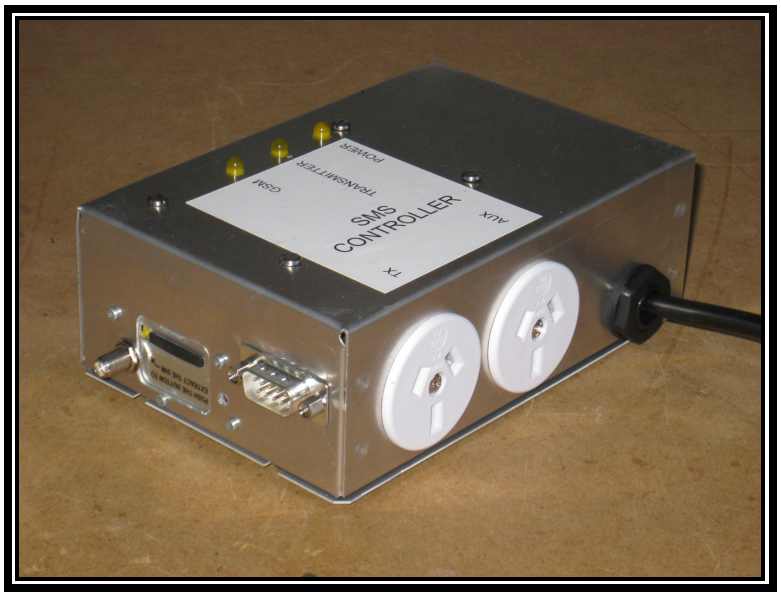
SMS control unit for SRK transmitters

Ver 1.00	13 February 2014	Initial release
Ver 1.01	14 February 2014	Updated POWER and GAIN syntax
Ver 1.02	13 April 2014	Added photo Added TX ON, TX OFF, AUX ON an AUX OFF commands
Ver 1.03	18 October 2014	Corrected grammar errors



1. General

The SMS interface unit allows SRK transmitters to be monitored and controlled via the mobile phone network using SMS messages. All major parameters may be monitored on either an automatic or manual basis and output power and FM deviation can be set via SMS. An alarm can be sent if any of a number of transmission failures occur.

In addition, the SMS interface has two mains outlets that allow the transmitter or auxiliary equipment (such as a satellite receiver) to be reset by turning off the mains power momentarily under SMS control, or turned on/off in the conventional way.

The SMS interface requires a user supplied SIM card with sufficient network credits to allow messages to be sent from the interface.

The SMS interface is a self contained, stand alone unit that may be retrofitted to existing installations with the minimum of effort and cost.

2. Physical

The SMS interface is housed in an aluminium box measuring 6” x 4” x 2”.

The right hand side has the mobile network antenna (an SMA socket), a SIM card socket, and a DB9 plug for connection to the serial port of the transmitter.

The front side has two 10A mains sockets, one labelled “TX” and one labelled “AUX” and the mains input (via a permanently attached 1.2m mains lead). These are the power outlets mentioned above.

The top has three indicator lamps. The lamp labelled “POWER” lights when the controller unit is powered up. The lamp labelled “GSM” lights when mobile network communication has been established, and flashes at a rate equal to the number of bars of reception. For this to occur, a valid SIM card must be inserted and there must be sufficient network signal strength. The lamp labelled “TX” lights when serial communication with the transmitter is established. For correct operation, all lamps should be lit.

3. Installation

The SMS controller must be connect to the mains supply to operate.

The transmitter and/or other equipment may be powered via the SMS controller to allow them to be hard reset under SMS control, though this is not always necessary.

A suitable mobile network antenna should be connected to the SMA connector. If the SMS interface is housed in a larger metal box then the antenna should be located outside the larger box to ensure adequate network signal strength.

The DB9 interface cable (supplied) should be used to connect the SMS interface to the transmitter. Note that one end of this cable is male and the other is female, so the user should ensure that the appropriate end is used for each piece of equipment.

A functioning SIM card should be inserted into the SIM card socket and the user should ensure that the card has sufficient network credits to allow SMS messages to be sent by the SMS interface.

4. Operation

If all is well then all three lamps should light.

Commands can now be sent to control the transmitter.

5. SMS command format

All commands are upper case, except the password which can be either upper or lower case.

All commands are preceded by the password, indicated in the command list that follows as <password>. This can be any length up to 15 characters and contain the characters A-Z, a-z, 0-9.

The default password is “Admin99”.

If the command has an incorrect or missing password, no response will be sent by the SMS controller.

All responses to the commands are sent back via SMS from the transmitter to the number the command came from. Obviously, it is the user’s responsibility to ensure the SIM card fitted at the transmitter site has sufficient credit to allow the responses to be sent.

In the list below, the underscore (_) actually indicates a space and <password> is the actual password.

<password>PASSWORD=<new password>
This command changes the password to <new password>. After this command has been sent all subsequent commands must be preceded by the new password. If this command is executed successfully then the transmitter will respond by sending an SMS containing the word “OK” back to the number that sent the command. If not successful then no response will be sent. The password can be disabled by sending the command “<password>PASSWORD=”, though this is not recommended.

<password>RESET_TX
This command resets the transmitter by switching it off for 5 seconds, then back on again. If this command is executed successfully then the transmitter will respond by sending an SMS containing the word “OK” back to the number that sent the command. If not successful then no response will be sent. This command has no effect if the transmitter is currently turned off (by use of the TX_OFF command).

<password>RESET_AUX
This command resets the satellite receiver (or whatever else is connected to the AUX outlet) by switching it off for 5 seconds, then back on again. If this command is executed successfully then the transmitter will respond by sending an SMS containing the word “OK” back to the number that sent the command. If not

successful then no response will be sent. This command has no effect if the auxiliary output is currently turned off (by use of the AUX_OFF command).

<password>AUX_ON, AUX_OFF, TX_ON, TX_OFF
These commands turn on or off the respective mains outlet.

<password>?
This command causes the transmitter to send back the values of all its main parameters in the form:

FORWARD=xxW
REFLECTED=xxW
DEVIATION=xxKHZ
GAIN=xxx%
TEMP=xxC
AUTO=xxx DAY(S)
BARS=x
ALARM=xxx
BITE=xxxxx
FIRMWARE=x.xx

The values in xx will depend on the actual operating parameters of the transmitter being interrogated. If the transmitter is not responding to serial commands due to a fault (or if turned off) then the response will read “TX_ERROR”. Whichever response is sent it will go to the number that initiated the “?” command.

The number after AUTO is the number of days between an automatic status SMS. See the description below of the AUTO= command for more information

BARS is the number of bars of signal strength, 0, 1, 2, 3 or 4. This is also the number of flashes that the GSM lamp will show.

ALARM can either be ON or OFF. For more information about the ALARM function see below.

BITE is Built In Test Equipment and a 1 in any of the x fields indicates a problem with the transmitter. This is the response of the transmitter “ST?” command so further information can be found in the remote control section of the transmitter connected to the controller.

<password>POWER=xx.x
This command sets the forward RF power to whatever is held in xx, for example “POWER=10.0” will set the power to 10.0W. If this command is executed successfully then the transmitter will respond by sending an SMS containing the

word “OK” back to the number that sent the command. If not successful, but the password is correct, then an error response will be sent. Note that the format and range of values that are valid for xx.x will be different depending on the power rating of the transmitter and must conform to the same rules as the “FP=” command of the serial link. Refer to the transmitter specific manual for more details. If the value or format is incorrect then the transmitter will respond with an error via SMS.

<password>GAIN=xx
This command sets the audio gain (and hence deviation) to whatever is held in xx, for example “GAIN=58%” will set the audio gain to 58%. If this command is executed successfully then the transmitter will respond by sending an SMS containing the word “OK” back to the number that sent the command. If not successful then no response will be sent. Note that the format and range of values that are valid for xx must conform to the same rules as the “AG=” command of the serial link. Refer to the transmitter specific manual for more details. If the value or format is incorrect then the transmitter will respond with “COMMAND_ERROR” via SMS.

<password>AUTO=xxx
This command causes the transmitter to send a summary of all parameters automatically every xxx days. The format of the report is the same as the response to the “?” command (see above). Xxx can be any value from 1 to 255. For example “AUTO=30” would make the transmitter send out an SMS about once a month giving its status. The status SMS is sent to the number that originally sent the AUTO command. This number is stored in non-volatile memory, so is remembered even if the SMS controller is turned off.

To turn off the auto-reporting simply send <password>AUTO=0. This sets the auto days to zero and disables the auto reporting function.

<password>ALARM=ON
<password>ALARM=OFF
These commands turn on or off the alarm function. When the alarm function is turned on a status SMS will be sent to the number that sent the ALARM command if:

- The RF power falls to zero, or
- The deviation falls to less than 10KHz (loss of audio), or
- Communication is lost with the transmitter, or
- The transmitter has an over SWR alarm, or
- The transmitter has an RF alarm, or
- The transmitter has an over temperature alarm, or
- The transmitter has a PLL failure, or
- The stereo generator in the transmitter fails (if fitted).

The cause of the alarm must continue for more than 30 seconds for an SMS to be sent. Only one SMS per alarm occurrence will be sent.

The alarm number is stored in non-volatile memory, so is remembered even if the SMS controller is turned off.

The ALARM number and AUTO number need not be the same.

6. Troubleshooting

Problem	Cause	Solution
"POWER" lamp does not light. TX and AUX sockets have no power.	No mains voltage.	Check mains voltage.
"POWER" lamp does not light but TX and AUX sockets have power.	Internal fault.	Return to manufacturer.
GSM lamp does not light.	No SIM card.	Insert SIM card.
GSM lamp does not light.	Broken SIM card.	Check SIM card in mobile handset.
GSM lamp does not light.	No antenna connected.	Check antenna and connection.
GSM lamp does not light.	Insufficient signal.	Check signal strength using SIM card in mobile handset.
TX lamp does not light.	Transmitter is not on.	Check that transmitter is turned on.
TX lamp does not light.	Transmitter is not connected to interface unit.	Check cable between transmitter and interface unit.
TX lamp does not light.	Transmitter is faulty.	Check serial operation using PC and Hyperterminal as per transmitter manual.
All lamps light but no response to SMS command.	Using wrong SIM card number.	Check that the number is correct.
All lamps light but no response to SMS command.	Insufficient SIM card credit.	Check credit. Try SIM card in mobile handset for correct operation.
All lamps light but no response to SMS command.	Incorrect password.	Contact manufacturer to have password reset.
All lamps light but no response to SMS command.	Incorrect command syntax.	Check command syntax.