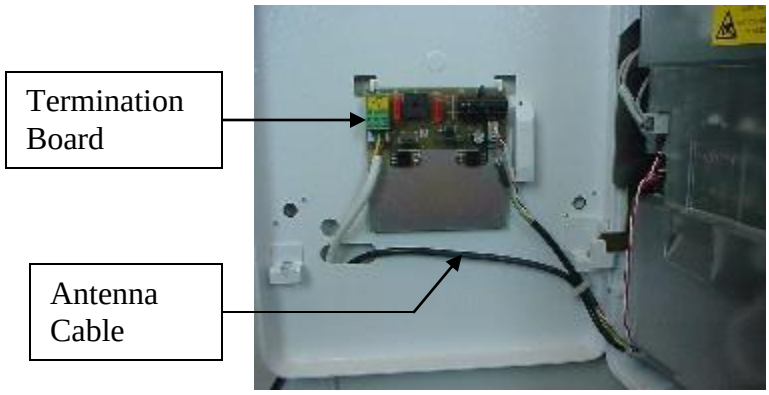


Figure 13: Antenna- and Power Supply Cable entering at rear case.

12. Connect the cable from connector J1 on the Termination board to connector J17 on the Control Board. (See Figure 21)
13. Connect the earth (green) connector to the spade terminal on the front case.

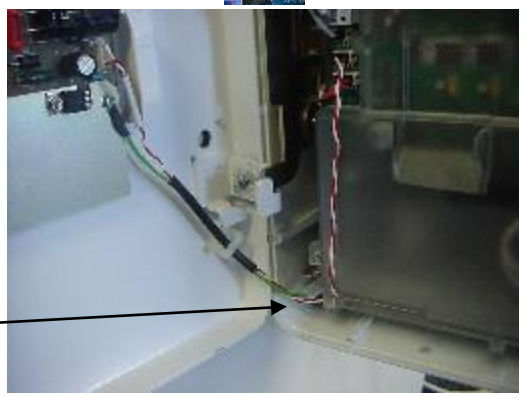


Figure 14: Spade Terminal on Front Case

Mounting Board Installation

An alternative to using a Booth is to use a Mounting Board accessory, which incorporates hidden channels for cables and antenna. (See Spares and Accessory Guide) This provides a simple and cost effective wall mounted installation and is suitable for covered areas. The Mounting Board is mounted to a wall using four M8 Rawl Bolts inserted through the mounting holes coinciding with Rear Case mounting holes.

Figure 15: PubliCell mounted on Mounting Board

1. Remove Phone from packing box and place rear case down on a horizontal surface.
2. Unlock the case and open to 90 degrees by lifting the Front Case on the left hand side off Rear Case. Disconnect connector J17 from the Control Board and the earth (green) connector from the tab terminal on the front unit.
3. Slide the Front Case off the Rear Case hinges and put aside. Use the Mounting Board as a template to mark the positions of the Rawl Bolt holes on the wall.
4. Drill four holes to suit the Rawl bolts.
5. Insert the Rawl Bolts into the drilled holes and remove the bolts from the anchor nuts.
6. Insert top Rawl Bolts through Mounting Board and secure to the wall, do not tighten to anchor nuts.
7. Mark the 12Vac cable entry position on the wall.

8. Run the 12Vac cable from PSU (see PSU Installation) to this point leaving about 500mm of cable for routing through the Mounting Board channel and phone to the Termination Board.
9. Plastic cable ducting is recommended for this, See Figure 16.

Figure 16: Plastic Cable Ducting

10. Remove Mounting Board from the wall and insert the flexible omni directional antenna, supplied with the phone, into the Antenna recess.
11. Insert 12Vac power cable into the Power Cable Recess and secure the Mounting Board to the wall without tightening the Rawl bolts.

Figure 17: Antenna- and Power Cable in Recess of the Mounting Plate

12. Hang the Rear Case on the Rawl Bolts (Rear Case top mounting holes are keyhole shape)
13. Insert lower Rawl Bolts through Rear case and Mounting board.
14. Use a size 13 spanner to tighten the screws. Check that the Rear Case is not distorted by over tightening. DO NOT OVERTIGHTEN
15. If the mounting surface is bowed use the large diameter M8 washers as packing under the base. (See Figure 12)

16. Hang the Front Case onto the Rear Case Hinge Brackets, close and check the lock action. If this is stiff then ensure that the Rear Case has not been distorted due to the tightening of the M8 screws.
17. Route the power supply Cable and Antenna cable through the aperture on the rear cover leaving sufficient slack to allow the connector to plug into the Termination Board. (See Figure 13)
18. Connect the cable from connector J1 on the Termination board to connector J17 on the Control Board. (See Figure 21)
19. Connect the earth (green) connector to the tab terminal on the front unit. (See)

Battery

The phone uses a 6v 3AH sealed gel cell battery to provide 24 hours standby power or at least 4 hrs talk time, in case of mains failure. The battery is also used for solar powered installations (refer Solar.)

The phone will operate without a battery, but this practice is not recommended.

Battery Installation

1. Unlock the case and open to 90 degrees by lifting Front Case on left hand side off the Rear Case

2. Pop the Release Buttons (See Figure 18) on the right hand side of the Control Board Cover, and swing the Control Board Cover open approximately 90°. This is done by gripping the Black Release Buttons and pulling away from the Case, until a ‘click’ is felt. The Control Board may then be swung open easily. To secure the Control Board, close the Cover then press the Release Buttons until a ‘click’ is felt, making sure that the l Release Buttons are lined up with their holes.

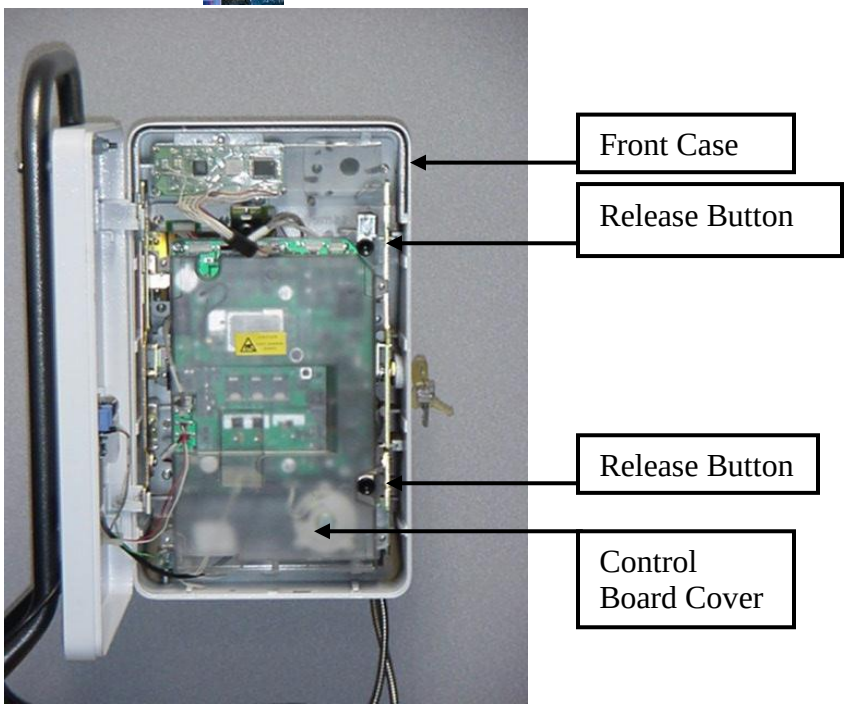


Figure 18: View Inside the Front Case

3. Place the Battery in the Battery Bracket making sure the positive (RED) terminal is to the LEFT. Note: this is IMPORTANT!!
4. Secure the Battery to the Battery Bracket with the Cable Tie.
5. Connect the two spade terminals on the Battery Cable (coming from the Control Board.) to the corresponding colour terminals on the battery (Red to Red, and Black to Black.). Note: this is IMPORTANT!!
6. Close the Control Board Cover and re-secure the Release Buttons.

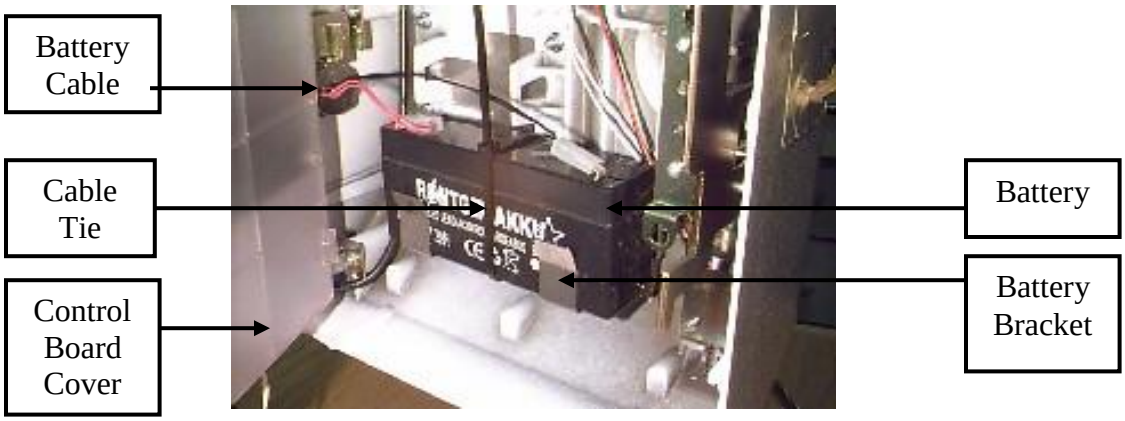


Figure 19: Battery

Power Supply

The PubliCell requires a nominal 12Vac power source

This is normally supplied from a 230Vac mains power supply located close to an outlet socket.

The 12Vac is supplied to the phone via a three core flexible cable, which should be less than 100m to prevent excessive volt drop.

Earthing for the phone is via the 12Vac cable and Power Supply to Mains Earth.

Note: Alternative Earthing practise for lightning protection is covered under Antenna installation.
There is no mains voltage (230Vac) present in the PubliCell
The 12Vac supply is isolated from the Mains supply.

Power Supply Installation

1. Mount the PSU in close proximity to the mains outlet socket

2. Use a cable of AWG 12-16 (use AWG 12 (CSA = not less than 2mm sq on long cable runs) to connect between the Power Supply and the PubliCell Termination Board. The cable must be protected by ducting or conduit.

Do not run 12Vac power cable with 230vAC mains cable in the same ducting or conduit as resulting inadequate isolation can cause hazardous voltages on the PubliCell. This practise is also contrary to regulatory requirements for electrical installations.

3. The Power Supply top cover is released by removing the screws from the base using a #1 Pozi drive screwdriver. (See Figure 20)

Figure 20: Screws

4. The blue connector on the transformer PCB is unplugged and the three-core cable connected to the connectors screw terminals. The Live (brown) & the Neutral (blue) cores are connected to the outer terminals marked AC. The Earth Core (yellow/green) is connected to the centre terminal marked E (EARTH). (The two AC pins provide 12Vac to the Telephone.)
5. A Green Plastic 3way socket is supplied in the kit of parts with the phone. Wire the other end of the (12Vac) three-core cable to this socket. Ensure that the Earth (yellow/green) core is connected to the Centre Terminal of the socket.

6. Note: The orders of the Live & Neutral are not important.

7. Re-insert the blue connector and route the cable passed the transformer and out through the cut out in the cover.

8. Re-assemble the power supply housing taking care not to pinch the wires.

Power Supply Cable Connection to PubliCell

Figure 21: Power Supply Cable Connections

Apply Power – The standard Mains Power Supply Unit should be used to provide the 12Vac @ 2A required to power the PubliCell. The power is connected to the Termination board "Power In" Connector.

Figure 22: Power from Power Supply Unit – J6 on Termination Board

Location of Switches and Connectors on Control Board

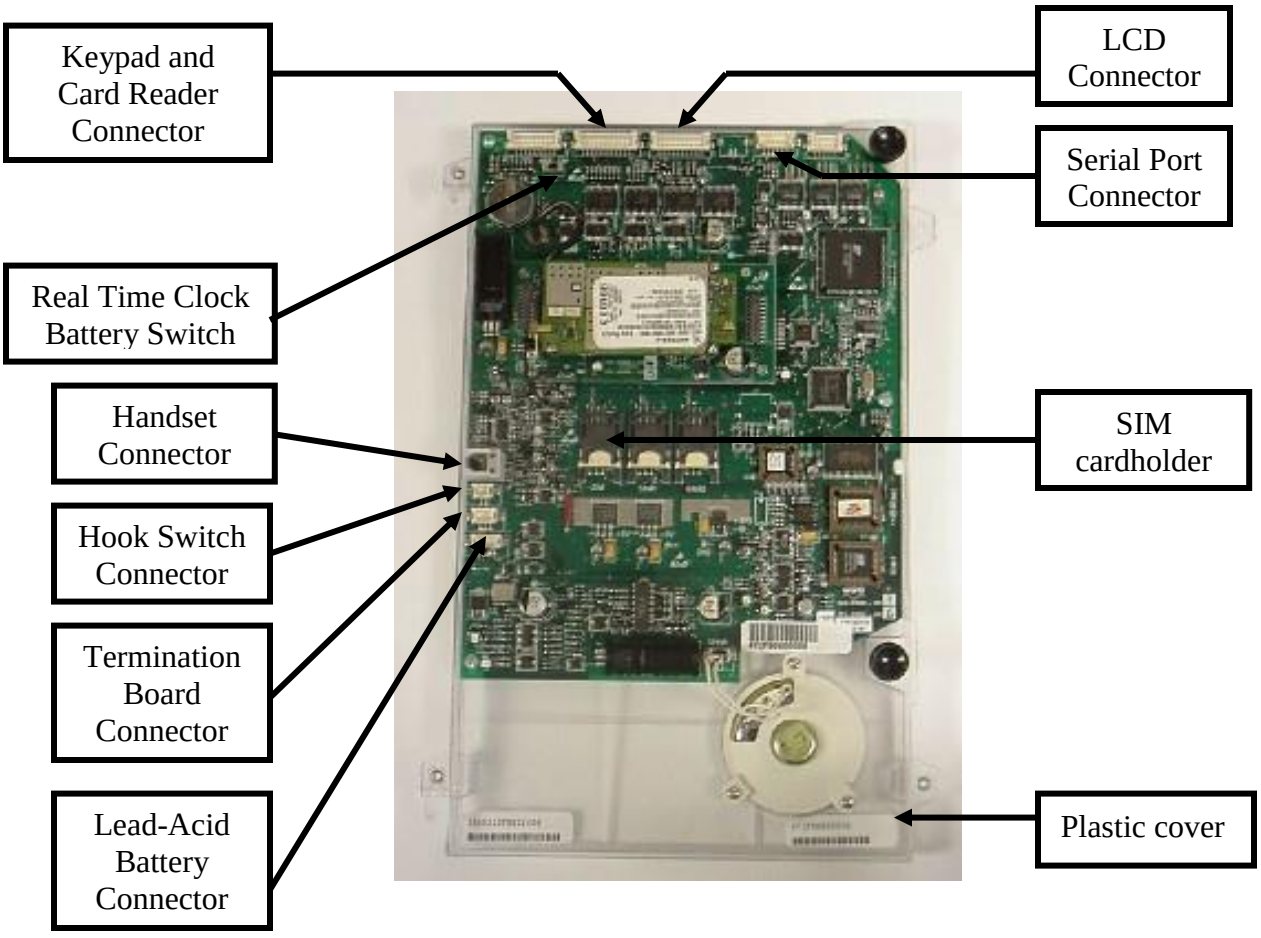


Figure 23: Control Board Connectors

--- End of Chapter Installation ---

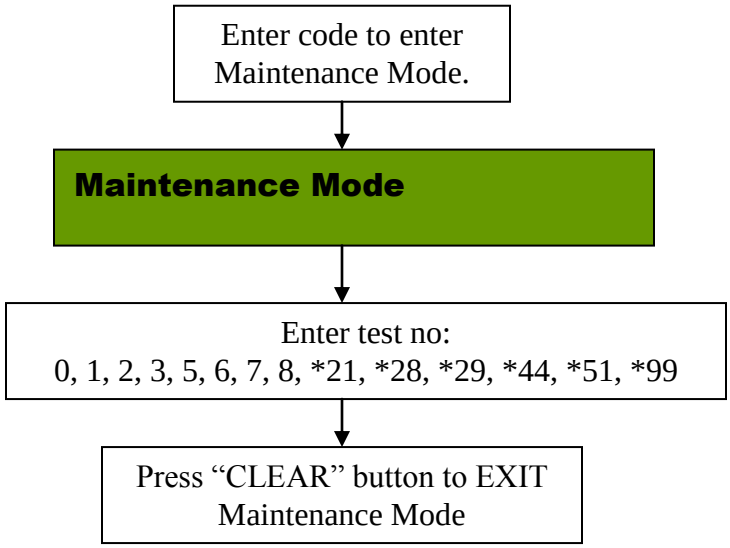
Chapter 6: Diagnostic Test Reference for Maintenance Purposes

This chapter contains the Diagnostic Test procedures for the PubliCell GSM Payphone. This is used to diagnose the status of the PubliCell and configure the initial operating parameters. These test are done in Maintenance Mode. These test enable fault finding for field maintenance.

Overview

Maintenance Mode Code is a secret code that should only be known by trusted personnel on a need to know basis.
*The code is *007#*
When in Maintenance Mode, wait 30 seconds to revert back to Idle State or press the "CLEAR" button.

Figure 24: Flow diagram on entering Maintenance Mode



Test Codes

Each maintenance function or test is initialised by a specific code.

Table 1: Maintenance Mode Function/Test

Code	Diagnostic Item
0	Test All (Spin Test)
1	Battery Test
2	LCD Test
3	GSM Radio Test
4	Software Version Check
5	Build State
6	Switch Motorola Module Ringer off
7	Door Switch Test
8	Signal Strength
*21	Debugging on/off
*28	Customer's Code
*29	Location
*44	Reset
*51	Send SMS to Management System
*99	Restore Factory Settings

Note: These setting cannot be changed.

0 – Test All (Spin Test)

The following items are continuously checked by the PubliCell and can be viewed with this test:

Table 2: Test All, items tested.

Item	**Description**
GSM Radio	See if radio responds to AT Commands. See if radio is still connected.
Internal SIM PIN	Test if PIN is correctly configured. See if entered Pin match internal SIM
Door	Check if door is open or close.
Supply Power	Measure voltage over supply.
Battery Voltage	Measure voltage over battery
Handset	Check to see of handset is connected to control board
Real Time Clock	Check to see if this is a valid time and date
Location	Check if something is stored under location in memory
Ring	Check both software and hardware. It must ring soft, medium and load.
Signal Strength	Show percentage of signal strength as measured by GSM Radio.

Note: If an error occurs during the auto test, the display stops and shows the fault.

1 - Battery Voltage Test

The following can be viewed by doing this test:

Table 3: Battery Voltage Test Items

Item	Description
Battery Voltage	Measure voltage over battery without load
Testing Battery	Measure voltage over battery with dummy load and measure difference form "Battery Voltage". Check potential to deliver current.
Temperature	Measure temperature inside the case. This is used for battery charge management.

The PubliCell monitors the voltage of the battery continuously. When the battery's voltage is below 6V this test will display:

The PubliCell will not power up on the battery alone if the battery's voltage is below 5.3V.

2 – LCD Test

The LCD displays all 8's and the backlight will flash. Then the LCD will highlight all the pixels wile the backlight flashes twice.
This is done to see that the PubliCell software can switch all the pixels on and off. This also test that the LCD display is working.
NB: For this test handset must be on-hook.

3 – GSM Radio Test

The following items is checked by the PubliCell when this test is performed:

Table 4: GSM Radio Test Items

Item	Description
GSM Radio	See if radio responds to AT Commands. See if radio is still connected.
Signal Strength	Show percentage of signal strength as measured by GSM Radio. Resample continuously. New reading when phone beeps.
GSM Module Software	Display the software on the GSM Radio Module
GSM Module Hardware	Display the Hardware version of the GSM Radio Module
Operator Name	Display the Network operator's name
Location	Check to see if something is store under location in memory
IMEI	International Mobile Equipment Identity

International Mobile Equipment Identity (IMEI):
*This number uniquely identifies mobile equipment. The Equipment Identity Register (**EIR**) database contains a list of all valid mobile equipment on the network, where each mobile station is identified by its IMEI. An IMEI is marked as invalid if it has been reported stolen or is not type approved.*

4 – Software Version Test

The software version and configuration version are displayed when this test is done:

Table 5: Software Version Test Items

Item	Description
Software Version	
Software version F1	See note
Software version F2	See note
Individual Configuration	Display Individual Config file name
Group Configuration	Display Group Config file name

Software version F1 & F2
There are two flash memory chips on the control board. When new software is downloaded to the phone the new software is written in the chip overwriting the oldest version of software on the phone. Therefore, after a software download, the phone will have both the previous and new version software. The phone will however use the newest version of software.

5 – Build State

The following PubliCell build state information can be obtained:

Table 6: Build State Items

Item	Description
Phone ID	See note
Software Version	
Software version F1	See note above
Software version F2	See note above
IMEI	International Mobile Equipment Identity
GSM Module Hardware	Display the Hardware version of the GSM Radio Module
CCID	SIM card identification (Only for Wavecom GSM Module)

Phone ID:
*This number is unique to each phone and is generated from the Dallas 2430A device "**Registration Number**" as a "48 Bit Serial Number". **Phone ID** is the number used by the PMS to manage the phone.*
***CCID**: SIM card Identification*
A unique number that is issued to each SIM card and is stored on the SIM.

6 – Motorola Ringer

When the PubliCell is fitted with a Motorola GSM Module, the module's ringer needs to be switched off. The ringer will be switched off permanently. The PubliCell uses the build in buzzer.

7 – Door Switch

Check if door is open or close.

8 – Signal Strength

Show percentage of signal strength as measured by GSM Radio.

*21 – Debugging on/of

It turns the debugging feature on or off.

*28 – Customer's Code

Display the customer code that was stored in memory when phone was manufactured. This number identifies the customer.

*29 – Location

This is a brief installation site reference (e.g. Lift, floor2, Grand Hotel). Type the location in by using keypad, and press “OK/YES” button on completion. (Only 20 characters long)

*44 – Reset

This function will reset the software on the phone.

*51 – Manual Report to Management System (PMS)

This function causes the PubliCell to send an SMS to the PMS. This can be used to verify the operation of the MODEM and to upload any fault data. This function is used before a PubliCell is taken out of service, e.g. for repair or maintenance.
The PubliCell will give a confirmation message notifying that the message did or did not go through successfully.

*99 – Factory default

This function downloads the original factory default settings from the management system to the phone.

--- End of Chapter Diagnostic Test Reference for Maintenance Purposes ---

Chapter 7: PMS - User's Guide

Overview

Publicell Management System (PMS) is an Integrated Service Solution for managing the GSM Payphone product in the field and delivering a high standard of reporting capabilities:

- Take delivery of the Payphones and allocate them to regions and assign technicians to them.
- You can commission / de-commission Payphones
- Change Payphone configuration and download the new configurations to the Payphones.
- Download existing configuration files in the event of corruption on the Payphones.
- Request the Payphones to dial-in and upload call and fault records
- Set up dial-in windows via dial-in scheduler
- View technical Documentation, manuals, advertising, etc from the Bulleting Board.
- Summary and Detailed reporting.

These tasks can all be performed without leaving PMS system.
Furthermore, PMS will provide ad-hoc querying and reporting capabilities by means of third party tools like Cognos.

System Requirements

- Pentium IV PC or Higher
- 512 MB Ram or higher
- 60GB HDD or higher
- 2 or more DB9 RS232 serial ports (for modems)
- Microsoft Windows 2000 or better
- 2 x GSM modems
- Microsoft SQL Server or MSDE

System Orientation

On the PMS, you can distinguish six different sections for managing the Payphone Network. These sections become available to the user after a successful system Login has takien place. These sections are displayed on left in a "Outlook-Bar" menu as: Dashboard, Phone Admin, Reporting, System Admin, DM Maintenance, and Monitor. Due to the layout of the pages, the PMS allows you to manage the system in one uniform way.

Access

System access is controlled by MS SQL Server defined users with three basic user roles, namely: Super User, Phone Admin and Report User.

- **Super User**: Take ownership and allocate Payphones. The default username "msadmin" and password "admin" are of this role directly after installation.
- **Phone Admin**: Perform Payphone Management
- **Report User**: Only able to use the Report Engine for Report Generaetion

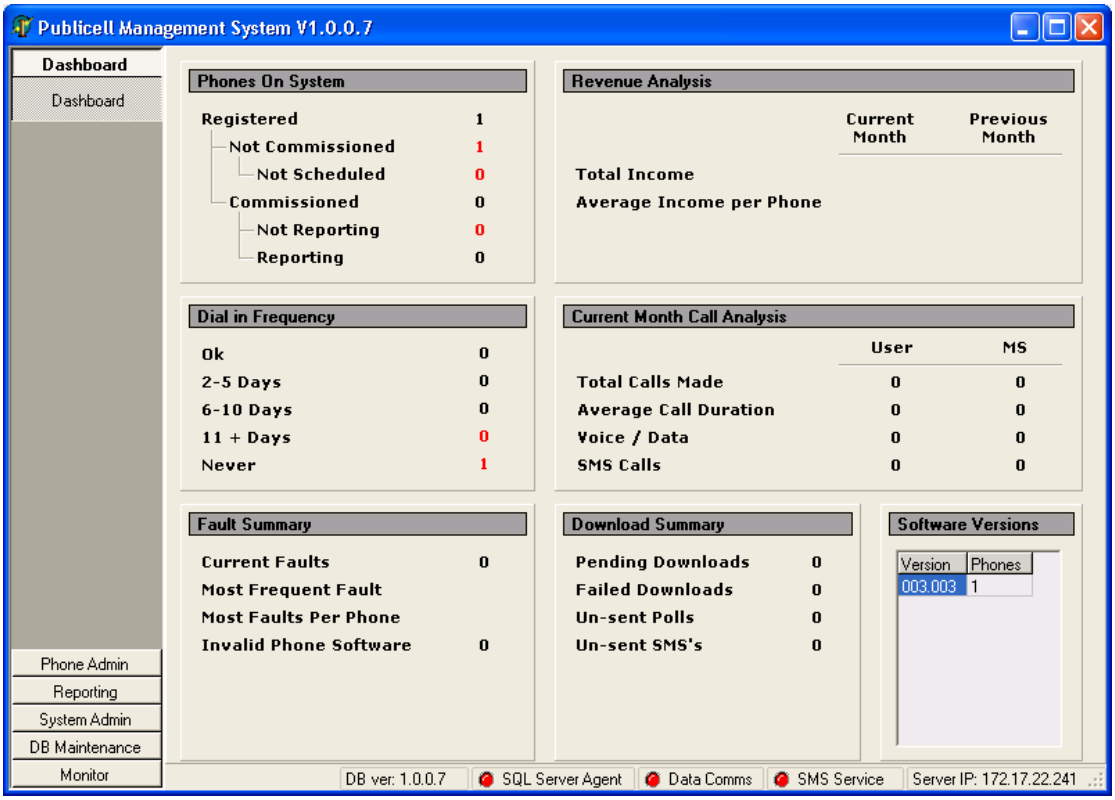
To access the PMS, launch the Publicell.exe application and enter valid user credentials on the Login window.

System Functionality

On the PMS, you can distinguish six different sections for managing the Payphone Network after successful system Login. The sections below will describe the purpose of each section.

Dashboard

The dashboard is the default window displayed after login. It serves as a spapshot view the entire system, providing key information for managerial decision support.



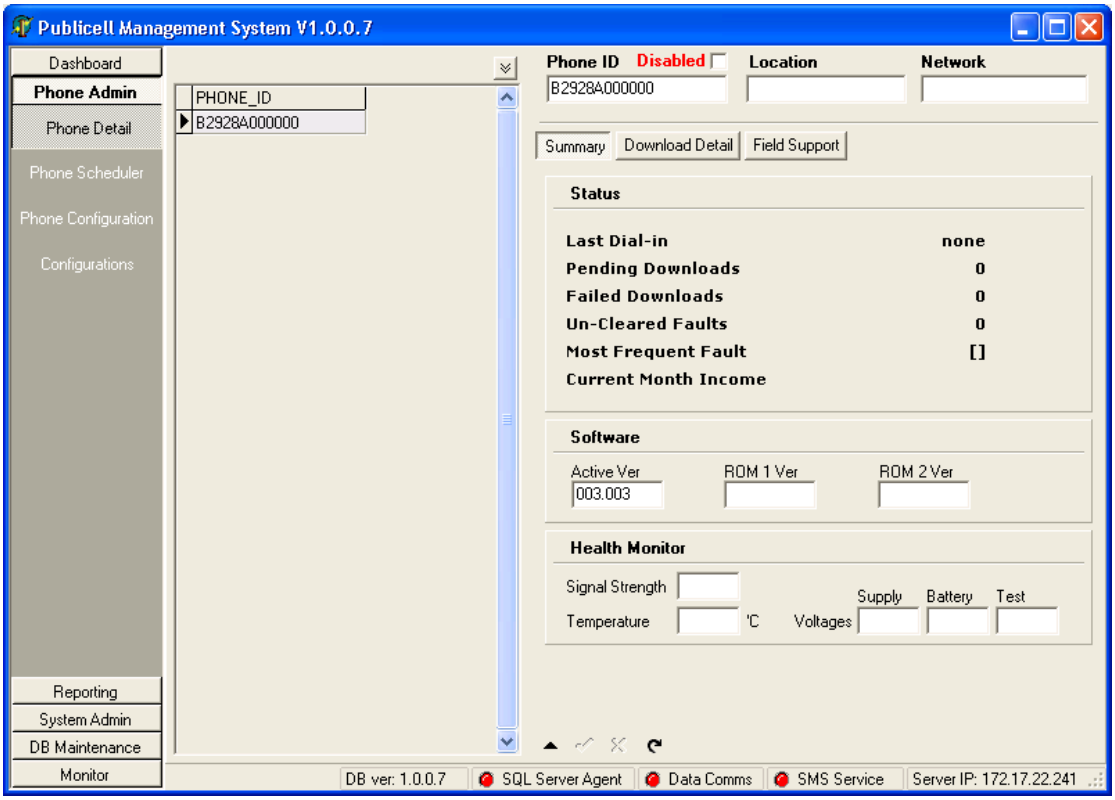
Phone Admin

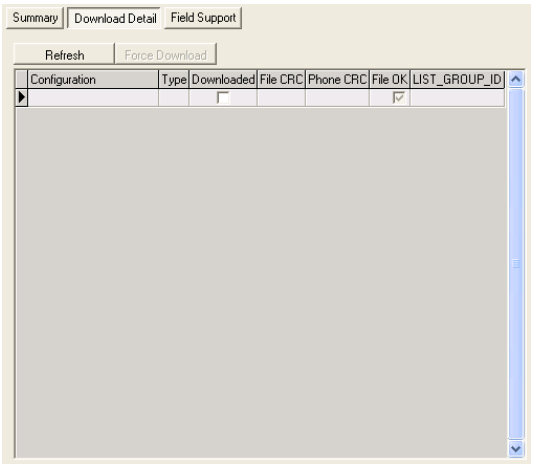
Phone administration is devided into four sections, Phone Detail, Phone Scheduler, Phone Configuration and Configuration.

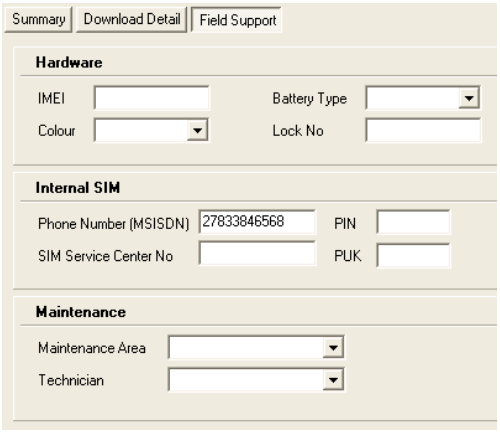
Phone Detail

Phone detail provides a list of all the registered phones with the option to view each phone's Summary Information, Download Detail, and Field Support settings.

- The summary screen provides information on phone behaviour and settings.
- Download detail will show any outstanding configuration downloads. These will be cleared with the next data call by that payphone. The page will also display the current files that have been allocated to the Payphones as well as the software version.
- Field support allows setting of characteristics and allocated technicians for reporting and field support activities.

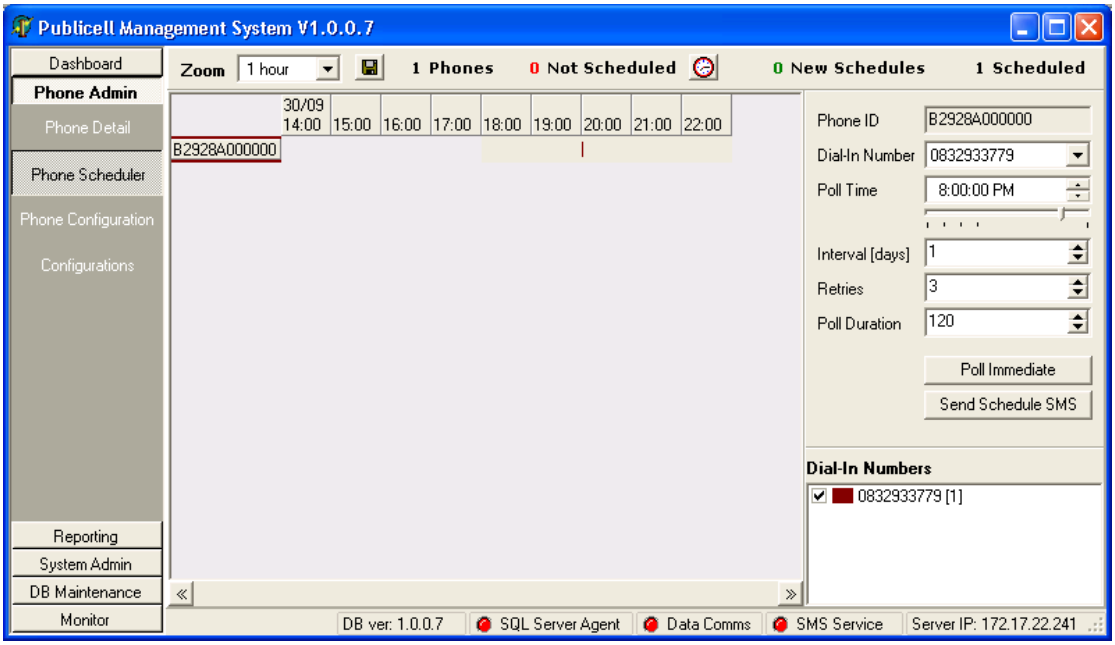






Phone Scheduler

This section is the first step in the Payphone management process and can be referred to as the Commissioning process. A payphone will auto-register on the system after a technician performs the *51 test. This phone will be indicated as a “un-scheduled phone”. The phones schedule referrs to the communication between the PMS and the Payphones. In essence a Phone Poll is a request that is sent to the Payphone to perform an action. This action is either setting of a “regular schedule” or an “immediate poll”. The medium that is used to send the poll request to the Payphone is by means of a SMS message.



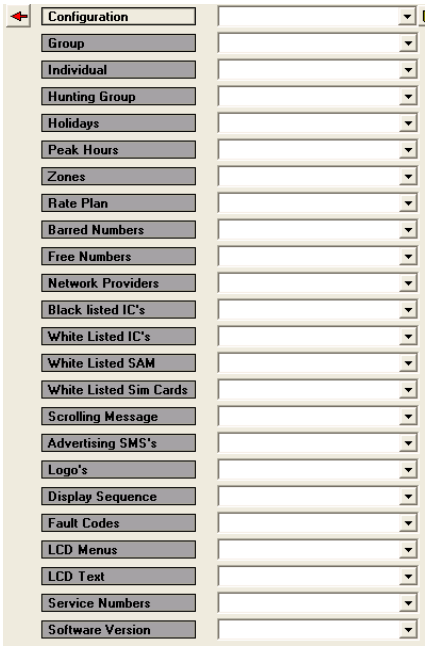
Typically the Payphones will be configured to perform "Scheduled" dial-ins which are configurable via the PMS. The Payphones will usually be scheduled to dial-in every second or thrid day, depending on Payphone usage in a particular location..

An immediate poll is used for the Payphone to retrieve and download new configuration files and / or software that was allocated.

The PMS auto-scheduler is a powerfull mechanism by which payphone dial-in times will be optimally scheduled based on call duration settings.

Phone Configuration

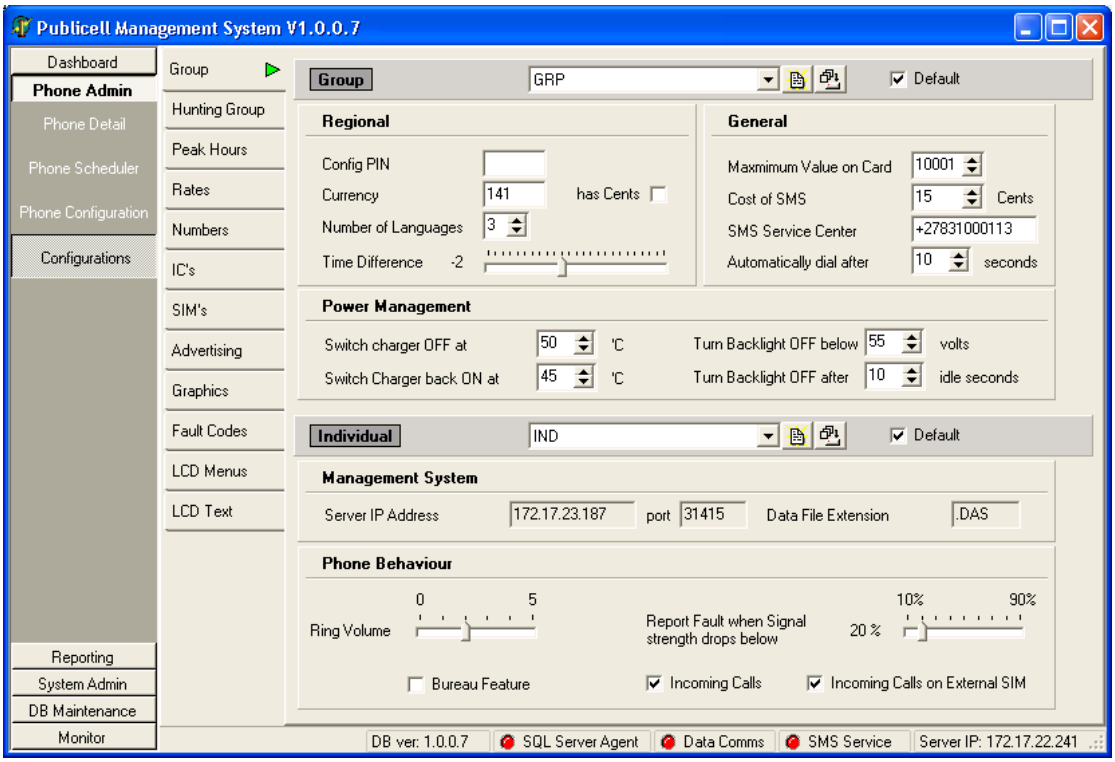
Essentially this section deals with the allocation of configuration file to the Payphone and the allocating of new software to the Payphone. Any functions performed in this section will only update the PMS and will not downstream the changes to the Payphone. To apply the changes to the Payphones the user will need to request the Payphone to perfrom and immediate dial-in to download the changes or the user will submit a change to take place on the dial-in scheduler which are configured on the Payphones. Outstanding downloads will reflect on the phone detail screen.

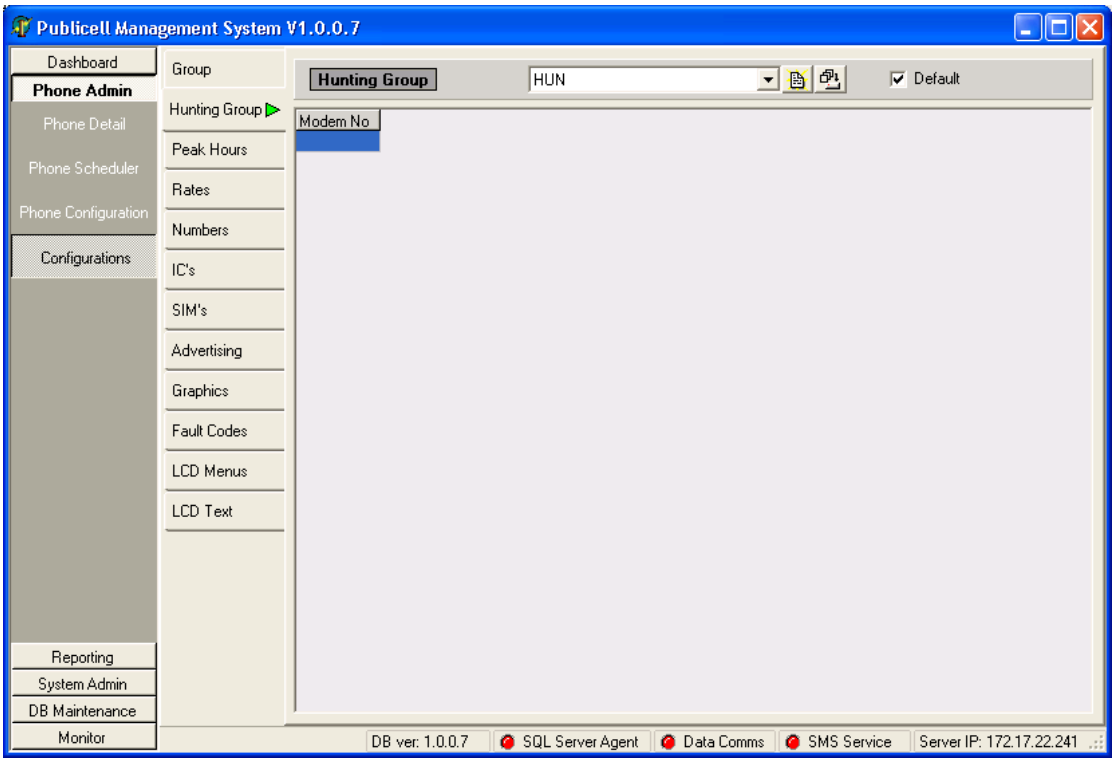


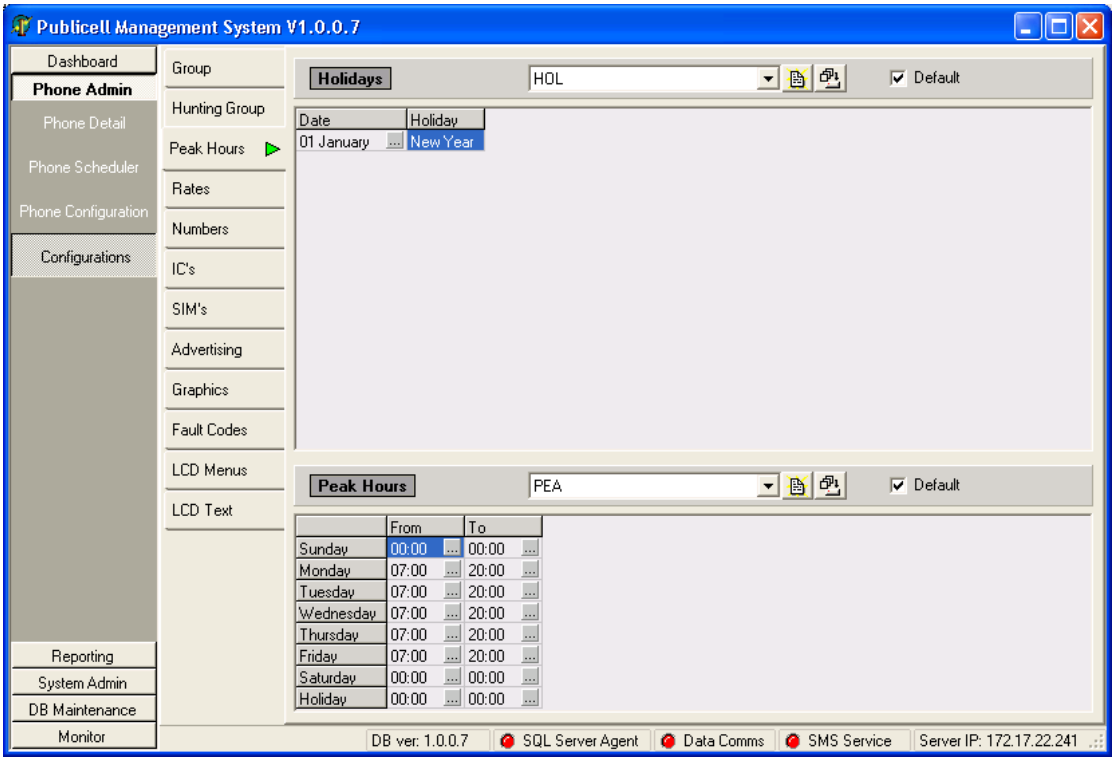
Each payphone's behaviour is determined by settings in 23 Configuration files, one of which is the actual phone software file. The PMS allows creation of any number of files of each type. These files can in turn be grouped in to any number of groups. A Group can then be assigned to one or more payphones.

Configuration

The configuration window allows creation of the individual configuration files used to control payphone behaviour. The screen images below show the various settings available through the PMS.






Publicell Management System V1.0.0.7
Dashboard
Phone Admin
Phone Detail
Phone Scheduler
Phone Configuration
Configurations
Reporting
System Admin
DB Maintenance
Monitor
Group
Hunting Group
Peak Hours
Rates
Numbers
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
Holidays
HOL
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SQL Server Agent
Data Comms
SMS Service
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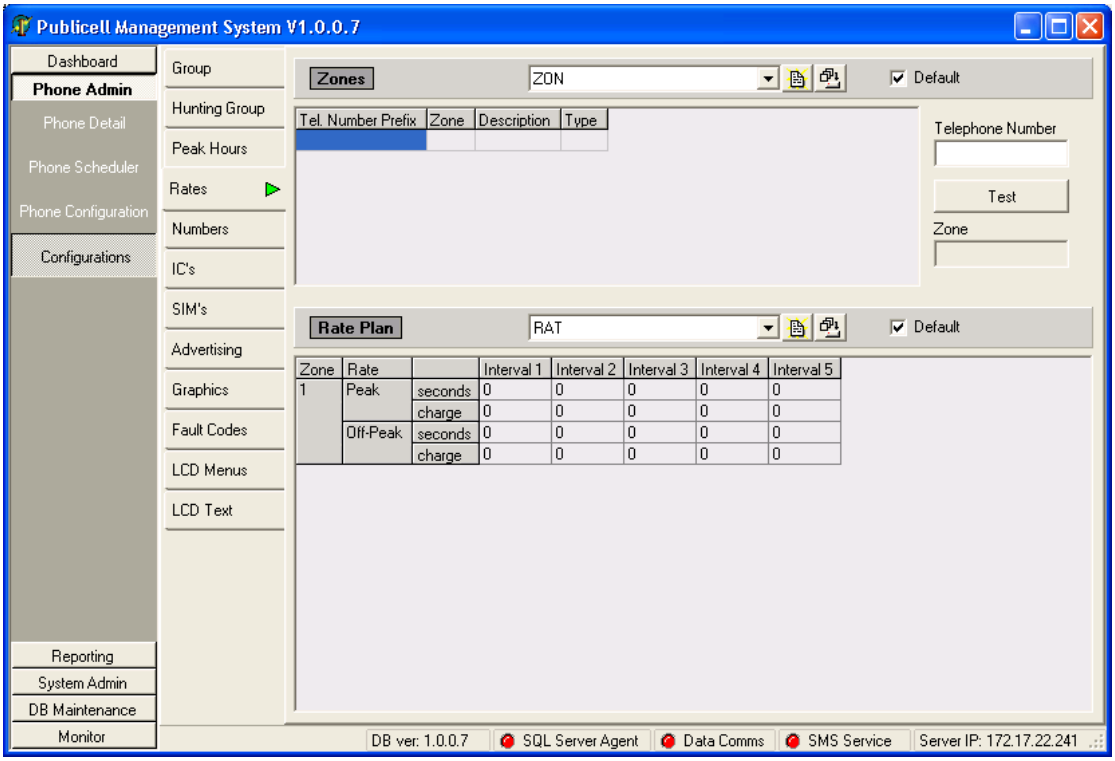
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Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
Zones
ZON
Default
Tel. Number Prefix
Zone
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Test
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Rate Plan
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Default
Zone Rate
Interval 1 Interval 2 Interval 3 Interval 4 Interval 5
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charge 0 0 0 0 0
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Data Comms
SMS Service
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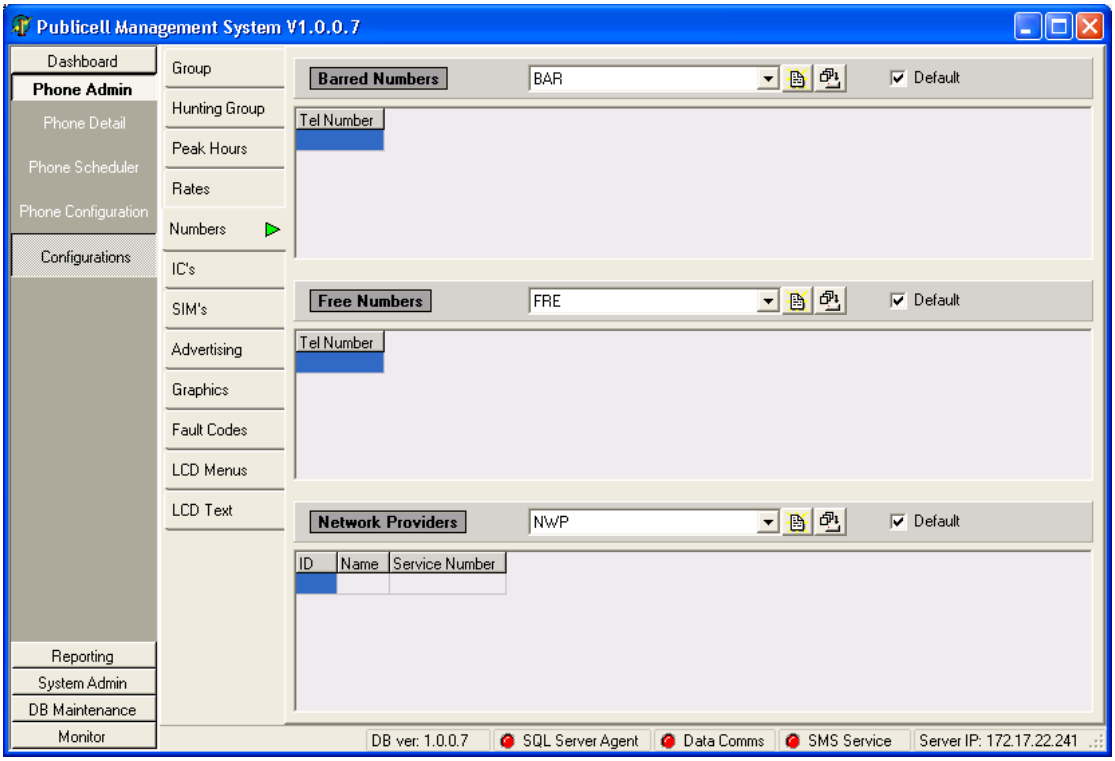
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LCD Text
Barred Numbers
BAR
Default
Tel Number
Free Numbers
FRE
Default
Tel Number
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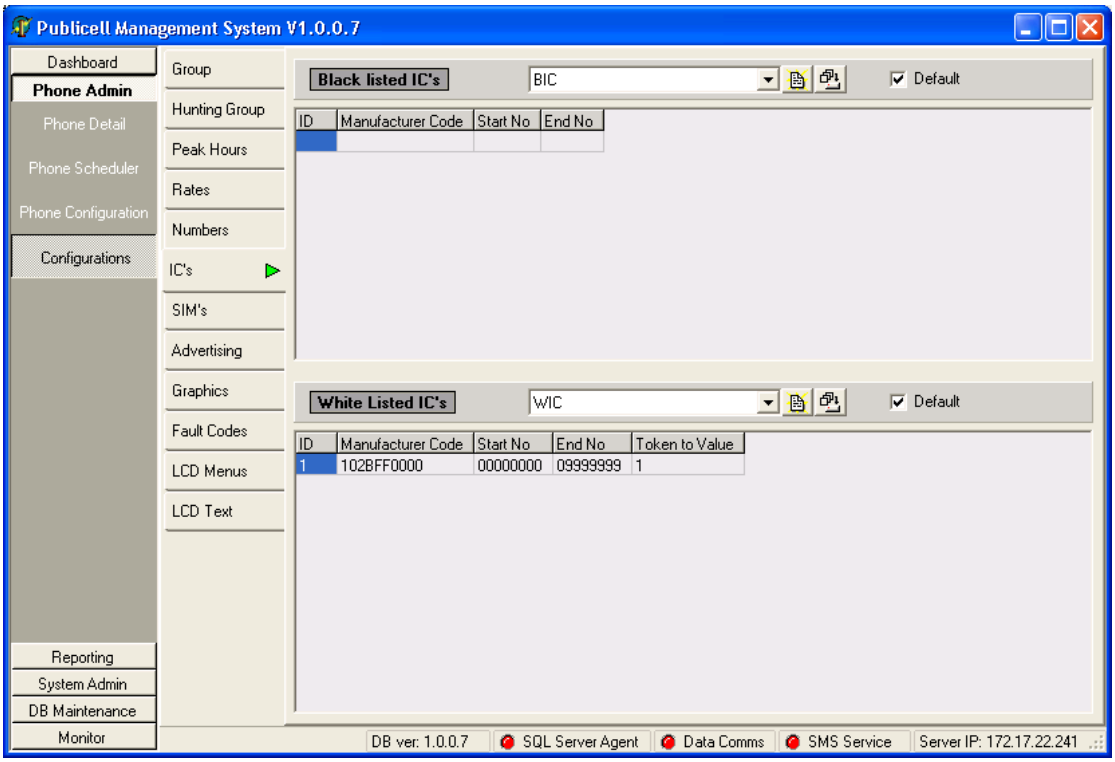
SQL Server Agent
Data Comms
SMS Service
Server IP: 172.17.22.241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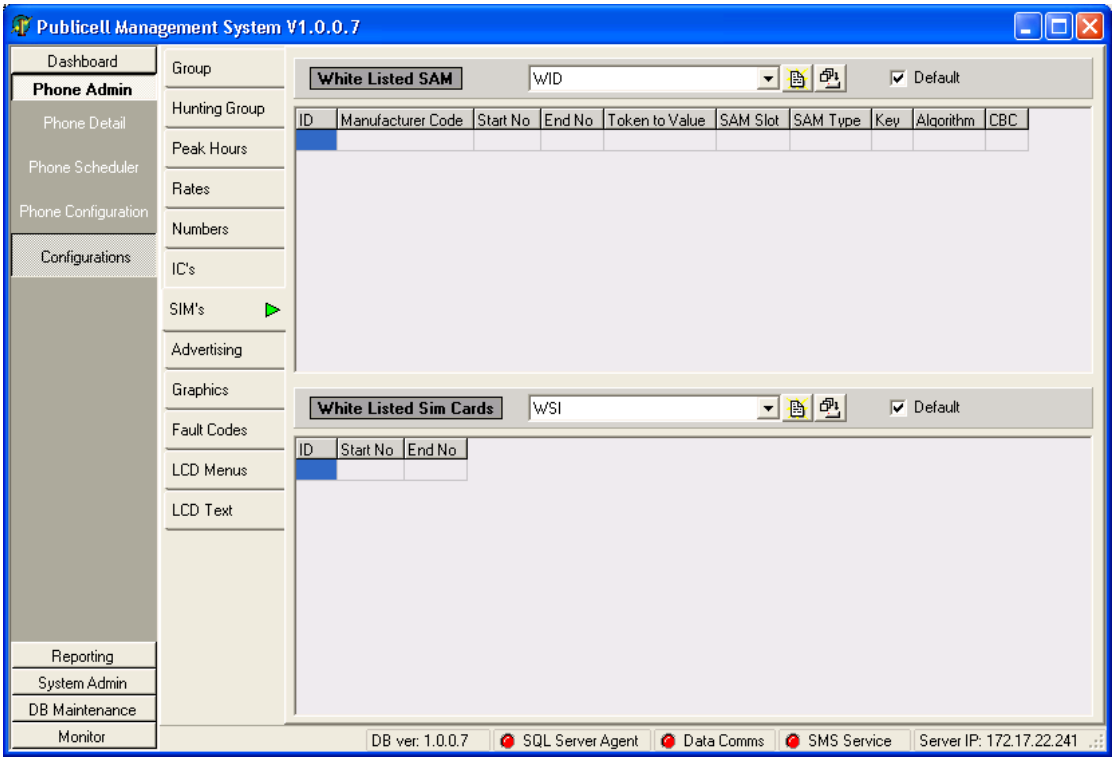
Monitor
Group
Hunting Group
Peak Hours
Rates
Numbers
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
Black listed IC's
BIC
Default
ID
Manufacturer Code
Start No
End No
White Listed IC's
WIC
Default
ID
Manufacturer Code
Start No
End No
Token to Value
1
102BFF0000
00000000
09999999
1
DB ver: 1.0.0.7
SQL Server Agent
Data Comms
SMS Service
Server IP: 172.17.22.241


Publicell Management System V1.0.0.7
Dashboard
Phone Admin
Phone Detail
Phone Scheduler
Phone Configuration
Configurations
Reporting
System Admin
DB Maintenance
Monitor
Group
Hunting Group
Peak Hours
Rates
Numbers
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
White Listed SAM
WID
Default
ID
Manufacturer Code
Start No
End No
Token to Value
SAM Slot
SAM Type
Key
Algorithm
CBC
White Listed Sim Cards
WSI
Default
ID
Start No
End No
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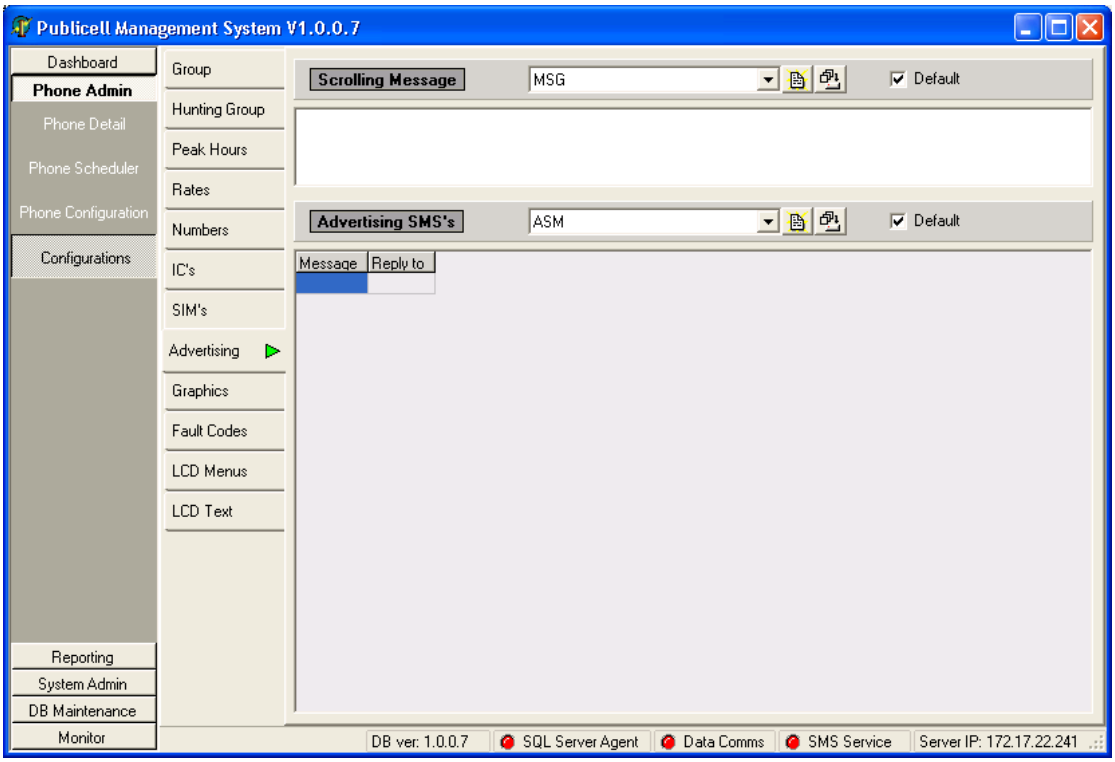
SQL Server Agent
Data Comms
SMS Service
Server IP: 172.17.22.241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SIM's
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LCD Menus
LCD Text
Scrolling Message
MSG
Default
Advertising SMS's
ASM
Default
Message
Reply to
DB ver: 1.0.0.7
SQL Server Agent
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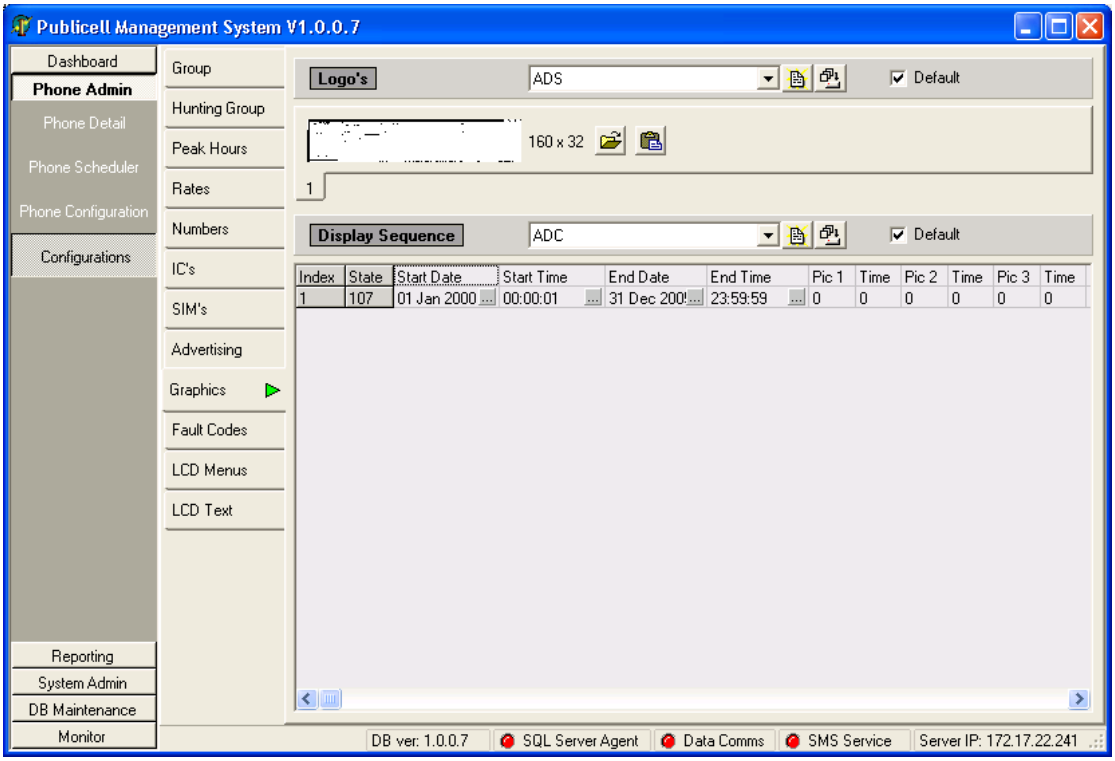
Server IP: 172.17.22.241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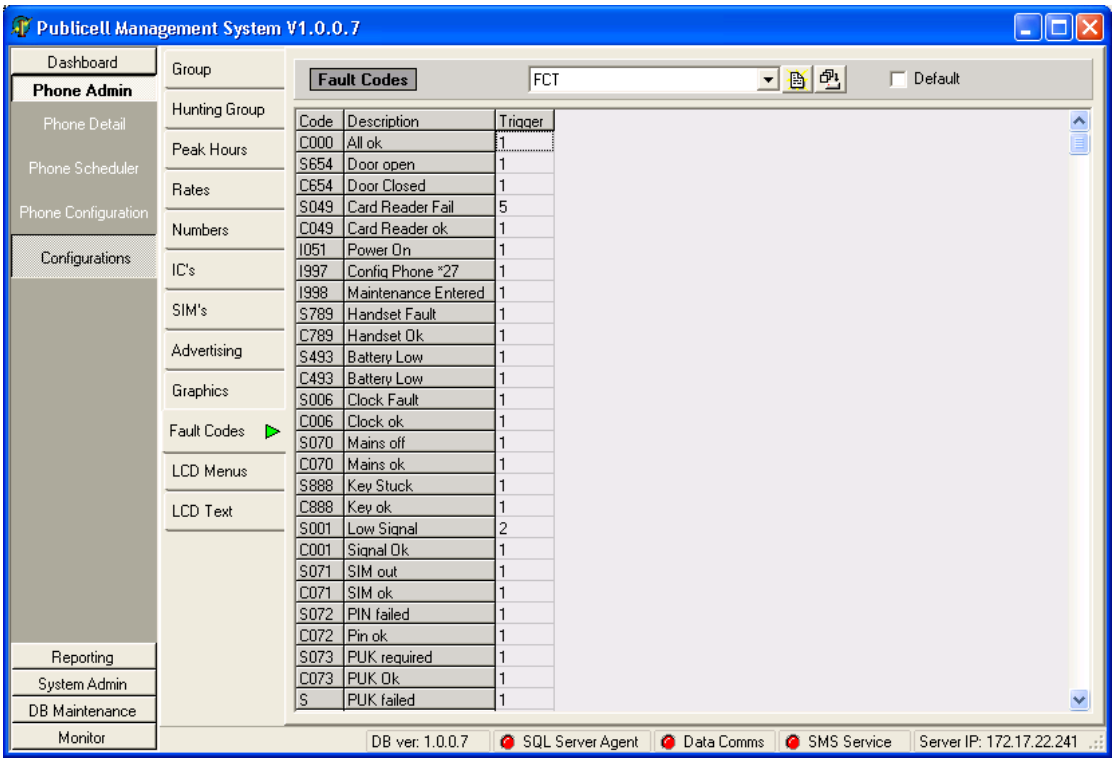
DB Maintenance
Monitor
Group
Hunting Group
Peak Hours
Rates
Numbers
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
Logo's
ADS
Default
160 x 32
1
Display Sequence
ADC
Default
Index State Start Date Start Time End Date End Time Pic 1 Time Pic 2 Time Pic 3 Time
1 107 01 Jan 2000 00:00:01 31 Dec 200! 23:59:59 0 0 0 0 0 0
DB ver: 1.0.0.7
SQL Server Agent
Data Comms
SMS Service
Server IP: 172.17.22.241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Numbers
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
Fault Codes
FCT
Default
Code Description Trigger
C000 All ok 1
S654 Door open 1
C654 Door Closed 1
S049 Card Reader Fail 5
C049 Card Reader ok 1
I051 Power On 1
I997 Config Phone *27 1
I998 Maintenance Entered 1
S789 Handset Fault 1
C789 Handset Ok 1
S493 Battery Low 1
C493 Battery Low 1
S006 Clock Fault 1
C006 Clock ok 1
S070 Mains off 1
C070 Mains ok 1
S888 Key Stuck 1
C888 Key ok 1
S001 Low Signal 2
C001 Signal Ok 1
S071 SIM out 1
C071 SIM ok 1
S072 PIN failed 1
C072 Pin ok 1
S073 PUK required 1
C073 PUK Ok 1
S PUK failed 1
DB ver: 1.0.0.7
SQL Server Agent
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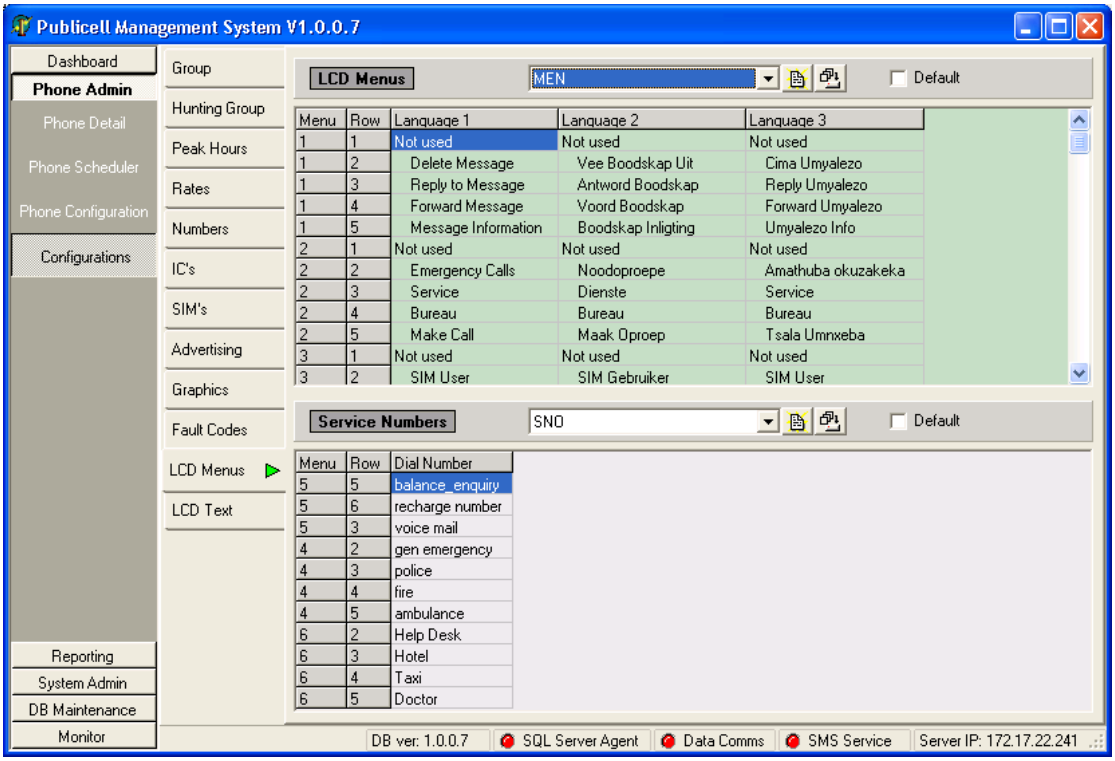
Server IP: 172.17.22.241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IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
LCD Menus
MEN
Default
Menu Row Language 1 Language 2 Language 3
1 1 Not used Not used Not used
1 2 Delete Message Vee Boodskap Uit Cima Umyalezo
1 3 Reply to Message Antword Boodskap Reply Umyalezo
1 4 Forward Message Voord Boodskap Forward Umyalezo
1 5 Message Information Boodskap Inligting Umyalezo Info
2 1 Not used Not used Not used
2 2 Emergency Calls Noodoproepe Amathuba okuzakeka
2 3 Service Dienste Service
2 4 Bureau Bureau Bureau
2 5 Make Call Maak Oproep Tsala Umnxeba
3 1 Not used Not used Not used
3 2 SIM User SIM Gebruiker SIM User
Service Numbers
SNO
Default
Menu Row Dial Number
5 5 balance_enquiry
5 6 recharge number
5 3 voice mail
4 2 gen emergency
4 3 police
4 4 fire
4 5 ambulance
6 2 Help Desk
6 3 Hotel
6 4 Taxi
6 5 Doctor
DB ver: 1.0.0.7
SQL Server Agent
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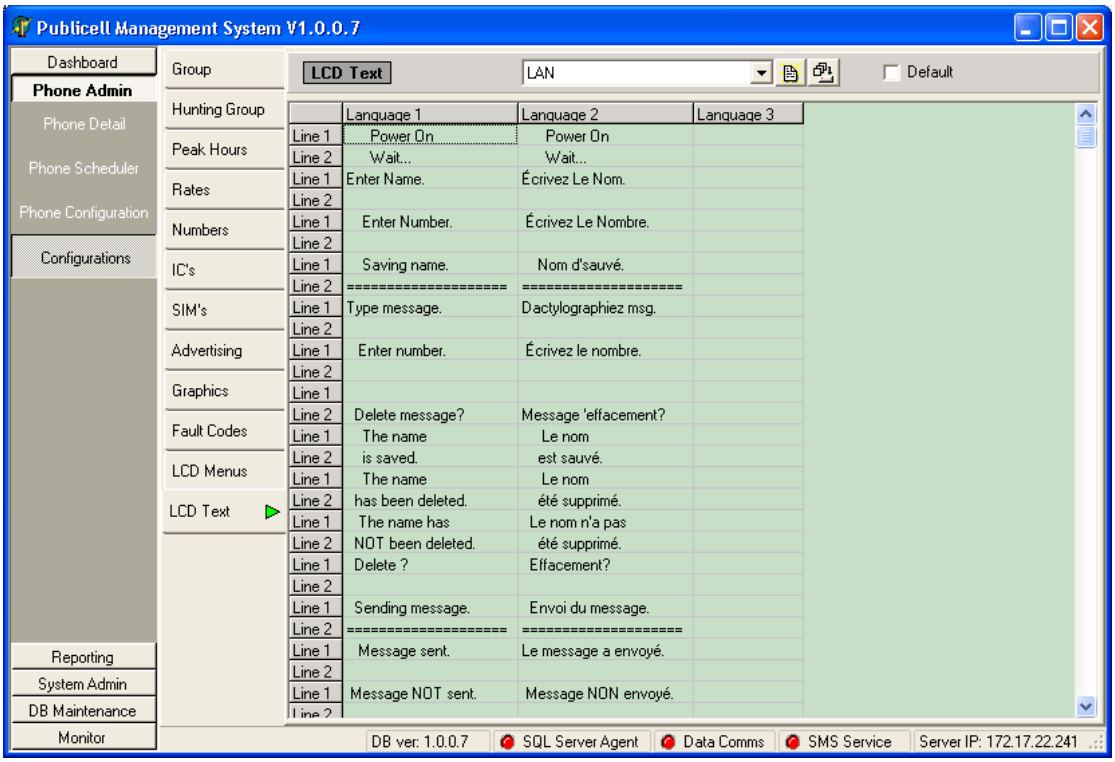
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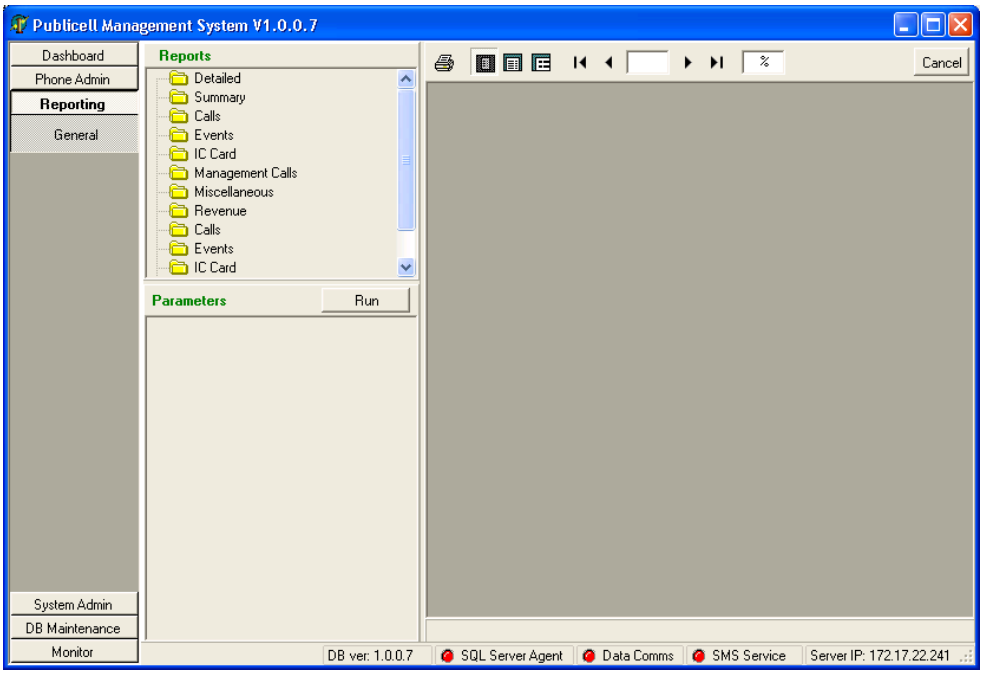
IC's
SIM's
Advertising
Graphics
Fault Codes
LCD Menus
LCD Text
LCD Text
LAN
Default
Language 1 Language 2 Language 3
Line 1 Power On Power On
Line 2 Wait... Wait...
Line 1 Enter Name. Écrivez Le Nom.
Line 2
Line 1 Enter Number. Écrivez Le Nombre.
Line 2
Line 1 Saving name. Nom d'sauvé.
Line 2 ========== ==========
Line 1 Type message. Dactylographiez msg.
Line 2
Line 1 Enter number. Écrivez le nombre.
Line 2
Line 1
Line 2 Delete message? Message 'effacement?
Line 1 The name Le nom
Line 2 is saved. est sauvé.
Line 1 The name Le nom
Line 2 has been deleted. été supprimé.
Line 1 The name has Le nom n'a pas
Line 2 NOT been deleted. été supprimé.
Line 1 Delete ? Effacement?
Line 2
Line 1 Sending message. Envoi du message.
Line 2 ========== ==========
Line 1 Message sent. Le message a envoyé.
Line 2
Line 1 Message NOT sent. Message NON envoyé.
DB ver: 1.0.0.7
SQL Server Agent
Data Comms
SMS Service
Server IP: 172.17.22.241

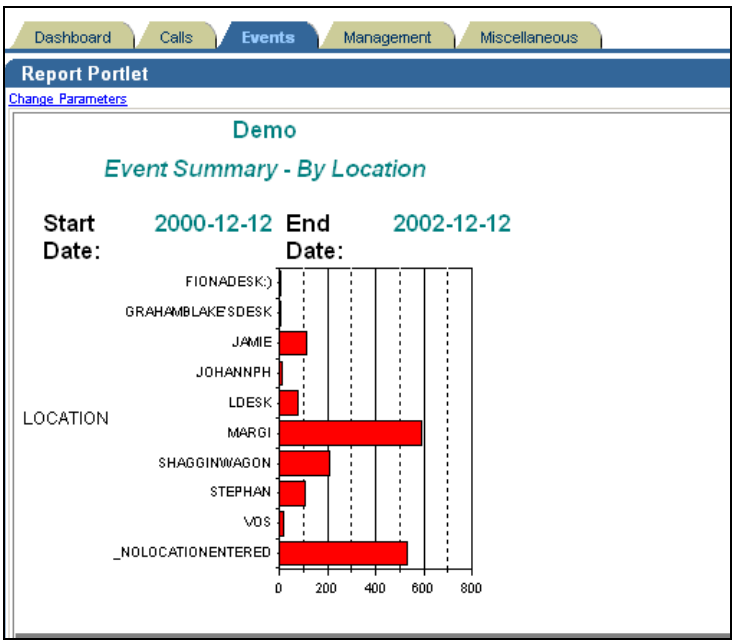
Reports

The PMS is loaded with default summary and detailed reports. The structure is designed to allow adding customised reports without the need for a new application (averything is database based). Each report accepts parameters with which the user can limit the "field view" of the results.



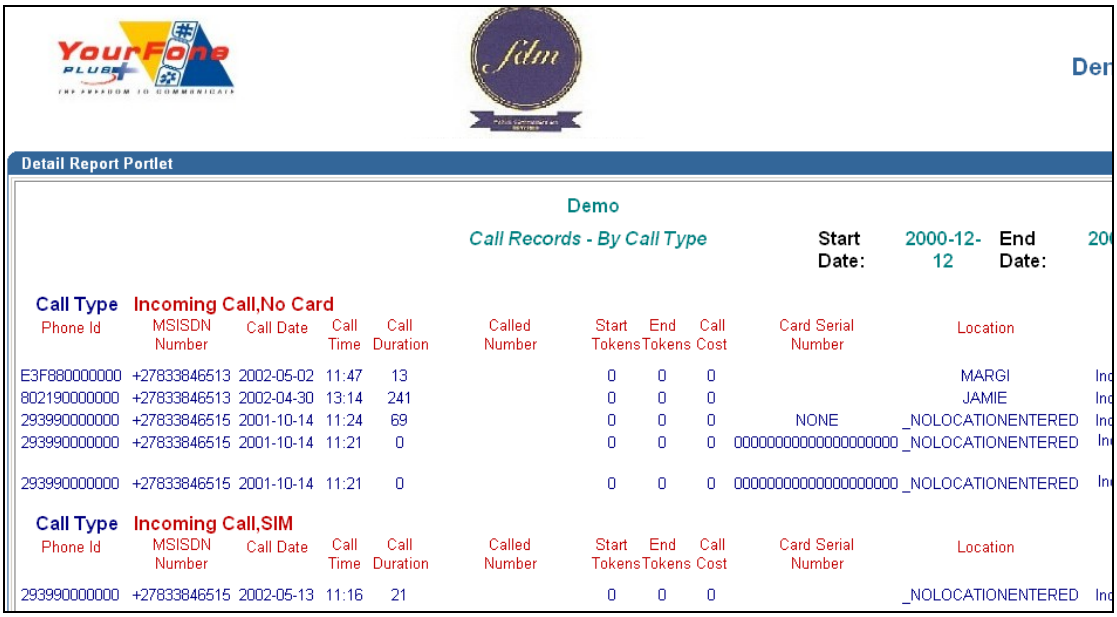
Summary Reports

Summary reports comprise primarily of Charts: Bar, Line and Pie's. The reports here are for high level summary, to gain a quick view of the network status: Payphone performance and usage, critical faults, fraud detection, etc.



Detailed Reports

Detailed reports are typically in a tabular format. The reports here are more detailed and will contain detailed information on calls made, fault tracking and logging, etc.



Detail Report Portlet

Demo

Call Records - By Call Type

Start Date: 2000-12-12 End Date: 20

Call Type Incoming Call,No Card

Phone Id	MSISDN Number	Call Date	Call Time	Call Duration	Called Number	Start Tokens	End Tokens	Call Cost	Card Serial Number	Location	
E3F8800000000	+27833846513	2002-05-02	11:47	13		0	0	0		MARGI	In
802190000000	+27833846513	2002-04-30	13:14	241		0	0	0		JAMIE	In
293990000000	+27833846515	2001-10-14	11:24	69		0	0	0	NONE	_NOLOCATIONENTERED	In
293990000000	+27833846515	2001-10-14	11:21	0		0	0	0	00000000000000000000	_NOLOCATIONENTERED	In
293990000000	+27833846515	2001-10-14	11:21	0		0	0	0	00000000000000000000	_NOLOCATIONENTERED	In

Call Type Incoming Call,SIM

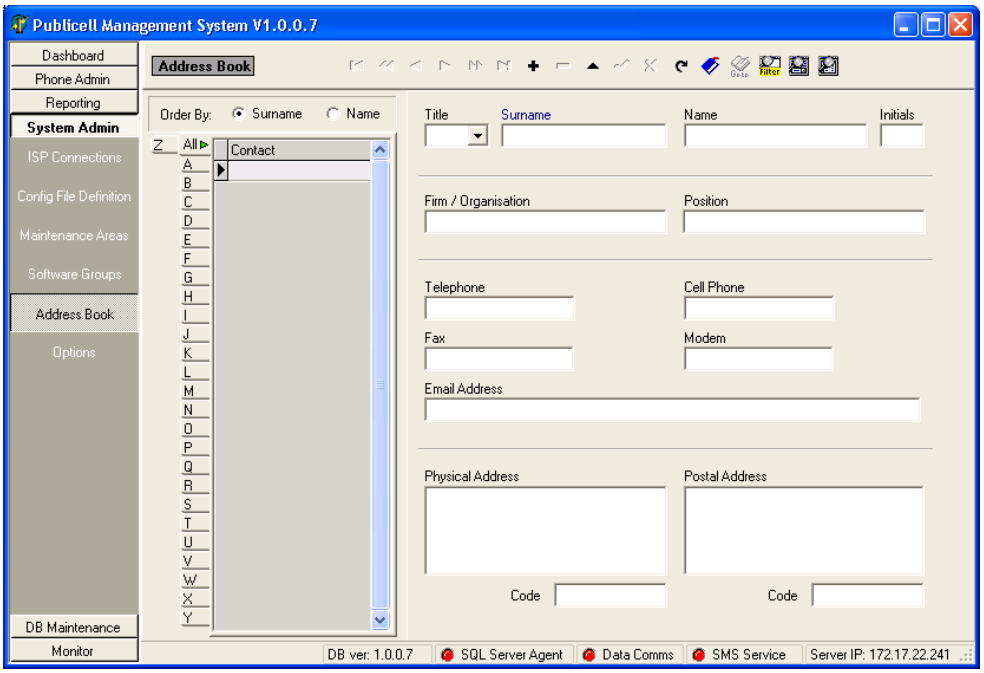
Phone Id	MSISDN Number	Call Date	Call Time	Call Duration	Called Number	Start Tokens	End Tokens	Call Cost	Card Serial Number	Location	
293990000000	+27833846515	2002-05-13	11:16	21		0	0	0		_NOLOCATIONENTERED	In

Custom reports

Currently users are not able to define user specific reports, this option will be made available in version 2.0 of the PMS.

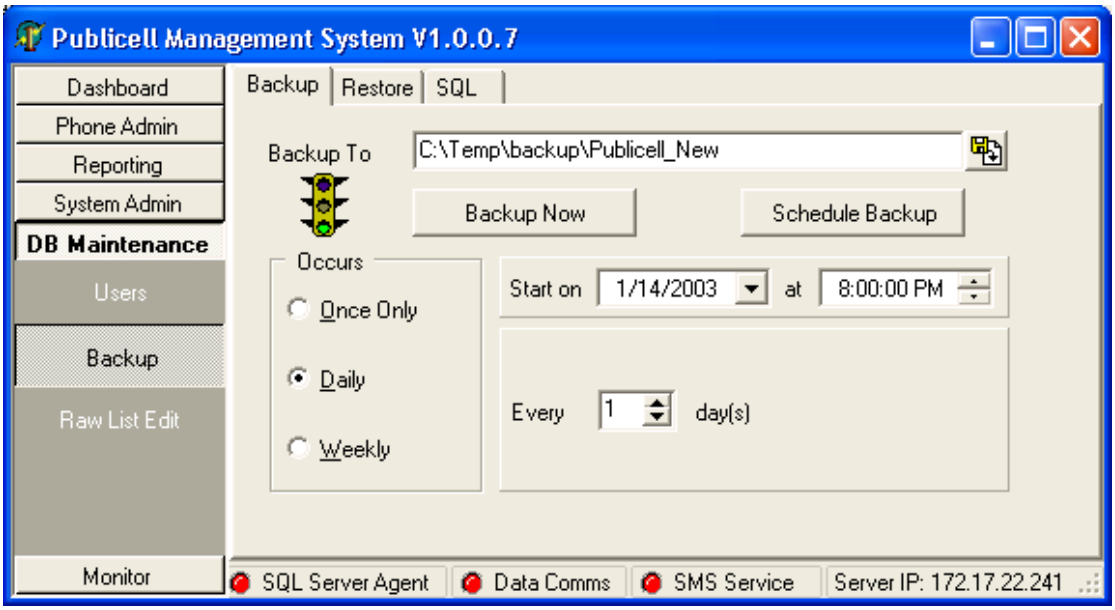
System Admin

System Admin provides the fundamental control over PMS functionality.



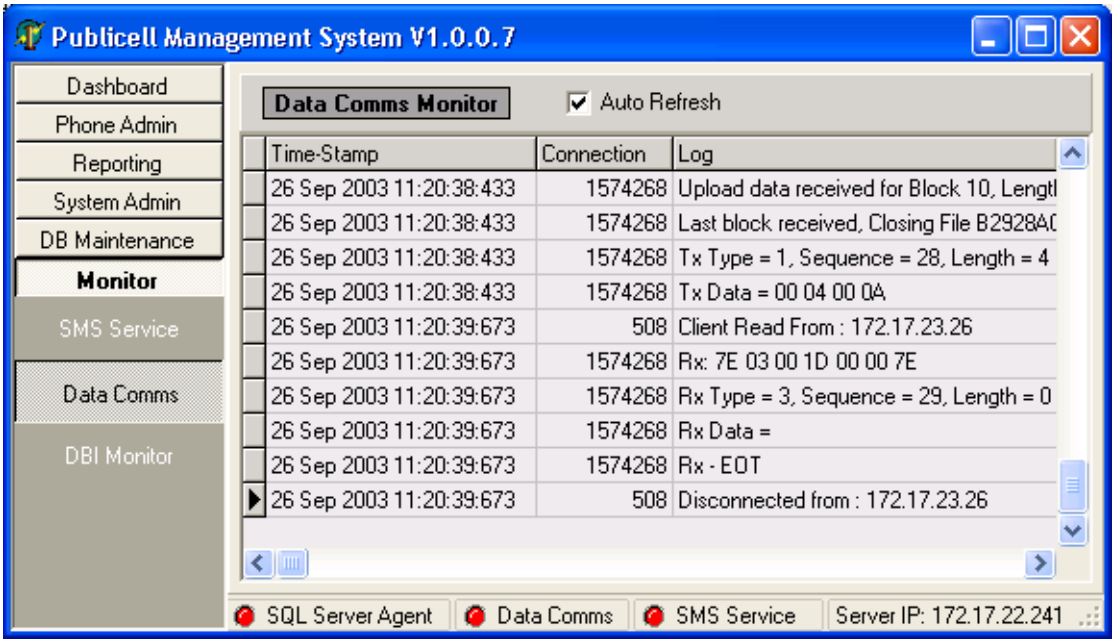
DB Maintenance

Database maintenance is essencial in PMS efficiency, and a variety of tools are provided for this.



Monitor

Many aspects of the PMS is built into Operating System Services to ensure functionality even when a user is not logged into the system. Logging and status information of these services si provided in the Monitor window.



Help systems

Help file and user manuals will be made available on the Technical Bulleting located on the Publicee page at the following site: HTTP://PUBLICELL.TELLUMAT.COM. Currently Help Files, Manuals and technical documentation are all in MS Word format. Future versions of these files will be made available on the site in Acrobat Reader and HTML format. Keep your eyes appealed on the web-site for the release of the new formats.

MS Word Help Files

The system help files are currently in MS Word format and will be made available for download in the near future.

HTML Manuals

Currently no HTML documentation exists, but will be made available in the near future.

--- End of Chapter PMS: Web User's Guide ---