



MULTI POINT

GUARD MONITORING SYSTEM



FSK Guard monitoring system

1. Features

- Guard points configurable using the keypad.
- Up to 5 unique supervisor tags.
- Between 1 and 16 guarding points.
- Complete event history (up to 20K events) accessible from keypad.
- Uniquely identifiable passive tags with built in real time clock.
- Respond to any event with SMS, radio, GPRS, sound, display or printout.
- Remote control panic alarm.
- Built in backup battery.

2. Connections

- TOP:
 - 433MHz aerial
 - Female SMA Connector for GSM antenna.
- Bottom:
 - DB25 Parallel port for dot-matrix printer.
 - DB9 Male connector for serial data comms.
 - 16V AC power connector.

3. Getting started

1. Attach the guard points along the route that the guard will have to patrol.
2. Connect the TX75X radio, dot-matrix printer, and GSM antenna to the unit.
3. Connect the AC power supply to the GMU.
4. The unit will start up and detect the presence/ absence of a built in GSM module.
5. Once the GMU has started up it will show "Insert a green tag to start guard shift".
 - When the GMU is turned on it will automatically detect the presence of a GSM modem (optional built in). If no modem is detected or no sim card is fitted the device will not report using SMS or GPRS.

4. Keypad configuration

1. Insert the yellow supervisor tag to activate the keypad. The GMU will display "Supervisor on site".
2. Press and hold the E key while inserting the supervisor tag again to enter the setup menu (with GMU versions older than version 2.3 enter the supervisor pin code and then insert the yellow tag to enter the setup menu).
3. Using the up/ down button you can now move the '*' character to choose a menu item and execute the choice by pressing the Enter key. At the bottom of each menu you will find a '...back' menu item. Select this item to return to the previous menu.
4. Choose the **GMU Setup** menu item and press enter.
 - a. **Load patrol points** - This option is to program/ "learn" each patrol point's unique ID.
 - Press enter.
 - Insert a guard tag to clear the tag.
Do one complete patrol visiting all the guard points.
 - Insert the tag into the GMU again.
The GMU will now display the number of guard points recorded.
 - If the number of points is correct press enter to save the point information.

- b. **Patrol duration** – This option is to set the time that the guard should take to complete one full patrol.
- Press enter.
 - The GMU will show the patrol duration in minutes.
 - Press the CLR button to reset the time to 0.
 - Now type the number of minutes that it would take the guard to do a full patrol.
 - Press enter to save the new value.
- c. **Rest duration** – This option is to set the time that the guard should rest between patrols.
- Press enter.
 - The GMU will show the patrol duration in minutes.
 - Press the CLR button to reset the time to 0.
 - Now type the number of minutes that the guard should rest for between patrols.
 - Press enter to save the new value.
- d. **Report patrol start** – This option is to decide weather or not the start of each patrol should be reported to the control room via radio and GPRS.
- Press enter.
 - Choose “Yes” (1) to report each patrol start or “No” (0) to suppress the patrol start report.
 - Press enter to save the new value.
- e. **Report patrol complete** – This option is to decide weather or not the end of each patrol should be reported to the control room via radio and GPRS.
- Press enter.
 - Choose “Yes” (1) to report each patrol end or “No” (0) to suppress the patrol end report.
 - Press enter to save the new value.
- f. **Shift setup** – With this option the GMU can be programmed to automatically start and end guard shifts at specified times.
- Five shifts can be specified for each day of the week.
 - Select **Shift setup, Sunday, Shift 1**.
 - Enter the start time for shift 1. Example “10:00”. Note that the cursor will automatically advance to the duration of shift 1.
 - Enter the shift duration Example “02:00”.
 - Press enter to save the shift.
 - In this example: The GMU will automatically become active (guard on duty) at 10:00 on the next Sunday. The guard will then be prompted to do patrols as normal for 2 hours after which the GMU will automatically switch to inactive (off duty) mode.
 - The GMU will continue to start and stop shifts according to the daily shift times programmed into it week after week.
- g. **Date and time** – Set the GMU date and time.
- Date. Press enter to edit the GMU date. The date will be displayed as century, year, month, day (ccyymmdd). Change the date to the current date and press enter to save.
 - Time. Press enter to edit the GMU time. The time will be displayed as hour, minute, second (hhmmss). Change the time to the current time and press enter to save.
 - Day of week. Press enter to edit the day of the week. The current (today) weekday will be displayed. To change the current day, press the numbers 1 through 7 on the keypad to select the correct day. Once the correct day is selected, press enter to save.
- h. **Exit and restart** - This option will reset the GMU; load all the updated settings and then normal guarding can continue.

- i. Insert the **yellow tag** again to report “supervisor off duty” and disable the keypad.

5. Doing a patrol

1. Insert a **green guard tag** to activate the GMU. The GMU will display “Guard came on duty”.
2. The guard rest time will count down (default 15 minutes).
3. When the rest time expires the GMU will instruct the guard to start his patrol.
4. To start the patrol, insert the **green tag** again.
5. The GMU will show “Guard started patrol”.
6. Now visit each patrol point and insert the same **green tag** into each patrol point. Make sure that the red lamp on each point flashes (If the red lamp flashes twice it means that point has already been recorded).
7. Return to the GMU and insert the **green tag** to end the patrol.
8. The GMU will show “Patrol completed OK” and start the rest time if all points have been visited correctly.
9. If the guard missed any points and there is sufficient patrol time remaining, the guard can go back and tag the point/s that was missed.
10. Repeat steps 2 through 9 for the whole duration of the guard shift.
11. To end the guarding shift and put the GMU into standby insert the **red tag**.

6. View event log

1. Insert the **yellow supervisor tag** to activate the keypad. The GMU will display “Supervisor on site”.
2. Press and hold the E key while inserting the supervisor tag again to enter the setup menu (with GMU versions older than version 2.3 enter the supervisor pin code and then insert the yellow tag to enter the setup menu).
3. Choose the **Event Log** menu item and press enter.
 - a. Pressing the up arrow key will move forward through the circular queue of events.
 - b. Pressing the down arrow key will move backward through the queue of events.
 - c. When the first event is reached and the down arrow key is pressed the log will wrap around to the last event that was recorded.
 - d. Pressing the * key will move backward ten log positions and the E key will move forward ten entries in the log.
 - e. Pressing the 7 key will move backward one hundred log positions and the 9 key will move forward one hundred entries in the log.
 - f. The event log will store up to 20480 events in memory. When the log space gets filled up the oldest events in the log will be over written.
 - g. Press Clr to exit the log and return to the main menu.
 - h. Select “...back” to go back to operational mode.
4. Insert the **yellow tag** again to report “supervisor off duty” and disable the keypad.

7. Reporting codes

Reporting codes as sent from the TX75X radio:

FSK CODE SENT	SIGNAL NAME	GETS REPORTED WHEN:
025	Panic	When remote button (red) was pressed.
187	Keypad tamper	When too many keys are being pressed without matching a pin code or function. Only possible when supervisor is on site and keypad is therefore enabled.
155	Guard patrol fail	When a guard fails to start his patrol. Sent after his rest time plus another 2 minutes have gone by without a green tag being inserted.
006	Patrol started	When the guard starts his patrol. This report is subject to the "Report patrol start" option being set to "Yes" in the setup menu.
154	Guard emergency	When the second remote button (green) was pressed (only available on 3 button FSK remotes).
155	Fail to return from patrol	When the guard's patrol time expires without the guard having done a successful patrol.
004	Points missed	When a guard returned with some points missed and the patrol time expired.
160	Patrol completed OK	When a guard returns with all points visited. This report is subject to the "Report patrol complete" option being set to "Yes" in the setup menu.
157	Guard off duty	When a red tag was inserted and the GMU went into standby mode.
156	Guard on duty	When the GMU is in standby mode and a green tag is inserted to start a guard shift.
058	Periodic test	Test report sent every 46 hours.
250	Power up	Sent after the GMU have been powered up and initialised.
153	Remote fire	When the first (blue) button was pressed (only available on 3 button FSK remotes).
013	Supervisor on site	When yellow tag was inserted by a supervisor arriving on site.
029	AC Fail	When the mains power goes off for longer than 20 minutes.
027	Low battery	Sent if the GMU internal backup battery voltage drops below 11.5 volts.
014	Supervisor left site	When the yellow tag was inserted by a supervisor leaving the site.

Reporting codes as sent by the GMU via GPRS

CONTACT ID CODE SENT	SIGNAL NAME	GETS REPORTED WHEN:
E120	Panic	When remote button (red) was pressed.
E137	Tamper	When too many keys are being pressed without matching a pin code or function. Only possible when supervisor is on site and keypad is therefore enabled.
E700	Time to start patrol	The rest time has expired and the GMU prompted the guard to start his patrol. (By default this is not sent.)
E701	Fail to start patrol	When a guard fails to start his patrol. Sent after his rest time plus another 2 minutes have gone by without a green tag being inserted.
E702	Guard patrol started	When the guard starts his patrol.
E704	Guard requires assistance	When the second remote button (green) was pressed (only available on 3 button FSK remotes).
E705	Guard fail to return from patrol	When the guard's patrol time expires without the guard having done a successful patrol.
E708	Points missed	When a guard returned with some points missed and the patrol time expired.
E713	Patrol ok	When a guard returns with all points visited.
E714	Guard off duty	When a red tag was inserted and the GMU went into standby mode.
E715	Guard on duty	When the GMU is in standby mode and a green tag is inserted to start a guard shift.
E602	Periodic test report	Test report sent every 10 hours.
E719	Power up	Sent after the GMU have been powered up and initialised.
E110	Fire (remote)	When the first (blue) button was pressed (only available on 3 button FSK remotes).
E717	Supervisor on site	When yellow tag was inserted by a supervisor arriving on site.
E301	AC loss	When the mains power goes off for longer than 20 minutes.
E302	Low battery	Sent if the GMU internal backup battery voltage drops below 11.5 volts.
R717	Supervisor left site	When yellow tag was inserted by a supervisor leaving the site.
E718	Wrong route	When the fixed route or random start point option was set and the guard did not obey the single route or random start point instruction.
E703	Patrol start late	When the patrol start lead time has expired and the guard then started the patrol late.

8. Advanced/ pre-shipping configuration

When the GMU is turned on it will automatically detect the presence of a GSM modem (optional built in). If no modem is detected the device will not report using SMS or GPRS.

1. Remove power from the GMU by removing the fuse and turning the AC supply to the unit off simultaneously.
2. Hold down the E key while replacing the fuse. The GMU will seem to stay off.
3. Enter the day part of the current date with a leading 0 if necessary. Then enter "12". Example: Today is 2008-05-03. To enter the advanced configuration menu we need to enter 0312.
--Note 1: If the GMU have been without battery or AC power for a long time the internal clock will have reset at power up and the date according to the GMU will be 1900-01-01. If this is the case you need to enter 0112 to enter the advanced menu.
-- Note 2: Be careful not to "bounce" or accidentally press a button twice when entering the code. If this happens or a wrong code is entered, the GMU will continue to initialise as with a normal power up.
4. Choose the **GMU Setup** menu item and press enter.
 - a. **Reporting options** – There are 26 events that can be reported by the GMU. For the full list of events please refer to table 2.1
 - i. **For each event:**
 - With the * next to the desired event press enter to see its reporting options.
 - The GMU will show some or all of the numbers 1 through to 8.
 - Each number represents a method by which the selected event can be reported.
 - To enable or disable a specific means of reporting press the corresponding number(1-8) to turn the report method on or off.
 1. Show on display
 2. Make a sound
 3. Send a message via radio
 4. Print a message through the GMU printer port.
 5. Make a voice call (Fuction not yet implemented int GMU)
 6. Send a GPRS message
 7. Send an SMS message
 8. Send an email message (Fuction not yet implemented int GMU)
 - Example: The display shows "1 3 6 " and the selected event is "Remote panic". This means that when a remote panic is pressed the GMU will show on the display(1) "Panic", it will send a radio(3) panic alarm and it will also send a GPRS(6) panic alarm.
 - b. **Communication setup** – This option is to set the GMU identification, SMS and GPRS settings.
 - i. **GMU identification:** This text is used to identify the GMU in every SMS message that gets sent from the GMU.
 - ii. **GMU Account code:** This is the numeric account code that the GMU uses to identify itself to the control room software when reporting via GPRS. This account code must be unique for each unit and must be in the range of 00001 to 65535.
 - iii. **SMS Service centre:** This is the number for the sms service centre used to send SMS messages. Vodacom (SA): +27829119, MTN (SA): +27831000113. For other cellular service providers please contact the service provider help line to obtain the correct service centre number.
 - iv. **Sim pin code:** This is the pin code for the sim card that is installed in the GMU.
 - v. **Supervisor telephone number:** This number is not used as yet. In version 2.5 and later this number will be used as an emergency number for making a voice call from the GMU.
 - vi. **SMS telephone number 1 to 10:** These are the 10 mobile phone numbers that will receive SMS messages from the GMU. Messages will only be sent for events that have the SMS option (option 7 of reporting options) enabled.

- vii. **GPRS APN:** This is the Access Point Name on the GPRS network that the GMU unit uses to obtain a network connection to the message routing server. For Vodacom and MTN use “internet”. For other cellular service providers please contact the service provider help line to obtain the correct APN name.
 - viii. **APN user name:** Some access points require a username. MTN and Vodacom’s public APN do not require a username. Please check with the cell phone service provider if in doubt.
 - ix. **APN Password:** Some access points require a password. MTN and Vodacom’s public APN do not require a password. Please check with the cell phone service provider if in doubt.
 - x. **POP3 server:** This server address is not in use as yet. In version 2.5 and later this server address will be used to send daily email reports from the GMU directly to the user.
 - xi. **SMTP server:** This server address is not in use as yet. In version 2.5 and later this server address will be used to send daily email reports from the GMU directly to the user.
- c. **GMU tag ID’s** – The tags that are used with the system has a unique built in ID. The GMU needs to be programmed with these tags ID’s in order to operate correctly.
- i. **Red (sys. Off) tags:** In order for the GMU to recognise a red tag the tag ID needs to be programmed into the GMU. Select “Red (sys. Off) tags”, then select “Red tag 1”. The first red tag ID will be displayed. To enter a new tag ID insert the tag so that the GMU can read the tag.
When complete press enter to save the new ID. Repeat the process for all the required red tags selecting “Red tag 2” through to “Red tag 20”.
 - ii. **Green (guard) tags:** In order for the GMU to recognise a green tag the tag ID needs to be programmed into the GMU. Select “Green (guard) tags”, then select “Green tag 1”. The first red tag ID will be displayed. To enter a new tag ID insert the tag so that the GMU can read the tag.
When complete press enter to save the new ID. Repeat the process for all the required guard tags selecting “Green tag 2” through to “Green tag 20”.
 - iii. **Yellow (supervisor) tags:** In order for the GMU to recognise a yellow tag the tag ID needs to be programmed into the GMU. Select “Yellow (guard) tags”, then select “Yellow tag 1”. The first yellow tag ID will be displayed. To enter a new tag ID insert the tag so that the GMU can read the tag.
When complete press enter to save the new ID. Repeat the process for all the required supervisor tags selecting “Yellow tag 2” through to “Yellow tag 20”.
NOTE: If a tag is presented to the GMU that has not been programmed into the GMU as a red, yellow or green tag, the system will assume the tag to be a green guard tag. It will report the guard actions done with that tag as guard number 99.
- d. **Patrol setup** – These settings are used to customise the patrol times, route and patrol points for a specific site.
- i. **Time between shifts:** This is the time in minutes that the system is allowed to be in its inactive mode. If the guard goes off duty (Red tag) and no guard comes back on duty for this amount of time the GMU will send a “Fail to start shift” alarm. This
 - ii. **Rest time:** This is the time in minutes that is allowed for the guard to rest between patrols. The default is 15 minutes.
 - iii. **Patrol start lead time:** This is the time in minutes that the guard is allowed to respond to a “Start patrol” prompt. If the guard fails to start his patrol within this time, the GMU will send a “Fail to start patrol” alarm.
 - iv. **Patrol grace time %:** This is the percentage of the patrol time that Guard patrol times may fluctuate by. For Example: Assume the patrol grace time % is set to 20 and the patrol time is set to 60 minutes. This means that the guard may complete his patrol between 48 minutes (60 - 20%) and 72 minutes (60 + 20%) from the start of his patrol.
 - v. **Points grace time %:** This option only applies if a fixed route was selected (Route options 3 - Below). In order for this option to work correctly, the patrol points must be recorded into the unit by doing an actual patrol at the ideal walk pace(see Load patrol points below).
This is the percentage of the point to point time that the Guard walk times may fluctuate by. For Example: Assume the Points grace time % is set to 10 and the recorded walk time between point 1 and 2 is 20 minutes. This means that the time taken to walk from

point 1 to point 2 on his patrol may be 18 minutes (20 - 10%) and 22 minutes (20 + 10%).

- vi. **Patrol duration:** This is the time in minutes that the guard is allowed to complete his patrol. The guard must complete his patrol within this amount of time. If the patrol grace time was set the guard may not return before patrol time – $((\text{grace}\% * \text{patrol time})/100)$ or else the GMU will report “Patrol fast”.
- vii. **Load patrol points:** In order to record all the point ID’s that have been installed on the patrol route as well as the time it takes to walk between each point, the patrol points must be loaded. Press enter, the GMU will display “Insert tag to clear”. Insert a green guard tag. The GMU will clear any stored points from the tag and display “Patrol, then insert tag”. Do one complete patrol with the same green tag. Make sure that the patrol is done at the correct pace if the Points grace time is to be used. Once complete, insert the tag into the GMU again and check that the GMU read the correct number of points. Press enter to save the route information that was gathered from the tag.
- viii. **Enter point ID’s:** This option allows the user to manually enter point ID’s. Each guard point has a unique identity. This ID can be found written on the back of the point when purchased. When replacing a single guard point it is easier to use this option to replace an old point ID with the newly installed point. Alternatively the all the patrol points have to be re recorded by following the instructions in “Load patrol points” above.
- ix. **Route options 1/2/3:** This is a choice between three different route options. Press enter and then 1 to select option 1. With option 1 selected the guard can follow any route during his patrol as long he clocks all the patrol points within the designated patrol time. With option 2 selected the guard will be instructed to start at a specific point after which he can follow any route to clock all the remaining points. The start point in option 2 will be randomly selected by the GMU for every patrol. If the guard starts with a different point than the one instructed, the GMU will send a “Wrong route alarm”. With option 3 selected the guard will be required to follow the same route as was recoded in “Enter point ID’s” above. If he fails to visit the patrol points in the correct order, the GMU will send a “Wrong route alarm”. With this option selected the time between points can be monitored by setting the points grace time (v. above) to a percentage greater than 0.
- e. **Remote controls:** The GMU has a built in 433MHz rolling code remote receiver. The GMU can be programmed to respond to up to 20 remotes. Each remote has to be programmed into the GMU. Select “Remote 1”. The GMU will display the unique ID for remote control 1. To over write this ID with a different remote ID just press any button on the new remote. The new ID will be displayed. Press enter to save the new ID. Note that FSK uses a unique, securely encrypted rolling code protocol and therefore GMU can only function with a FSK remote.
- f. **Date and time –**
 - i. **Date.** Press enter to edit the GMU date. The date will be displayed as century, year, month, day (ccyymmdd). Change the date to the current date and press enter to save.
 - ii. **Time.** Press enter to edit the GMU time. The time will be displayed as hour, minute, second (hhmmss). Change the time to the current time and press enter to save.
 - iii. **Day of week.** Press enter to edit the day of the week. The current (today) weekday will be displayed. To change the current day, press the numbers 1 through 7 on the keypad to select the correct day. Once the correct day is selected, press enter to save.
- g. **Exit and restart -** This option will reset the GMU; load all the updated settings and then normal guarding can continue.
- h. Insert the **yellow tag** again to report “supervisor off duty” and disable the keypad.

Table 2.1

Event name:	Occurs when:
Remote panic	Any time panic pushed
Keypad tamper	When the supervisor is on duty (keypad active) and too many keys are pressed.
Patrol start timer (rest timer expired)	When rest time expires
Guard fail to start timer (patrol lead time)	Patrol start lead timer expires. (3 minutes)
Patrol start tag	Green tag inserted to start patrol.
Patrol start tag late	Green tag inserted after 3 min lead time expired
Guard requested assistance	Green remote button pressed
Guard fail to return timer	Patrol time expired without guard returning
Guard late return tag	Not used
Points read, points missed	Guard return with points missed
Points read points slow	Guard walked points slowly. (If option is set)
Points read points fast	Guard walked points too fast. (If option is set)
Points read Overall walk slow	Guard walked patrol slowly. (If option is set)
Points read Overall walk fast	Guard walked patrol too fast. (If option is set)
Points read points OK	Guard returned with all points visited.
Guard off duty	When a red tag was inserted.
Guard on duty	When the GMU is in standby mode and a green tag is inserted.
No guard on duty	When the time between shifts expire without a new guard shift being started.
Programming entered	When the simple programming menu is entered.
Guard late on duty	When a "No guard on duty" event occurred and a guard thereafter starts a new shift (green tag).
Wrong route	Guard walked the wrong route (if the option for random start points was set or a single fixed route was selected).
Power up	When power is applied to the GMU.
REMOTE FIRE	Blue button on remote control pressed
Supervisor on duty	Yellow supervisor tag entered
AC power fail	AC not present for 15 minutes (not after power up)
Low battery	Battery voltage less than 10.5V for more than 10 minutes.
Supervisor off duty	Yellow supervisor tag entered to leave site.
AC power RESTORE	AC present for 15 minutes (not after power up)



FSK TECHNICAL STANDBY NUMBERS:

FRANK : 082 657 7852

RICKUS : 072 595 7700