• W A R N I N G •

Please refer to the System Installation Manual for information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer.

GSM 1000™

WIRELESS COMMUNICATIONS

SG SECURITY COMMUNICATIONS
A Division of Sur-Gard Security Systems Ltd.

DSC™ Security Products

INSTALLATION MANUAL

Version 1.O

Table of Contents

Section 1 - Introduction 1
1.1 GSM 1000 1
1.2 Specifications 1
Section 2 - Functions 2
2.1 Sending an Alarm 2
2.2 Trouble Supervision 2
2.3 Antenna Tamper 2
2.4 Downloading 2
2.5 Emergency Calling 2
Section 3 - Installation 3
3.1 Cellular Communications 3
3.2 Mounting the Module in the Cabinet 3
Hookup Diagram - PC1580 4
Hookup Diagram - PC5010 / PC5015 / PC585 / PC1565 / PC5008 5
Hookup Diagram - PC4010(CF) / PC4020(CF) / PC4020KT v1.0 to v2.X 6
Hookup Diagram - PC4010(CF) / PC4020(CF) v3.X 7
3.3 Terminal Descriptions 8
3.4 Mounting the Antenna 9
Section 4 - Programming 11
4.1 Programming the GSM 1000 Module 11
4.2 Setting up the GSM 1000 Programmer/PC 13
4.3 Programming the Control Panel 14
Section 5 - Testing 17
5.1 Testing the System 17
5.2 Trouble Shooting 17
5.3 Trouble Indication 18
Section 6 - Glossary of Terms 20

The GSM 1000 unit is only waranted for Contact ID service. SIA or DOWNLOADING may not work on your network.

SECTION 1 - INTRODUCTION

1.1 GSM 1000

The GSM 1000 Cellular Alarm Transmitter enhances the protection provided by a security system by providing a reliable backup to the control panel's normal telephone communications with the monitoring station. The GSM 1000 works with the DSC Security Control Panels described in the Specifications below.

If the control panel is unable to complete an alarm transmission through the normal telephone line, due to any line problems, the GSM 1000 will be activated and will transmit the alarm communication over the cellular network. The GSM 1000 works automatically.

The GSM 1000 has been designed for simple and straightforward installation. Wiring connections are made directly between the GSM 1000 unit and the security control panel. The DSC Security Control Panel requires only minor changes in their Programming Sections

1.2 Specifications

Compatible control panels

- PC585 v2.1 or later
- PC1565 v2.0 or later
- PC1580 v1.0 or later (except 1.0U).
- PC4010 v1.0 or later
- PC4020 v1.0 or later
- PC4020A v3.0 or later
- PC4020KT v1.0 or later
- PC5008 v2.0 or later
- PC5010 v1.0 or later
- PC5015 v2.0 or later

Cellular Network

- GSM 900 Mobile Communication Network.

RF Power Output

- 2.0 Watts peak

Antenna

- 3 - 5 dB gain, TNC connector

Battery

- 12 volt 7 Ah minimum rechargeable gel-cell type battery. It must be present on the control panel.

Dimensions

- 5.8" × 3.6" × 3.0" (148 mm × 90 mm × 77 mm)

Weight

- 1 lb. (0.5 kg)

IMPORTANT NOTE

A security system cannot prevent emergencies. It is only intended to alert you and, if included, a monitoring station, of an emergency situation. Security systems are generally very reliable but they may not work under all conditions and they are not a substitute for prudent security practices or life and property insurance. Your security system should be installed and serviced by qualified security professionals who should instruct you on the level of protection that has been provided and on system operations.

SECTION 2 - FUNCTIONS

2.1 Sending an Alarm

When an event has occurred and a reporting code signal has to be sent to the monitoring station (i.e. an alarm), the signal can be transmitted via the GSM network as a backup, primary* or redundant* communicator. Please refer to the "Programming the Control Panel" section in this manual.

Backup

The control panel will check the telephone line for dial tone. If no dial tone is detected, the control panel switches its communications path through the GSM 1000.

Primary

The control panel will not try the telephone line, but will immediately send the signal through the GSM 1000.

Redundant

The control panel will send the signal through the telephone line. It will attempt the call via the telephone line until successful, or until the programmed maximum dialing attempts has been reached. After the attempt on the telephone line, the panel will always switch to the GSM 1000 to communicate the same signal.

**** MAXSYS panels (PC40X0) can only use the GSM 1000 as a backup communicator.***

2.2 Trouble Supervision

The GSM 1000 monitors itself for two possible trouble conditions: PGM Connection to the control panel, and Loss of Cellular Communications. LED1 on the GSM 1000 module is used to identify which trouble condition is present. When a trouble condition is present, the TBL output will switch low, which in turn can trigger a zone input on the control panel. Please refer to the "Trouble Indication" section in this manual for specific detail on the trouble conditions and operation of LED1.

2.3 Antenna Tamper

The antenna tamper switch module provides extra tamper security for the GSM 1000 antenna. Note that this tamper switch is effective if the antenna is mounted right at the module (no extension cable) and if the antenna bracket on the GSM 1000 module is used. The switch dimensions are such that they fit on the module exactly if used with antenna mounting bracket. Therefore if the antenna is relocated to fit in another hole, the tamper switch will generally be ineffective. Please refer to the diagram and mounting instruction in the "Mounting the Antenna" section.

2.4 Downloading

If your GSM network has the required support, the GSM 1000 can be used for Downloading purposes to a DSC control panel. This optional feature can be used if the GSM network supports modem communications on its voice channel. Please refer to the RNG Terminal and Connection Diagram for proper connections. Also, ensure Option 05 has been programmed accordingly, as indicted in "Programming the GSM 1000" section in this manual.

Note: *Downloading will only work if your GSM network supports SIA.*

2.5 Emergency Calling

The GSM 1000 is capable of making an emergency call via the GSM network, for such cases as when the regular telephone line is down. Simply by pressing the emergency button, the GSM 1000 will dial the preprogrammed emergency telephone number. Please refer to the connection diagram in the "Panic Terminal" section and telephone number programming in the "Programming the GSM 1000" section in this manual.

Note: *It is recommended that the preprogrammed emergency number be that of a station with a 24-hr attendant, such as your local monitoring station.*

SECTION 3 - INSTALLATION

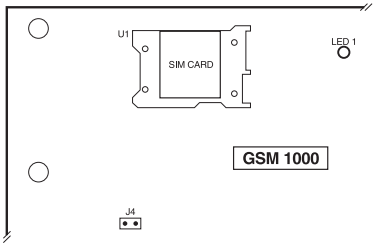
3.1 Cellular Communications

All cellular telephones, including the GSM 1000, must 'register' with the cellular network. 'Registration' is simply a handshake between the Mobile services Switching Centre and the GSM 1000. During handshake the information stored in the SIM card is transmitted to the GSM cell-site and the cell-site –upon verification of data- will send an authorisation back to the GSM 1000. It is therefore very important that a PIN number be programmed into the GSM 1000 ***before*** attempting to connect to the network. Registration is done upon power up of the GSM 1000 and whenever requested by the network. If the GSM 1000 does not register the network will not complete a call.

3.1.1 Arranging for Cellular Service

In order for the GSM 1000 to communicate via the cellular telephone network, an account must be set up with a cellular network operator. The 'account' is simply a matter of establishing the billing information for the cellular service. In return, the cellular carrier will provide you with a SIM card with PIN-number and a *telephone number* for your GSM 1000. Cellular service may vary in price and coverage. Check with your GSM service provider for area coverage maps and service charges.

3.1.2 Inserting SIM Card



When you have obtained a SIM card from your GSM service provider, insert it into the SIM Card socket (SIM Lock) on the GSM 1000 module. Simply slide the cover to the right and pull open. Then insert your card and close the lid.

3.2 Mounting Module in Cabinet

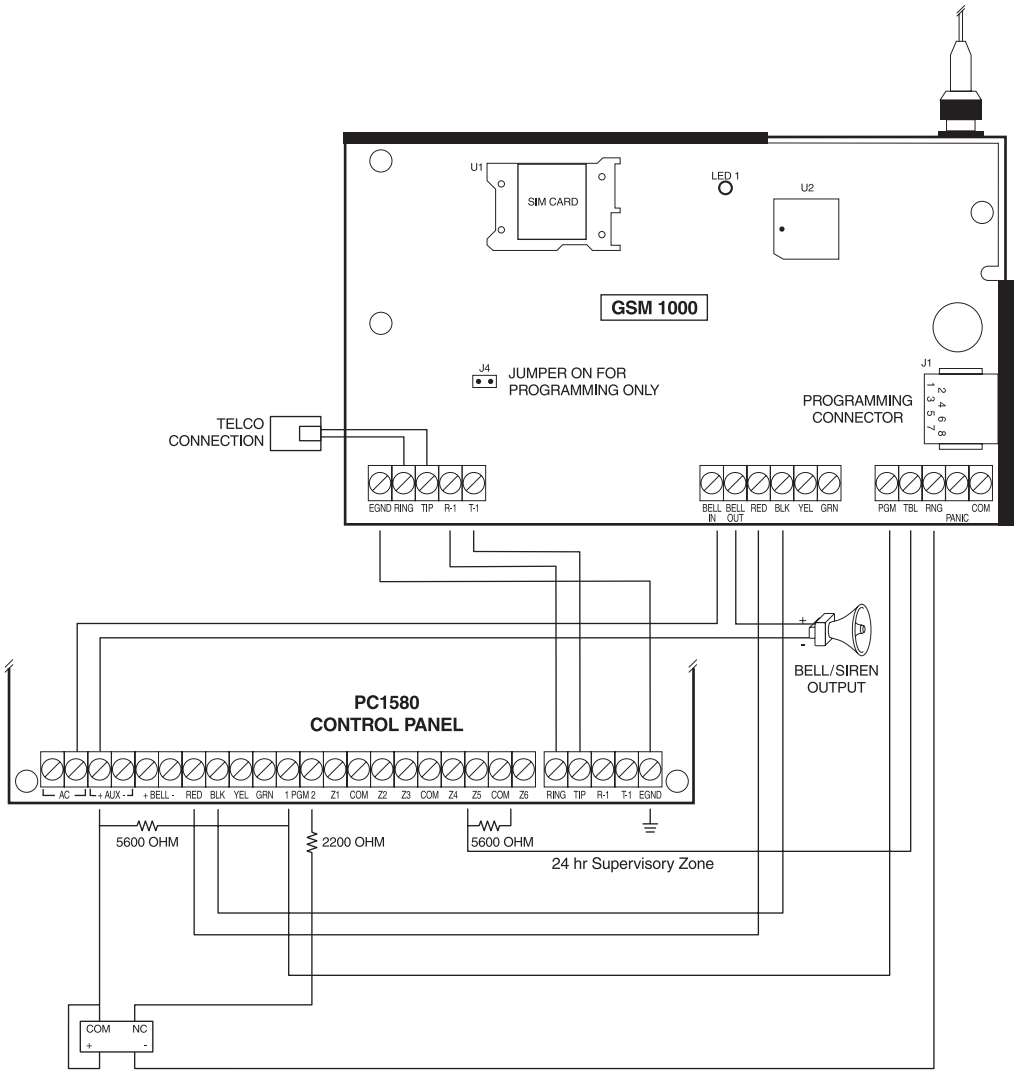
The metal bracket that accommodates the GSM 1000 is mounted in the upper right hand corner of the control panel cabinet with the antenna going through the knock out. The GSM 1000 mounting bracket attaches to the panel cabinet through the use of clips and screws. Please note, however, that the clips (metal teeth) make it purposely difficult to remove the module once it is installed. Because of the nature of the installation, it may be difficult to access the connection terminals of the control panel. It is therefore recommended that wiring connections be made to the control panel before the module is installed.

There may be situations where the cabinet you are using does not accommodate the antenna mount location properly. In such cases, you may order an optional cabinet, which will fit the GSM 1000 module properly. You may also remove the antenna mast from the antenna bracket of the GSM 1000 module, and reattach it through another hole in the cabinet you are using. Please ensure that antenna mast does not contact the cabinet.

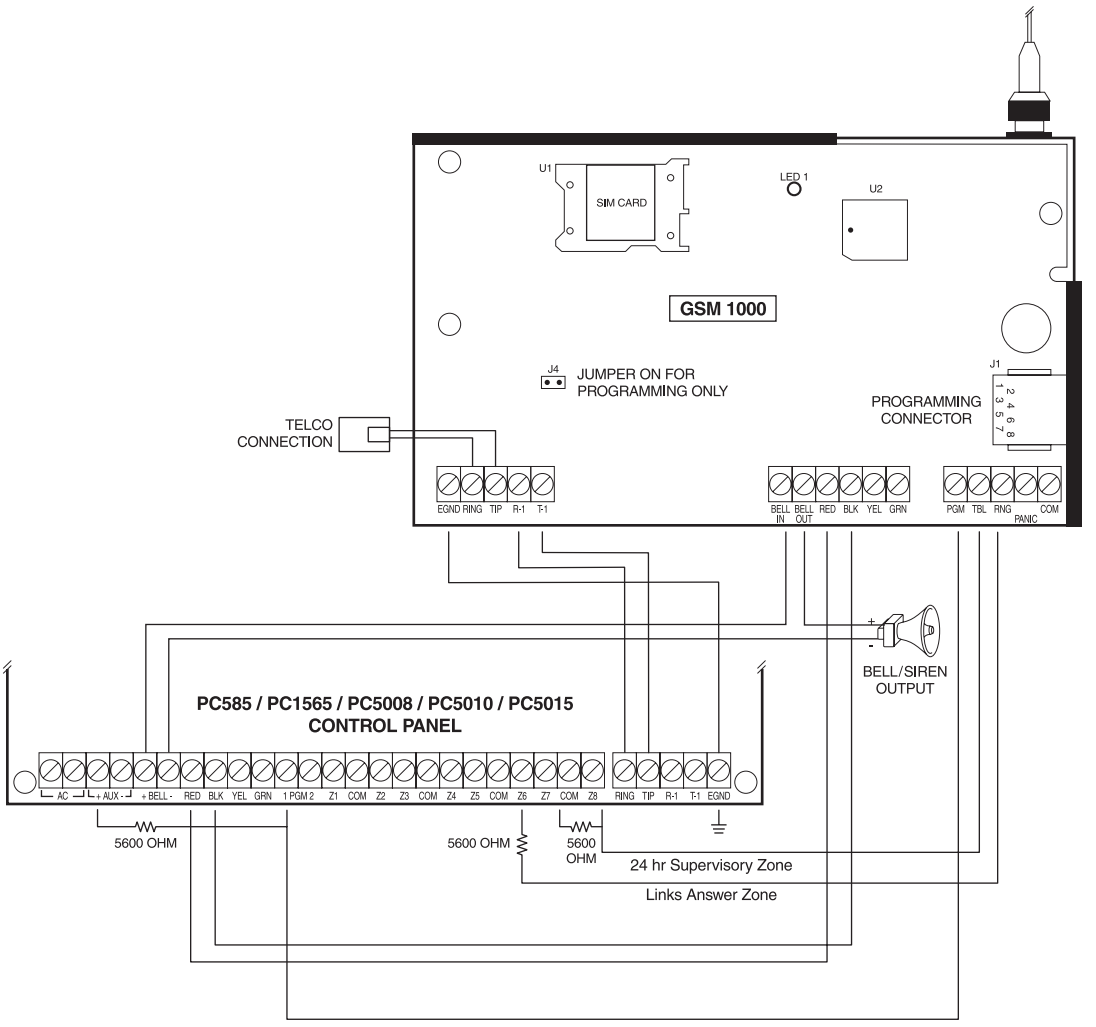
Note: *If it is not possible to install the antenna with the antenna mast fastened to the antenna bracket of the GSM 1000 module (i.e. relocating to another knock out), the antenna tamper switch cannot be used effectively.*

The GSM 1000 should not be located near sources of interference. These sources include EMI (Electromagnetic Interference) generated by television or heavy electric motors, such as those found in heating or air conditioning units.

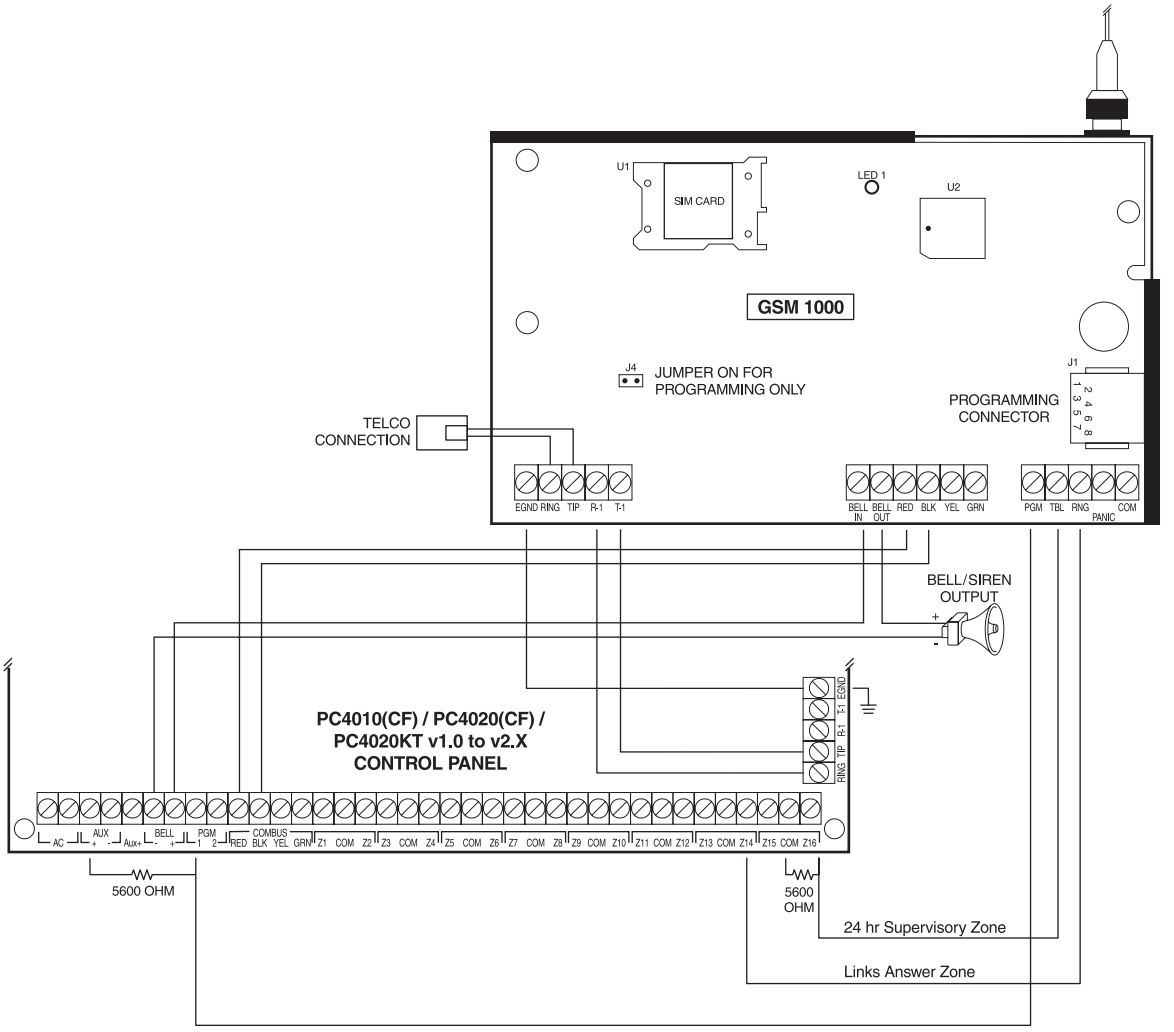
HOOKUP DIAGRAM - PC1580



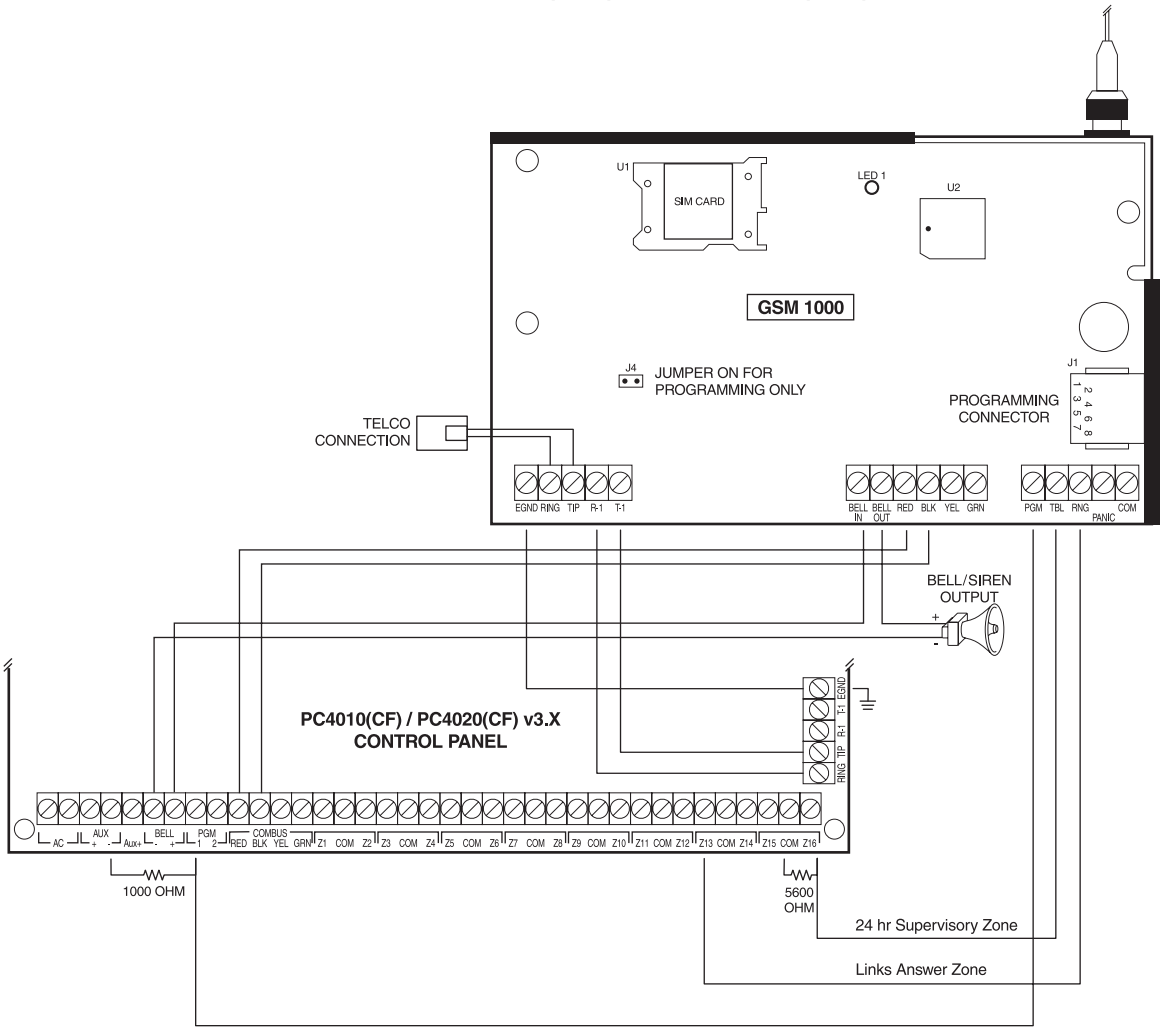
HOOKUP DIAGRAM - PC585 / PC1565 / PC5008 / PC5010 / PC5015



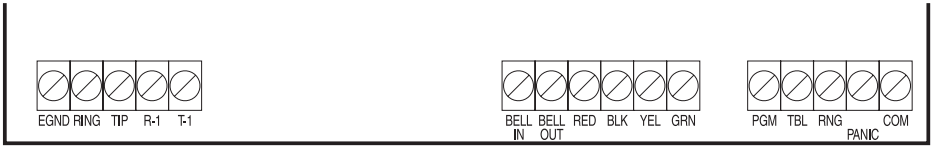
HOOKUP DIAGRAM - PC4010(CF) / PC4020(CF) / PC4020KT V1.0 TO V2.X



HOOKUP DIAGRAM - PC4010(CF) / PC4020(CF) V3.X



3.3 Terminal Descriptions



Do not connect the transformer or the battery to the control panel until all other wiring between the GSM 1000 module and the control panel, including antenna connection, has been completed and checked. Incorrect wiring connections may cause the GSM 1000 unit to operate improperly. Please refer to the hookup diagrams in the manual for the appropriate control panel that is used with the GSM 1000 module.

3.3.1 Earth Ground Terminal

Connect the GSM 1000 “EGND” terminal to the control panel “EGND” terminal. Connect a ground cable from the Cabinet Ground connection to an earth ground, such as a copper cold water pipe, by the shortest and most direct route. Ensure that the cold water pipe connection provides path to ground. ***Do not make the ground connection to a plastic cold water pipe!***

3.3.2 Telephone Line Terminals

The control panel TIP and RING are always used as the communications paths for the alarm signal. The GSM 1000 controls whether the signal is routed through to the regular telephone line (PSTN) or via the GSM network. If the alarm signal is to go through the GSM network, the regular telephone line (TIP and RING of GSM 1000) is disconnected.

3.3.3 BELL IN and BELL OUT Terminals

The GSM1000 module requires short durations of high current. The DSC control panel Bell output can provide this current when the GSM1000 is transmitting. Please be sure to connect the Bell In and Bell Out terminals as shown in the connection wiring diagrams.

3.3.4 Power Supply Connection

Connect the GSM 1000 “RED” terminal to the control panel “RED” terminal and the GSM 1000 “BLK” terminal to the control panel “BLK” terminal. For the panels that do not have the “RED” and “BLK” terminals connect the GSM 1000 “RED” terminal to the control panel “AUX+” and the GSM 1000 “BLK” terminal to the control panel “AUX-” terminal.

3.3.5 PGM Terminal

The connection between the control panel PGM terminal and the GSM 1000 PGM terminal provides a serial communications link between the two boards. This link allows the control panel to send the central station telephone number to the GSM 1000 Module.

Ensure a proper connection is made. Please refer to the connection diagram and programming instructions in this manual.

3.3.6 TBL (Trouble) Terminal

The GSM 1000 TBL terminal will switch to ground whenever a trouble condition is present on the GSM 1000 unit. The terminal will remain switched to ground for as long as a trouble condition exists. This feature is used to report GSM 1000 trouble conditions to the control panel via a zone programmed for 24 hour (Links) supervision.

Please refer to the control panel programming instructions and wiring connection diagrams in this manual to ensure proper supervision of the GSM 1000 module.

3.3.7 RNG (Ring) Terminal

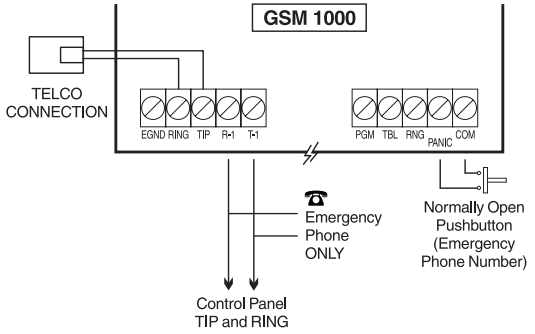
When the GSM 1000 receives a phone call, it will activate the RNG terminal on the GSM 1000 Module. Please refer to Option 05 to enable ring detect. This output may be used for the control panel which allows it to answer incoming downloading calls via the GSM network.

Note: *Downloading is only available on networks capable of SIA communications.*

Please refer to the control panel programming instructions in this manual for programming the appropriate input (i.e. Zone or PGM) as Links Answer or Forced Answer.

Please refer to the connection diagram in this manual for proper connections between the GSM 1000 and control panel.

3.3.8 Panic Terminal



When the Panic terminal is temporarily shorted to ground, the GSM 1000 will dial the phone number that is programmed in the panic phone number option. Please refer to Option 09 in "Programming the GSM 1000 Module" section. This phone number has to be a direct access line, it can not be dialed to a PBX and then into an extension.

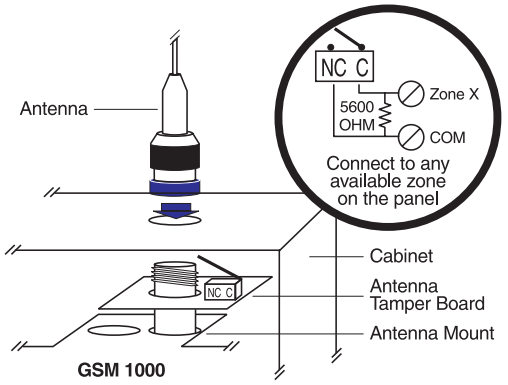
Note: *This input is a 24-hour, silent terminal and the Panic phone call will be connected through the cellular network.*

3.4 Mounting the Antenna

Note: The GSM 1000 antenna must be mounted above ground level. Installing the antenna as high as possible is best. If necessary, Antenna Extension Kits are available from you distributor (see the "Relocating the Antenna" section below). The antenna should be installed in a physically secured location to avoid tampering. Also, avoid placing the antenna under any sort of RF (Radio Frequency) shielding, such as metal roofing or overhang. The GSM 1000 works best when the antenna is installed in an unobstructed "line of sight" to the GSM network receiver.

The antenna should always be connected to the GSM 1000 whenever it is operated. The unit will not function properly if an antenna is not installed.

3.4.1 Antenna Tamper Switch



When the Panic terminal is temporarily shorted to ground, the GSM 1000 will dial the phone number that is programmed in the panic phone number option. Please refer to Option 09 in "Programming the GSM 1000 Module" section. This phone number has to be a direct access line, it can not be dialed to a PBX and then into an extension.

In addition to the GSM 1000 network supervision, the Antenna Tamper Switch module may be used to further increase the security of the antenna connection to the GSM 1000 module. Please refer to the diagrams below for installing the tamper switch.

Note: *This module is only effective if the antenna mast is connected to the antenna bracket of the GSM 1000 module.*

3.4.2 Relocating the Antenna

Before permanently mounting the control panel with the GSM 1000 module in its final location, verify that it is working as it should by following these steps:

Step 1: Make all connections between the GSM 1000 and the control panel.

Step 2: Power up the control panel.

Step 3: Check number of flashes on status LED on the GSM 1000 module. If the LED flashes only once every 10 seconds then the antenna is in an acceptable location.

If a suitable location is not available with the antenna attached directly to the GSM 1000 module, obtain an Antenna Extension Bracket kit from your DSC / Sur-Gard supplier. Each kit contains an extension cable, a mounting bracket, instructions, and all required mounting hardware. Three lengths of extension cable are available:

Extension Kit	Length of Cable
LAE-1	1 m
LAE-5	5 m
LAE-8	8 m

Use only the Extension Kits to extend the mounting range of the antenna. Do not cut or splice the extension cable. The maximum distance between the GSM 1000 and the antenna is 8 meters as obtained by using the LAE-8 Extension Kit. Make sure the antenna is in a physically secured location to avoid tampering.

Secure the TNC connector from the Extension Kit to the mounting bracket, ensuring that the star washers make solid electrical contact with the mounting bracket.

Remove the antenna from the GSM 1000 metal bracket and connect the extension cable to the TNC connector on the bracket/cabinet. Secure the antenna to the TNC connector mounted on the Extension Kit Mounting Bracket.

Locate the mounting bracket and antenna away from possible sources of electrical interference. Moving the antenna just a short distance will likely be adequate. Temporarily secure the mounting bracket in the new location and repeat steps 1 - 3 above. If the test gives a good result, perform a test transmission as described in the “Testing the System” section of this manual.

If the test is successful and the cellular transmission is completed without a Loss of Cellular Communication trouble, permanently secure the mounting bracket and antenna at the new location.

If the cellular transmission is not completed successfully or there is a trouble indication, relocate the mounting bracket and test the GSM 1000 again.

Note: *Do not secure the mounting bracket in a way that would stretch or strain the extension cable. Rather than try to strain the cable to reach a desired location, use a longer cable. When installation is complete, secure the extension cable so that it does not dangle or hang loose from the cabinet or mounting bracket.*

SECTION 4 - PROGRAMMING

4.1 Programming the GSM 1000 Module

There are several programmable options in the GSM 1000. These options can be accessed and programmed in two ways: via the GSM 1000 Programmer (optional unit), or via your personal computer (PC) with Hyper Terminal program. Both methods make a simple connection to the RJ-45 socket on the GSM 1000 module.

Please refer to connection diagram and the appropriate GSM 1000 Programming section below.

Note: *Jumper J4 must be on when programming the module. Be sure to remove the jumper when you are finished programming. Also, be sure to end your programming session with the "0F" command to properly exit and initialize the new settings.*

4.1.1 Using GSM 1000 Programmer

The GSM 1000 Programmer is used to enter the required GSM cellular network parameters into the GSM 1000. If the parameters are not entered correctly, the GSM 1000 will not operate properly.

Connect the BLACK and RED wires of the programming unit to the "-" and "+" terminals of the standby battery. Next, insert the SIM card to its holder and lock the card holder. Short jumper J4 and connect the GSM 1000 Programming Unit to RJ45 connector. ***Please note that GSM 1000 Programming Module has to be connected to the system before power-up!***

Apply power to the whole system after checking all the wiring between the control panel and the GSM 1000 module. After about 10 seconds the LCD display should show the "**Enter Password**" message. The password is **A1AA55**. Enter the password terminating the line with <ENTER>. The Password can be entered 2 times only. After 2 wrong attempts the GSM 1000 unit will lock you out. **All data strings have to be terminated with <ENTER>.** Upper case letters from A to F can be produced by pressing <1 to 6> while depressing the <SHIFT> button. Please see following chart:

Keys depressed	**LCD display**
0 to 9	0-9
<SHIFT> + 1	A
<SHIFT> + 2	B
<SHIFT> + 3	C
<SHIFT> + 4	D
<SHIFT> + 5	E
<SHIFT> + 6	F

The next message will be: "**Selection:**" Enter the number representing the feature you want to program or change and the **<ENTER>** at the end. You have to enter a two-digit number for "Selection". If the first number is **0**, the unit will perform **EDIT**ing of the options; and if it is 1, it will perform **DIAGNOSTICS** function.

Options

The following options can be **EDIT**ed:

00 Display software version
01 Display PCB revision
02 Set number of Cell error before reporting error to panel
03 - 04 For future use
05 Ring Detect (EEPROM flag)
06 - 07 For future use
08 PIN number
09 'PANIC' phone number
0A - 0D For future use
0E Return to Selection mode
0F Exit Programming mode

Explanation of EDITable options:

O: xx = Old value
N: yy = New value to be entered
yy = Must be 2 digit value, e.g. O:02, N:03.
Press <ENTER> to save value and exit option.
Press <ESC> to exit option without changing the existing value.

00: Display software version.

Displays the current software version.
Line 1: Software ver.
Line 2: = 5A0100

01: Display PCB revision.

Displays the current version of GSM 1000 board.
Line 1: PCB ver.
Line 2: = 100000

02: Set number of Cell error before reporting errors to control panel.

Number of "Cell/Transceiver" problems before reporting the problem to the control panel
Line 1: Cell error
Line 2: O: xx, N: yy

Note: *This value must not be "00". The factory default value is "04".*

05: Ring Detect (EEPROM flag)

If enabled, the GSM 1000 can detect incoming call such as a downloading call. The RNG output will activate when a call is incoming.

02 = Ring Detect Enabled
00 = Ring Detect Disabled
Line 1: E2prom flag
Line 2: O: xx, N: yy

08: PIN number.

Users 4 digit PIN number. Must be entered to make a call on GSM 1000
Line 1: PIN num.
Line 2: O: x, N: y
y = 1 digit value. Repeat entry until all 4 digits of your new PIN is complete.

09: 'PANIC' phone number.

Phone number to dial after the 'Panic' button is pressed.

The old phone number is displayed as
Line 1: Panic old: 123
Line 2: 4567890123456

The new phone number can be entered as
Line 1: Panic new: 123
Line 2: 4567890123456

A maximum of 16 telephone digits can be entered.

0E: Return to selection menu

0F: Exit programming mode

Note: *Make sure you always exit the programming mode with the OF command. Remove the GSM 1000 programmer/PC from J1 and remove the jumper from J4.*

4.1.2 Disconnecting GSM 1000 Programmer

Step 1 Remove the BLACK and RED wires from the standby battery.

Step 2 Disconnect the modular cord of the Programmer Unit from the GSM 1000.

Step 3 Remove Jumper J4 from GSM 1000 module.

Step 4 Make sure that the SIM card is securely seated in its socket and the holder is latched.

Step 5 Observe the proper flashing rate of the red LED. It should only flash once every ten seconds.

Note: *Unplug the Programmer from the GSM 1000 when finished programming. The GSM 1000 will not operate when the Programmer is plugged in.*

4.1.3 Using a PC (Personal Computer)

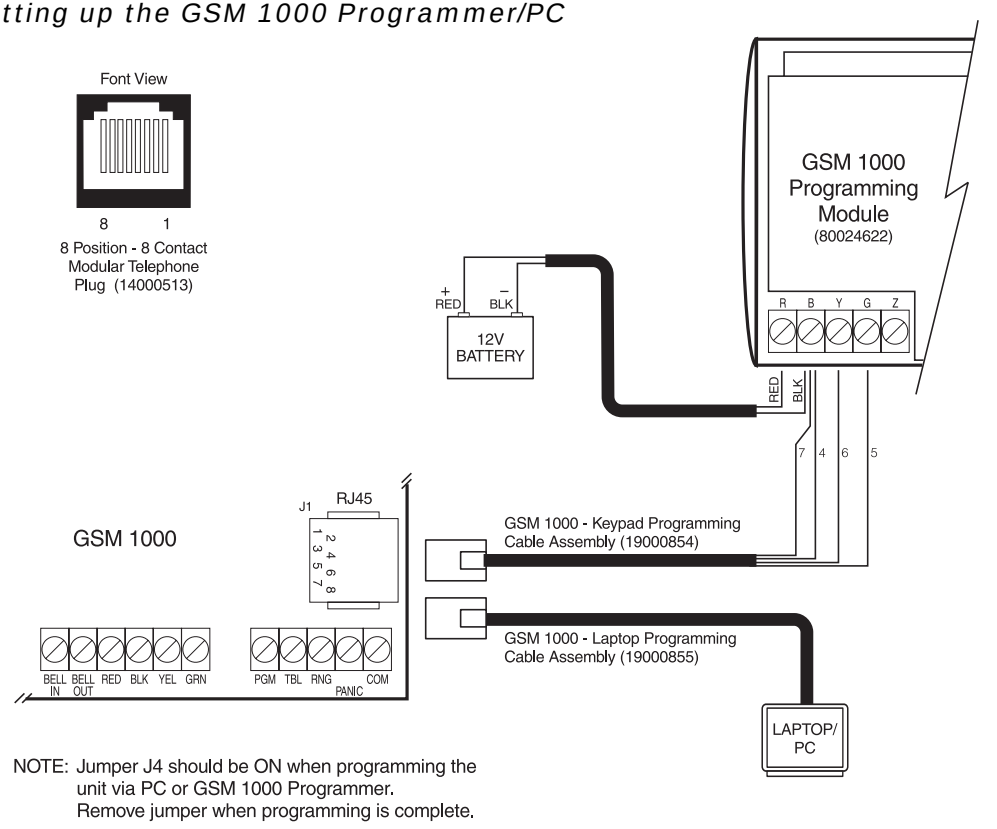
Programming can also be done using a personal computer and a GSM 1000 programming cable (Order at Sur-Gard Part #: 19000855). For hook up and details please refer to Programming Hookup diagram.

Use the following setup:
Start 'Hyper Terminal' software under Windows and set the communication options to:

• Baud rate: 1200 • Parity: even • Data bits: 7 • Stop bit: 1 • Flow control: none

Power up the GSM 1000 module and then connect the GSM 1000 Programming cable to J1 (RJ45 socket).
Note: *Jumper J4 should be ON when programming the unit via PC or GSM 1000 Programmer. Remove jumper when programming is complete.*

4.2 Setting up the GSM 1000 Programmer/PC



NOTE: Jumper J4 should be ON when programming the unit via PC or GSM 1000 Programmer. Remove jumper when programming is complete.

IMPORTANT NOTE

When a control panel is programmed for GSM 1000 operation, the PGM1 output is dedicated to the GSM 1000 Communicator and cannot be used for other functions.
The GSM 1000 utilizes and relies on the features and functionality in DSC control panels which are present for the Links1000 Communicator. Therefore, any reference in the control panel's installation manual to Links1000 programming also applies to the GSM 1000.

4.3.1 Telephone Number Preamble

The GSM 1000 receives the telephone number to dial from the alarm control panel *telephone number* memory location. The 'data' is sent via the PGM connection. The 'Preamble' programming section of the alarm control allows for flexible dialing strings. This helps the installer use the most effective cellular plan available.

The 'Preamble' allows the installer to add a prefix or a country and area code to the telephone number should the cellular network need additional dialing digits. In some areas, dialing the central monitoring station may only require seven digits when using land line, while the cellular network may require country code + area code + a common specified phone number accessing the network. Still other areas may require what is known as '0 plus' dialing. That is, the cellular network requires a '0' be added to the local telephone number.

If there is some doubt whether a 'Preamble' is needed, simply dial the central station from the premises land line, then, dial the number using the installed GSM 1000. If both calls connect, do not add a 'Preamble'.

To add a 'Preamble' simply enter the additional digits required in the location provided (see Control Panel Programming section). The 'Preamble supports up to 4 digits and they will always be dialed in front of the telephone number in the control panel memory. Factory default of 'Preamble' location is FFFF. Program all unused digits as "F".

4.3.2 Communication Formats

Due to limitation of the GSM cellular telephone network, only certain communication formats are recommended when using the GSM 1000:

- **Recommended:** DTMF formats (i.e. Contact ID)
- **Not Recommended:** Pulse formats (i.e. 20 BPS)
- **Depends on network:** Modem Format (i.e. SIA)

4.3.3 PC1580

Section(s)

[01] Choose a zone for GSM 1000 TBL supervisory and program as zone definition '09'.

[06] Programmable Output Options. Enter '16' in this section to enable GSM 1000 operation for PGM1. If Downloading via cellular is to be used, then enter '30' for PGM2, otherwise program PGM2 as desired or hit '#' to exit. Only PGM1 supports GSM 1000 operation and only PGM2 supports Forced answer.

[36] Program the Alarm Reporting Code for the GSM 1000 24-hour Supervisory Zone. The restoral code is in section 37.

[43] Program reporting code for TLM (telephone line monitor). The restoral code is in section 44. The restoral will not be sent via GSM 1000.

[46] Program Test Transmission Reporting Code.

[51] Program Call Direction for sending alarms. Minimal setting for GSM 1000 operation is option 3 'ON'.

[52] Program Call Directions for tamper alarm and restorals. Default is 'Disabled'.

[53] Program Call Directions for Openings and Closings. Default is 'Disabled'

[54] Program Call Directions for System Maintenance Alarms. Default is 'Disabled'

[55] Program Call Directions for System Test Transmission. Minimum setting for GSM 1000 operation is option 3 'ON'.

[61] Program Second Communicator Option Code. Default is 'GSM 1000 used as land-line backup communications only'.

[62]-[63] GSM 1000 Test Transmissions will follow System Test depending on programming in sections [46] and [55].

[67] Program GSM 1000 Preamble. Please see 4.3.4 Preamble section. Sections [68] and [69] used for second and third Preamble numbers.

4.3.4 PC585 / PC1565 / PC5008 / PC5010 / PC5015

Programming the Control Panel

Section(s)

[001]-[004] **GSM 1000 Supervisory:** choose the zone that will be used to report the 24 hour GSM 1000 supervisory alarms [section 001 to 004]. Program that zone as [09]. **Downloading via GSM 1000:** if Downloading via cellular is to be used, choose a zone to perform Forced Answer. Program the chosen zone as [24]. This will force the panel to answer an incoming cellular call.

[009] **GSM 1000 Enable:** program [16] into section 009. This will reserve the PGM1 output for GSM 1000 communications. Only PGM1 will support GSM 1000 operation.

[320]-[323] **GSM 1000 Trouble Reporting Code:** in section 320 to 323, enter the desired reporting code for GSM 1000 Trouble reporting. Use same zone as GSM 1000 supervisory.

[349] **TLM Trouble Reporting via GSM 1000:** go to section 349. Find TLM Trouble Code (via GSM 1000). Enter the desired reporting code. The Restoral is contained in section 350, this will not be sent via the GSM 1000.

[352] **GSM 1000 Test Transmission:** program the GSM 1000 Test Transmission code in section 352. The GSM 1000 will follow the land line test transmission schedule.

[361]-[368] **GSM 1000 Call Direction Options:** go to sections 361 to 368. Determine which signal types will be sent via GSM 1000. Section 380, zone light [7] dictates whether the GSM 1000 will be used as backup or primary communications. When set to primary, the GSM 1000 will always place a cellular call on signals so identified in Call Directions.

[390]-[392] **GSM 1000 Preamble:** program sections 390 to 392 with preambles (if necessary) for each communicator outbound telephone number.

[490] **GSM 1000 Downloading Preamble:** if necessary, program section 490 with the GSM 1000 Preamble for the Downloading.

[703] **Dialing Delay:** program section 703 with 010. This places a necessary delay between GSM 1000 (and all other) dial attempts.

4.3.5 PC4010 / PC4020 / PC4020KT

To program the panel for GSM 1000 operation, enter the “Links 1000” section, which can be found under System (00), Communications (04) and then Links1000 (04). Programming the following items, as described in further detail below: Links Enable/Disable, Links telephone number, and Periodic Test Transmission.

Programming GSM(Links) 1000 Telephone Numbers

Enter the telephone number the way it would be dialed on a telephone. The total number of digits, including dial tone searches, must not exceed 31. Note that a “D” for a dial tone search is automatically programmed at the beginning of the telephone number. ***Note:*** *There must be a dial tone search programmed into the telephone number for the GSM 1000 module to operate.*

When a telephone number is entered, press the [#] key to save the number in the system’s memory.

PC4010/PC4020/PC4020KT Telephone Entry Options Menu

Press the [*] key to enter the Telephone Entry Options Menu. Use the arrow keys to scroll through the list of menus, and press the [*] key to select the menu displayed on the keypad screen. Or, enter [0] or [1] to select one of the menu options described below:

[0] Save After entering a telephone number, instead of pressing the [#] key, this option may be selected to save the number in the system’s memory.

[1] Dial Tone Selecting this option will add a 2-second dial tone search to the telephone number. The dial tone search will be represented by a “D” in the telephone number display. A dial tone search forces the control panel to wait for a dial tone before dialing a telephone number.

The following PC4010/PC4020/PC4020KT Menu Items are not used while programming telephone numbers for GSM 1000 operation. Do not select these items while programming telephone numbers for GSM 1000 operation, as adding pauses or the DTMF digits may result in improper dialing.

[2] Pause 2 Seconds [4] DTMF *

[3] Pause 4 Seconds [5] DTMF #

Links Module - The PC4010/4020/4020KT panels must be programmed to work with the GSM1000 module. This is done by enabling the LINKS module. Doing so automatically enables the PGM1 Output for GSM1000 operation.

Periodic Test - A periodic test transmission can be sent through the GSM network. This option must be turned on to be enabled.

Transmission Cycle Days - Enter the number of days between test code communications. Valid entries are from 001 to 255; the default setting is 030.

Transmission Cycle Time - Enter the time of day for the test transmission. Enter the time in the 24-hour clock format, where the first 2 digits are the hours ranging from 00 to 23, and where the last 2 digits are the minutes ranging from 00 to 59. The default setting is 0000.

GSM 1000 Trouble Reporting - Program Zone 1 trouble reporting code, and restoral reporting code.

SECTION 5 - TESTING

5.1 Testing the System

Before testing the GSM 1000 unit, ensure that the control panel is correctly programmed and operating properly by performing a test transmission to the monitoring station over the normal telephone line. If problems are encountered in communicating over the normal telephone line, ensure that the communication options, telephone numbers and account numbers are programmed properly in the control panel. The control panel must be programmed properly in order for the GSM 1000 to operate.

Apply power to the whole system after all wiring connections have been made. Ten seconds after power is applied to the GSM 1000 unit, LED1 on the unit will begin to flash. Observe LED1 for at least 40 seconds, if LED1 flashes once every ten seconds, then the GSM unit is operating properly. If there is a trouble condition, LED1 will flash either ***four*** times or ***eight*** times in every ten seconds. Refer to the "Trouble Indication" section of this manual.

5.1.1 Performing a Test Transmission

Contact the monitoring station to request a transmission test. Remove the telephone cord from the TELCO jack. Perform a System Test as described in the control panel's Installation Manual. When the test is complete, contact the monitoring station to confirm the transmission. Perform additional test transmissions as required by the monitoring station.

Note: *Whenever a cellular telephone call is answered by a receiver or another phone, cellular charges will be applied to the cellular telephone account that placed the call. Therefore keep in mind that test signals will increment the cellular bill. If for some reason the call is established but the alarm signal is not received, the cellular account will still be billed. Please double check the installation before you test.*

5.1.2 "On Air" Indication

Whenever the GSM unit is communicating over the cellular network, the red LED (LED1) on the unit's circuit board will be energized. When communications are successfully completed and there are no troubles to report, the LED will return to its standby indication of one flash every 10 seconds. If trouble conditions exist, the LED will flash 4 or more times every 10 seconds.

5.2 Trouble Shooting

If GSM 1000 does not communicate to the central monitoring station receiver, check the following before calling Technical Support:

5.2.1 Check Wiring

A. Make sure T1 & R1 of the GSM 1000 are connected to TIP & RNG of the control panel.

B. Make sure the RED and BLK of the GSM 1000 are connected to RED and BLK of the control panel.

C. Make sure the BELL+ of the panel is connected to BELL IN of the GSM 1000. The BELL OUT should be connected to the siren.

D. Make sure the proper resistor is in place on control panel PGM (see installation instructions).

E. Make sure the programmer is not plugged into the GSM 1000.

F. Make sure jumper J4 is removed.

5.2.2 Check Trouble LED

A. Check number of flashes on status LED. If the LED flashes more than once every ten seconds, refer to Table 1 in the "Trouble Indication"section and correct the indicated problem.

B. Four flashes indicates bad communications with the cellular network. Try adding an extension antenna and relocating the antenna.

C. Eight flashes indicates a bad PGM connection. Check that the wire from the control panel's PGM to the GSM 1000 PGM is correct and that the correct resistor is in place. Next, check that the power connections (RED, BLK , BELL+) between the panel and the GSM 1000 are good. Lastly, verify that the control panel is programmed for GSM 1000 operation.

5.2.3 Other Checks

A. Connect a telephone handset to TIP & RING of the control panel. Send a signal through the GSM 1000. Listen to the handset. If a 'network' message is heard, make note of it and follow the instructions. For instance; the network message says "you must first dial a 1 or zero before placing this call". The telephone number in the control panel probably requires a 'Preamble'.

B. Check cellular activation. Call the cellular number of the GSM 1000. If the GSM 1000 is properly activated but turned off, the network message should say "the cellular customer you have called is unavailable or has travelled outside of the coverage area". If the GSM 1000 cellular number is called and the GSM 1000 is turned on (and downloading is not enabled and connected), the message should say "The customer you have called is unavailable", or it will simply hang up (this would occur after many rings). If the cellular number is not activated the message will say "the number you have called is not in service". Call the cellular service provider and check the activation. Be prepared with the GSM Cellular Service Provider Information.

C. If you continue to experience difficulties, try sending a signal through the GSM 1000 and listen for the black relay on the GSM 1000 board to 'click'. This indicates that the GSM 1000 is receiving the central station telephone number via the control panel PGM output. If after that the red trouble LED stays on steady, the GSM is transmitting. If it does not, the GSM 1000 can not find a voice channel. The panel will time-out and attempt the call again. Try using an antenna extension kit to relocate the antenna.

Note: *Do not disconnect the telephone line between the GSM 1000 and control panel when testing. Only disconnect the telephone line at the TELCO jack when testing the GSM 1000.*

5.3 Trouble Indication

The GSM 1000 automatically monitors its operation and indicates trouble conditions by flashing LED1 on the circuit board. LED1 normally flashes once every 10 seconds when the GSM 1000 is in standby (ready to transmit) mode. Troubles are indicated when LED1 flashes more than once at each 10 second interval. Shown below is the number of flashes used to indicate each trouble condition. If more than one trouble is present, only the first trouble is indicated. When that trouble is cleared, the next will be indicated.

The GSM 1000 uses a 30-second delay timer for all troubles. The status LED will flash as soon as the condition is detected, but the TBL output will not be activated until the condition has existed for 30 seconds.

TABLE 1 — LED1 Indications

Number of LED Flashes	Trouble	Time-outs for GSM 1000 failures
4 flashes	Loss of Cellular Communication	30 seconds
8 flashes	PGM Trouble	30 seconds

Loss of Cellular Communication: Indicates that the GSM 1000 is not able to communicate with the cellular network. Make sure that the antenna is securely connected to the antenna connector, all wiring and cables are secure and undamaged, and that metal objects have not obstructed the antenna. Check the supply voltage to the GSM 1000 radio between BELL_IN and BLK terminal points. If there is no power at these terminals, the transceiver will not function, the micro-controller will register a “Cell Problem” and the LED will flash 4 times.

PGM Fault: Indicates that there is a problem with the connection between the GSM 1000 PGM terminal and the control panel’s PGM terminal. Check the following:

- Ensure that the PGM terminal is connected to the control panel’s PGM terminal
- Ensure that the control panel’s PGM Output has been programmed for GSM 1000 operation
- Ensure that no other connections have been made to the control panel’s PGM terminal
- Ensure that the GSM 1000 power supply terminals are connected to the control panel’s proper terminals
- Ensure that a resistor has been added as shown in the hookup diagrams. Refer to the Hookup Diagram for information on the resistor required.

SECTION 6 - GLOSSARY OF TERMS

The following is a description of various terms used with regards to cellular technology.

GSM

The acronym GSM stands for Global System for Mobile telecommunications.

SIM card

It is a smart card called the Subscriber Identity Module. The SIM card provides personal mobility, so that the user can have access to all subscribed services irrespective of both the location of the terminal and the use of a specific terminal. By inserting the SIM card into another GSM cellular phone, the user is able to receive calls at that phone, make calls from that phone, or receive other subscribed services. The mobile equipment is uniquely identified by the International Mobile Equipment Identity (IMEI). The SIM card contains the International Mobile Subscriber Identity (IMSI), identifying the subscriber, a secret key for authentication, and other user information. The IMEI and the IMSI are independent, thereby providing personal mobility. The SIM card can be protected against unauthorized use by a password or personal identity number.

SIA

The acronym SIA stands for Security Industry Association. The SIA format is an alarm communication format, in the form of a modem protocol, used by the DSC alarm control panels to transmit information to the Monitoring Central Station.

Contact ID

It is an alarm communications format, composed of DTMF tones, used by the DSC alarm control panels to transmit information to the monitoring station.

PIN

The acronym PIN stands for Personal Identification Number.

LIMITED WARRANTY

Sur-Gard Security Systems Ltd. warrants that for a period of twelve months from the date of purchase, the product shall be free from defects in materials and workmanship under normal use and that in fulfilment of any breech of such warranty, Sur-Gard Security Systems Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Sur-Gard Security Systems Ltd., such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Sur-Gard Security Systems Ltd. Sur-Gard Security Systems Ltd. neither assumes, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

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WARNING: *Sur-Gard Security Systems Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.*

CE CONFORMITY

The GSM 1000 module will bear the CE symbol of conformity. This symbol is a declaration that on account of its design and implementation, the GSM 1000 is in compliance with the currently valid versions of the following EC Directives.

89/336/EC	EMC Directive
73/23/EC	Low Voltage Directive
91/263/EC	Telecommunications Devices Directive

CTR21 Notes

1. This equipment has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point.

   In the event of problems, you should contact your equipment supplier in the first instance.
2. This equipment was designed to work on the PSTN networks in the following countries: Austria, Belgium, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Israel, Norway, Portugal, Spain, Sweden, Switzerland, Netherlands and the UK.

   If there is special Software programming to be done for a specific country this will be noted in the Programming Worksheets booklet. Therefore, please consult the Worksheets booklet during programming of the equipment and take note of any special country specific requirements for the PSTN.

   If this equipment is to be connected to a PSTN in a country that is not listed above, please contact the vendor to check for compatibility with the network in question.
3. This equipment has only been approved for and is only intended for use with DTMF dialing.
4. In order to comply with CTR21 regulations, the Maximum Number of Dialing Attempts that a control panel can make must not exceed 15.

How to Contact Us:

Sales

For information about additional products, please call our sales number: 1-800-418-7618, or e-mail us at sales@sur-gard.com.

Technical Support

If you have questions or problems when using Sur-Gard products, you can call technical support. If you are within the United States, Puerto Rico, the U.S. Virgin Islands or Canada, you can get support by dialing 1-800-503-5869 ext.1. If you are outside these areas, please call (416) 665-4494 ext.1, or e-mail us at support@sur-gard.com.

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