



# **CGW-D Installation and Operation Manual**

**Version 2, Release 3**

**March 2008**



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In the event this product proves to be defective in workmanship or materials within a period of one year from date of shipment, ITS will repair or replace the product at its discretion. Transportation will be the responsibility of the dealer/distributor.

Under no circumstances shall ITS be liable for consequential or special damages, loss of revenue or user/dealer expenses arising out of or in connection with the use or performance of the product, whether based on contract, tort, or any other legal agreement.

The following shall void the above warranty: malfunctions resulting from fire, accident, neglect, abuse, or acts of God; use of improper electrical power; or repair of, tampering with or alteration of the product by anyone other than ITS authorized personnel.



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## Chapter 1: Introduction

### 1.1 Overview

This chapter provides a general introduction to the CGW-D, including its purpose and use, and details the contents of the supplied package.

### 1.2 Purpose and Use

The CGW-D is a cost-effective cellular gateway, call back system and call diverter for both private and corporate use. It supports extension and PSTN line interface (FXO – Foreign Exchange Office), and home phone and PBX trunk service (FXS – Foreign Exchange Station).

### 1.3 What’s in the Box?

When opening the supplied package, please check its content. If the content does not match the following list, please contact your dealer. The box should contain the following items:

Part	Quantity
CGW-D device	1
Power supply (type varies according to the configuration in each country)	1
2.5 dB antenna	1
Installation CD	1
USB cable	1
RJ11-RJ11 cable	1
Wall installation drill template	1
Screws and dowels for wall installation	2x2

## 1.4 Physical Description

The front panel controls and connectors of the CGW-D device are displayed in Figure 1-1. The SIM insertion port on the bottom panel is displayed in Figure 1-2.



Figure 1-1. CGW-D Controls and Connectors



Figure 1-2. SIM Insertion Port

## 1.5 Getting Started

Getting started with the CGW-D comprises of the following steps:

### Preparation to operation:

- Connect the device to 9 VDC power using the supplied adaptor.
- Install the supplied GUI software on a PC (refer to Chapter 2 for instructions).
- Install USB drivers (refer to Chapter 2 for instructions).
- Connect the device to PC via the USB interface.
- Program the device as required.

### Device installation:

- Connect the antenna to the antenna connector.
- Insert a SIM card into the port.
- Connect the device in one of the following configurations, according to its purpose:
  - Private use at home (Figure 1-3).
  - Office trunk use (Figure 1-4).
  - Office trunk gateway (Figure 1-5).

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### **NOTE**

Make sure not to connect the PSTN line to the phone (FXS) socket! This connection may harm your FXS interface hardware.

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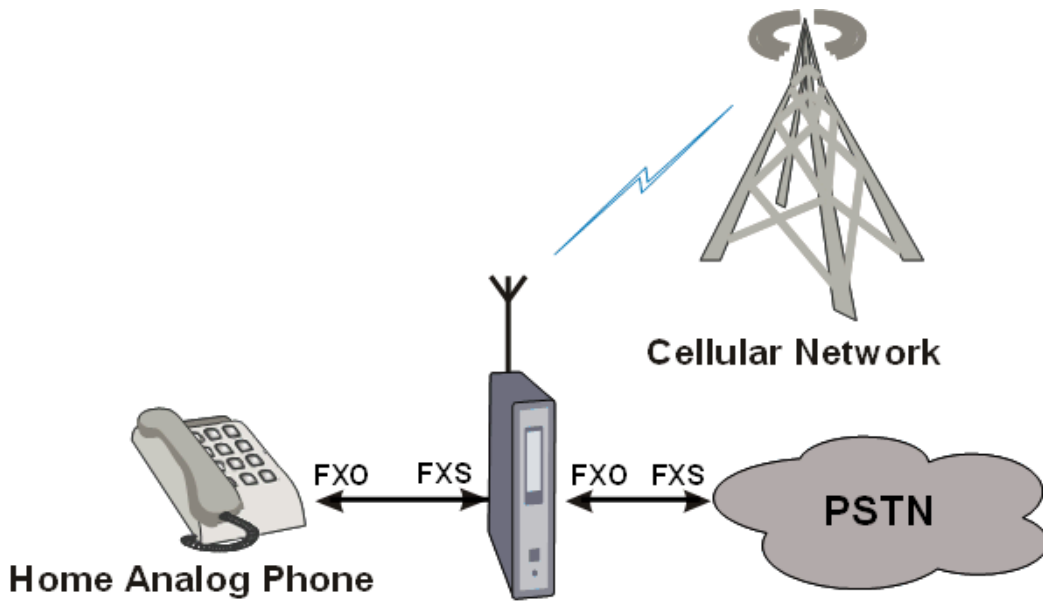


Figure 1-3. Home Configuration

The home analog phone places a call. If the destination subscriber is a cellular one, the call is forwarded by the CGW-D to the cellular network. Otherwise, the call is forwarded to the PSTN. Incoming calls from a cellular network are forwarded to an analog telephone.

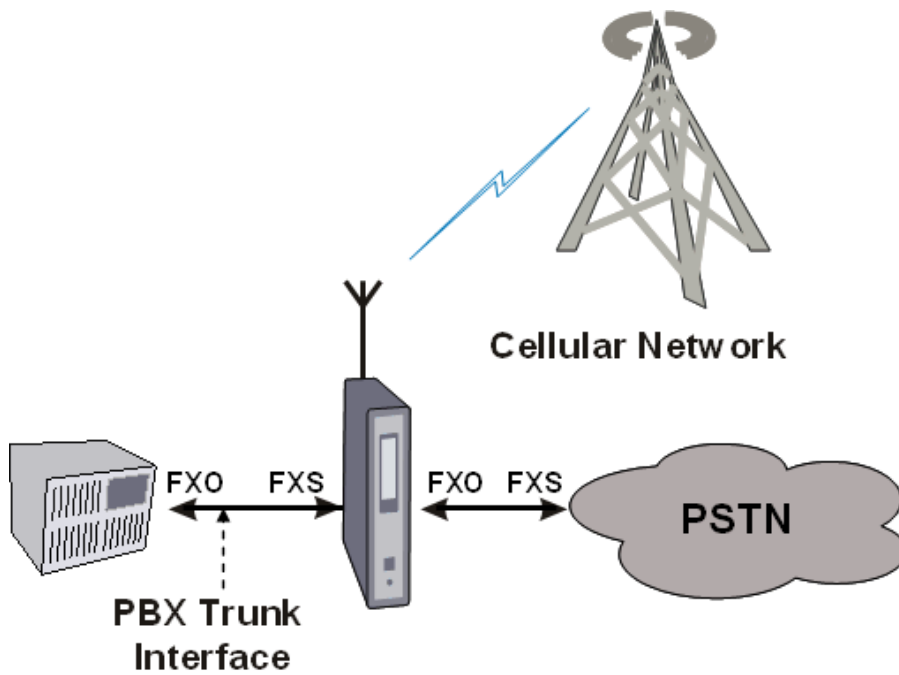


Figure 1-4. Office Trunk Configuration

The same operation as above, but in this case the call is initiated by a PBX analog trunk. The call is forwarded by the CGW-D either to the cellular network or to the PSTN.

Incoming cellular calls can be forwarded to the PBX trunk or to the PSTN (and paid by the organization, rather than by the cellular caller). The last operation is called "public call thru" or DISA (Direct Inward System Access).

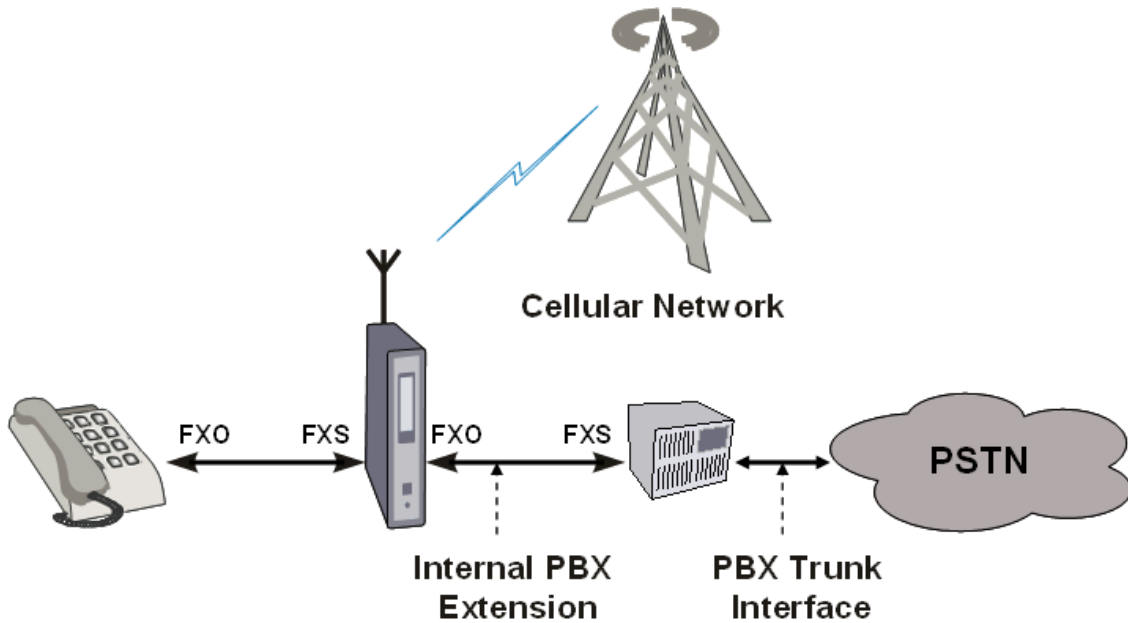


Figure 1-5. Office Trunk Gateway Configuration

This configuration is mainly used for Callback and Call-thru applications from external cellular users. A Callback remote cellular user can call the PBX, and (if authorized) the call is disconnected and reversed. The CGW-D calls back the remote user and sends a dial tone. The remote user becomes now a local PBX member, and can (if authorized):

- Call any internal PBX station.
- Call any PSTN external number.

This application is primarily used by company employees situated out of the country.

A Call-thru remote cellular user calls the PBX and (if authorized) is forwarded to the PSTN. The user pays for the local cellular call and the company pays for the PSTN extended call.

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## Chapter 2: Software Installation

### 2.1 Overview

This chapter provides step-by-step instructions for installation of the CGW-D GUI application software and the USB driver.

### 2.2 Installation Procedure

To install the software perform the step as follows:

- a. Insert the supplied CD into the drive.
- b. Open the folder from the drive (Figure 2-1) and double-click the **Setup** icon (📄). The installation window opens (Figure 2-2). The recommended destination folder appears in Destination Folder area. If required, click **Browse** and specify another folder.

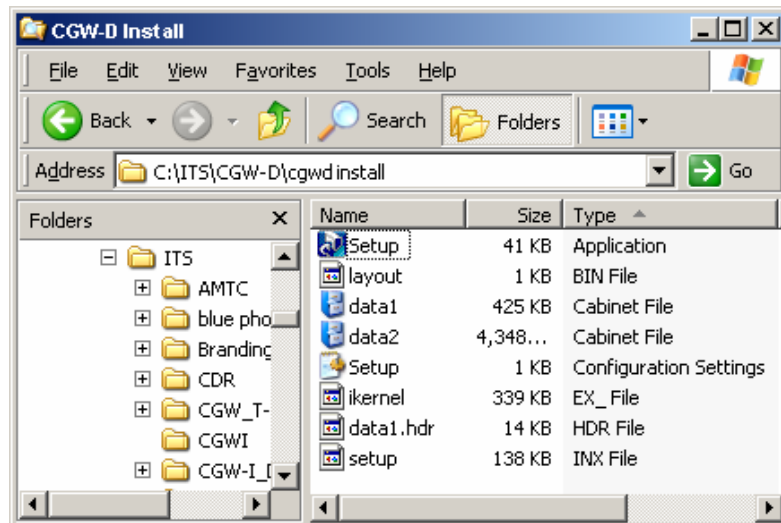


Figure 2-1. CGW-D Install Window

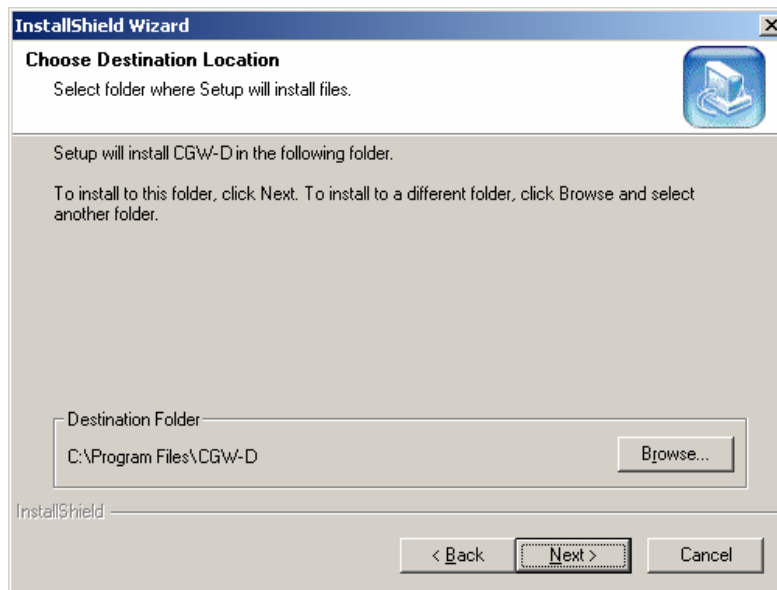


Figure 2-2. Install Shield Wizard Window – Destination Folder

- c. Click **Next** to continue. The next installation window opens (Figure 2-3). The recommended name for the program folder appears in the **Program Folders** field. If required, type another name in this field. The program files will be saved in the folder that you specify.

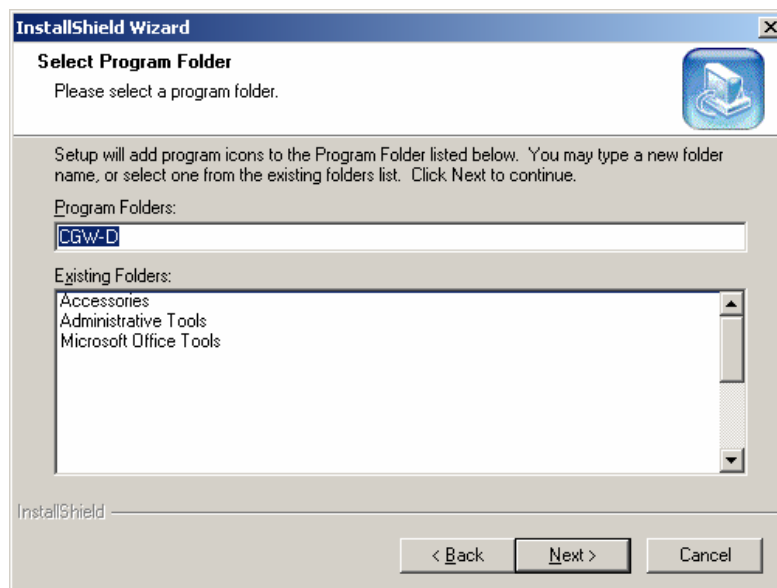


Figure 2-3. Install Shield Wizard Window – Select Program Folder



- d. Click **Next** to continue. A window displaying that installation is complete appears (Figure 2-4).

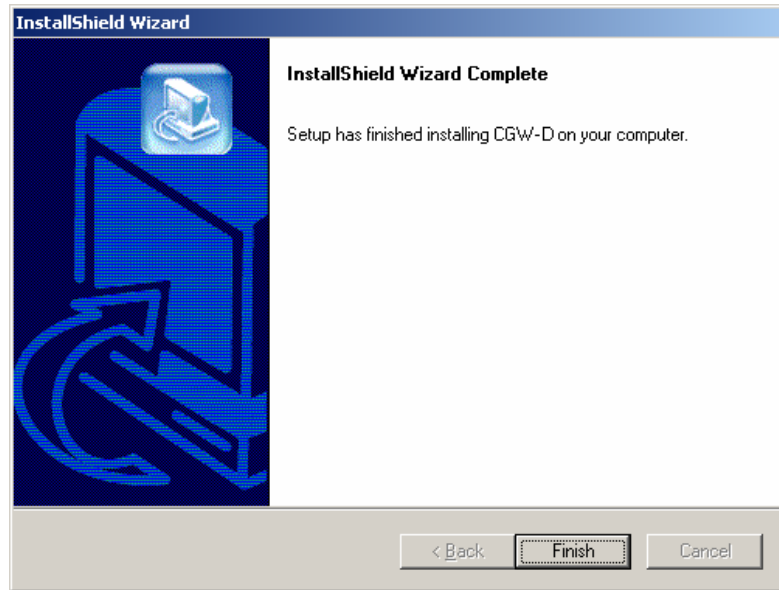


Figure 2-4. Install Shield Wizard Window – Installation Complete

- e. Click **Finish**. The installation window closes. An icon appears on your desktop (Figure 2-5).



Figure 2-5. CGW-D Icon

- f. Activate the CGW-D application by either double-clicking the icon or through the Start menu (Figure 2-6).

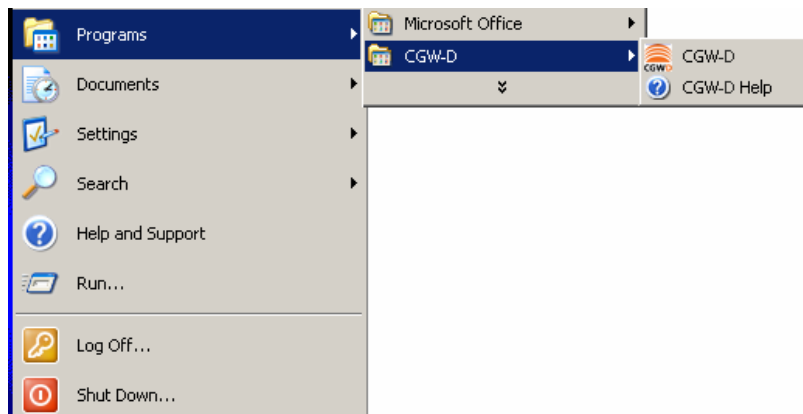


Figure 2-6. CGW-D Activation Through Start Menu

## 2.3 USB Driver Installation

The USB installation driver software is included on the supplied CD. Please note, that you must select a driver that corresponds to the operation system installed on your PC. If an update is required, you can find the drivers you need on the following web page: <http://www.ftdichip.com/Drivers/VCP.htm>.

### NOTE

When the device is connected via a USB cable to the PC and it is in programming mode, the CGW-D will not receive any incoming calls and will not make any outgoing calls. In case of an incoming call the caller will get a No Answer ring back tone.

There are two stages of USB driver installation:

### 2.3.1 USB Serial Driver Installation

To install a serial driver, perform the steps as follows:

- a. Power the device using the 9V DC external power supply.
- b. Plug a USB cable into the device and the PC USB port. **Found New Hardware** window appears (Figure 2-7).

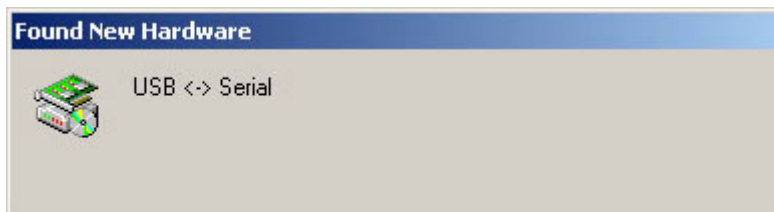


Figure 2-7. Found New Hardware Window

This window should appear automatically when the new hardware is detected.

**If it is not detected automatically, perform the steps as follows:**

- a. Right-click **My Computer** icon and select **Manage** from pop-up menu. **Computer Management** window appears.
- b. Click the **Device Manager** branch. The device management tree appears on the right.
- c. Right-click **Universal Serial Bus controllers** and select **Scan for hardware changes** from pop-up menu. After a few seconds **Found New Hardware Wizard** window appears (Figure 2-8).



Figure 2-8. Found New Hardware Wizard – Window 1

- d. Click **Next**. The next wizard window appears (Figure 2-9).



Figure 2-9. Found New Hardware Wizard – Window 2

- e. Click the **Search for a suitable driver for my device (recommended)** radio button and click **Next**. The next wizard window appears (Figure 2-10).

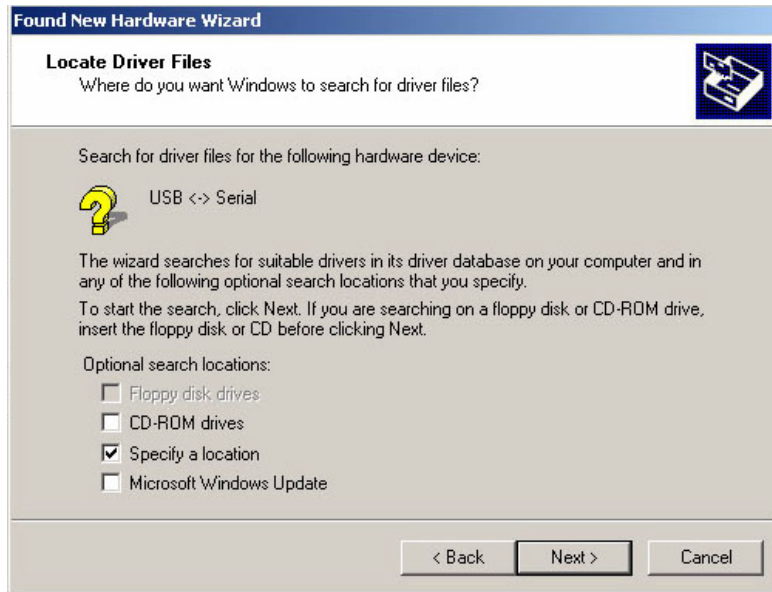


Figure 2-10. Found New Hardware Wizard – Window 3

- f. Select the **Specify a location** check-box and click **Next**. A standard Windows browser opens (Figure 2-11).

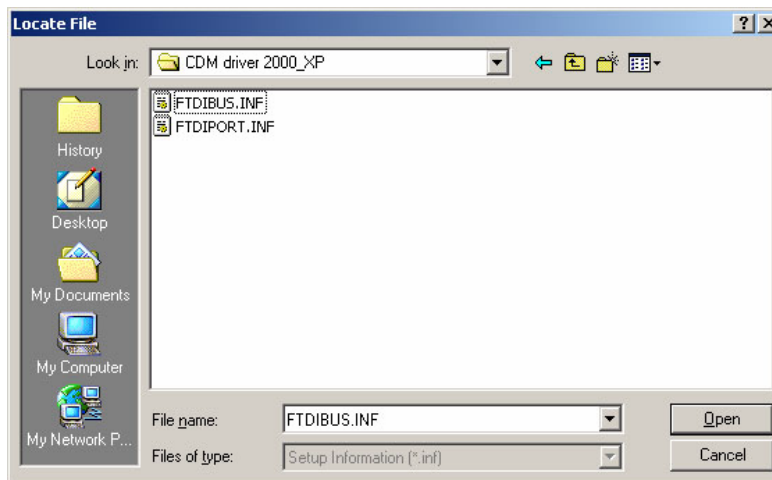


Figure 2-11. Browser Window

- g. Select the USB driver's files location on the supplied CD and the operation system installed on the PC, and click **Open**. The next wizard window appears (Figure 2-12).

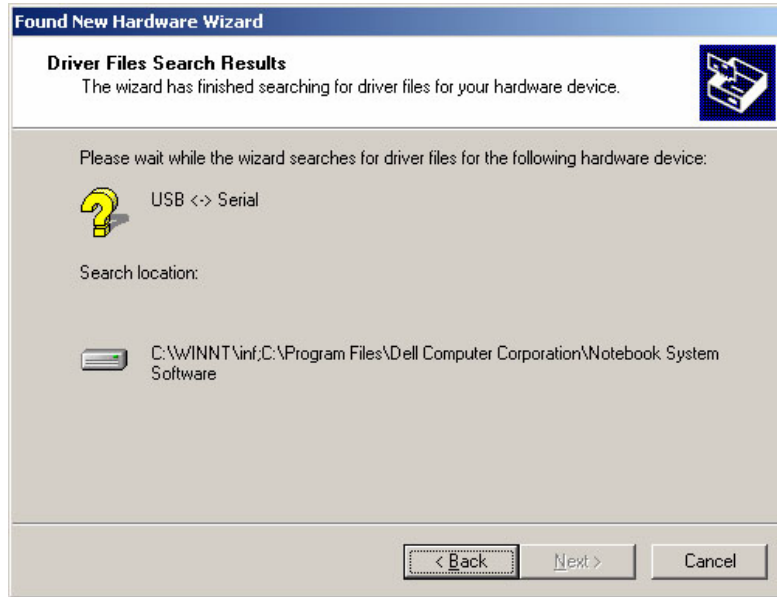


Figure 2-12. Found New Hardware Wizard – Window 4

- h. Click **Next**. An installation procedure is performed (Figure 2-13).

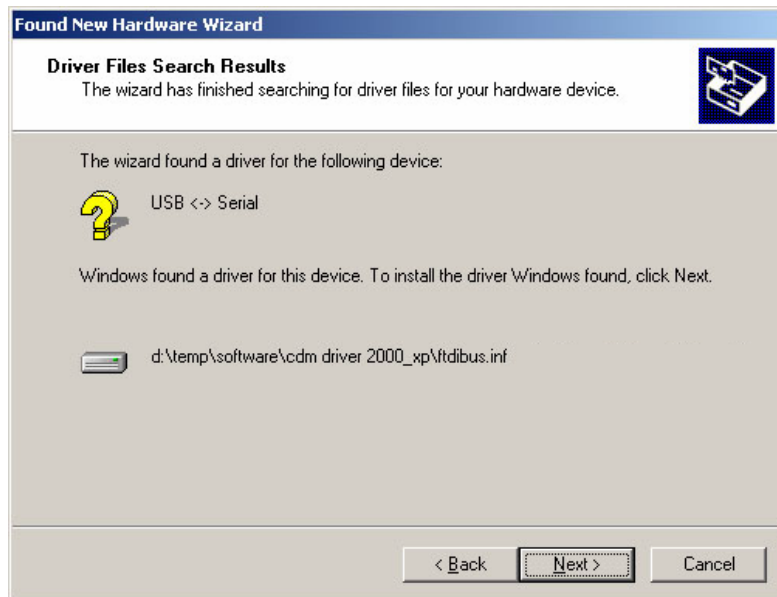


Figure 2-13. Found New Hardware Wizard – Window 5

- i. Click **Next**. A new window informs that USB-COM serial converter installation is completing.



Figure 2-14. Found New Hardware Wizard – Window 6

- j. Click **Finish** to finish USB-COM port converter installation and start the USB port installation. **Found New Hardware** window appears (Figure 2-15) and after a few seconds **Found New Hardware Wizard** window appears (Figure 2-16).

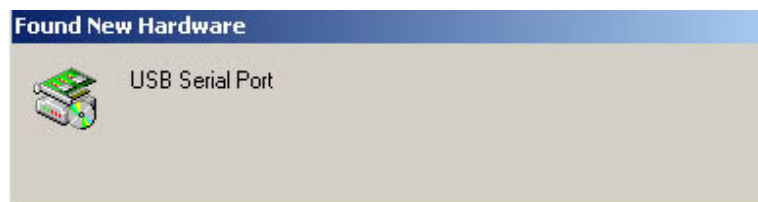


Figure 2-15. Found New Hardware Window



Figure 2-16. Found New Hardware Wizard – Window 7

- k. Click **Next**. The next wizard window appears (Figure 2-17).



Figure 2-17. Found New Hardware Wizard – Window 8

- l. Click the **Search for a suitable driver for my device (recommended)** radio button and click **Next**. The next wizard window appears (Figure 2-18).

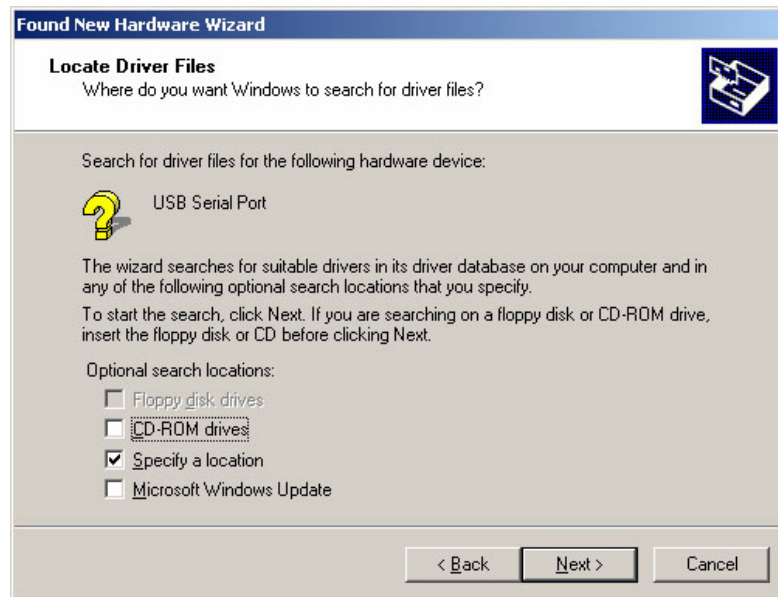


Figure 2-18. Found New Hardware Wizard – Window 9

- m. Select the **Specify a location** check-box and click **Next**. A standard Windows browser opens (Figure 2-19).

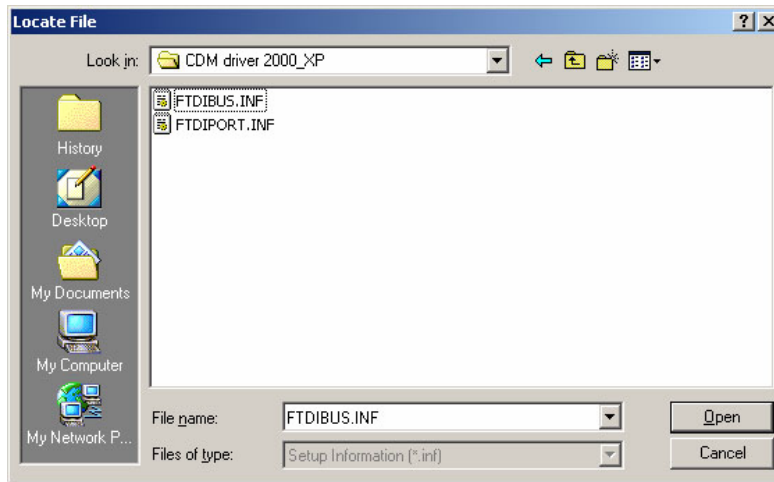


Figure 2-19. Browser Window

- n. Select the USB driver's files location on the supplied CD and the operation system installed on the PC, and click **Open**. The next wizard window appears (Figure 2-20).



Figure 2-20. Found New Hardware Wizard – Window 10



- o. Click **Next**. A new window informs that USB-COM serial port installation is completing (Figure 2-21).

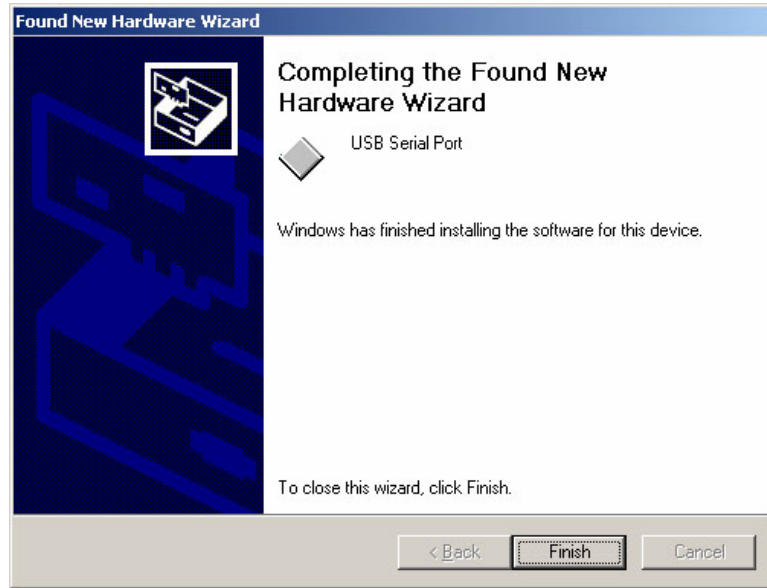


Figure 2-21. Found New Hardware Wizard – Window 11

- p. Click **Finish** to finalize the installation process.

**To test the connection between PC and Device perform the steps as follows:**

- a. Run the VMS software from the supplied CD.
- b. From the main menu select **Communication**→**Read Configuration** and click **OK**. VMS starts reading the configuration from the Device system through the USB interface. If the VMS application does not find USB port automatically, you can resolve it as follows:
  - Right-click **My Computer** icon and select **Manage** from pop-up menu. **Computer Management** window appears (Figure 2-22).
  - Click the **Device Manager** branch. The device management tree appears on the right.

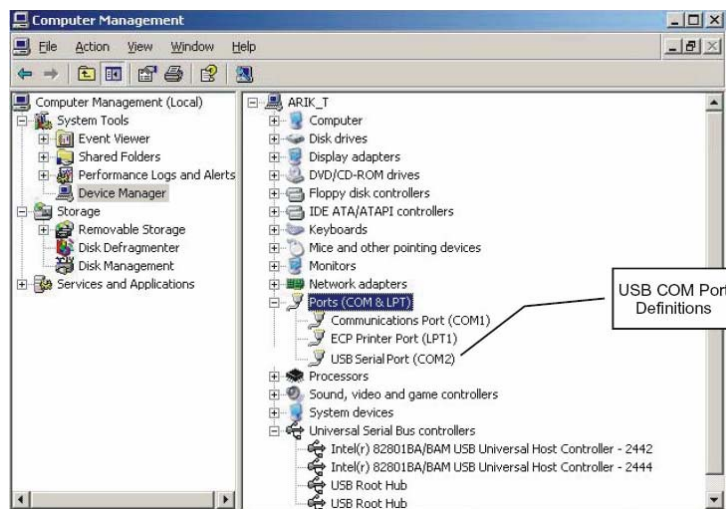


Figure 2-22. Computer Management Window

- Find the installed USB Serial Port and the corresponding PC COM port.
- On the VMS application main menu select **Communication→Com Port. USB To COM Port Selection** window appears (Figure 2-23).

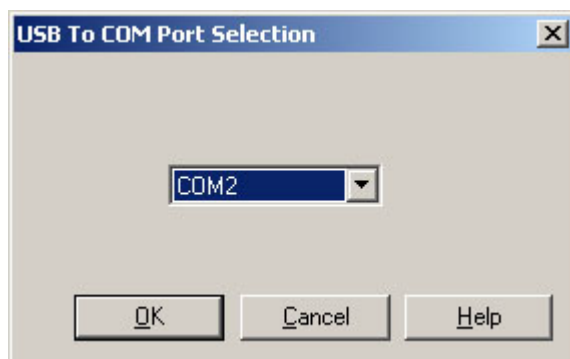


Figure 2-23. USB to COM Port Selection Window

- Set the COM port as required.
- Try to activate the Read Parameters function again.

## Chapter 3: User Interface

### 3.1 Overview

This chapter displays all the system windows and details the function of all controls and fields.

### 3.2 Main Screen Structure

The CGW-D application is based on a tabbed pane that contains four menus (see Paragraph 3.2.1) and four tabs (see Paragraph 3.2.2).

#### 3.2.1 Application Menus

The CGW-D application has the following menus:

- **File** menu (see Paragraph 3.2.1.1).
- **Communication** menu (see Paragraph 3.2.1.2).
- **Tools** menu (see Paragraph 3.2.1.3).
- **Help** menu (see Paragraph 3.2.1.4).

##### 3.2.1.1 File Menu

The **File** menu (Figure 3-1) serves for standard operations as customary in most Windows-based applications.

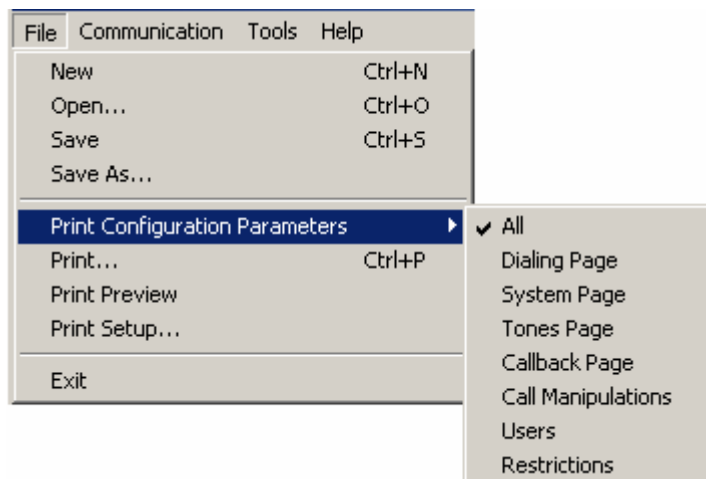


Figure 3-1. File Menu

Item	Function
New	Creates a new file (.cgwd format)
Open	Opens an existing file
Save	Saves file in a specified location
Save As...	Saves existing file under another name or location
Print Configuration Parameters	Enables to select parameters for printing by group
Print	Opens a standard Windows print dialog
Print Preview	Displays a preview of the printed parameters (Figure 3-2)
Print Setup	Opens a standard Windows print setup dialog
Exit	Exits the application

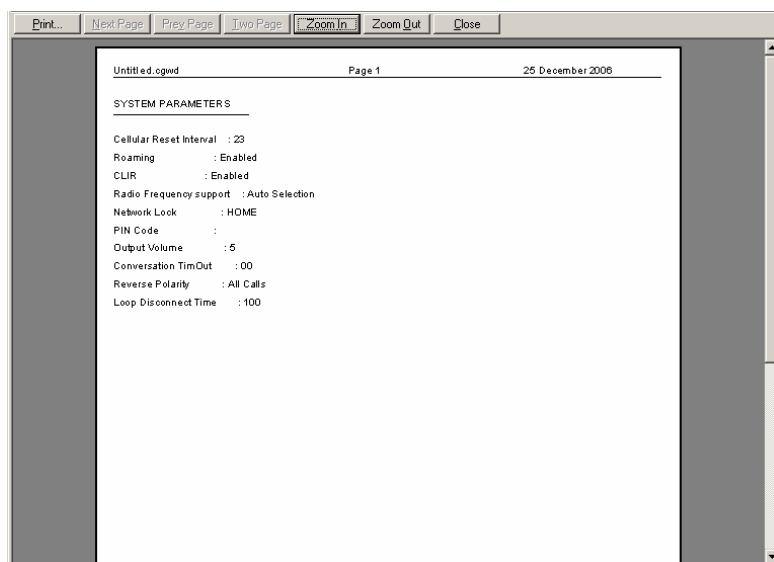


Figure 3-2. Print Preview Window

### 3.2.1.2 Communication Menu

The **Communication** menu (Figure 3-1) serves for performing operations related to device communication and to change the user password.

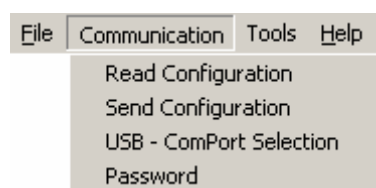


Figure 3-3. Communication Menu

Item	Function
Read Configuration	Opens the <b>Read Parameters</b> window (Figure 3-4)
Send Configuration	Opens the <b>Send Parameters</b> window (Figure 3-5)
USB ComPort Selection	Opens the <b>Communication Setting</b> window (Figure 3-6)
Password	Opens the <b>Change Password</b> window (Figure 3-7)

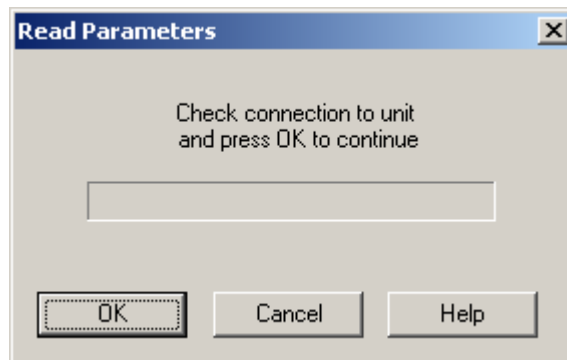


Figure 3-4. Read Parameters Window

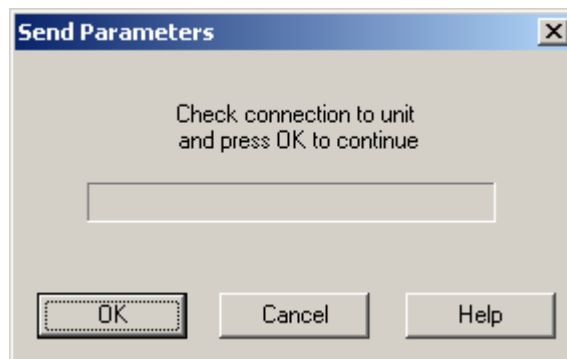


Figure 3-5. Send Parameters Window

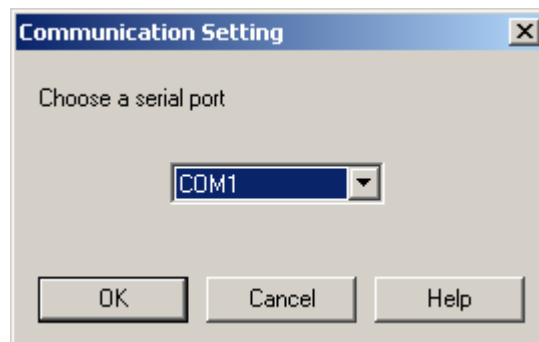


Figure 3-6. Communication Setting Window

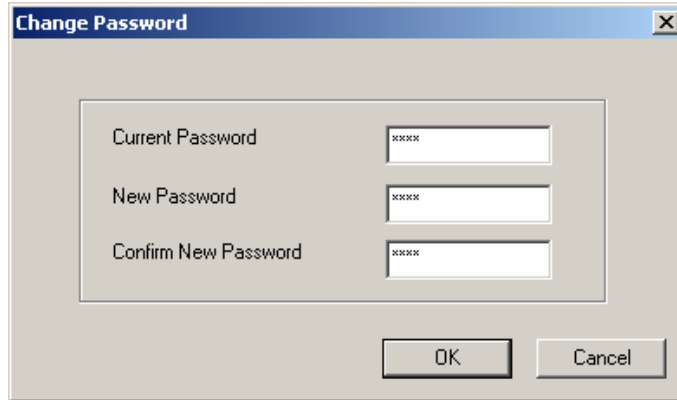


Figure 3-7. Change Password Window

### 3.2.1.3 Tools Menu

The **Tools** menu (Figure 3-1) serves for performing operations related to CDR viewing and deletion, device reset and software upgrade.

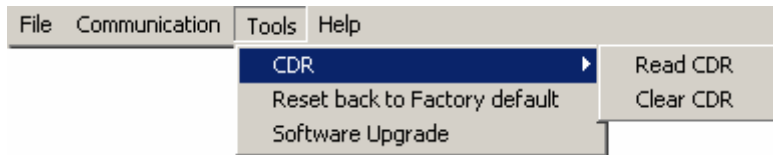


Figure 3-8. Tools Menu

Item	Function
Read CDR	Opens the Read CDR window (Figure 3-9)
Clear CDR	Opens a warning message and enables to clear CDRs (Figure 3-10)
Reset back to Factory default	Resets the unit to factory default (restricted for administrators)
Software Upgrade	Enables to install an upgraded software version (restricted for administrators)

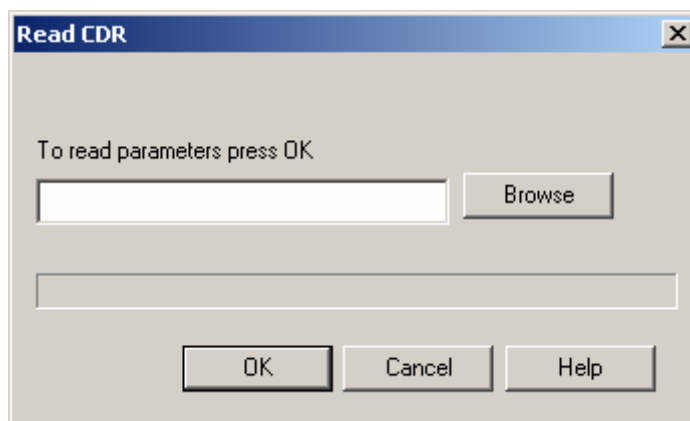


Figure 3-9. Read CDR Window

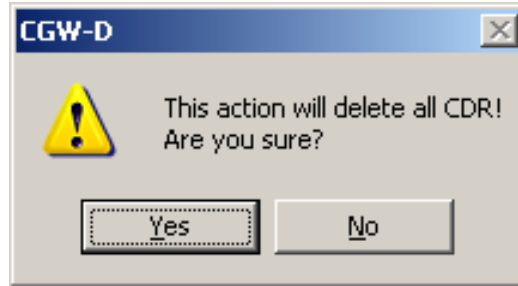


Figure 3-10. Clear CDR Warning

**NOTE**

The CDR list is based on FIFO functionality, thus the first call registered is the first call to be overwritten. In order to prevent lose of call information, the data should downloaded periodically.

**3.2.1.4 Help Menu**

The **Help** menu (Figure 3-1) serves for performing operations related to CDR viewing and deletion, device reset and software upgrade.

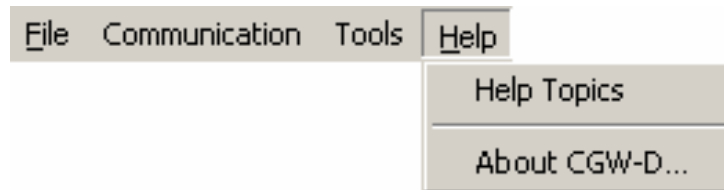


Figure 3-11. Help Menu

Item	Function
Help topics	Opens an online help file
About CGW-D...	Displays the software version (Figure 3-12)

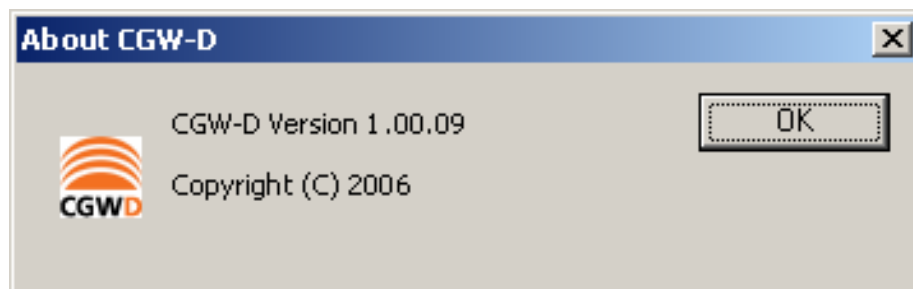


Figure 3-12. About Window

### 3.2.2 Window Tabs

The operation window comprises the following tabs:

- **Dialing Parameters** tab (see Paragraph 3.2.2.1).
- **System Parameters** tab (see Paragraph 3.2.1.2).
- **Tones Parameters** tab (see Paragraph 0).
- **Call Back/Call Through** tab (see Paragraph 0).

**Dialing Parameters** tab opens by default when the application is activated.

#### 3.2.2.1 Dialing Parameters Tab

The **Dialing Parameters** tab (Figure 3-13) contains the options for dialing parameters configuration.

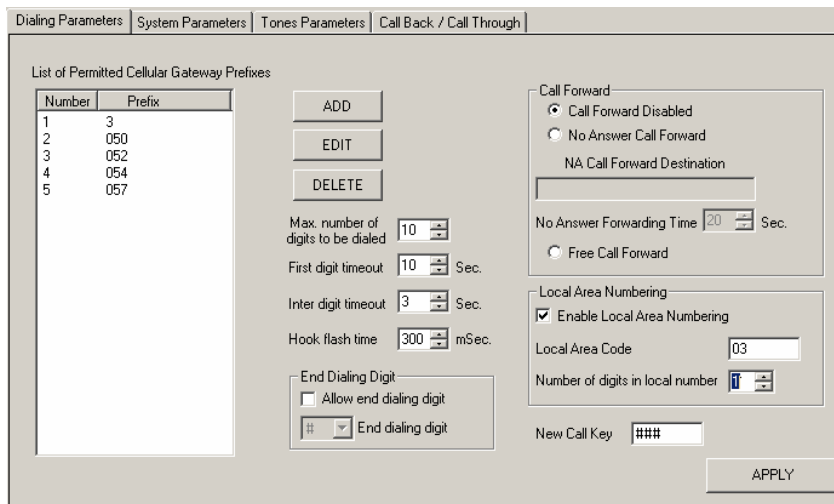


Figure 3-13. Dialing Parameters Tab

Item	Function	Default	Range/Option
List of Permitted Cellular Gateway Prefixes	This field is designated to contain the permitted frequencies entered by the user (“white list”).	Empty	Max. 30 X 8 digits
ADD	Opens <b>Add Prefix</b> window (Figure 3-14).		
EDIT	Opens <b>Edit Prefix</b> window (Figure 3-15).	Displays selected prefix	
DELETE	Deletes the selected prefixes from the list.		



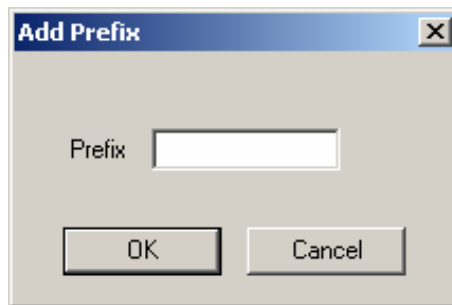


Figure 3-14. Add Prefix Window

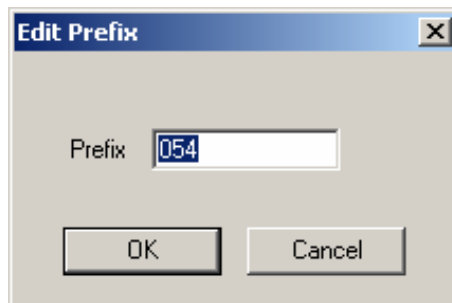


Figure 3-15. Edit Prefix Window

Item	Function	Default	Range/ Option
Max. number of digits to be dialed	Specifies the maximum number of digits comprising a number.	10	
First digit timeout	Specifies the timeout value in seconds for dialing the first digit of the number.	10	
Inter digit timeout	Specifies the timeout value in seconds for dialing the all number digits except the first digit.	3	
Hook flash time	Specifies the required time (in milliseconds) to put a call on hold to enable its routing to the destination number.	300	
<b>End Dialing Digit</b>			
Allow end dialing digit	This checkbox enables the end dialing digit feature – a DTMF symbol used to indicate the end of destination number dialing.	Deselected	
End Dialing Digit	This combo-box enables to define a digit/symbol as an end dialing digit.	Disabled	0..9, *, #

Item	Function	Default	Range/ Option
<b>Call Forward</b>			
Call Forward Disabled	Defines that incoming calls from the FXO side will not be forwarded.	Selected	
No Answer Call Forward	Defines that if an incoming call from the FXO side is not answered, it will be forwarded to the number specified in the field below.	Deselected	
NA Call Forward Destination	Active only if the above radio button is selected. Contains the number to which the call will be forwarded.	Disabled	
No Answer Forwarding Time	Active only if the above radio button is selected. Specifies the time in seconds after which the unanswered call from the FXO side is forwarded.	20, disabled	
Free Call Forward	Enables to forward calls from the FXO side to a cellular extension (corresponds to the Maximum Number of Digits to be Dialed parameter).	Deselected	
<b>Local Area Numbering</b>			
Enable Local Area Numbering	Enables to add a local area prefix for the land dialed number. If the PSTN line is disconnected, the gateway will add a local area prefix automatically to the dialed local area number.	Deselected	
Local Area Code	Contains the local area code (prefix).	Disabled	4 digits max.
Number of digits in local number	Defines the number of digits in the land number so that the system could identify whether it is required to add a local area code when the number is dialed via a cellular network.	7	
New Call Key	Enables to define a key that will start a new call.	###	
APPLY	Applies all changes.		

### 3.2.2.2 System Parameters Tab

The **System Parameters** tab (Figure 3-16) contains the options for systems parameters configuration.

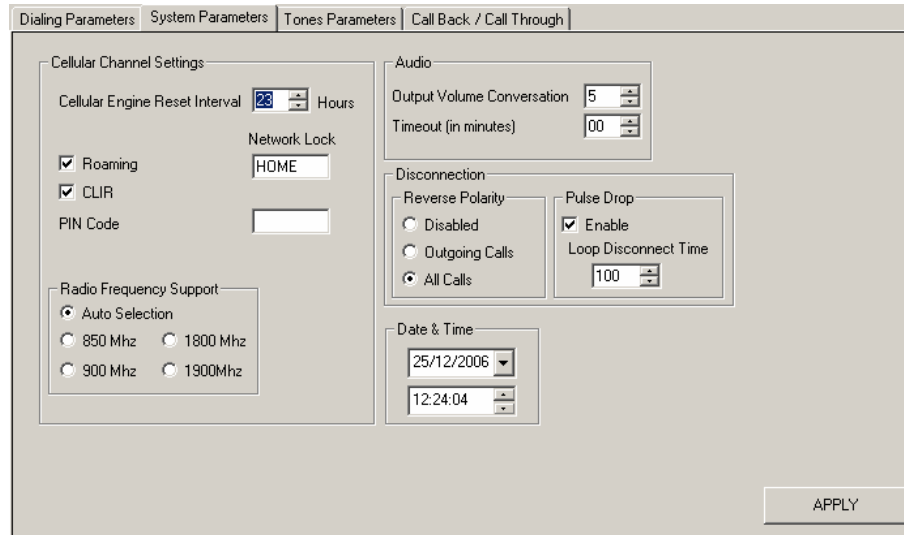


Figure 3-16. System Parameters Tab

Item	Function	Default	Range/ Option
<b>Cellular Channel Setting</b>			
Cellular Engine Reset Interval	Enables to set the interval in hours for cellular engine reset.	23	00-24 (00 = no reset)
Roaming	Enables to activate the roaming service	Selected	
CLIR	Calling Line Identification Restriction. Prevents transmission of calling SIM card's number (for outgoing calls).	Selected	
Network Lock	Enables to set the number of an operator with which the system will work. If field displays HOME or 0000000, the system will first try to register with its home network, and will connect to the strongest available network if there is no signal and Roaming is enabled. If network operator details are set as a permanent factory setting, this field is disabled.	HOME	7 digits, 0..9

Item	Function	Default	Range/ Option
PIN Code	<p>Enables to restrict changes to gateway by means of a PIN code. For initial installation, the PIN code requests on the SIM must be disabled using any GSM cellular phone. Three incorrect attempts of PIN code entry will lock the Channel Settings fields, and the PUK code must be obtained from the network operator to unlock the SIM. After this, you must still enter the correct PIN code.</p> <p>PIN code can be up to 8 digits. When entering the PIN code, one should dial "439 PIN code #". If the # won't be dialed the CGW-D will not acknowledge the PIN code</p>	Empty	4 digits, 0..9
<b>Radio Frequency Support</b>			
Auto Selection	Enables the gateway to select automatically any radio frequency from the list of supported frequencies during registration process.	Selected	
850 MHz	Sets the gateway to use only 850 MHz frequency during registration process.	Deselected	
900 MHz	Sets the gateway to use only 900 MHz frequency during registration process.	Deselected	
1800 MHz	Sets the gateway to use only 1800 MHz frequency during registration process.	Deselected	
1900 MHz	Sets the gateway to use only 1900 MHz frequency during registration process.	Deselected	
<b>Audio</b>			
Output Volume Conversation	Enables to set the reception volume level.	5	1-9
Timeout (in minutes)	Enables to set the conversation time limit in minutes for outgoing cellular calls.	00	00-99 (00 = no limit)
<b>Disconnection – Reverse Polarity</b>			
Disabled	Gateway does not send reverse polarity to the FXS side when a call disconnection was received from the cellular network.	Deselected	Disabled

Item	Function	Default	Range/ Option
Outgoing Calls	Gateway sends reverse polarity to the FXS side when a call disconnection was received from the cellular network during outgoing calls only.	Deselected	Outgoing Calls
All Calls	Gateway sends reverse polarity to the FXS side when a call disconnection was received from the cellular network during all calls.	Selected	All Calls
<b>Disconnection – Pulse Drop</b>			
Enabled	Activates pulse drop (loop current disconnection) service and enables the Loop Disconnect Time field.	Selected	
Loop Disconnect Time	Contains a value in msec for pulse interval that informs the PBX of call disconnection.	100	100-1900 msec
Date & Time	Displays current date and time		
APPLY	Applies all changes.		

### 3.2.2.3 Tones Parameters Tab

The **Tones Parameters** tab (Figure 3-17) contains the options for tone parameters configuration.

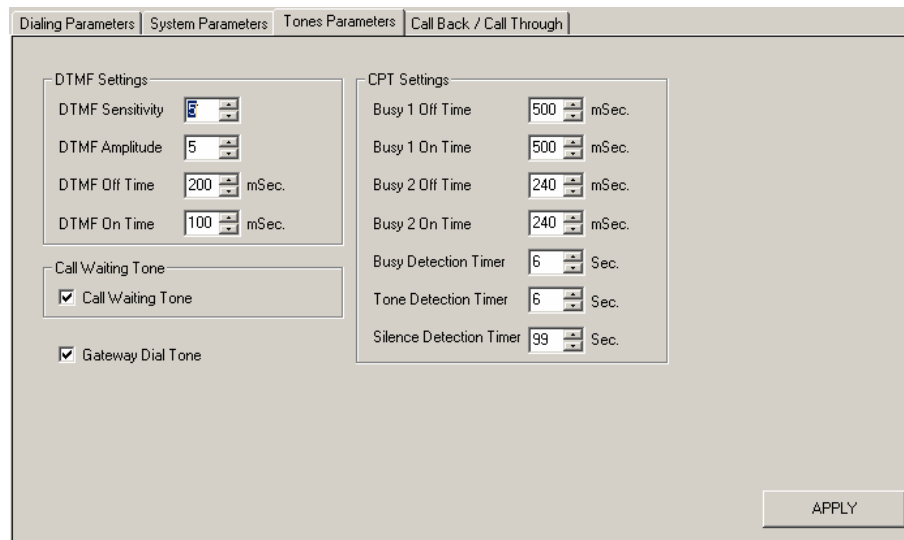


Figure 3-17. Tones Parameters Tab

Item	Function	Default	Range/ Option
<b>DTMF Settings</b>			
DTMF Sensitivity	Contains a value of the DTMF sensitivity level of the gateway, which can be dialed from the PSTN. Applicable to PBX and cellular networks.	5	1-9
DTMF Amplitude	Contains a value of the amplitude of DTMF tones, which are dialed by gateway to PSTN or PBX directory.	5	1-9
DTMF Off Time	Contains a value of the off-time cadence of DTMF tones (in msec.), which will be dialed by gateway.	200	
DTMF On Time	Contains a value of the on-time cadence of DTMF tones (in msec.), which will be dialed by gateway.	100	
Call Waiting Tone	Enables a tone indicating that another call is pending. During a cellular call, a new cellular call will be indicated by the call waiting tone, whereas a new PSTN call will be rejected.	Selected	
Gateway Dial Tone	Enables the gateway to generate a dial tone for outgoing gateway calls as well as to the home phone, PBX trunk or PBX extension directions for future dialing.	Selected	
<b>CPT Settings</b>			
Busy 1 Off Time	Contains a value in msec for off-time of type-1 busy tone cadence.	500	
Busy 1 On Time	Contains a value in msec for on-time of type-1 busy tone cadence.	500	
Busy 2 Off Time	Contains a value in msec for off-time of type-2 busy tone cadence.	240	
Busy 2 On Time	Contains a value in msec for on-time of type-2 busy tone cadence.	240	
Busy Detection Timer	Contains a value in msec for gateway to detect a busy tone and disconnect call.	6	
Tone Detection Timer	Contains a value in msec for gateway to detect a continuous tone signal.	6	

Item	Function	Default	Range/ Option
Silence Detection Timer	Contains a value in msec for gateway to detect silence and disconnect call.	99	
APPLY	Applies all changes.		

### 3.2.2.4 Call Back/Call Through Tab

The **Call Back/Call Through** tab contains the options for call back and call through configuration.

Item	Function
<b>Users List</b>	
NEW	This button opens the <b>Create User</b> window (Figure 3-18).
EDIT	This button opens the <b>Edit User</b> window (Figure 3-19).
DELETE	Deletes a selected entry from the Users List.
RESTRICTIONS	Opens the <b>Prefix Restriction Numbers</b> window (Figure 3-20).
MANIPULATION S	Opens the <b>Call Manipulation</b> window (Figure 3-21).

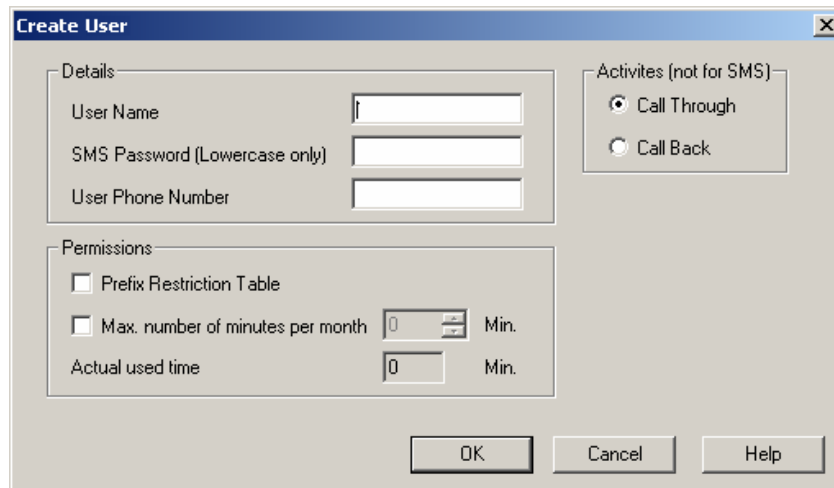


Figure 3-18. Create User Window

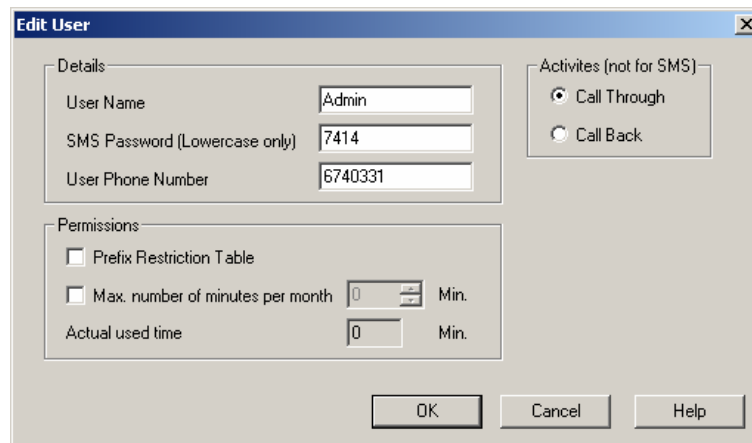


Figure 3-19. Edit User Window

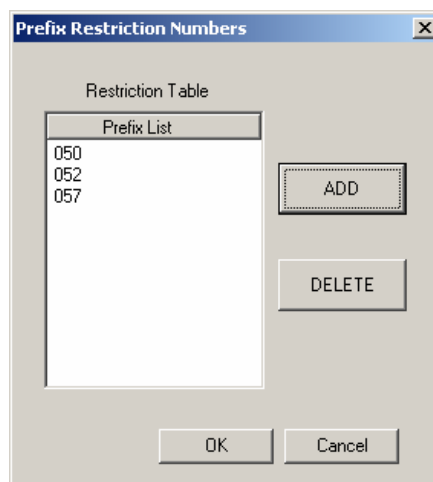


Figure 3-20. Prefix Restriction Numbers Window

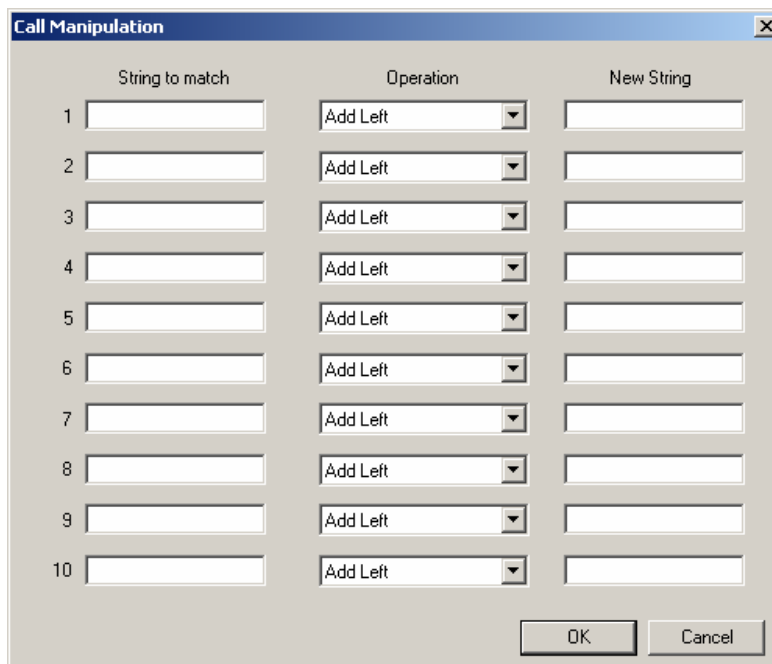


Figure 3-21. Call Manipulation Window



**NOTE**

The Call Manipulation window includes up to 10 different Cellular numbers strings with a maximum of 5 digits each. For each entry there is a rule to make changes in the detected CLI number. When the system detects an incoming call from the Callback/Call Through database user, the CGW-D calls back to the number, which is changed according to the rule from the Call Manipulation window.

Item	Function	Default	Range/Option
<b>Public Call Through</b>			
Allow Public Call Through	Enables to provide a dial tone to any incoming cellular caller, which can make calls subject to the restrictions set in <b>Prefix Restriction Numbers</b> window and <b>Max. Digits to Dial</b> parameter.	Deselected	
Max. Digits to Dial	Contains a value that limits the number of digits that a cellular caller can dial. Active only when <b>Allow Public Call Through</b> checkbox is selected.	Inactive	
Enable Restriction Table	Applies the settings defined in the restrictions table.		
Subscriber's Timer Reset Day in Month	Contains a value that defines the day of the month in which the subscriber's timer will be reset.	1	1-28
Call Back/Through First Digit Timeout Operation	Enables to select the action that gateway will perform if the caller starts dialing after the <b>First digit timeout</b> parameter defined in the <b>Dialing Parameters</b> window has elapsed. When this occurs, the gateway will either disconnect the call or forward it to the FXS direction.	Disconnect	Disconnect FW to Phone
Call Divert Number	Enables to divert the call to an alternate cellular gateway. A number in the field enables this feature; an empty field disables this feature.	Empty	
APPLY	Applies all changes.		

### 3.2.3 DTMF Programming

The CGW- D device can be programmed using DTMF commands. To program the unit, perform the steps as follows:

1. If the unit is connected to a PBX, remove the cable from the FXO connector on the unit front panel.
2. Connect an analog telephone directly to the FXO connector.
3. Dial \*900 and enter the password (1234 by default).
4. Use the commands in the following table for programming.

#### **NOTE**

- When DTMF programming changes are made, the device will perform an automatic reset for the changes to take effect.
- Exit from the programming mode by \*900 or hanging up the telephone.
- If you do not enter digits for 45 seconds, the unit will automatically exit the programming mode.
- When entering a correct command, you will hear two beeps; when entering an incorrect command, you will hear long a beep.

Operation	Command	Default
Enter the programming mode	*900 +XXXX where: XXXX=Password	1234
Exit the programming mode	*900	
Maximum number of digits to be dialed. Less than XX: 3-second timeout, before dialing starts. Exactly XX digits dialed: Number dialed directly. More than XX digits dialed: Number will be cut off after reaching XX.	*300 + XX where: XX = 01-32 (digits)	10 towards PBX. (Tip: set the default to country's max. telephone number length).

Operation	Command	Default
Reverse polarity. The CGW-D can be programmed to send a “reverse polarity” command to the PBX, when a “call answer” is detected. This parameter is useful if call accounting software is active.	*320 + X where: X = 0 – 2 (3 in 4_14 Partner) 0 = No reverse polarity 1 = Reverse polarity only on outgoing calls 2 = Reverse polarity for incoming and outgoing calls	2
Output volume control	*330 + X where: X = 1-9 (9 is highest)	5
End dialing digit definition	*334 + X where X – DTMF digit 0-9,*,#	None
Hook Flash time in msec with option to set 040-980 in 20 msec steps.	*370 + XXX	300 ms
Pulse drop (Loop disconnect) duration. The length of the loop current disconnection to indicate to the FXS direction about the conversation end.	*380 + XX where: XX = number of 1/10sec XX = 01-19	08 = 800 msec
Conversation timeout. The telephone conversation will be automatically terminated after this timeout.	*390 + XX where: XX = time out in [minutes]01-99 00 = unlimited	00 (unlimited)
First digit dialing timeout. During this time interval the gateway waits for the first dialed digit.	*391 + XX, where XX – time in seconds 03-60	10
Inter digit timeout. Maximum available time interval between dialed digits	*392 + X where: XX – time in seconds 2-9	3
Disable End dialing digit functionality	*394	
Cellular network prefixes (White list). The CGWT-D will transfer an outgoing call to the cellular network if and only if its direction is present in the list. All other outgoing calls are transferred via PSTN. Up to 30 numbers with a maximum of 8 digits can be defined.	*400 + XX + YY..YY + # where: XX = 01 – 30 (ordinary numbers of permitted prefixes) YY..YY = Permitted prefixes (0 – 9, *, #) '**' for '*', '*#' for '#'	None
Delete call barring (White list prefixes).	*400 + XX + # (delete a specific list number) or *400 + *1 (delete the whole restricted number list).	None

Operation	Command	Default
<p>Call Forward mode.</p> <p>The CGW- D will transfer an incoming call from PSTN (FXO) to a predefined /free cellular number either Unconditionally or after No-Answer from PBX/Home. In addition to Gateway provides dial tone for the free dialing via Cellular network follow by the Cellular prefixes (White list) settings</p>	<p>*420 + X</p> <p>where:</p> <p>X = 0: disabled;</p> <p>X = 1: enabled to specific number;</p> <p>X=2 enabled for free dialing (Dial tone providing)</p>	0
<p>Enable Local Area Numbering support.</p> <p>Gateway checks the number of dialed digits of the outgoing cellular call and adds a local area code when the dialed number is equal to the local area PSTN numbers.</p>	<p>*425 + X</p> <p>where:</p> <p>X = 0: disabled;</p> <p>X = 1: enabled</p>	0
Local Area Code (prefix) definition	<p>*426 + YY..YY+#, where:</p> <p>YY..YY – up to 6 digits local area code</p>	None
Number of digits in Local PSTN number	<p>*427 + XX, where:</p> <p>XX = 00-32</p>	07
Time to wait for No-Answer.	<p>*430 + XX</p> <p>where:</p> <p>XX = delay period in [sec.]</p> <p>00 = unconditional</p> <p>XX = 00-99</p>	20
<p>Call Forward cellular destination.</p> <p>Cellular number prefix should exist in toll restriction list (*400), otherwise the call shall not be forwarded.</p>	<p>*440 + XX.....X + #</p> <p>where:</p> <p>XX.....X = up to 16 digits (0 – 9, *,)</p>	None
Current Day/Time settings	<p>*444+DD+MM+YY+HH+MinMin</p> <p>DD-Day</p> <p>MM-Month</p> <p>YY-Year</p> <p>HH-Hour</p> <p>MinMin – Minutes</p>	01-01-2006-00:01
<p>Cellular Engine Reset Interval.</p> <p>Define the interval (in hours) between cellular channel resets when the unit is in idle mode.</p> <p>Note: The whole unit is reset!</p>	<p>*450 + XX</p> <p>where:</p> <p>XX = number of hours between resets (01 to 24)</p> <p>00 – engine reset disabled</p>	23

Operation	Command	Default
System Tones Cadence	*470 + X + YYYY where: X = 1; Busy 1 OFF time. X =2; Busy 1 ON time. X = 3; Busy 2 OFF time. X = 4; Busy 2 ON time. X = 5; DTMF OFF time (sent). X = 6; DTMF ON time (sent). YYYY = 4 digit cadence in steps of 20msec. For X = 1-4    YYYY=0100-3000 For X = 5,6    YYYY=0020-0980	
DTMF sensitivity	*480 + Y where: Y = sensitivity level (1-9), 9 most sensitive	5
DTMF amplitude level	*490 + X, where: Y = level (1-9); 9 – highest.	5
Roaming. The CGW-D will be able to register with another GSM operator.	*500 + X, where: X = 0, off X = 1, on	1
Busy tone detection time. Time interval for recognizing the busy tone.	*520 + X, where: X – time in seconds (1-9)	6
Continuous Tone Detect Timer – time interval for continuous tone detection. The device disconnects when a continuous tone is detected for XX seconds	*530 + X, where: X = time in seconds (1-9). An error rate of $\pm 25\%$ may occur due to tone flexibility.	6
Silence detection timer. Time interval, when gateway detect a silence for to disconnect a call	*531 +XX, where: XX = time in minutes (00-99)	99
CLIR (Calling Line Interface Restriction). The CGW-D can restrict its SIM telephone number display.	*550 + X, where: X = 0, off X = 1, on	1
Call Back/Call Through Subscribers Timer Reset Day	*560 + XX, where: XX = 01-28	1
Enabling Call Back/Call Through restriction table.	*561 + X, where: X=1 – Restriction table enabled X=0 – Restriction table disabled	1

Operation	Command	Default
Call back/Call Through Subscribers restriction table (black list).	*562 + XX + YY..YY + #, where: XX = 01 – 30 (list number of restricted numbers) YY..YY = Up to 8 Restricted digits (0 – 9, *, #) Clear restriction list: 562+*1 ***' for '*', '*#' for '#'	None
Maximum number of digits for Public Call Through calls	*564 + X, where X=0-9	0 – Public Call Through mode disabled
Call Back/ Call Through first digit operation. Specify operation, which the Gateway will implement if a Call Back/Call Through subscriber expired First Digit time out time interval. Options: To disconnect, or to pass a call to the Phone/PBX trunk (FXS) direction	*565 + X, where: X=0 – Disconnect X=1 – Forward to phone (FXS)	
Audio signaling (beep) for outgoing cellular call indication	*587 +X, where: X=0 – disable X=1 enable	1
Change programming password	*600 + new password, where: password must be 4 digits long (only digits, 0-9)	1234
Set Auto-Attendant back to factory default	*654+* + admin ps wrd +#	
Enter the Programming mode.	*900 + XXXX, where: XXXX = password 0000 = master password.	1234
Exit the Programming mode	*900	

## Chapter 4: Programming Guide

### 4.1 Overview

This chapter provides programming instructions for the administrator.

### 4.2 CGW-D Start-Up and Idle Modes

To initialize the device and set it to idle mode, perform the steps as follows:

- a. Connect the supplied antenna to the **Ant.** socket.
- b. Connect the required cables to the **To PSTN** and/or **To PBX** sockets (see **Home Configuration** connection diagram in Chapter 1).
- c. Insert SIM card to the SIM card port on the bottom panel.
- d. Connect the external power supply to the power connector. The LCD display lights up and displays the initialization message (Figure 4-1), followed by idle mode message (Figure 4-2).



**v2 = Software version**

**N = 9 to 0 countdown**

Figure 4-1. Start-Up Mode



**XX = Radio signal reception level**

**YY...Y = Cellular operator name**

Figure 4-2. Idle Mode

### **NOTE**

The minimum recommended reception level is -80 dB.

### 4.3 PC Programming Mode

Connect the device to a PC through the USB interface. The LCD displays the programming mode message (Figure 4-3).



Figure 4-3. Programming Mode

### NOTE

If required, install USB drivers as detailed in Chapter 2.

### 4.4 Defining Permitted Cellular Prefixes (Home Use)

To define permitted cellular prefixes in home use configuration, perform the steps as follows:

- a. Connect the PSTN line cable to the **To PSTN** socket on the device.
- b. Connect a home phone to the **To Phone/PBX** socket on the device.
- c. Launch the CGW-D application.
- d. Click **ADD** on the **Dialing Parameters** tab. **Add Prefix** window opens (Figure 4-4).
- e. Enter the cellular prefix number (up to 6 digits long, numbers only).

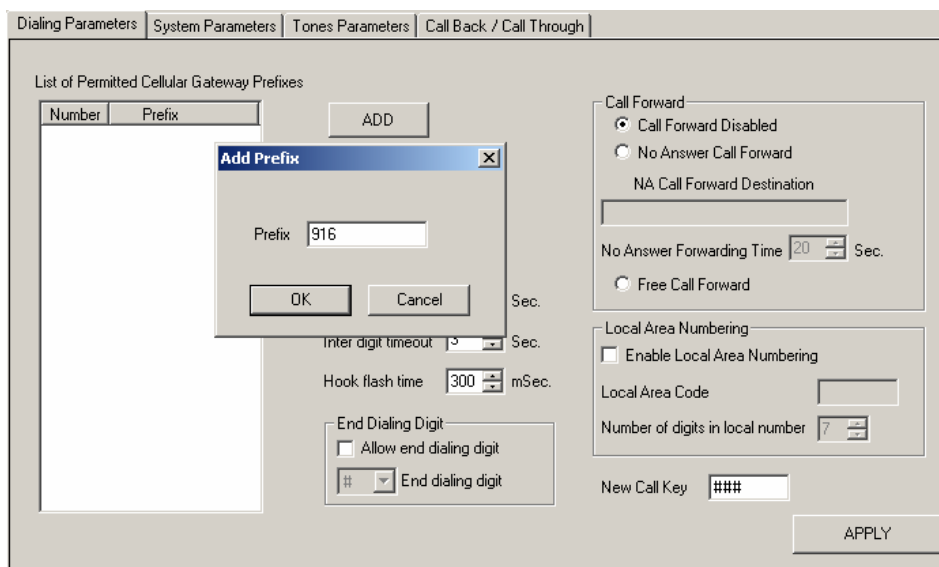


Figure 4-4. Defining Permitted Cellular Prefixes

- f. Click **APPLY**. A message requesting administrator’s password appears.



- g. Enter password (default: 1234). If all parameters were successfully completed, the message **Apply parameters completed** appears on the screen.
- h. To test the function, lift the home phone receiver. The device displays a message (Figure 4-5).



Figure 4-5. Message Before Dialing

- i. Dial a cellular number beginning with the permitted prefix. The number appears on display (Figure 4-6), and the device notifies by two short beeps that the call is routed to a cellular network.



Figure 4-6. Dialed Cellular Number

- j. When the person at the destination answers and the call is in progress, the device displays a message (Figure 4-7).



Figure 4-7. Call in Progress With Permitted Prefix

- k. Disconnect the call.
- l. Dial a cellular or PSTN number that does not contain a permitted prefix. The call is routed to the PSTN network, and a message is displayed (Figure 4-8).



Figure 4-8. Call Routed to PSTN

## 4.5 Diverting an Incoming PSTN Call to a Cellular Number

To divert an incoming PSTN call to a cellular number, perform the steps as follows:

- a. Enter CGW-D to the PC programming mode.
- b. Launch the CGW-D application.
- c. Select the **No Answer Call Forward** radio button in **Call Forward** area of the **Dialing Parameters** tab (Figure 4-9).
- d. Set a value in **No Answer Forwarding Time** field (default value is 20).

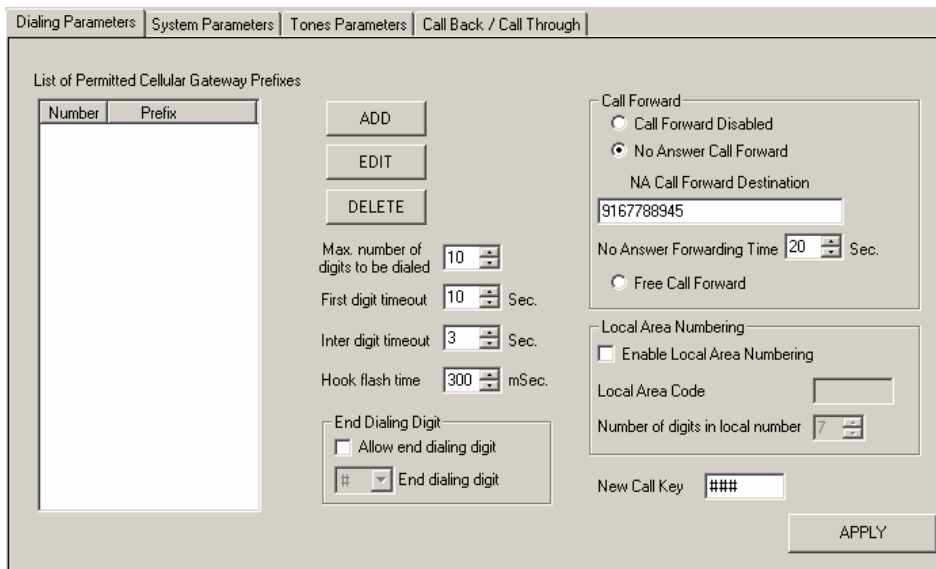


Figure 4-9. Call Forward to Cellular Number

- e. Click **APPLY**.
- m. To test the function, make an outside call to the CGW-D PSTN number. The device displays a message (Figure 4-5).



Figure 4-10. Message Before Dialing

- f. Wait the number of seconds specified in the **No Answer Forwarding Time** field. When time has elapsed, the call will be diverted to the specified cellular number.

---

**NOTE**

If during the diverting process the calls disconnects, reduce the value in **Hook Flash Time** field.

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## 4.6 Corporate PBX Trunk Usage

To use the CGW-D device as a corporate PBX trunk, perform the steps as follows:

- a. Connect a PBX trunk interface instead of a home phone to the device (see **Office Trunk Configuration** connection diagram in Chapter 1).
- b. Configure the PBX to route calls to the CGW-D. You may require assistance from the PBX administrator to make this configuration.
- c. Define permitted frequencies (as detailed in Paragraph 4.4).
- d. Define the required call forwarding settings. It is recommended to select the **Call Forward Disabled** radio button in the **Dialing Parameters** tab, so that the incoming calls will be routed according to the rules defined in the PBX.
- e. Make test calls to check the CGW-D functionality.

## 4.7 Call Back/Call Through Database Maintenance

To maintain the call back and call through database, perform the steps as follows:

- a. Connect the CGW-D device according to **Office Extension – Configuration 2** connection diagram in Chapter 1.
- b. Connect a PBX extension line to the **To PSTN** socket.
- c. Launch the PC software.
- d. Open the **Call Back/Call Through** tab.
- e. Click **NEW. Create User** window opens (Figure 4-11).

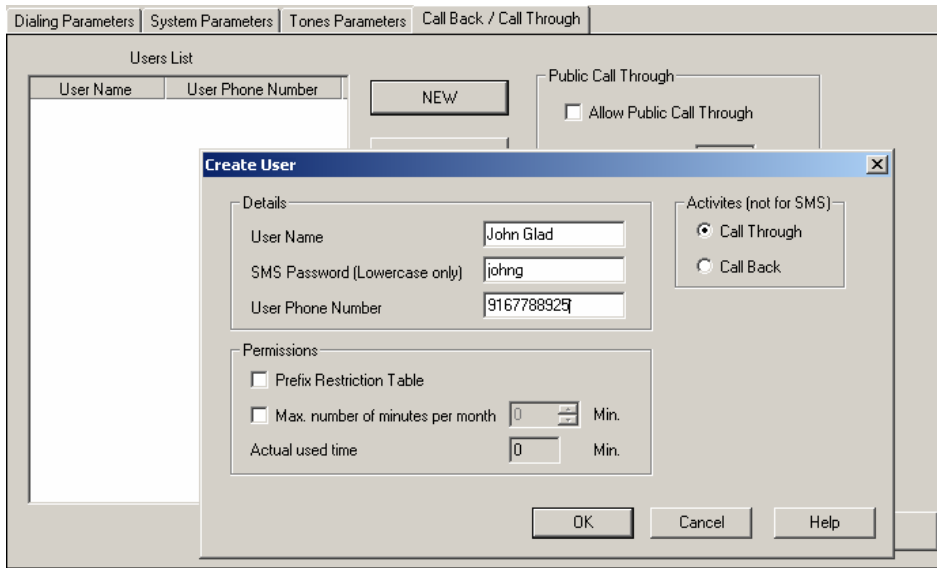


Figure 4-11. Creating a New User

- f. Enter the user’s name in **User Name** field.
- g. Enter a password for SMS in **SMS Password** field. Make sure to use lowercase letters only.
- h. Enter user’s phone number in **User Phone Number** field.
- i. Select **Call Back** or **Call Through** feature in **Activities** area.
- j. Click **APPLY**. The user’s subscriber account was created in the database.
- k. Make a call to the CGW-D from the registered cellular phone. The device receives, the call, disconnects and calls the caller back. A message appears on the LCD (Figure 4-12).



**InCall GSM CB = Incoming caller GSM  
requested call back service**  
**YY....Y = Cellular operator name**

Figure 4-12. Call Back Message

- l. If required, define a list of restricted frequencies, and select the **Prefix Restrictions Table** checkbox. The defined restrictions will be applied to this user.

## 4.8 Corporate Usage as Cellular Gateway Connected to PBX Extension

To use the CGW-D as a cellular gateway connected to a PBX extension, perform the steps as follows:

- a. Connect the CGW-D device according to **Office Extension – Configuration 2** connection diagram in Chapter 1.
- b. Connect a PBX extension line to the **To PSTN** socket.
- c. Launch the PC software.
- d. Select **Free Call Forward** in **Dialing Parameters** tab.
- e. Click **APPLY**.
- f. To test the function, make a call to the CGW-D extension to receive a dial tone.
- g. Dial the destination cellular number. It is routed subject to the settings on the permitted prefixes list. The LCD displays a message (Figure 4-13).



**InCall PSTN CT = Incoming PSTN/PBX requested  
call through service to the cellular network**

**YY....Y = Cellular operator name**

Figure 4-13. Call Through Message

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## Chapter 5: Technical Specification

### 5.1 CGW-D for GSM Network

Model	CGW-D GSM Gateway
GSM Network Type	GSM Phase II
GSM Module	Integrated dual-band (900/1800, 850/1900 MHz)
SIM card	Plug-in, 3V, small
Transmission Power	Max. 2W / 900MHz Max. 2W / 850MHz Max. 1W / 1800MHz Max. 1W / 1900MHz
Receiver sensitivity	-104 dBm
Connectors	RJ-11 (Trunk) – to analog trunk interface to PBX or home phone  RJ-11 (PSTN) – to analog trunk interface of PSTN or to PSTN subscriber line – home phone configuration only (CGW-D only)  Power Supply  SMA female - Antenna
Off-hook AC impedance	600Ω
On-hook line voltage	48VDC
Off-hook line current	Maximum 25mA
Off-hook loop resistance threshold	800Ω
Dial tone frequency	400Hz
Ringing voltage	48Vrms, 25Hz
Supported dialing type	DTMF
Antenna	50Ω Impedance, connected via SMA connector frequency 800 - 2000MHz
Antenna cable length	3m

Model	CGW-D GSM Gateway
	9.8ft
Power supply	Input: 110VAC, 60Hz 220VAC, 50Hz Output: 9VDC, 800mA
Temperature range	0°C-45°C 32°F-113°F
Maximum relative humidity	95%
Dimensions (HxWxD)	212x44x121 mm/8.3x1.7x4.8 inch
Weight	550g (1.21 lbs)



## Chapter 6: CGW-D Accessories

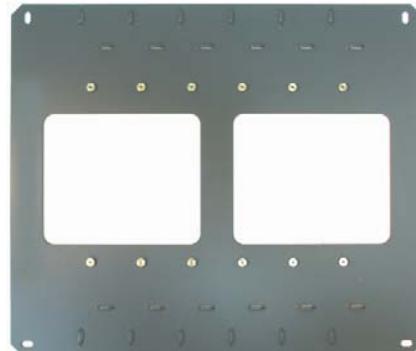
Your CGW-D package contains a multiple-antenna holder that can hold up to six antennas, and wall mount brackets for three or six units (Figure 6-1).



Multiple-Antenna Holder



Three-Unit Bracket



Six-Unit Bracket

Figure 6-1. CGW- D Mounting Accessories

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