

# SMS-Pack - Installation Instructions V4.3

24hr Standby  
082 444 7176

## SMS-Pack components

- TX-SMS
- Independent power supply
- Transformer
- Short range receiver (optional)
- Key fob remote (optional)
- Battery (12V 2.2 or 7AH)
- Whip antenna
- Additional hand held key fob remotes may be ordered
- **Multi channel receiver** - A 4-channel receiver allows it to learn 4 different key fob remotes or a multi-button key fob remote and switch its outputs to identify which of the 4 remotes or buttons has been received. This means that the remote or button that caused the activation can be identified. The multi channel receiver option should be ordered separately.

**Please refer to the separate short range receiver programming instructions.**

**Note:** Should you require a custom SMS messages to be sent from the 4 different key fobs or buttons, these messages can be programmed into the unit using the configuration software.

## 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!

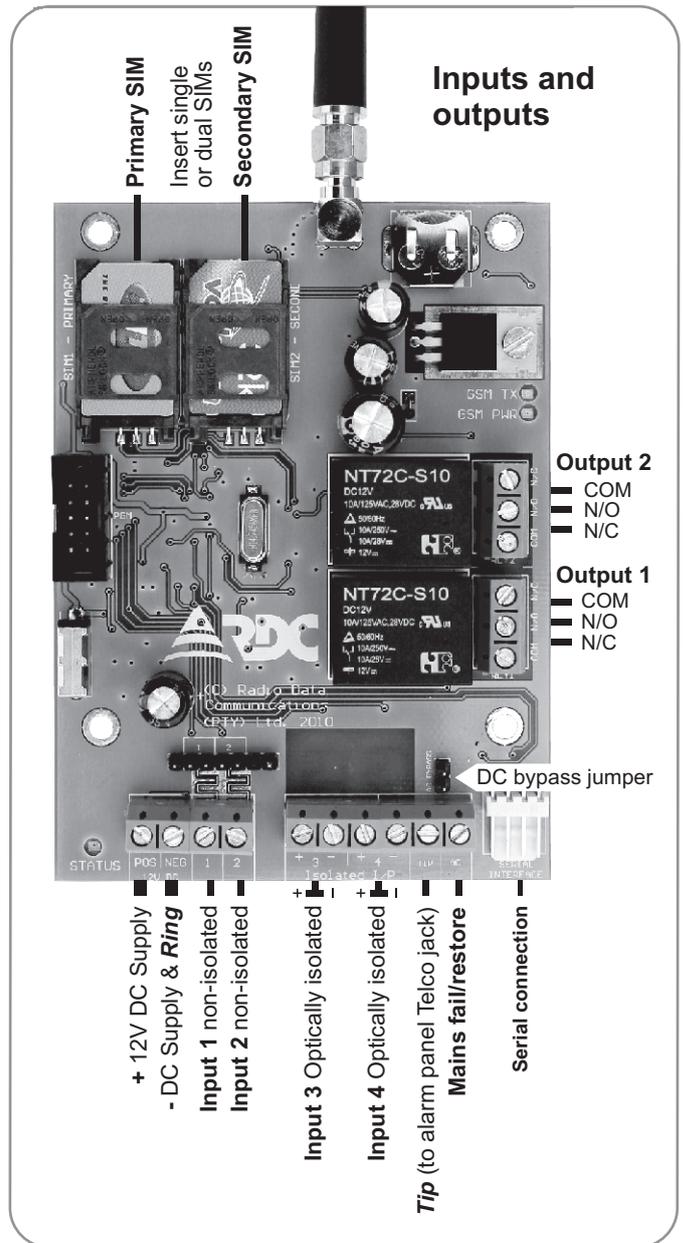
**Please Note:** If a prepaid SIM card has not produced a billable event for a long period of time (typically 3 months), the card will be de-activated (churned) by the network. It is strongly recommended that you configure the TX-SMS to send a self test SMS every day so that your SIM card remains active.

**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.

## TX-SMS 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



## 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:

<b>Communications Format</b>	- Ademco Contact ID
<b>Dial Format</b>	- Tone
<b>Wait for Dial Tone</b>	- No
<b>Central Station Number (Primary)</b>	- 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 master user 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 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

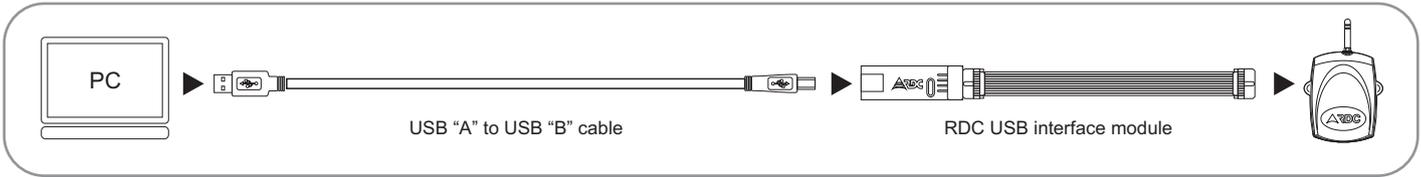
Possibly the most important configuration setting that needs to be completed in the PC application software is the 'Message Centre' numbers for the SIM card/s being used. If the message centre number is missing or incorrect, the TX-SMS can receive SMS's, but cannot reply. It is therefore vitally important 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 unit'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



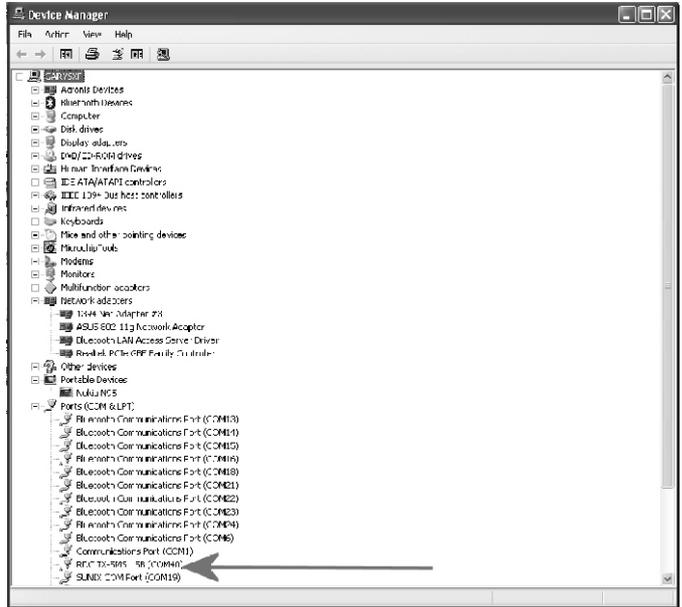
Click <Continue Anyway>  
Click <Finish> to complete the installation.

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 need to be done once during install 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.

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# SMS-Pack - Short range receiver programming instructions

24hr Standby  
082 444 7176

www.radiodata.co.za

**NOTE:** This receiver will only function with remote key-fob transmitters using the TRINARY format operating on 433.92 MHz. Check with your supplier if necessary.

This receiver is capable of operating with up to 4 remote key-fobs or a multi-button key-fob. Each key-fob can have its own unique code combination and when a recognized code combination is received, the output corresponding to the code received will be activated.

This allows the receiver to be used in situations where it is necessary not only to react to an incoming key-fob signal, but also to identify which key-fob, group of key-fobs, or which button on a multi-button key-fob caused the activation.

It is important that before proceeding with the receiver programming, the unique code combination for each key-fob should be set in the remote key-fobs. If a group of key-fobs are required to trigger the same output on a receiver then it is important that each of those key-fobs in the group should have the same unique code combination. Under these circumstances it will not be possible to identify the exact key-fob that caused the activation, only the group to which the key-fob belongs can be identified.

## On the receiver perform the following steps:

The steps necessary to program each of the 4 outputs are essentially the same. The jumpers installed in the positions LK1, LK2 and LK3 determine which output is being programmed. See Table below.

1. Apply power to the receiver, if receiver is installed in a RDC SMS-PACK or similar; ensure that the entire unit is powered up.
2. Ensure that the correct jumper configuration has been selected on LK1, LK2 and LK3. This jumper configuration selects the output that is to be programmed. See table.
3. Install the supplied link across the LEARN pins.
4. Observe the LED on the receiver flashing at a steady rate.
5. Press and hold the button on the remote key-fob that is required to trigger the selected output. Keep the button depressed for approx. 3 seconds.
6. On releasing the button, the LED on the receiver should be permanently on. If not repeat step 5 again.
7. Remove the jumper across the LEARN link.
8. If more outputs are to be programmed using key-fobs that have code combinations that differ from those already programmed into the receiver, then repeat steps (2) to (7) until all the desired outputs have been programmed.
9. The receiver has now been taught to recognize the remote key-fob/s and is ready for use.

Output	LK1	LK2	LK3
1	IN	OUT	OUT
2	OUT	IN	OUT
3	IN	IN	OUT
4	OUT	OUT	IN

## To verify correct operation:

Press the button on any of the remote key-fobs and observe the LED on the receiver turning on in response to the correct code being received. The LED on the receiver should remain on for about 3 seconds after the button is released. The LED will respond to any key-fob it recognises irrespective of the output which is activated.

To code additional remote key-fobs to the receiver, simply duplicate the SIL switch settings of the master key-fob, in the extra remote transmitters.

To re-code the receiver for new remote key-fob code combinations, repeat steps (1) through (8) above. Old remote key-fob codes are replaced by new key-fob codes during the LEARN process.



## SMS-Pack charger

The **SMS-Pack Charger** has a low battery disconnect feature to protect the battery from deep discharge. When the battery voltage falls below 10.5 V with the AC supply not being present the SMS-Pack will turn off. When the AC is restored, the charger will reconnect the battery automatically.

**NOTE:** For installation and test purposes a 'bootstrap' link is provided on the charger board to reconnect the battery without an AC supply being present. Momentarily shorting the link pins on the charger board will turn the SMS-Pack on. The link must not be left across these jumpers permanently as this will defeat the battery protection circuitry.



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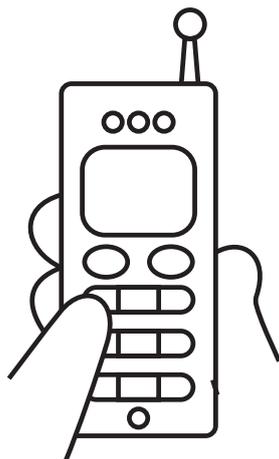
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# TX-SMS - Remote Command Guide

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 'Geysler'  
*\$1234\*tmr10\*rly2-off\*tm-2300\*dw-6\*id-Geysler*

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#*