

Text Alert

SMS Data Monitor & Logging System



Industrial Interface Ltd

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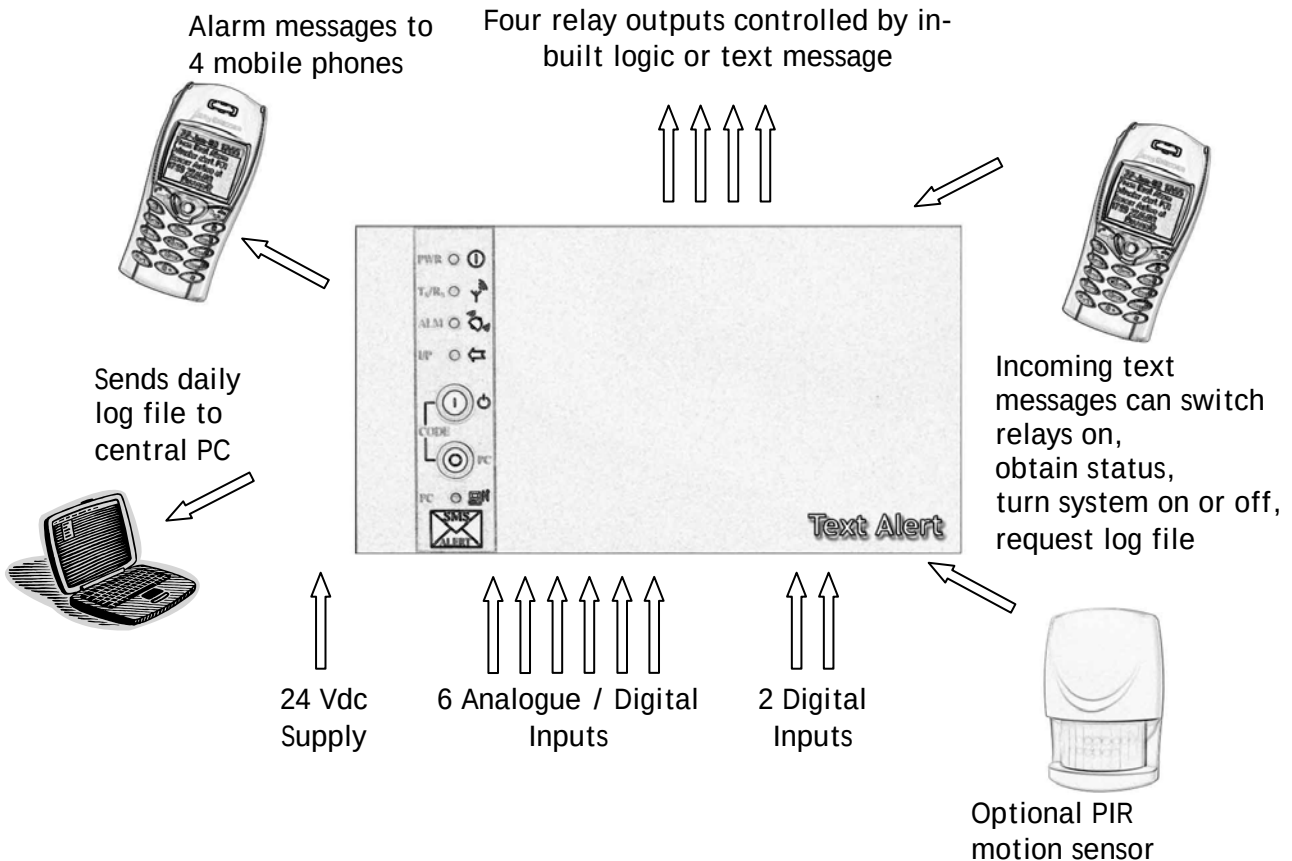
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1 Introduction

The Text Alert Data Monitoring and Logging system can monitor up to 6 analogue / digital inputs and sends SMS alarm messages to up to four mobile phones including a central station. Additionally, the system can log the value of six inputs at 1 minute intervals and send a daily log to a central PC.

The system also has 4 relay outputs which can be triggered on alarms or be switched on and off by text message. An optional PIR motion sensor is also available.



1.1 Quick Start

1.1.1 Alarm Monitoring System

Wire in analogue / digital inputs and outputs using PCB links to set input types (see pages 6 to 7)
Wire up 24 Vdc power supply (11.1 to 30Vdc)
Install GSM Data software onto a PC (see page 9)
Configure software and download to Text Alert (see pages 9 to 15)
Turn Text Alert to ON mode (see page 24)
Text Alert will now monitor the inputs and send SMS alarm messages to the selected phones.

1.1.2 Data Logging Option

Configure data logging options and download into the Text Alert (see pages 13 to 15)
Connect modem to PC using the RS232 cable provided.
With the modem switched on start the GSM data receiver program.
The system is now ready to receive daily log files or to request intermediate log files.
Note: The GSM Data Receiver program must be running in order to receive data files. It can be minimised.

1.2 Phone System

The unit includes a SIM card for the Vodafone network. This has the largest coverage in the UK, but there may be gaps in the coverage. If you cannot link to the Vodafone network it should be possible to use another service provider, please contact us for details. The SIM card provided is a pay-as-you-go service. So for each text message that the system sends the balance on the account is reduced. The rate for each message is likely to change but is currently about 12p per text. When the balance on the account is low it can be topped up at usual locations, phone shops, supermarkets, etc using the supplied account card. The SIM card has to make at least 1 phone call in every 6 month period, and so the system has been programmed to ensure that a call is made regardless of how many texts it has sent. This call is made to the speaking clock and is to ensure the SIM card remains registered to the network provider. Each data upload costs between 10p and 25p, depending on how many channels are being logged.

1.3 Safety Precautions

The following safety precautions must be observed during all phases of the operation, usage, service or repair of the Text Alert Alarm System.

When in hospital or other health care facility, observe the restrictions on the use of mobiles. Switch the Text Alert off, if instructed to do so by the guidelines posted in sensitive areas. Medical equipment may be sensitive to RF energy.

The operation of cardiac pacemakers, other implanted medical equipment and hearing aids can be affected by interference from cellular apparatus placed close to the device. If in doubt about potential danger, contact a physician or the manufacturer of the device to verify that the equipment is properly shielded. Pacemaker patients are advised to keep their Text Alert system away from the pacemaker, while it is on.

Switch off the Text Alert before boarding an aircraft. Make sure it cannot be switched on inadvertently. The operation of wireless appliances in an aircraft is forbidden to prevent interference with communications systems. Failure to observe these instructions may lead to the suspension or denial of cellular services to the offender, legal action or both.

Do not operate the Text Alert in the presence of flammable gases or fumes. Switch off the Text Alert when you are near petrol stations, fuel depots, chemical plants or where blasting operations are in progress. Operation of any electrical equipment in potentially explosive atmospheres can constitute a safety hazard.

The Text Alert receives and transmits radio frequency energy while switched on. Remember that interference can occur if it is used close to TV sets, radios, computers or inadequately shielded equipment. Follow any special regulations and always switch off the Text Alert wherever forbidden, or when you suspect that it may cause interference or danger.

IMPORTANT!

The Text Alert operates using radio signals and cellular networks cannot be guaranteed to connect in all conditions. Therefore you should never rely solely upon any wireless device for essential communication.

Remember, in order to make or receive calls, the Text Alert must be switched on and in a service area with adequate cellular signal strength.

2 Hardware

2.1 Inputs and Outputs

The system is supplied as with up to 6 analogue / digital inputs, 2 additional digital inputs, 4 digital outputs, and 4 Text Message Alarms which can be sent to up to 4 mobile phones. The unit comes complete with a SIM card which will have been activated with the phone network. The unit can also be supplied with an optional PIR sensor.

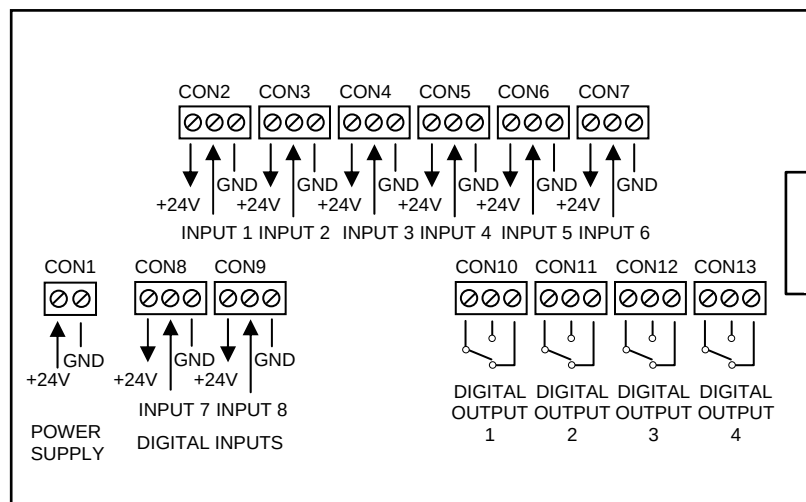
2.2 General

It is important that the system is put into use within 6 months of receipt as the SIM card may be deactivated after this time if it has not been used. The SIM card is supplied with a credit balance of £1. It is advisable to add credit to the SIM as soon as possible.

2.3 Installation

The unit needs to be opened by unscrewing the 4 screws in the corners of the front panel. The box divides into 2 parts. The main circuit is located behind the front panel, and the connection terminals are found on the panel at the rear of the box.

The two sections are joined by a ribbon cable which can easily be unplugged from the rear connection panel by opening the 2 side flaps on the connector and pulling the plug out of the socket. The terminations on the rear connection panel are detailed below:



Rear Connection Panel Terminal Details

2.3.1 Power Supply

The power supply is wired into CON1 on the left side of the enclosure. This supply should be between 11.1V and should not exceed 30V.

2.3.2 PIR Sensor

The optional PIR sensor if fitted should be wired into CON9. Each of the sensors will alarm if the wiring is tampered. In addition it is possible to daisy chain additional PIR sensors to protect additional areas.

In a single PIR installation the 4 wires from the PIR are connected:

'+' into the +12V terminal on CON9

'-' into the GND terminal on CON9

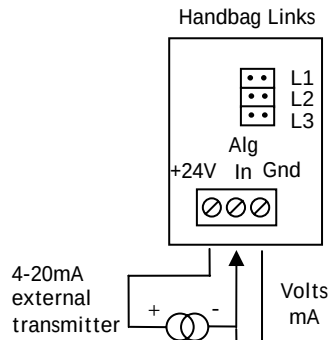
PIR signal 'C' into the GND terminal on CON9

PIR signal 'N' into the Input 8 terminal on CON9

If additional PIR sensors are connected in series, all of the sensors keep the + and – terminals wired as above. Input 8 on CON9 is wired into the first PIR's 'N' terminal. The 'C' terminal from this PIR is then wired into the next PIR's 'N' terminal. The 'C' terminal of the last PIR sensor is then wired into the GND terminal on CON9 to complete the circuit.

2.3.3 Analogue / Digital Inputs

The analogue / digital inputs are connected on terminals CON2 to CON7. The inputs must be configured using the handbag links as shown below. There are 3 options available. In addition a 24V supply is available on the leftmost terminal for use to excite 4-20mA or similar transmitters.



Input Type	L1	L2	L3
0(4) - 20mA	☒	☒	
0 - 10V			☒
0 - 24V or Digital Input			

These inputs can be used as digital inputs by removing all links and connecting a switch between +24V and the Input terminal.

2.3.4 Other Digital Inputs

Additional digital inputs can be wired in on terminals CON8 and CON9. Normal switch type devices need to be connected to the central INPUT terminal and the GND terminal on the right.

2.3.5 Digital Outputs

The digital outputs are available on CON10 to CON13. Each output is available with the Common relay connection available on the left terminal, the Normally Open (N/O) terminal on the centre and the Normally Closed (N/C) terminal on the right. NOTE: If the main power supply fails, the digital outputs will switch off, as the internal battery cannot support the additional load of the relays.

2.3.6 Topping up the SIM card

Important please register your SIM card upon receipt using the Vodafone form supplied. This will allow additional free credit to be added to your account by Vodafone.

To top up the SIM card use the supplied Vodafone 'Top-Up' card at any supermarket, garage or phone shop displaying the TOP-UP logo. Simply pay for as much as you wish to add. The cashier will swipe the Top-Up card and the credit will be added to the account within 15 minutes automatically. Alternatively, the SIM card can be topped-up over the internet. Visit the Vodafone website www.vodafone.co.uk and follow the instructions.

2.3.7 Internal Buzzer

The unit has an internal buzzer which is used only in 2 conditions. Firstly if a Trigger Delay has been set on any of the digital outputs or text messages, then whilst in this delay period the buzzer will switch on and off in ½ second intervals. The other condition is if an Alarm Set Delay has been set, the buzzer will sound continuously once the unit has been switched to ON mode for the duration of the delay period. The buzzer can be totally disabled by removing a link L36 from the circuit board.

3 Software

3.1 GSM Data Software PC Installation

Insert the GSM DATA CD into the CD-ROM drive on your computer and close the CD tray. The software should run automatically. If not, locate the CD-ROM drive in 'My Computer' and run the program Setup.exe. The software will be installed to a default directory location, unless you select otherwise.

3.2 GSM Data Logger Software

Run the program GSM Data Logger. A window will appear briefly while the software loads. The main window screen appears showing the Summary page of the current configuration.

3.2.1 Summary Page

The summary screen has 6 sections to it showing details about the attached unit, including name, access code, password and version, phone network details, registered telephone numbers, together with the configuration of each of the optional input channels, optional output channels and text messages. The entire configuration can easily be seen from this screen; however, the configuration cannot be altered from this viewpoint. To change any of the details, you need to select one of the Tabs across the top of the window, selecting Inputs, Outputs, Messages or Miscellaneous.

Text Alert

File Link Help

Summary Inputs Outputs Messages Miscellaneous

Miscellaneous

Unit Name: LOG UNIT	Network Days: 175
Access Code: 1111	Balance Number: *#1345#
Password: yellow	Software Version:
Power failed message: 01:00:00	Last network call made on:
Power OK message: 00:10:00	Next network call due on:
Alarm Set Delay: 00:01:00	Balance:

Phone and Log Details

Base station: +44123401234	Clock	Power
Number 2: +44123401235	☒	☒
Number 3:	☐	☐
Number 4:	☐	☐
Log every minute, changeover at 06:00		

Inputs

Name	Invert	Logging	Averaging	Low	High	Logic Summary
1: Flow Rate	Off	ON	ON	20.0%	50.0%	True if input is less than 20.0% or greater than or equal to 50.0%
2: Temperature	Off	ON	ON	0.0%	50.0%	True if input is greater than or equal to 50.0%
3:						
4:						
5:						
6:						
7:						
8:						

Outputs

Name	Triggers after	Expires after	Conditions	Output State
	Min Sec	Day Hour Min		
1: Output 1	- -	- - -	If 1 or 2 is true	ON
2:	- -	- - -		
3:	- -	- - -		
4:	- -	- - -		

Messages

Phone	Triggers after	Expires after	Conditions	Message Text
B 2 3 4	Min Sec	Day Hour Min		
1: ☒ ☒ ☐ ☐	1 30	0 6 0	If Flow Rate > 80.0%	High Alarm
2: ☐ ☐ ☐ ☐	- -	- - -		
3: ☐ ☐ ☐ ☐	- -	- - -		
4: ☐ ☐ ☐ ☐	- -	- - -		

Com Port = COM1

3.2.2 Inputs

Selecting the Inputs Tab displays the current configuration of Input 1 as well as showing tabs for each of the other 7 inputs. The input may be displayed as 'Not Used'; this can be altered by selecting 'Analogue Input' from the drop down list next to the 'Type' label. This displays the various options and trigger levels for this input. All the inputs are scaled from 0 to 100%. The input can be given a unique name with up to 15 characters to help identify it in the Output and Message sections. The logic functionality of the input can be inverted if required, and the analogue reading can be averaged over the last 4 readings to help reduce noise on the signal.



Each input has selectable levels which the input signal is compared with to produce high and low level alarms. For example by default the configuration is for a Low Logic Level of 0.0 and a High Logic Level of 50.0%. If the input value is less than 50% the logic value is 0, but if the input rises equal to or above 50% the logic value of the input becomes 1. This is illustrated on the graph beside the configuration. The yellow area of the graph is where the input is at a logic 1 level and the white area is at logic 0. A more complex comparison is possible for example by changing the low logic value to 20% for example. The illustration above shows how the graph to the right now indicates that if the input value drops below 20% the input will also be at logic 1 level.

Inputs 7 and 8 are digital inputs and so only produce logic 1 or 0, and have no analogue input value. The logic can be inverted from the drop down box. Again a graph to the right of the configuration shows how the logic works, including the hysteresis. Basically the input is at logic 0 until the input signal causes the internal voltage to reach 80% of its range. The input stays at logic 1 until this same signal is reduced to 20% of its range. This hysteresis helps the system to reject noise or 'jumpy' signals.

3.2.3 Outputs

Pressing the Outputs Tab allows the output functions to be edited. New Tabs are displayed one for each of the 4 optional digital output channels. Each output can be configured as either an Input Logic Evaluation or an Analogue Input Evaluation.

3.2.4 Input Logic Evaluation

In this mode the output can be energised based on the logic value of each of the analogue inputs. The screen allows the output to be named for identification. The output can be switched on or off based on up to 3 logic expressions. The logic function is selected using the small rows of eight boxes, representing each of the inputs. So for example selecting the box labelled 1 on the upper row 1, means that output 1 will be switched on if analogue input 1 is in a logic 1 state. However, ticking the box below this on row 0 in position 1 means that the output will be switched on if analogue input 1 is producing a logic 0 value. More than one input can be selected here to produce conditions such as if inputs 1 and 2 but not 3 are active. To the right of the rows of small boxes, a logic expression is produced depending on which inputs have been selected. In addition there is the ability to add two additional logic expressions which are 'OR'ed with the first.

The screenshot shows the 'Text Alert' application window with the 'Outputs' tab selected. Under 'Output 1', the 'Type' is 'Input Logic Evaluation'. The configuration area for 'Output 1' includes a text field for the output name, a dropdown for 'is on', and a logic statement field. Below these are three rows of logic input boxes (1-8) for rows 1, 0, and another row. The first row has box 1 checked. The second row has box 2 checked. The third row is empty. To the right of these boxes are text fields for logic expressions: (1), (2), and an empty field. Below these are checkboxes for 'Trigger Delay' (Minutes: 0, Seconds: 30) and 'Expiry' (Days: 0, Hours: 0, Minutes: 5). The bottom status bar shows 'Com Port = COM1'.

3.2.5 Analogue Input Evaluation

The output can also be triggered as a result of the value of any of the 6 optional analogue inputs. It can be turned on or off when one or two inputs raise or lower to a certain value. This is easily selected using the drop down selection boxes.

Each of the outputs can have an Expiry Delay set which means that it cannot be re-triggered for a period of time. In addition if an Expiry Delay is set, the unit can also have a Trigger Delay,

which is a period of time during which a trigger condition must be maintained continuously before the output is allowed to change.

3.2.6 Messages

The messages are almost identical in operation to the digital outputs. There are two modes of operation, using either Input Logic Evaluation or Analogue Input Evaluation. The logic details are the same as for digital outputs above. There has to be an expiry time associated with each text message to avoid sending too many unnecessary messages and wasting the mobile phone account credit. A trigger delay can also be set as described in the output section above. The text message can be sent to any or all of the 4 registered mobile phone numbers, using the selection boxes at the bottom of the screen.

The screenshot shows the 'Text Alert' software window with the 'Messages' tab selected. The interface includes a menu bar (File, Link, Help) and a tabbed interface with 'Summary', 'Inputs', 'Outputs', 'Messages', and 'Miscellaneous'. Under 'Messages', there are four sub-tabs: 'Message 1', 'Message 2', 'Message 3', and 'Message 4'. The 'Message 1' sub-tab is active, showing a text input field with 'High Alarm'. Below this, there are two 'send if' conditions. The first is checked and set to 'Flow Rate' is '> than' '80.0 %'. The second is unchecked. At the bottom, there are settings for 'Trigger Delay' (1 minute, 30 seconds), 'Expiry' (0 days, 6 hours, 0 minutes), and four phone number selection checkboxes: 'Base station' (+4412341234), 'Phone 2' (+44123401235), 'Phone 3', and 'Phone 4'. The 'Com Port' is set to 'COM1'.

Text Alert

File Link Help

Summary Inputs Outputs **Messages** Miscellaneous

Message 1 Message 2 Message 3 Message 4

Type Analog Input Evaluation

Message 1

High Alarm

☒ send if Flow Rate is > than 80.0 %

☐ send if is %

☒ Trigger Delay Minutes 1 Seconds 30

Expiry Days 0 Hours 6 Minutes 0

☒ Base station +4412341234 ☒ Phone 2 +44123401235 ☐ Phone 3 ☐ Phone 4

Com Port = COM1

3.2.7 Miscellaneous

The Miscellaneous screen shows a range of options regarding the operation of the unit. The first section allows you to enter up to 4 mobile phone numbers to be registered with the system. This means that any text messages can only be sent to any of these 4 numbers. In addition only any of these 4 numbers can be used to send messages to the unit asking for status information etc. Each phone number can also be selected to have a text message sent to it if the clock resets and causes disruption to any currently active delays or if the power supply fails. The first number is that of the base station, which must be included for the Datalogger to know which number to use to upload the data.

Text Alert

File Link Help

Summary Inputs Outputs Messages **Miscellaneous**

Phone details

		Clock Reset Message	Power Fail Message
Base station	+44123401234	☐	☐
2	+44123401235	☒	☒
3		☐	☐
4		☐	☐

Text alert details

Unit Name: LOG UNIT

Password: yellow

Access Code: 1111

Time Delays

☒ Power Failed Message Hours: 1 : Minutes: 0

☒ Power Now OK Message Hours: 0 : Minutes: 10

☒ Alarm Set Delay Hours: 1 : Minutes: 0

Network details

Disconnection days limit: 175

Balance phone number: *#1345#

Datalogging

Inputs: 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☐

Log every minute: On

Changeover Time: Hour 06 Minute 00

Com Port = COM1

The unit can have a name given to it in the box at the top right of the screen. In addition the mobile phone access Password is set here together with the front panel Access Code. The Access Code must consist of zeroes and ones, and can have between 1 and 16 key presses. The Access Code is used to switch the unit between ON and OFF mode.

Below this details on the mobile phone network must be entered. The Disconnection Days Limit is the number of days that the phone will stay active on the network if it hasn't dialled a number. For the supplied Vodafone system, this is 180 days, and so the number 175 is entered here to force the system to make a call after 175 days to ensure the network link is maintained.

The Balance Phone Number is entered here to allow the system to phone the network provider to find out the current balance on the account. For the supplied Vodafone system this is set to *#1345#.

The Time Delays box allows you to enter time delays. The 'Power Failed' message delay sets the time after a power failure occurs, before the unit sends a Power Failed text message. This could

be set to 30 minutes to help avoid unnecessary alarms. The 'Power Now OK' will delay the sending of a Power Restored message until a specified time has occurred without another failure. This will again avoid unnecessary alarms. A typical value may be 10 minutes.

The Alarm Set Delay is important to avoid false intruder alarms. This is the time delay after switching the system from OFF to ON mode before an alarm will be triggered. This allows the user time to leave the protected area and lock the door, before the system fully activates.

The system can log the values of up to six inputs, selected by ticking the associated check boxes. The values on the chosen inputs are logged every minute when 'Log Every Minute' is set to ON.

The changeover time is the time of day the Datalogger dials in to the base station to upload the last 24 hours worth of data. If it is unable to get through it will continue logging new data whilst retaining the old data for up to 8 hours. The old data can be requested with a text message during this 8 hour window.

When multiple dataloggers are configured to upload to the same base station, it is sensible to space out the changeover times to reduce the likelihood of 2 dialling in at the same time. At least 3 minutes is recommended since a data call can take up to 90 seconds.

3.2.8 Read Input Values

The Read Input screen is accessed through the 'Link-> Read Inputs' menu option. This screen allows the computer to read the actual analogue input values together with the logic state of each channel. The computer has to be connected to the Text Alert with a standard RS232 communications lead. The Text Alert has to be placed into PC LINK mode from the front panel as described in Section 5. Pressing the Read key in the new window will cause the computer to take a new set of readings from the Text Alert. A typical display is shown below:

The screenshot shows a window titled 'Read Inputs' with a standard Windows-style title bar. Inside the window, the text 'Read complete.' is displayed above a progress bar consisting of 16 blue squares. Below the progress bar are two buttons: 'Read' and 'Close'. Underneath these buttons is a table with 8 rows and 2 columns. The first two columns are labeled '1:' through '8:'. The first two columns contain numerical values (43.5, 44.5, Not Used, Not Used, Not Used, Not Used, Not Used, Not Used). The second column contains the text 'Not Used'. At the bottom of the window, there are two labels: 'TRUE' (highlighted in yellow) and 'FALSE'.

Channel	Value	Logic State
1:	43.5	Not Used
2:	44.5	Not Used
3:	Not Used	Not Used
4:	Not Used	Not Used
5:	Not Used	Not Used
6:	Not Used	Not Used
7:	Not Used	Not Used
8:	Not Used	Not Used

TRUE FALSE

3.2.9 Programming the Text Alert

The Text Alert is programmed using the Link->Program menu option. After the configuration has been made within the program, it is always advisable to save the configuration before programming. The Text Alert must be placed into PC LINK mode as described in Section 5.1.4,

and a standard RS232 communications lead connected between the Text Alert and the PC. It is also necessary to set which COM port you are using on the PC. This is altered using the Comms->Comport menu option. Once this has been set, select the Comms->Program menu option and the PC will send the configuration into the Text Alert. The programming will take a few seconds to complete. The Text Alert is then ready to use. If logging is enabled it will prompt you to reset the log values already stored in memory.

3.2.10 Reading the Text Alert

The Text Alert configuration can be read using the Link->Read Configuration menu option. Once again the Text Alert has to be placed into PC LINK mode and a standard RS232 communication cable attached. Ensure that any configuration in the Text Alert software has been saved, and then select the Comms->Read Configuration menu. The reading will begin and after a few seconds the configuration will be shown on the computer.

3.2.11 Reset Log Input Data

This screen allows you to reset the log data in memory and is usually performed after a Datalogger has been re-programmed. If log data is not reset, the next data upload may contain some invalid readings, particularly if the changeover time was changed during programming.

3.2.12 Program Time and Date

It is important that the Text Alert knows the correct time and date, otherwise it will upload data at the wrong time. Make sure the PC being used has the correct time and date on it before programming the time and date.

3.2.13 Get Network and Balance Info

The balance and time of network call information can be retrieved using this menu option.

3.3 Central PC GSM Data Receiver Software

This program is used to control the base station Siemens GSM modem so that data can be received from the Datalogger. Data can only be received when this program is running.

3.3.1 Start Up

Connect the modem to the pc with the comms cable. Switch the modem on. It takes a few seconds to connect to the network and once connected it will briefly flash its led every 3 seconds. Start the GSM Data Receiver Program (Start->GSM Data->GSM Data Receiver). After a few seconds it should display these messages:

```
10/09/2005 15:04:07 Log file opened when program started: Sep05datalog.log
10/09/2005 15:04:07 Commencing modem initialisation
10/09/2005 15:04:10 Initialisation complete, waiting for data
```

If the third message is not displayed, check the com port is set up correctly using the menu options **Modem> Change Com Port**.

3.3.2 Normal Operation

Every day at the scheduled upload time the Datalogger dials in. The call is answered and data is saved in the installation directory which by default is:

C:\Program Files\GSM Data

It is stored in "comma delimited" format, enabling the file to be opened in Excel or other spreadsheet program. It takes the form of the Datalogger name then the date of the first reading in the file.

For example if the name of the Datalogger is "Log Unit 1" and the date of the first reading is 8th Sept 2005 the file will be called:

LogUnit1_08092005.csv

If the Datalogger was not able to dial in (because the receive modem was not switched on for example), the Datalogger will continue to store new data for eight hours, whilst still retaining the old data. In order to get the Datalogger to upload the old data a "Log request" message will need to be sent to the unit within eight hours of the originally scheduled upload.

3.3.3 Change Password

The Change Password screen is accessed through the 'File-> Change Password' menu option. The default password is PASSWORD which can be changed by following the instructions on screen.

3.3.4 Records

The Records screen is accessed through the 'File-> Records' menu option after successfully entering the password. A record can be created for each datalogger that might require a text message to be sent to it. Use the Add Record button to enter the Name, Password and Number of each datalogger. The password is case sensitive. It is recommended that numbers are entered in international format (for example 07799 123456 should be typed in as +447799123456 with no spaces in between). Records can be edited later if any changes are required.

3.3.5 Send Message

A text message can be sent from the base station modem to the Datalogger. This is achieved by choosing 'Log-> Send Message' using the drop-down menus and entering the password. Choose the destination of the message from the dropdown box. The corresponding number will be retrieved. Choose the type of message and click **Send** to send the message.

Messages that can be sent to the datalogger are documented in section 4, but some extra details are given here.

- **Log Request**

Usually within a minute the Datalogger will dial in. The call is answered and the data is saved in exactly the same way and location as normal.

The data received and the format of the filename depends on when the Datalogger receives the "log request" message. If it was within eight hours after a scheduled upload that failed, the old data will be saved and the filename will be

LogUnit1_08092005.csv

If the last scheduled upload had been successful, or if it is more than eight hours after the last scheduled upload, the letters Sp will be added to the end of the filename to enable it to be distinguished. Our example above would be called:

LogUnit1_08092005Sp.csv

Data in this file will only be a portion of the day, with valid readings up to the present minute.

- **Switch on Log Upload to this modem**

This message will change the base station number to that of the modem that sent the message, which also has the affect of switching on log uploading if it had previously been switched off.

- **Switch off Log Upload**

This message will delete the base station number from the datalogger, which has the affect of switching off log uploading because the datalogger will now have no number to upload the log data to.

3.3.6 Store Raw Data

The data received by the modem can be stored in an unprocessed state by selecting this menu option (so that there is a check mark beside it).

This option is available primarily for troubleshooting and can be ignored for normal use.

3.3.7 Get Balance

The remaining balance on the sim card can be requested. This is achieved by choosing 'Modem-> Get Balance' using the drop-down menus. Since this is a modem command, **ATD** must be put in front of the Vodafone balance request string ***#1345#** to give **ATD*#1345#**

3.3.8 AT Command

AT commands can be sent to find out more about the status of the modem. For example AT+COPS? finds out the network the modem is connected to and AT=CSQ will give an indication of signal strength. This option is available primarily for troubleshooting and can be ignored for normal use.

3.3.9 Advanced

This gives access to the timeouts used when the modem performs various tasks. This option is available primarily for troubleshooting and can be ignored for normal use.

3.3.10 GSM Data Receiver Log File

All transactions displayed on screen are also written into a log file, stored in text format in the following location:

C:\Program Files\GSM Data

The filename takes the format of the month, year then the word 'datalog', for example:

Sep05datalog.log

3.4 Uninstalling the Software

To uninstall the software, go to the Windows Control Panel and select Add/Remove Programs. The GSM Data software will be listed. Highlight this item and press Remove. Windows will automatically delete the program, although the directory with any data files will remain. These can be deleted using the standard Windows Explorer or through 'My Computer'.

4 Controlling the Text Alert from your mobile phone

4.1 Using the Password

It is possible to register your mobile phone with the unit if the Password is known. To do this you need to send a text message from your mobile phone to the Text Alert unit selecting one of the 4 phone number locations. Be careful not to overwrite an already stored number. So for example if you wish to add your phone to location 1 and the password is "yellow" send the following text message from the phone you wish to register:

yellow A1

The password is case sensitive so take care when typing the message. The Text Alert will add the mobile phone number which is automatically added to the text message into memory number 1. Simply change A1 into A2, A3 or A4 for the other phone number memories.

4.2 Available Text Commands

Once your phone has been registered with the unit the following commands become available. Each of the commands is detailed below:

A1	Add Phone to System
S1	Request Status Message 1
S2	Request Status Message 2
NP	Change Password
CD	Change front panel button Access Code
D1	Delete Phone from System
OFF	Put System into OFF Mode
ON	Put System into ON Mode
RESET	Reset System
O1H	Force Digital Output ON
O1L	Force Digital Output OFF
O1P	Allow Digital Output to follow program
LOG	Request oldest available Data Log

4.2.1 A1 - Add Phone to System

Replace the word Password below with the actual unit's password.

Password A1

Put the sending phone number into memory location 1. Note this will overwrite the number already stored in this location. Use A2, A3 and A4 for the other memory locations. Please ensure that the mobile phone you are using is your own and do not use any internet SMS Text Messaging services for this command as your security could be compromised. Please note that location A1 must be the telephone number of the Base Station.

4.2.2 S1 - Access Status Message 1

Password S1

Request Status message 1 to be sent to your phone. The message sends the following information:

The Name of the unit	Up to 15 letters
The current operating mode	ON or OFF
Power supply status	OK or PF if the power has failed
The value of the analog inputs	0 - 100%
The state of the 2 digital inputs	HI or LO
The logic values of the inputs	0 is condition False 1 is condition True

The status of the digital outputs

- H is ON
- L is OFF
- OK output is in this state
- DE a time limit is active and the output cannot change
- NU not used
- FO output has been forced into the current state
- TR means that the output has been triggered, but a trigger delay is active after which the output will change state

The status of the text messages

- OK message is waiting for the trigger condition to occur
- DE message sent to all phones and time limit is active
- DN has been sent to some but not all of the required phones
- NU not used
- TR means that the message has been triggered, but a trigger delay is active after which the message will be sent

The balance of the phone account

So a typical message could be:

```
LOG UNIT ON,OK I:1=10.6 2=63.9 3=30.5 4=40.8 5=78.7 6=100.0 7=LO 8=NU L:11100000 O:1=H.OK  
2=H.FO 3=L.OK 4=L.NU M:1=OK 2=DE 3=DN 4=NU B:#10.82
```

This message indicates that the unit is called LOG UNIT
The system is in ON mode
The power supply is OK.
The analog inputs are at values 10.6, 63.9, 30.5, 40.8 78.7 and 100.0
Digital input 7 is off (LO) and 8 is not used (NU)
The logic levels for each of the inputs are ON, ON, ON, and the rest are OFF.
The outputs are ON (H), FORCED ON, OFF (L), OFF and not used (NU).

The text messages are in the following conditions:
Message 1 is OK (waiting for condition to trip).
Message 2 has been sent to all required phones and cannot be resent until the time expires.
Message 3 has not been sent to all phones yet, but it will continue to try and send the information until the time expires.
Message 4 is not used.
The balance of the phone account is £10.82

4.2.3 S2 - Access Status Message 2

Password S2

Request Status message 2 to be sent to your phone. This message sends the following information:

The Name of the unit	Up to 15 letters
The current operating mode	ON or OFF
Power supply status	OK or PF if the power has failed
The 4 registered phone numbers	Telephone number or 'Empty'
The software version number	e.g. D.02
The balance of the phone account	

A typical message could be:

LOG UNIT ON,OK 1:+4412345678 2:+4412346789 3:+4412347890 4:EMPTY D.01 B:#10.38

4.2.4 NP - Change Password

Password NP Newpassword

The current password is changed to Newpassword. Take great care with this command as from this moment the new password will have to be used to access the system.

4.2.5 CD - Change Front Panel Access Code

Password CD NewAccessCode

The current access code is changed to NewAccessCode. Take great care with this command as from this moment the new access code will have to be used to change modes on the system. The Access Code is a string of numbers 1 and 0, which set the order that the front panel buttons marked 1 and 0 have to be pressed to change operating mode on the unit. The length of the Access Code is from 4 presses up to a maximum of 16 presses.

An example of this is:

Password CD 100110 Which changes the Access Code to 1,0,0,1,1,0

When sending the access code do not enter any spaces or other characters between any of the numbers, or the code will be incorrect. The code will not change if there are less than 4 numbers entered.

4.2.6 D1 - Delete Phone from System

Password D1

Delete the phone number in memory location 1. Use D2, D3 or D4 for other memory locations. Please note that D1 will delete the base station number, stopping log data uploads to the base station.

4.2.7 OFF - Put System into OFF Mode

Password OFF

Put the Text Alert into OFF mode.

4.2.8 ON - Put System into ON Mode

Password ON

Put the Text Alert into ON mode. Please note that if your system has an Alarm Set Delay configured, this will be ignored if the system is put into ON mode with a text message. Please ensure that you are not in the protected area.

4.2.9 RESET - Reset System

Password RESET

Reset all outputs, reset all outputs to default condition, reset all output and message expiry dates.

4.2.10 O1H - Force Digital Output ON

Password O1H

Force output 1 to switch on; use O2H, O3H and O4H for other outputs. Note that O1H is made using the capital letter O, not zero.

4.2.11 O1L - Force Digital Output OFF

Password O1L

Force output 1 to switch off; use O2L, O3L and O4L for other outputs. Note that O1L is made using the capital letter O, not zero.

4.2.12 O1P - Allow Digital Output to follow program

Password O1P

Force output 1 to follow the program, all expiry and forced restrictions are removed. Note that O1P is made using the capital letter O, not zero.

4.2.13 LOG - Request Data Log from the System

This command allows you to request the Datalogger to upload data readings to the base station. Normally this will be data from the changeover time until the time it received the LOG request text message.

If the Datalogger receives the message in the 8 hours following a failed attempt by the Datalogger to upload the data, it will send the 24 hours worth of data preceding the last changeover time. Once this has been successfully uploaded (or 8 hours have passed) this text message will cause the newest log data to be uploaded.

4.3 IMPORTANT NOTE

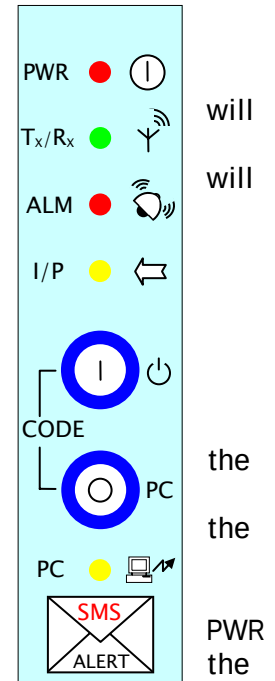
Please ensure your password is kept secret, and think about changing the password on a regular basis to maintain security. If your password and system telephone number are known, it will be possible for an intruder to switch off the system.

It is recommended that messages to and from the system are not saved on your mobile phone, as these may contain the phone number and password of the system.

5 Using the Alarm

5.1 Operational Modes

The Text Alert has 3 operating modes, ON, OFF and PC LINK. The unit usually go into OFF mode after power is applied, unless the unit was running in ON mode when a power failure occurred, in this case the unit immediately return to ON mode when the power is restored. In addition there is a temporary Start Up mode. Note that the datalogging function works the same way in ON or OFF mode. The Front Panel design is shown here:



5.1.1 Power Up

When the unit is powered on, the red PWR LED is lit. The unit assesses state of the internal battery and if it is uncharged the system will trickle charge the battery for 1 hour. During this time both the red PWR LED and Tx/Rx green LED will be lit permanently. If the battery is not totally discharged but only holds a minimum level of charge, the system will boost charge the battery for 15 minutes during which time both the red LED and the red ALM LED will be lit. If after either of the charging cycles, system decides that more charging is required the system will just continue the charging cycle for another hour or 15 minutes. If either of these charging cycles is required the unit will not respond to any key presses, text messages or communications. When the battery charge is acceptable the unit will re-enter the last operational mode it was in before it powered down.

5.1.2 OFF Mode

The unit can be switched into OFF mode by pressing both front panel buttons for up to 1 second until the Green Tx/Rx LED lights, and then the user must start to enter the access code using the 2 keys, 0 and 1, within 2 seconds and each subsequent digit within 2 seconds of the previous. Each key press will flash the RED power LED. Once the code has been entered correctly, the unit will enter OFF mode.

In OFF mode the unit will continue to read the inputs, but the outputs and the text message programming will be ignored. Any triggered outputs or text messages will be reset to their default condition and the ALM LED will be switched off. The user can still request status messages and force outputs and change phone numbers etc in this mode. In OFF mode only the PWR LED flashes, but in the same format as ON mode.

5.1.3 ON Mode

The unit can be switched into ON mode by pressing both front panel buttons for up to 1 second until the Green Tx/Rx LED lights, and then the user must start to enter the access code using the 2 keys, 0 and 1, within 2 seconds and each subsequent digit within 2 seconds of the previous. Each key press will flash the RED power LED. Once the code has been entered correctly, the unit will enter ON mode.

In ON mode the unit is monitoring it's inputs, calculating the logic functions of these inputs, checking the programming of the digital outputs, switching the outputs on and off as required, monitoring the programming of the messages and sending any required text messages to each of the registered phones. In addition it is monitoring for any incoming messages from registered phones with respect to status messages, forcing outputs, changing phone numbers etc. Whilst in ON mode the unit flashes both the PWR and Tx/Rx LED's briefly every 2 seconds if the main power supply is OK, or every 4 seconds if the unit is being powered from the internal battery

back up. However, if the unit has not been able to establish a mobile phone link, the LED's will double flash each time. If any of the digital outputs or text messages are triggered, the unit will switch on the ALM LED whilst the alarm condition is still triggered.

5.1.4 PC Link Mode

The unit can be switched into PC Link Mode only from OFF mode. To do this the user must push the lower 'O' button for 3 seconds and the unit will switch into PC LINK mode and the PC LINK LED on the front panel will light by itself, all other LED's will remain off.

In PC LINK mode the unit is purely looking for programming information coming through the RS232 communications port. The user needs to connect the unit to a PC with a standard communications cable and run the supplied GSM Datalogger PC software. The unit can then be programmed as required. Once programmed the unit is returned to the OFF mode again by pressing the lower 'O' button for approximately 3 seconds, until the PC LINK LED switches off. The unit is then in OFF mode and needs to be switched into ON mode for full functionality as described above. The unit will not stay in PC LINK mode unused for more than 2 minutes, after which time it will automatically revert to OFF mode. This allows the unit to conserve power.

5.1.5 Shutdown Mode

To shutdown and switch off the Text Alert, the unit must have its power supply switched off or disconnected. The unit must then be put in OFF mode. Afterwards, Switch '1' on the front panel must be pressed for 5 seconds until the PWR, Tx/Rx and ALM LED's are lit. Release the switch '1' and wait for the LED's to extinguish. The unit must be in Shutdown Mode before the front cover is removed.

5.1.6 No Power Mode

If the main power supply fails, the unit enters internal battery back up mode. In this state the digital outputs will all be switched off to conserve power. A Power Fail message will be sent to any phones registered for Power Fail messages after the programmed power fail time delay has occurred. Any new text message alarms will still trigger the unit to send the text message in the same way as normal. The unit can continue to operate in this low power mode for up to 24 hours before the internal battery will fail. When the system detects that the internal battery is about to fail, a final message will be sent to phones registered for Power Fail messages, to inform them that the unit is about to switch off. It is recommended to have the Text Alert send the Power Fail alarm message to at least one phone so that action can be taken to try and correct the main power supply failure. After a power is restored following a power failure, the unit will return to the same mode it was in when the power failed. So if it was in OFF mode it would remain in OFF mode when the power recovers. Likewise it would return to ON mode, if it was in ON mode when the power failed.

5.1.7 Error Mode

If the unit decides that it has an error which it cannot correct, the red ALM LED flashes on for ½ sec then off for ½ sec continuously. The unit will not perform any other tasks during this time. This mode indicates that there is an error with the programming of the unit. The unit needs to be moved to PC LINK mode by pressing the 'O' button for about 3 seconds until the PC LINK LED lights. The unit should then be reprogrammed through the serial port. It should then be possible to change back to OFF and then ON mode for the unit to function.

5.2 Changing the SIM card

The SIM card can be removed very easily. The unit MUST be put into SHUTDOWN mode as described above, before any of the following is performed. The unit needs to have the front cover unscrewed. Once opened the front panel can be disconnected from the back plate by opening the side levers on the cable connector linking the two sections. Once removed, looking inside the front cover assembly the SIM card socket can be found off to the right of centre just

before the phone and battery circuitry. The SIM card holder can be removed by sliding the yellow push switch on the side. The SIM card and holder will be pushed out of the connector. The plastic holder can be turned over to reveal the SIM card inside. If a SIM card is not present simply insert the SIM card in this plastic holder, and then slide the holder into the connector on the circuit board.

5.3 Replacing the Battery

Contact your supplier if you feel that the battery may need changing. The battery is a specially designed battery for this type of mobile phone circuitry. DO NOT use any other battery as this could damage the unit beyond repair.

5.4 External Aerial

An optional external aerial can be fitted to the unit. Please contact your supplier for more details.

5.5 Which Mode is the Text Alert in?

Simply phone the number of the Text Alert system using any voice phone and the unit will beep to indicate which mode the unit is in as shown below:

OFF Mode:	1 beep high, then 2 beeps low
ON Mode:	1 beep high, then 1 beep low

6 Specifications (@ 25°C)

Operating Temperature	0 to 55°C (Storage -20 to +85°C)	
Operating Altitude	Sea Level to 2000m	
Humidity	0 – 90% RH	
Power Requirements	11.1 to 15V dc	
Current Consumption	10.7 mA @ 12V dc (typical under minimum load)	
	110.0 mA @ 12V dc (typical under maximum load)	
	400.0 mA peak whilst fast charging batteries	
Temperature Stability	100ppm / °C	
Input Impedance		
	Current Input (0 – 20mA)	160 ohms
	Voltage Input (0-10V)	1 Mohm
	Voltage Input (0-25V)	2.6 Mohm
Output Relay Rating		
	Maximum Voltage	60VDC
		125VAC
	Maximum Current	1A @ 24VDC
		0.5A @ 125VAC
Phone Network		
Frequency Bands	Dual Band EGSM 900 & GSM 1800 (GSM Phase 2+)	
GSM Class	Small MS	
Transmit Power	Class 4 (2W) for EGSM 900	
	Class 1 (1W) for GSM 1800	
Antenna Design	50 ohm antenna interface	
Dimensions	210mm (w) x 112mm (h) x 50mm (d)	
Connections	Screw Clamp with pressure plate	
Conductor Size	0.5 to 4.0mm	
Insulation Stripping	12mm	
Maximum Terminal Torque	0.4Nm	
Weight	600g	
CE Conformity		
R&TTE Directive 1999/5/EC		
LVD 73/23/EEC		
EMC Conformity in accordance with directive 89/336/EEC		

7 Notes

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