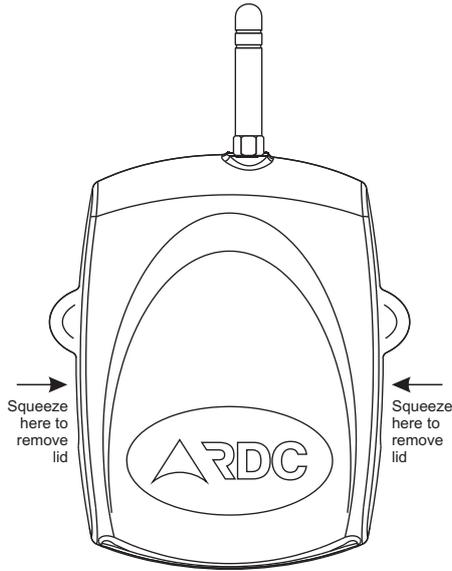


TX-SMS - Installation Instructions V4.3

24hr Standby
082 444 7176



Features Overview

- 4 Inputs report user definable SMS messages (2 x DC and 2 x optically isolated)
- Full Ademco Contact ID reporting to your cell phone
- 2 Relay outputs - SPDT relays
- 16 Independent daily timers for relay operations
- Missed call function for relay operation (20 users)
- Programme unit with PC software or by SMS
- Low voltage AC monitoring
- Power monitoring with warnings and restorals
- Battery backed time and date
- Dual SIM support

SIM cards

Standard GSM SIM cards from any network on prepaid or on contract can be used in the unit. Choose network/s which have the best coverage in your area. Look for the most cost effective SMS options when choosing SIM cards.

NOTE – Available airtime will decrease with every SMS sent. Make sure that sufficient airtime or SMS bundles are loaded. See your network’s documentation on how to purchase and load airtime.

The unit will operate with either 1 or 2 SIM cards. For single SIM operation place the SIM in the “Primary” location as indicated in the diagram . SIM cards are fitted into the SIM-LOCK holders on the PCB. The card slides into the top hinged cover. Close the cover and push forward to lock into place.

WARNING:
DO NOT insert or remove SIM cards while the unit is powered!

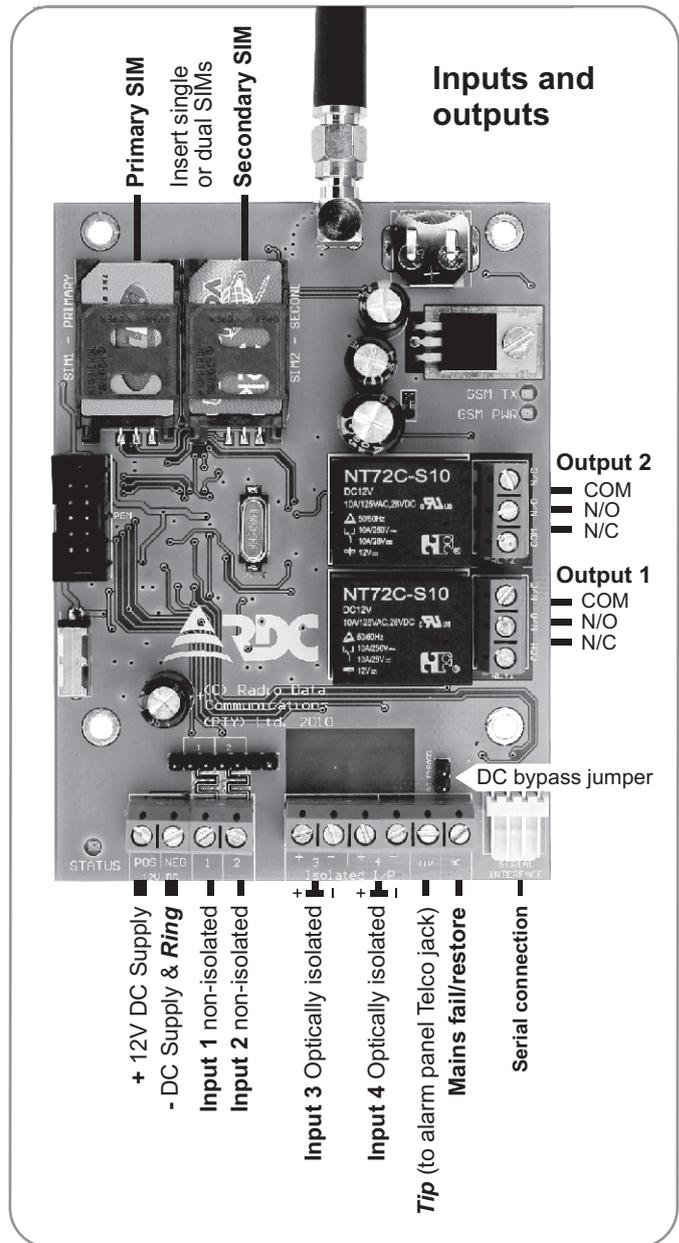
Please Note: If a prepaid SIM card has not produced a billable event for a long period of time (typically 3 months), the card will be de-activated (churned) by the network. It is strongly recommended that you configure the TX-SMS to send a self test SMS every day so that your SIM card remains active.

IMPORTANT - Before you install SIM cards

Install the SIM cards to be used into a normal cellular phone. Verify that there is no SIM PIN enabled (The phone must not ask for a PIN when switched on with this SIM card inside). If the phone does request a PIN, you need to enter the correct PIN so that the phone can start, and then disable the SIM card PIN. See your cell phone documentation on how this can be done. Verify that you are able to send an SMS message. The SIM card/s will now work with the TX- SMS.

LED Functionality

- Searching for GSM network
- Registered on GSM network - AC failure
- Registered on GSM network - AC present
- Configuration failure



Inputs

All inputs have programmable messages for both high and low going transitions. Should a message not be required for a particular level, it is simply deleted and therefore not sent.

A Low DC inputs (inputs 1 & 2)

The DC inputs (non-isolated) are for direct connection to alarm panels and any other low voltage equipment. The maximum input is voltage of 16V DC. Voltages below 2V DC are considered low and voltages above 10V are considered high.

B Optically isolated inputs (inputs 3 & 4)

These inputs are configurable and can support:

- Dry Contacts
- Open Collector – Pull to Ground (NPN)
- Open Collector – Pull to Supply (PNP)
- DC Voltage (5 – 18V DC)

Recommended for use when interfacing to equipment where dissimilar grounds are present (earth loop issues) or where harmful voltage spikes and surges may be conducted or induced into unit (e.g. electric fences).

Triggering the inputs - Each input has a (+) and (-) terminal.

Activate input with a positive level

- (-) connect to negative reference potential
- (+) connect to positive triggering signal

Activate input with a negative level

- (-) connect to positive reference potential
- (+) connect to negative triggering signal

The voltage range between the (+) and (-) terminals is designed for between 5 - 18V DC. If higher voltages are required a resistor can be placed in series with the triggering signal line:
18 – 25V = 560 Ohm (1/4W)
25 – 32V = 2200 Ohm (1/4W)

C AC input

A dedicated AC input monitors the low voltage AC line (16-18VAC). The input can be wired to one lead of the AC transformer's secondary winding which feeds the battery charger of an alarm panel. As this input is designed to connect to an AC source, a DC bypass jumper has been added when a DC voltage reflecting the AC status is used (see *diagram on previous page*).

SMS's reporting a change in AC status are not sent immediately. A 5 second delay prevents spurious SMS's being sent during a brownout.

Power Monitoring

The DC supply voltage is monitored and will report a low battery condition at 10.8V. A critical battery condition is reported if the voltage falls below 10V. A battery restoral is sent once the voltage rises above 12V.

D Contact ID

The TX-SMS can be wired directly to the telephone interface of an alarm panel. The *TIP* of the alarm panel is wired to the input labeled **TIP** on the unit and the *RING* of the alarm panel is wired to the **NEG** connector of the unit.

Contact ID telemetries as well as the partition and zone/user information are reported via SMS.

NOTE: the Contact ID account code is not sent as the unit identifies itself via the 'Unit Name' description.

IMPORTANT

In order for the Contact ID interface to function, the following settings on the alarm panel must be made:

Communications Format	- Ademco Contact ID
Dial Format	- Tone
Wait for Dial Tone	- No
Central Station Number (Primary)	- 1234

Relay Outputs

The TX-SMS has two SPDT relays. All the relay contacts are brought out to screw terminals. The relays can handle 8A DC (10 – 48V) and AC (110 – 400V) non-inductive loads. It is however not recommended that lethal AC is switched via the relays. RDC recommends that the relays switch DC to an external contactor as a safety precaution.

Relay actions may take place by direct commands being received via SMS, by the independent timers or by the missed call functionality.

Four basic relay operations

- Turn the relay on and stay on (on)
- Turn the relay off and stay off (off)
- Pulse the relay on for 3 seconds and turn off again (pls)
- Toggle the state of the relay. This command will change the state of the relay, i.e. If the relay is on it will be turned off OR if the relay is off then turn it on (tog)

NOTE: The last command received will always determine the final relay state. For example, if the relay is already on, and a pulse command is received, the relay will stay on for a further 3 seconds and then turn off. It will NOT turn off then on for 3 seconds.

Auto Test

The TX-SMS can be programmed to send a 'auto test' SMS to the reporting numbers once a day at a preset time. The auto test SMS is an important feature, not only to know that the unit is still functional, but also to prevent prepaid SIM card churn by the cellular network operator.

IMPORTANT

Due to the dual SIM feature, the TX-SMS should be commanded periodically to use the redundant prepaid SIM card so that it is not churned. See "Remote Configuration leaflet" on how to do this.

Antenna

A basic (stubby) antenna or an outdoor antenna can be used with the unit. Screw the antenna to the connector on top of the unit (only finger-tight). Verify that there is sufficient signal at the proposed installation site using a cell phone. On a phone with a 4 or 5-bar signal strength indicator, you should have at least 1-2 bars of signal. If the signal is too weak, the TX-SMS may have trouble sending or receiving SMS messages or may continually swap SIM's to find a better signal. In these cases, try and find a better location, or use a special antenna.

Vibration Tampering

The unit has a built in vibration sensor to send a tamper SMS when movement of the unit is detected. The sensitivity of the sensor can be adjusted using the PC application software or via configuration SMS. The sensitivity ranges from 1 - very sensitive to 255 - very insensitive.

Real Time Clock

The clock and calendar function has a built-in battery backup that will keep the date and time up to date in the event that there is no power. Time and date will be appended with every

SMS sent. The time and date cannot be set via the PC application software and can only be set using the following remote SMS command: \$pppp*syt

Reporting Numbers

The TX-SMS can have up to four reporting numbers programmed. Each reporting number will receive a broadcast SMS when the unit sends it. The unit can be configured so it will accept incoming SMS's from only reporting numbers. It can however also be configured so that it will accept SMS's from any source that has the correct command PIN code.

NOTE: Broadcast SMS's are sent as unsolicited messages from the TX-SMS in response to some event having taken place or occurred at the TX-SMS installation. Broadcast SMS's differ from acknowledgment SMS's, which occur as a result of a specific command being received and executed by the TX-SMS. Acknowledgment SMS's are sent only to the cell phone which originated the command and not necessarily the master users. If however, a master user sent the command then that master user will receive the acknowledgment SMS only.

Command PIN Protection

All SMS commands received must contain a valid four digit PIN code. This PIN code is chosen during the initial setup using the PC application software. It can be altered by remote command (SMS) provided the current PIN is known. If an invalid PIN is received, but the command structure is correct, each master user will be notified of an 'Illegal Access' attempt. This SMS will also contain the number of the cell phone which sent the command.

SMS commands

See remote configuration leaflet

IMPORTANT

Due to the dual SIM feature, the user sending a command to the unit may have to try both cell numbers associated with the TX-SMS if two SIM cards are used. This is because the unit may have switched SIM cards due to a problem encountered with the cellular network. For this reason it is important for users sending commands to have 'delivery reports' enabled on their cell phones so that they are able to see if the command has been received.

Operate Relays by Independent timers

The TX-SMS has sixteen independent timers that can be programmed to operate once per day at a given time. Each timer event will cause one of the four relay actions to be performed on one of the two relays and this will occur at the preset time everyday until cancelled or altered.

The timers can be configured either by the PC application software or by remote command (SMS). As an added feature each timer can be programmed to send a confirmation SMS to the four master users (broadcast SMS).

If for example a light needs to be turned on at 6pm (18h00) every evening and off at 6am (06h00) every morning, two timer events will be required. One timer event will be set to turn the relay on at 18h00 and the second timer event will be used to turn the relay off at 06h00.

Operate Relays by Missed Call

The TX-SMS can be programmed to respond to up to twenty

cell phone numbers. These cell phone numbers are not the same as master users. Master user numbers can however also be programmed as missed call numbers. Each missed call number can be associated with a relay and one of the four actions for that relay. This is very handy for access control and can be used for example to open an automated gate. Someone dialing the number of the TX-SMS at the gate will be able to open (and / or close) the gate without incurring any charge.

On receiving a voice call, the unit will wait until the number is presented by the network and then terminate the call. The termination of the call is acknowledgment that the TX-SMS has received the call, but not necessarily performed any action (as this number may not be in the missed call list of the unit).

As an option, the TX-SMS can be programmed to send an acknowledgment SMS to the calling number if the action has been performed. This however, incurs a charge for the SMS, which defeats the purpose of missed call functionality.

IMPORTANT

Due to the dual SIM feature, the caller placing the call to the TX-SMS for missed call functionality may have to try both cell numbers associated with the TX-SMS if two SIM cards are used.

Power requirements

The unit operates between 10-16V DC

Current: 60ma when idle with no inputs or relays active
200ma (average) when GSM active

Configuration Software

A PC application is supplied to configure the devices' input messages, primary and secondary SIM setup, missed call functionality, timer settings, message centre numbers etc.

A status screen shows GSM network status, signal strength, SIM card in use, input status, relay status, firmware version and battery voltage at a glance. This is useful during installation to ensure correct operation.

Most of the configuration options in the PC application software are self explanatory. Insert the supplied CD to automatically run the configuration software setup and install the drivers for the USB programmer interface.

IMPORTANT

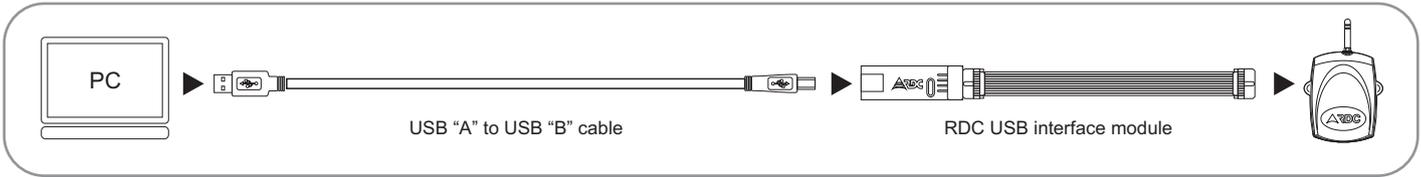
Possibly the most important configuration setting that needs to be completed in the PC application software is the 'Message Centre' numbers for the SIM card/s being used. If the message centre number is missing or incorrect, the TX-SMS can receive SMS's, but cannot reply. It is therefore vitally important to navigate to the 'Primary SIM' and 'Secondary SIM' tabs in the PC application software and select the correct message centre number for each of the two SIM cards being used.

If the cellular network is not listed in the pre-select buttons, the message centre number can be manually added in the provided box.

NB - All numbers including the Message Centre Numbers must be in International format i.e. +27....

NOTE: Once changes to the configuration settings have been made in the PC application software, they must be written back to the TX-SMS to make them permanent.

USB Programmer Interface



A USB interface module (available from RDC) and a USB "A" to USB "B" cable (available from computer shops) are required to connect the PC to the unit for configuration. The interface is plugged into the PC's PGM connector. The interface requires the installation of Windows drivers before the PC application software can be run. The drivers are installed during the main PC application installation from the supplied CD.

NOTE: The software and driver installation should be done BEFORE the USB interface module is attached to your PC.

USB driver installation

When the interface has been connected, the Found New Hardware Wizard window will appear. Select the "Recommended setting" and click <Next>.

When the Found New Hardware Wizard has located the drivers, the following screen will appear



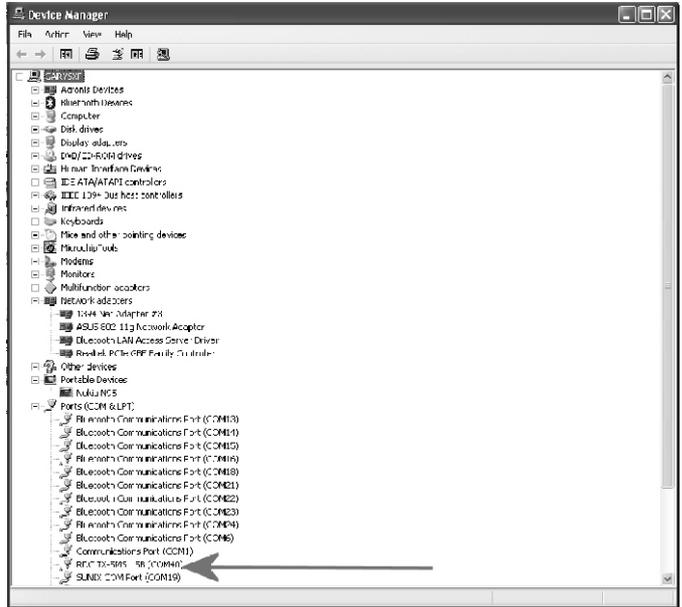
Click <Continue Anyway>
Click <Finish> to complete the installation.

The next two steps are important to see what COM port number has been allocated to the RDC TX-SMS interface.

Select 'My Computer' and then 'View System Information', the following panel should be displayed - Click on the 'Hardware' Tab and select <Device Manager>



The following Information will be displayed



Expand the Ports (COM&LPT) information and look for the RDC TX-SMS USB COM port allocation. In the example shown it has been allocated to COM40. Make a note of which COM port it has been allocated to in your system and use this COM port number when requested by the PC application software.

NOTE: This procedure only needs to be done once during installation and the allocated COM port number will remain the same, unless there is a hardware change on the computer. The PC application software will save and remember the selected COM port chosen.

WARNING

Read these instructions fully before operating and installing the unit.

DO NOT insert or remove SIM cards while the unit is powered.

Please note that dual SIM cards are recommended for redundancy where the device is used for security monitoring. The manufacturer has no control over the reliability of the cellular networks and can therefore not be held responsible for any signal problems associated with the network services.

Make sure that sufficient airtime or SMS bundles are loaded at all times. See your network's documentation on how to purchase and load airtime.

If a prepaid SIM card has not produced a billable event for a long period of time (typically 3 months), the card will be de-activated (churned) by the network. It is strongly recommended that you configure the TX-SMS to send a self test SMS every day so that your SIM card remains active.

Due to the dual SIM feature, the TX-SMS should be commanded periodically to use the redundant prepaid SIM card so that it is also not churned.

Due to the dual SIM feature, the user sending a command to the unit may have to try both cell numbers associated with the TX-SMS if two SIM cards are used.

Disclaimer

"RDC records that it merely supplies the products to the customer and that the customer has the sole responsibility to install the products and/or to incorporate the products in security systems. RDC does not take any responsibility for the installation of the products or for ensuring that any installation complies with SAIDSA Specification for Intruder Alarm Systems for Domestic, Commercial, Retail and Industrial Installations.

The customer shall also have no claims against RDC, its

directors, employees and agents of whatsoever nature, in any amount whatsoever, arising from any failure in or malfunction of a security system containing the products, or from the use of the products.

The customer indemnifies and holds harmless RDC and its directors, employees and agents of whatsoever nature in respect of any and all loss, damage, costs, expenses or claims which have been incurred by or brought against them by any third party (whether for the death or injury of any person or loss of or damage to any property, including any pure economic loss) arising from any failure of or malfunction of a security

system containing the products installed by or on behalf of the customer, or from the use of the products in any such system."

Please visit www.radiodata.co.za for warnings and terms and conditions.

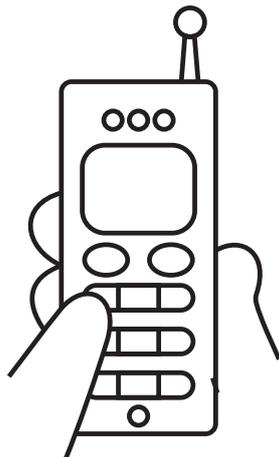
Copyright © 2011

Radio Data Communications (PTY) Ltd.

TX-SMS - Remote Command Guide

Firmware version 4.3

24hr Standby
082 444 7176



Remote configuration

The TX-SMS can be configured using SMS commands. It is recommended that the PC application software be used for the initial configuration of the unit. SMS commands can then be used to make configuration changes when the unit has been installed in the field. This is particularly useful for installations in far off or inaccessible locations.

IMPORTANT - Firmware version

Please note that the SMS commands listed in this document are for TX-SMS units with version 4.2 firmware or later. It is possible that the commands will not work on units with previous or later versions of firmware. If the unit has version 4.2 firmware, it will be indicated on the sticker on the base of the unit. The firmware version can also be requested by SMS command. *\$12134*ver*

IMPORTANT - Delivery reporting

Due to the dual SIM feature, the user sending a command to the TX-SMS may have to try both cell numbers associated with the unit if two SIM cards are used. This is because the TX-SMS may have switched SIM cards due to a problem encountered with a cellular network. For this reason it is important for users sending commands to have 'delivery reports' enabled on their cell phones so that they are able to see if the command has been received.

SMS sender verify

The unit can be configured to only accept commands and requests from a cell phone that is listed in the Reporting Numbers list. This will not affect the missed call operation.

SMS command rules

- All commands must start with a \$.
- A command pin (4 numeric digits) must follow the \$. The pin allows the user access to send commands to the unit. The command pin is not the same as the SIM pin which must be disabled. The factory default pin is 1234 which has also been used in the command examples.
- A * character separates the fields within the command string.
- All cell numbers must be entered into commands using the international format beginning with a +.

Commands

Set unit time to network time - *\$1234*syt*
Use this command to synchronize the unit time and date during initial setup. No delivery report is sent for this command.

Unit status request - *\$1234*sts*
Returns the following information by SMS: Which SIM is currently in operation, inputs status, relays status, battery voltage, AC status, time and date.

Request firmware version - *\$1234*ver*

Add reporting number - *\$1234*usrz*cellnumber*add*
(cell phone number for reporting)
Up to 4 reporting numbers are supported
examples
Add cellphone number 0831234567 as reporting number 3
*\$1234*usr3*+27831234567*add*
Add cellphone number 0829876543 as reporting number 1
*\$1234*usr1*+27829876543*add*

Note: Existing cell numbers are overwritten so it is not necessary to delete them first.

Delete reporting number - *\$1234*usrz*del*
example
Delete user 3 - *\$1234*usr3*del*

Warning: Deleting all reporting numbers with the sender verify option enabled will result in control over the unit being lost.

Sender verify - *\$1234*vfy*on/off*
vfy - Switch sender verify option on or off.
On- unit only accepts commands from any of the 4 reporting numbers.
Off- unit accept commands from any number.
example
Set sender verify on - *\$1234*vfy*on*

Change reporting name (Unit ID) - *\$1234*uid*name*add*
Set name of the unit 16 characters or less
example
Change reporting name to "Pump Station 2"
*\$1234*uid*Pump Station 2*add*

Change command pin - *\$1234*pin*new pin*
The command pin must be 4 digits long and must be numeric (no letters allowed)
example
Change the command pin from 1234 to 6789 - *\$1234*pin*6789*

Warning: This command can cause loss of control of the unit if the new command pin is not remembered.

Auto test time - *\$1234*aut*set-HHMM*dowd*add/del*
Change or delete auto test time.

dowd - Specify days of the week for test auto signals d= 1-7. 1= Monday, 2= Tuesday, 7= Sunday etc. See example for selecting multiple days. If *dow* is not specified, test signals are sent every day.

examples
Set the auto test for 13H20 on Wednesday and Sunday
*\$1234*aut*set-1320*dow37*add*
Cancel auto test - *\$1234*aut*del*

Change vibration sensor sensitivity - *\$1234*vib*n*
 0 = least sensitive 250 = most sensitive
example
 Set the vibration sensitivity to 50
*\$1234*vib*50*

Message centre number - *\$1234*mctn* msg center number max 15 digits*add/del*

mctn - Sets or changes message centre number
 n= primary SIM 1 or secondary SIM 2.
example
 Set SIM1 message centre number to +279119 - *\$1234*mct1*+279119*ad*
 Set SIM2 message center number to +271234 - *\$1234*mct2*+271234*add*

Swap SIM cards - *\$1234*sim*sss*
sss - pri = primary SIM
 sec = secondary SIM
examples
 Switch to secondary SIM - *\$1234*sim*sec*
 Switch to primary SIM - *\$1234*sim*pri*

Change input event SMS messages - *\$1234*msg*input*message*add/del*
 A definable 16 character SMS message is associated with each of the 4 inputs. This message is sent to the reporting number/s when the input on the unit changes state.
input - ip1h = input #1 high state
 ip2l = input #2 low state
examples
 Assign message Alarm Active to input 2 high - *\$1234*msg*ip2h*Alarm Active*add*
 Delete message assigned to input 2 low
*\$1234*msg*ip2l*del*

Note: If a message is deleted, nothing is sent when the input changes state.

Operate relays - *\$1234*rlyn*opr*
examples
 Pulse relay 2 - *\$1234*rly2*pls*
 Turn relay 1 on - *\$1234*rly1*on*
 Turn relay 1 off - *\$1234*rly1*off*
 Toggle relay 2 - *\$1234*rly2*tog*

Note: A confirmation SMS is automatically sent back to confirm that the operation was successfully. If no confirmation is received, check that the unit has not swapped to the alternate SIM card.

Missed call relay operation - *\$1234*mclm*cell number*rlyn-opr*cfm*lm-n*st-HHMM*en-HHMM*dw-d**
 There are 500 missed call locations. Each missed call can perform 1 of 4 operations on 1 of the 2 onboard relays. Special time access rules allow the number of missed calls accepted from a particular cell number to be limited and to further limited access to certain hours on certain days of the week.
mclm - Create, edit or delete up to 500 missed call entries. mcl= missed call command
 m= missed call location number (1-500)
opr - 1 of 4 operations - pls= pulse, on= turn on
 off= turn off and tog= toggle.
cfm - If *cfm* is present a confirmation SMS is sent.
lm-n - The access lifespan limits the number of missed calls before deleting the entry.
 n= 0-255 missed calls. If *lm* not present or if the value is 0, there is no limit to the number of missed calls accepted. If *cfm* is present, the delivery report will include the remaining number of missed calls allowed.
st/en - The operational time window sets an access start and end time (HHMM)
 It defines the hours that the caller will be able to use the missed call feature. If no parameters are present, there is no limit.
dw-d - Select certain days of the week d=1-7
 1= Monday, 2= Tuesday, 7= Sunday etc.

examples
 Add missed caller 35 to turn on relay 1
*\$1234*mcl35*+27825551234*rly1-on*
 Add missed caller 200 to have access from 06h30 to 07h00 from Monday to Friday, with a 25 count lifespan. Relay 2 must be pulsed and have confirmation SMS enabled.
*\$1234*mcl200*+27825551234*rly2-pls*cfm*lm-25*st-0630*en-1700*dw-12345*

Delete missed call operation - *\$1234*mclm*del*
example
 Delete missed call location 90
*\$1234*mcl90*del*

Query missed call location - *\$1234*mclm*???*
example
 Query missed call location 20 -
*\$1234*mcl20*???*

Set timer relay operation - *\$1234*tmry*rlyn-opr*tm-HHMM*dw-d*id-timer label 16 characters max**

tmry - Sets 16 independent timers to operate once a day until deleted. y= timer number
rlyn - Relay number n= 1 or 2
opr - 1 of 4 operations - pls= pulse, on= turn on
 off= turn off and tog= toggle.
tm - Set time in 24 hour format (HHMM)
dw-d - Select certain days of the week d=1-7
 1= Monday, 2= Tuesday, 7= Sunday etc.
id - Defines a timer label (16 character max)
examples
 Set timer 4 to turn relay 1 off at 12h00 each day - *\$1234*tmr4*rly1*1200*off*
 Set timer 10 to turn relay 2 off at 23h00 on Saturday with label 'Geyser'
*\$1234*tmr10*rly2-off*tm-2300*dw-6*id-Geyser*

Set timer 9 to turn relay 1 on at 06h30 on Monday, Tuesday and Friday with label 'Pool Pump' - *\$1234*tmr9*rly1-on*tm-0630*dw-125*id-Pool Pump*

A timer confirmation SMS can be sent to 1 of the 4 reporting numbers. It is either on or off for all timer events. The setting can only be done via the PC configuration software.

Delete a timer - *\$1234*tmrn*del*
example
 Delete timer 16 - *\$pppp*tmr16*del*

GSM signal (quality of signal) - *\$12134*rsi*
 Signal strength ranges from -113dBm (very weak) to -51dBm (very strong).
 -70 to -80dBm is considered normal.

Request prepaid balance - *\$1234*bal*
 Query monetary value on active SIM.

USSD SESSIONS

USSD network commands can be complex and extreme care should be used. Incomplete commands will leave the channel active for some time, will cause the unit to seem unresponsive and will incur per minute network USSD session charges. To initiate a USSD session and forward any replies via SMS to the requesting number, use the following commands:

Request balance - *\$1234*usd*USSD request#*
 Vodacom - *\$1234*usd**100#* (prepaid balance)
 - *\$1234*usd**111*1*2#* (SMS bundle)
 MTN - *\$1234*usd**141#* (airtime & SMS bundle)
 Cell C - *\$1234*usd**101#* (airtime only)

Note: An error message will show for contract SIMs or if the network does not support airtime balance features.

Load prepaid voucher - *\$1234*usd*USSD request#*
 Vodacom voucher
*\$1234*usd**100*01*voucher number#*
 MTN voucher
*\$1234*usd**141*voucher number#*
 Cell C voucher
*\$1234*usd**102*voucher number#*