Controller Com
Installation Guide

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Controller Com Installation Guide

1. Controller Com Setup

Setting Controller Com Parameters

The controller should be installed and set up as normal before the Controller Com is added. To do this refer to Palmer Environmental's "Controller Installation Guides".

To add the Controller Com to your existing controller installation you must have a copy of RM301 Readermate software version V3.00i (or later) and GSM Modem Handler software V3.00i (or later).

Site Connection

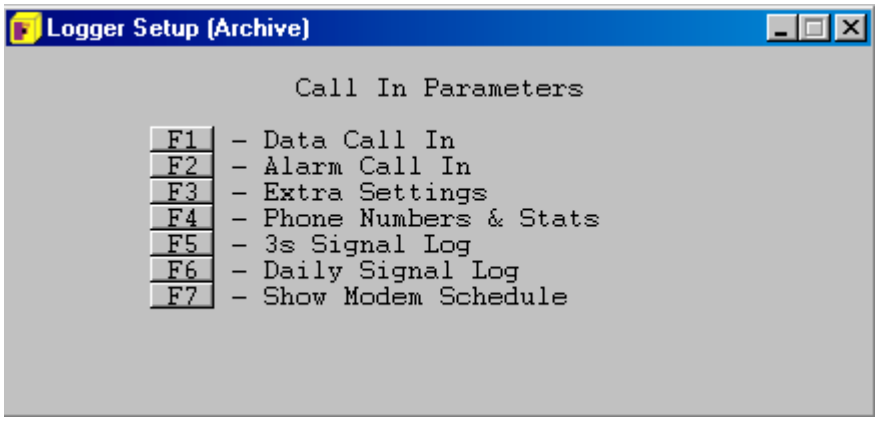
Ensure the Controller Com 10-way connector lead is connected to the cx 10-way port on the top of the controller (and external GSM battery pack if required). Connect the aerial to the Controller Com if not already done so. Check the connectors are clean dry and free from dirt.

Connect IR probe from PC to controller.

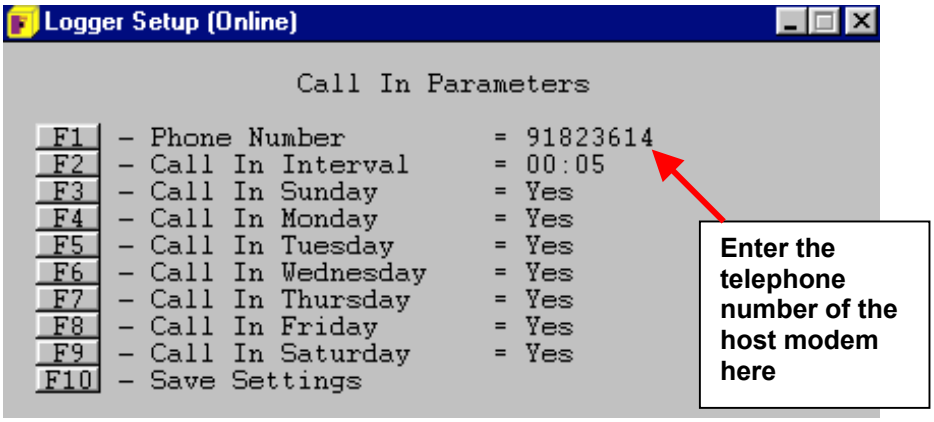
Select F8- Set Communication from the main menu of RM301, then select F4- Set to Wessex Loggermate Modem, then select F7- Controller Com. Press Esc to return to main menu.

Select option F1- Setup Logger from the main menu of RM301 software. All standard controller setup data will already be present here, if not refer to Palmer Environmental's "Controller Installation Guides".

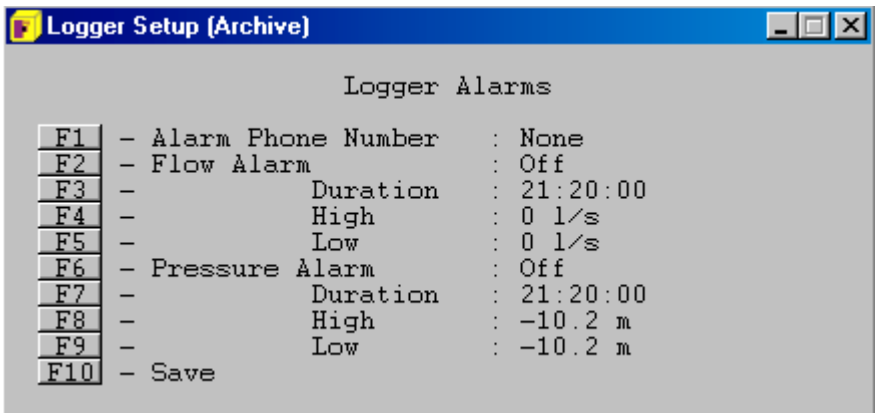
Select F9- Dial Back**.** This option allows the GSM SMS data dial back functions and alarms to be configured.



F1 Data Call In – This option allows configuration of the host modem telephone number, how often the data is transmitted back to the host and which day's data is required to be transmitted back to the host.



F2 Alarm Call In – The reading exceeding a high user defined set point or going below a minimum level triggers the alarms.



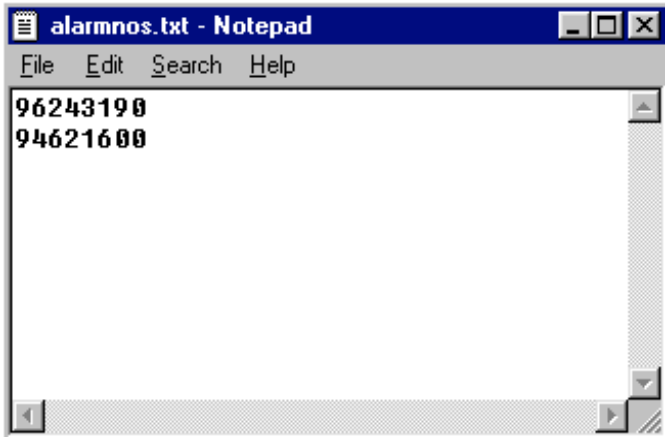
Select F2 or F6 (depending on the logging channel) to turn on or off the alarm. Select F1 to enter the telephone number of the host computer modem to which the alarms are to be sent.

The alarm set points are defined by stating High and Low recording point and the time duration which recorded data must exceed these points to force an alarm to occur.

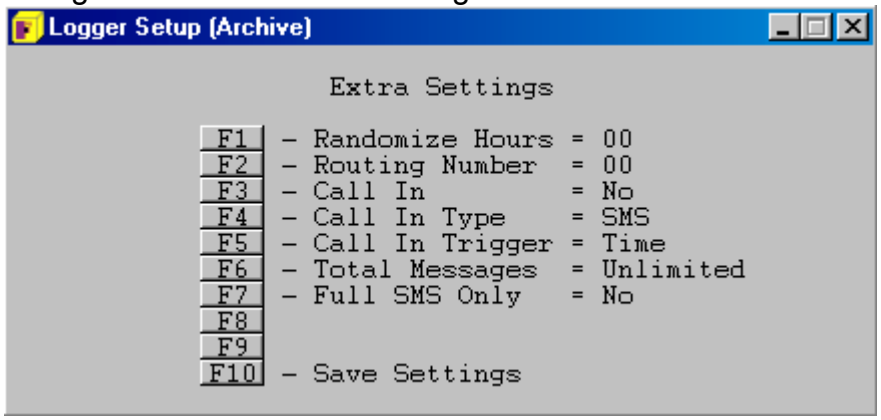
The system can also send alarms to mobile phones to indicate to an operator that the alarm of a specific controller has been received. There is no limit to the amount of mobile phones that the alarm message can be sent.

To enter the phone numbers required for the alarm message to be sent, follow the following procedure.

Enter “Windows Explore” and open the “C:\Logrmate” directory. Identify the file called “alarmnos.txt” enter here all mobile phone numbers to receive the alarm. This file can be modified using windows notepad. Remember to save the file.



F3 Extra Settings – Allows additional settings required to fully configure the GSM SMS message functions within the controller.



F1 Randomise Hours – Allows the time at which the controller sends back the data to be randomly spread over a period of time. This is used when a large number of controllers are sending data to a single host modem to stop the GSM network becoming overloaded with messages.

F2 Routing Numbers – Allows data from a specific set of controllers to be routed to a particular location.

F3 Call In – Activates the GSM function in the Controller Com. Setting to off on installation allows the logger to be set up.

F4 Call In Type – This should always be set to SMS.

F5 Call In Trigger – Can be interval or time. If the trigger is set to time the controller will send data at a specific time set in the data call in window (as shown previous). If the trigger is set to interval the controllers will send data at an interval set in the data call in screen. For example if the trigger is set to time and data call in set to 01:00 the controller will send data at 1am. If the trigger were set to interval the data would be sent every hour.

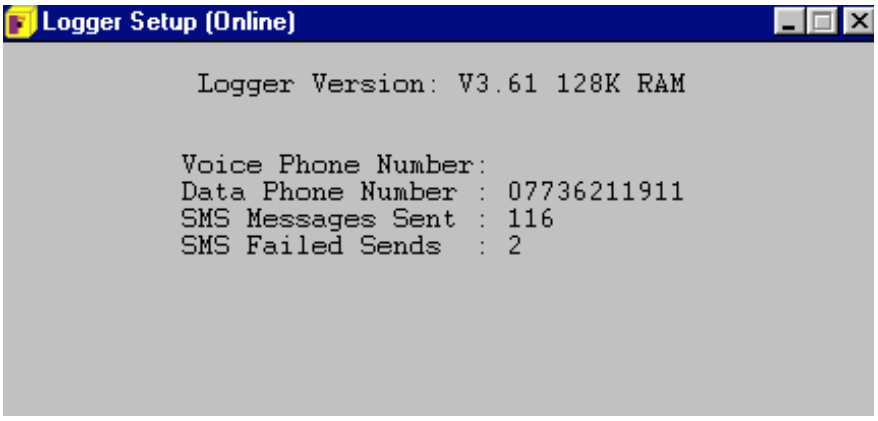
F6 Total Messages – When the trigger is set to interval the number of messages sent by the controller can be limited. This is used when the controller is used on a temporary basis for a specific application. If the trigger is time, total messages will be unlimited.

F7 SMS Messages - Each message has a limit on the amount of data it can contain (16 hours at 15-minute logging intervals).

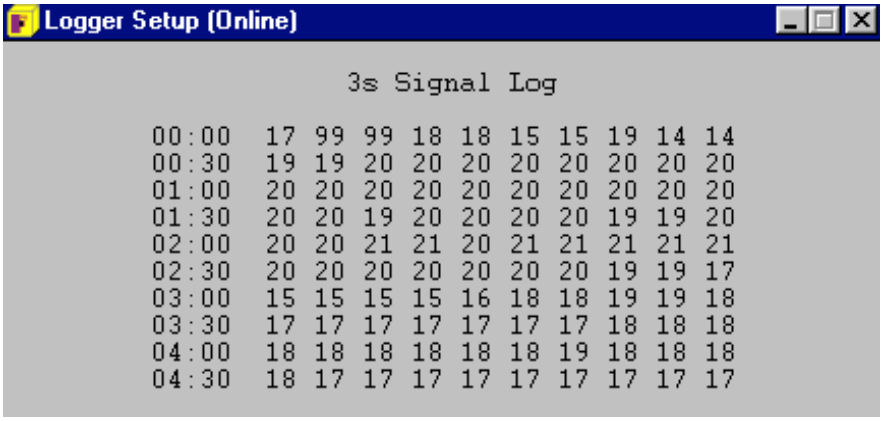
- If Full Only is selected the Controller Com will only send a message if it has sufficient data to fill a full message. If you require 24hr daily data at the same time each day then select another option. If logging at 15min intervals then this would send a message every 16 hours per channel.
- If Partial is selected the Controller Com will send messages when requested regardless if the message is full of data or not. If you require 24hr daily data, then selecting this option will send 6 messages daily. (2 per each logging channel). This is the standard common option.
- If Compressed is selected the Controller Com will compress the data (roughly 3:1) and use as many messages as required. This is generally used for data logging at less than 15min intervals, where multiple messages per channel are required each time the logger calls in.
- If 1 Per Call is selected the Controller Com will compress the data to a ratio of 4.68:1 per message. This means the data is compressed into one message per 24hr. Where ratios are shown in RED (less than 3:1) this indicates that filtering of the data will be required before compression which could cause data loss.
- If 2 Per Call is selected the Controller Com will compress the data to a ratio of 3.00:1 per message. This means the data is filtered and compressed into two messages per 24hr. Normally this can be used if logging at 15min intervals with no data loss instead of the Partial option for 24hr messaging.
- If 3 Per call is selected the Controller Com will compress the data to a ratio of 1.43:1 per message. This means the data is filtered and compressed into three messages per 24hr.

F10 Save Settings – Once all changes have been made under the Extra Settings menu press F10 to save the changes.

F4 Show Phone Numbers – Voice and Data phone numbers and the firmware version and memory size are indicated. Also the total number of SMS messages sent and failed. If a message fails to be sent the Controller Com keeps attempting to send until the send is successful.

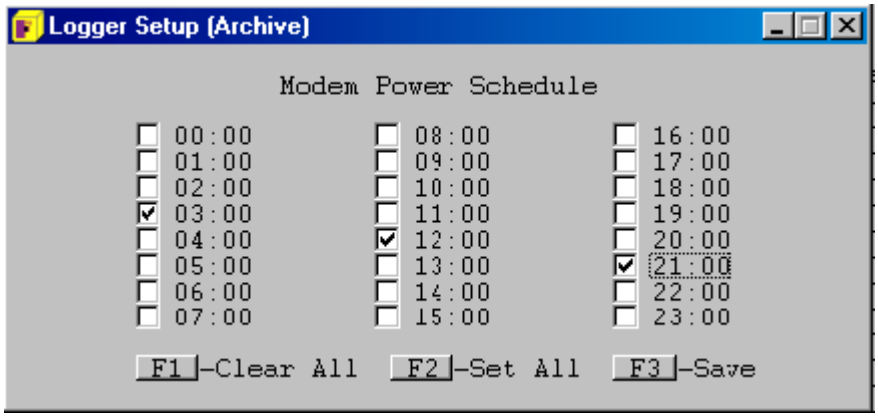


F5 3s Signal Log – When the Controller Com is to be installed in a chamber a GSM network signal strength check can be performed. (See Site Installation Guide section for more details)



F6 Daily Signal Log – Displays the lowest signal strength reading for the day in the same form as the 3s Signal Log.

F7 Show Modem Schedule - Only to be used where a GSM communication link is required. An external battery pack is required to be attached to the Controller Com for this use.

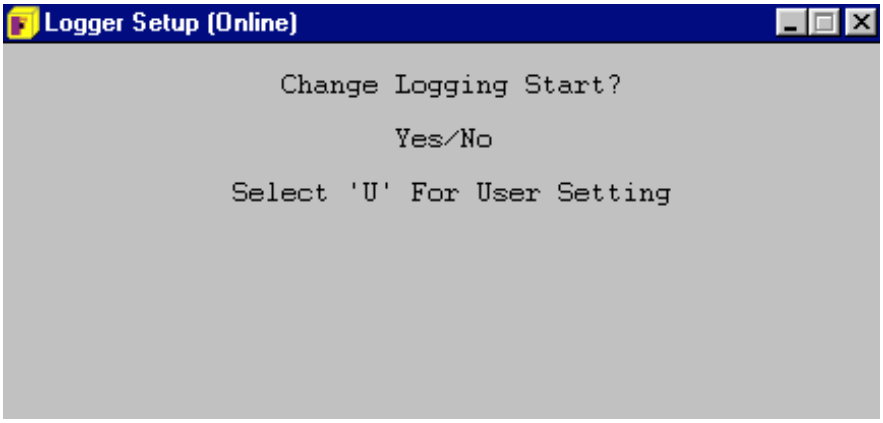


Select the hours which the battery pack will power the Controller Com modem on each day. Select F3 to save the settings.

The example above would power the modem for 3 hours, 3am-4am, 12noon-1pm and 9pm-10pm.

To work out the possible life of the battery pack, full 24hour power of the modem would equal a battery pack life of 18months, so 12hour power equals 36months etc

Remember on exiting the Dial Back setup screen to select F10-Setup Logger to save the configured data to the controller.



Three options are available: -

Yes – This option will change the logging start to the current time, so only data recorded after the current time will be transferred when the controller data is received.
No – This option retains the current logging start stored in the logger.
User – This option can be used to enter any desired logging start date and time.

2. Modem Handler

Overview

The modem handler is a software program that handles communications with the host modem. It receives messages from the logger converts them into data that can be interpreted by the RM301 software. The modem handler also takes commands from the RM301 and converts them into SMS format to be sent to the logger. It is important that the modem handler is active so that any alarms sent by the logger can be actioned. If the modem is turned off you will potentially loose data, but SMS log messages should be 'live' in the network for up to 4 weeks.

Connection

The host modem has three connections. The modem is connected to the PC via a serial communications cable. An antenna is connected to the host modem that is used to increase the signal reception from the GSM network. The modem also requires power and a power supply and adapter are supplied. There are two indication LED's on the Modem. An orange LED indicates that the power supply to the modem is connected. The green LED indicates the GSM status. When the green LED flashes once every 3 seconds the modem has access to the GSM network. If the green LED is on permanently the modem does not have access to the network.

SIM card installation

On the base of the modem is the SIM card installation access. The cover can be removed to expose the host modem SIM card. Host SIM's can be installed and replaced via this access.

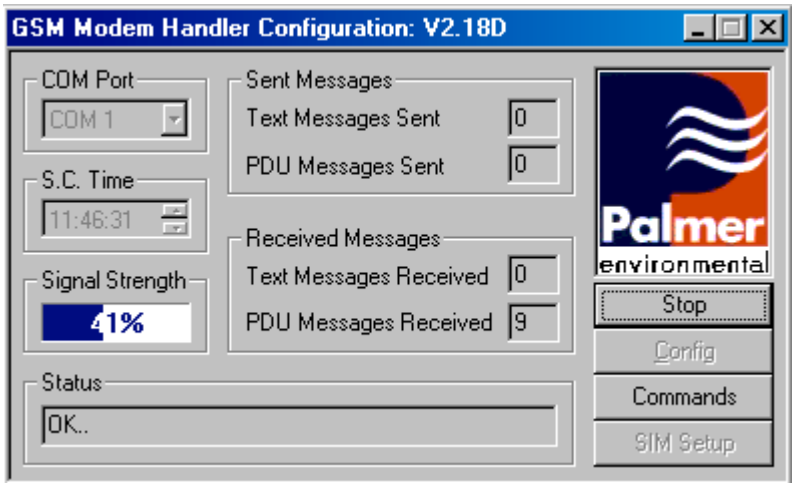
Modem Handler Software

Modem
Handler

When the RM301 software is installed for the first time a modem handler icon is created on the desktop also. Start the modem handler by double clicking on the modem handler icon. The modem handler software automatically locates and initialises the host modem. When the software is loaded files and directories are created that route the data within the system and automatically configures the modem handler.

When the software is started communications with the host modem are automatically established. The modem handler performs the following on start up: -

Initialises Modem
Checks if the SIM is unlocked
Read SIM information
Checks SIM phonebook
Obtains S.C. Time (GSM network service centre time)
Checks signal strength
Gets new messages.



After receiving all new messages the modem handler checks signal strength and new messages every three seconds.

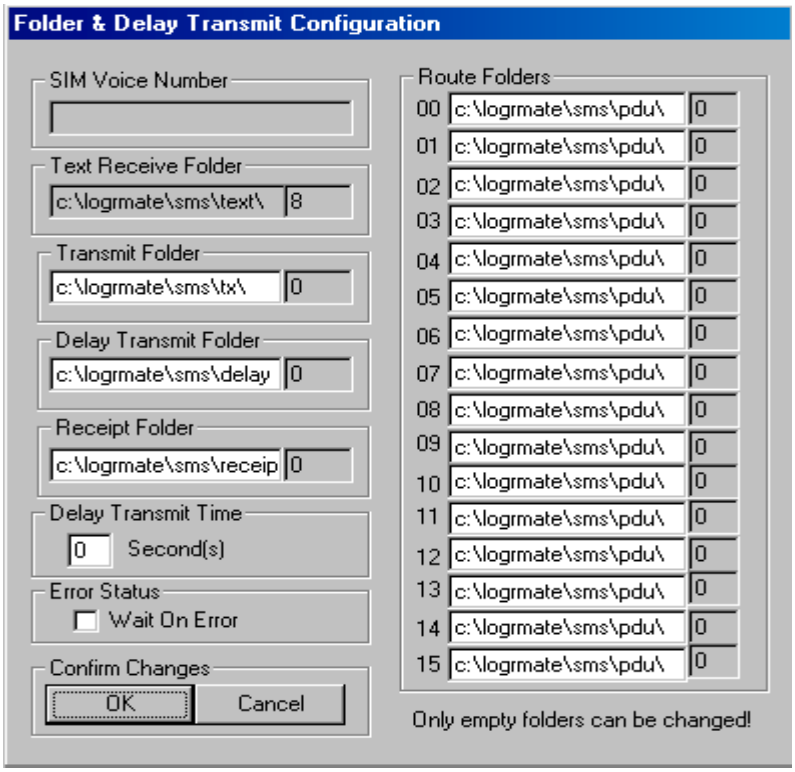
SIM Set-up

Both the SIM voice and data numbers are entered when the host modem is initially set. The voice number is used to synchronise the controller clock with the service centre clock.

Not all SIM's have voice and data numbers. Data numbers must be requested when ordering a SIM.

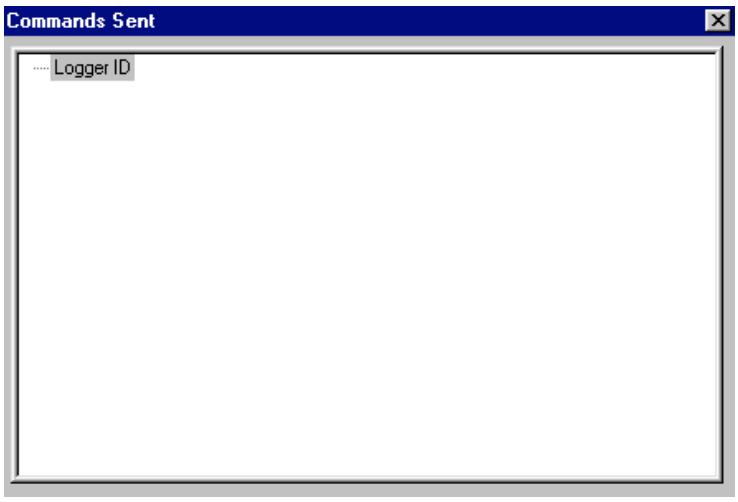
Modem Handler Config.

The software automatically configures the directory routings and settings. These can be viewed by pressing the “Config” button in the modem handler.



Modem Handler Commands

When a command is to be sent to the controller it is possible to view the command within the modem handler. Selecting the “Commands” button within the modem handler main menu allows any pending commands to be viewed.



3. Site Installation Guide

Controller Set-up

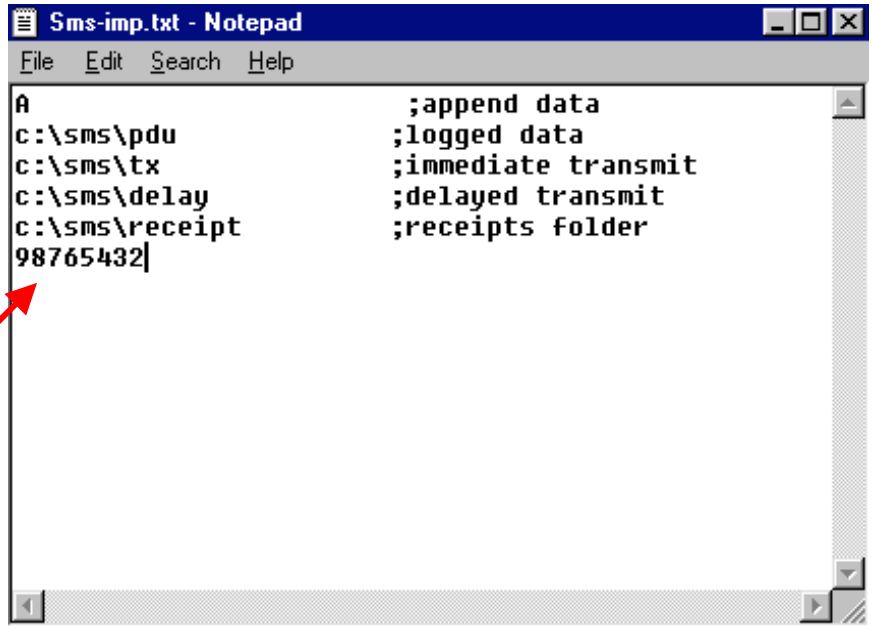
The controller should be set-up for GSM communications as described in the Controller Com Setup section.

Modem Handler

Before proceeding to site the modem handler program should be started and the host modem registered with the GSM network as described in the Modem Handler section.

Configuring Initialisation Message

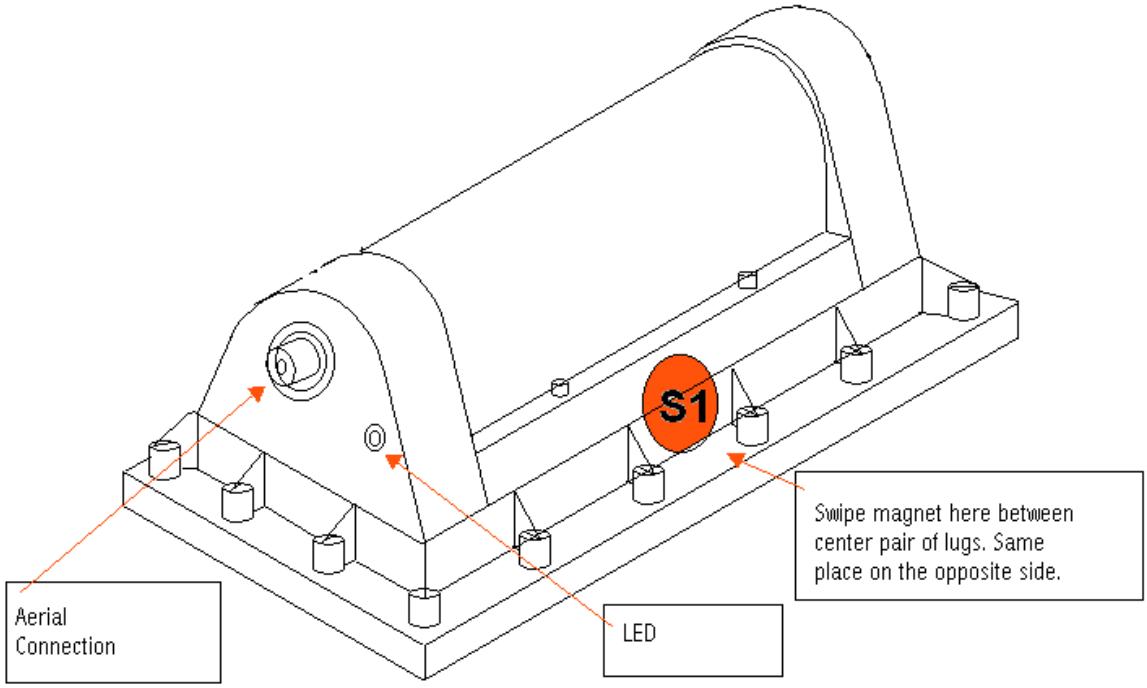
The system can be configured to send initialisation messages to a given mobile phone. The messages confirm correct installation of the Controller Com and registration to the GSM network (one for each of the controller logging channels). Open file “sms-imp.txt” in notepad and add the telephone number to which the initialisation messages are to be sent. (This file is found in C:\Logrmate)



Upon successful installation of the controller and registration a text message confirming installation will be sent to the mobile phone. This allows the installer confidence that the installation is complete.

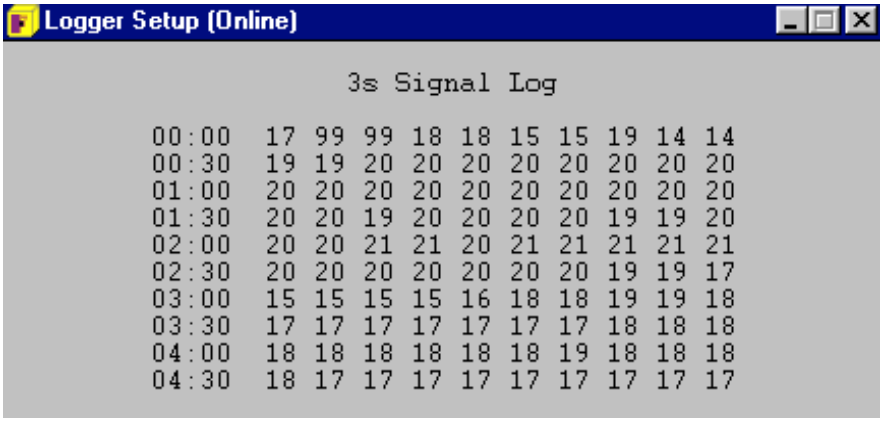
GSM Signal Strength

When the Controller Com is to be fitted in the chamber it can be set up for five minutes to check the GSM network signal strength. To do this swipe one side of the Controller Com with a magnet between the centre pair of lugs (you can use the magnetic base of the Controller Com aerial), an LED will illuminate green. Now swipe the other side of the Controller Com, again between the centre pair of lugs, the LED will now illuminate red.



The Controller Com is then placed in the chamber with the covers replaced and left for five minutes. After this time the Controller Com is removed and a log of the signal strength inside the chamber can be downloaded via the IR probe.

To do this return to F1- Setup and then select F9- Dial Back, then select F5-3s Signal Log



Good signal levels are displayed in black and poor signal levels are displayed in red. A level of 99 means that signal was not valid at that time. This is used to check if there is sufficient signal strength to send the SMS messages. Where figures are displayed in red another location of the Controller Com aerial will be required to improve signal strength.

Site Installation

Following satisfactory signal strength tests the installation can commence. To do this swipe one side of the Controller Com with a magnet between the centre pair of lugs (you can use the magnetic base of the Controller Com aerial), an LED will illuminate green.

Now swipe the other side of the Controller Com, again between the centre pair of lugs, the LED will now illuminate red. The LED will begin to flash red.

- Double flash every 3 seconds (indicating poor signal)
- Single flash every 3 seconds (indication good signal)

Once the Controller Com flashes a single red flash every 3 seconds swipe either side of the Controller Com once more and the LED will illuminate green. Shortly after the LED will illuminate red and flash every second, this confirms installation is taking place.

Initialisation Message

When the Controller Com is activated and registers with the network 6 messages are sent to the host computer confirming successful installation (one for each of the controller logging channels and a setup file for each). Also if the installer has configured a mobile phone number in the “sms-imp.txt” file 3 messages confirming initialisation and registration will be sent to the defined mobile phone (one for each of the controller logging channels).

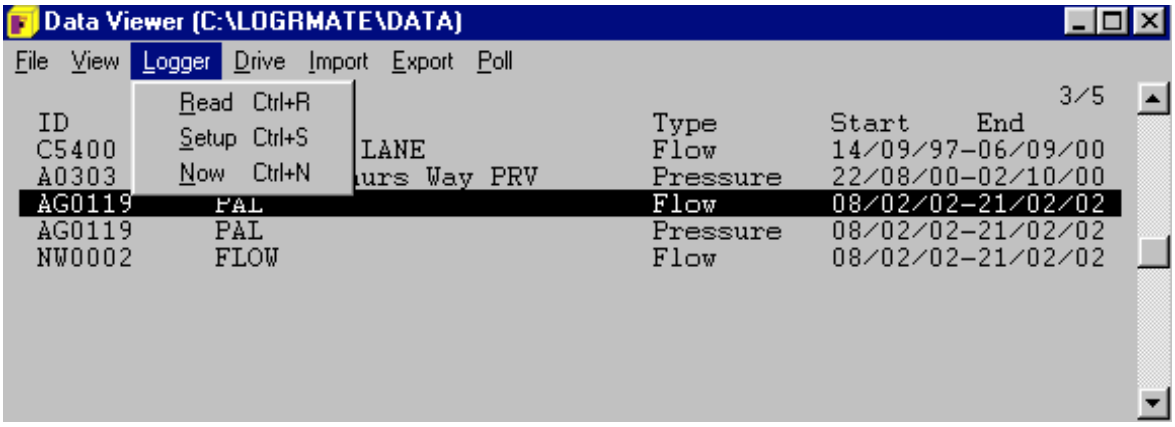
4. Remotely Programming Controller Com (Via SMS Pending Files)

Overview

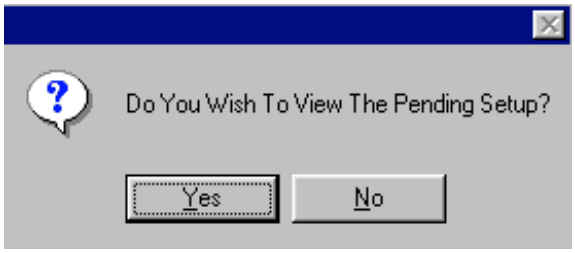
Commands can be sent from the host computer to the Controller Com to change controller set-up parameters.

Data Viewer

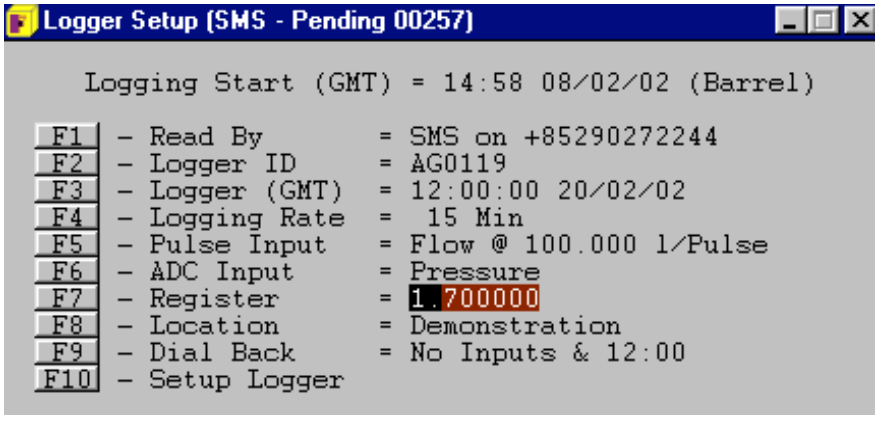
In the RM301 main menu select F4- View Data and select the controller channel you wish to communicate with by highlighting the file. Then select “Logger” and “Setup” from the menu bar.



A window appears that asks if you wish to view the pending setup.

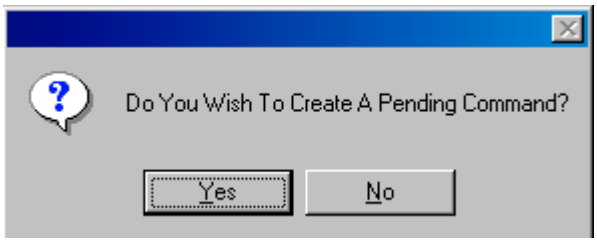


Clicking “Yes” will display the current controller channel configuration



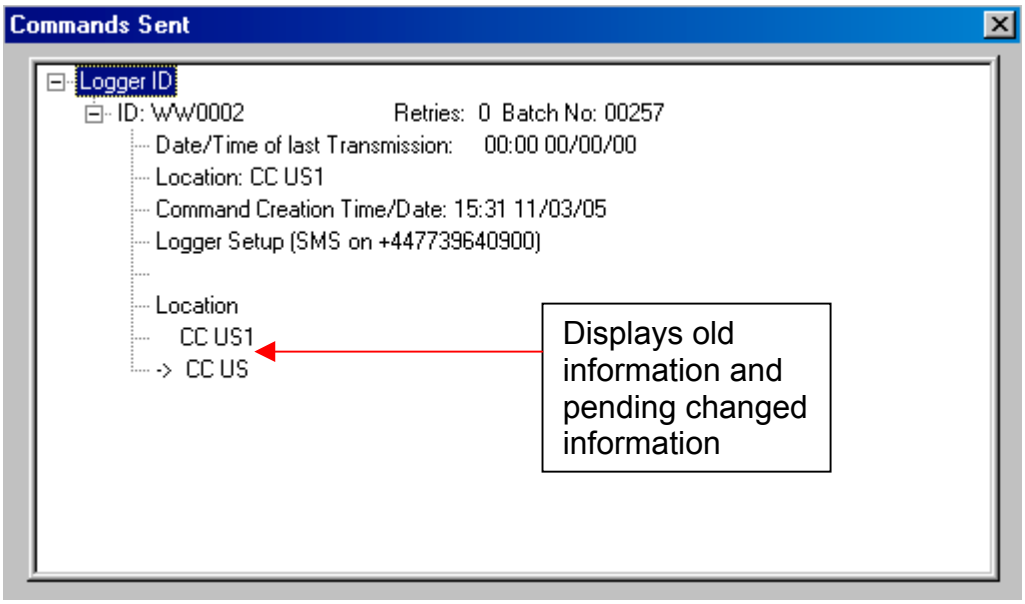
Change the required settings like normal. Remember to select F10-Setup Logger to save the new settings before exiting.

A window appears that asks if you wish to create the pending setup.



Click “Yes”, you will then be asked if you wish to view the changes.

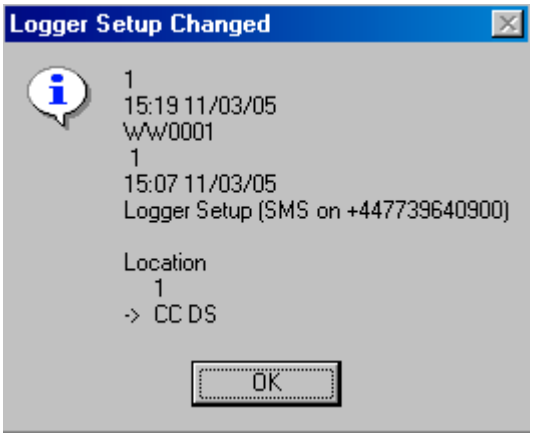
The change will now appear in the Modem Handler software. Click on the “Commands” button and your pending setup change is displayed.



The pending file is only sent to Controller Com when the Controller Com’s modem is switched on. In general practice this is only when the Controller Com sends it’s data into the host modem, this is received and then the pending file will be sent.

If this is restrictive and you require better communication time windows, then see “Remotely Programming Controller Com (Via GSM Communications) section.

Once received by the Controller Com a receipt message is returned to the host PC as confirmation.



The new set-up configuration will appear next time the Controller Com sends in it's data.

5. Remotely Programming Controller Com (Via GSM Communication)

(with the use of an external battery pack)

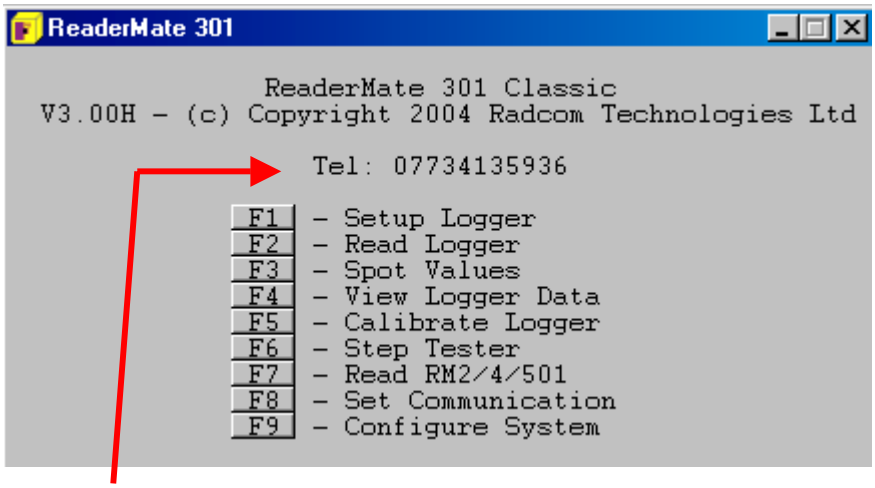
Overview

Commands can be sent from the host computer to the Controller Com to change controller set-up parameters directly using a GSM link. This can only be achieved if an external battery pack is fitted to the Controller Com and the Modem Schedule has been set (see Controller Com Setup section).

Data Viewer

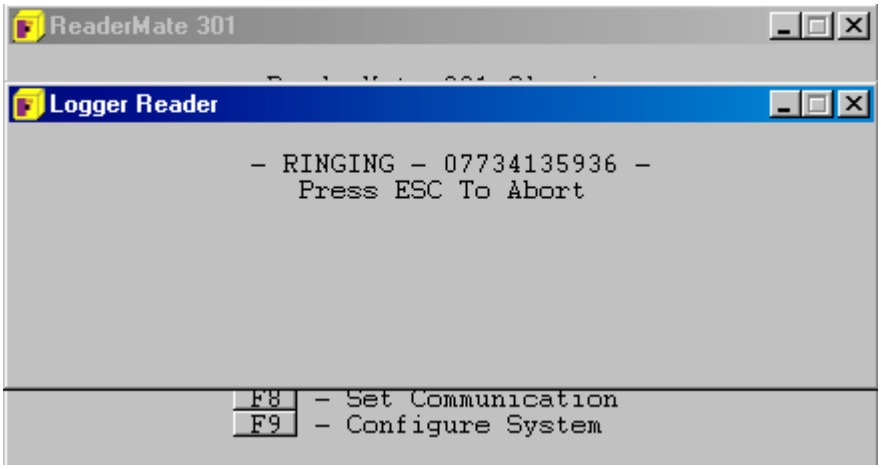
In the RM301 main menu select F8- Set Communication and then select F1- Telephone Number.

Enter the Data Telephone number of the required Controller Com you wish to communicate with. (This number will be different to the voice telephone number of the Controller Com)



The Data telephone number will now be displayed on the main menu in RM301.

Select your required command to either F1- Setup, F2- Read or F3- View Spot Values. As soon as one of these options is selected the host PC will ring the Controller Com and establish a live communication link.



This works in exactly the same way as if you were connected via IR probe, except the speed of communication is a little slower.

Press Esc when you have finished your communication link, this terminates the communication.

6. Quick Step By Step Setup

This is designed to quickly take you through a standard setup, step by step.

A. Set up modem in Controller for Controller Com modem.

1. Using I/R probe placed on controller open RM301 V3.00H (or later) and select F8- Set Communication
2. Now select F4- Set Wessex Loggermate Modem
3. Now select F7- Controller Com
4. To check this has been selected, esc to main menu and then select F1- Setup Logger. On the first channel pair, press 'V' on your keyboard and on the third line up from the bottom, Controller Com should be displayed

B. Set up SMS/GSM call times on Controller/Controller Com

- **Ensure Controller Com (and external GSM battery unit, if req.) is connected to controller before this part of the process is started**

1. Open RM301 to main menu and select F1- Set up Logger
2. All logging sections of this software are as normal, once logging details have been entered, select F9- Dial Back
3. You should now be in the 'Call in Parameters' menu and there are now seven options, start by selecting F3- Extra Settings
4. Ensure F4 reads SMS, if not select to change
5. Change F5 to choose how often you want the data to call in (Interval = xx Mins, Time = once a day at xx time, and Time x 2 = twice daily at xx time and yy time) the exact times will be selected by you later.
6. F7 is to select to send only Full SMS messages or not. (Only select Full to save on the number of messages sent)
7. Select F10 to save settings
8. You are now back in 'Call in Parameters' menu, select F1- Data Call In
9. Select F1 and enter the Voice No of the GSM Host Modem. (The Modem attached to your Host PC that will receive the information sent). Once entered click OK
10. Now select F2 and enter the time the controller should call in. This will differ depending on what you selected in B5. Follow on screen instructions
11. If information is required daily, ensure F3 through to F10 are set to Yes
12. Select F10 to save
13. If GSM data communication is also required, the additional external battery box must be connected. Select F7- Show Modem Schedule

14. You are now in 'Modem Power Schedule'. Here you select the hours of the day for the modem to be powered up for real time GSM data communication. Using the mouse, left-click each hour you wish to have the modem on for, or just select F2- Set All for all day. If you will not be using GSM data communication, select F1- Clear All to ensure modem will not be powered up. Once selection has been made, click F3- Save
15. Finally, select F10- Save. Select 'Y' or 'N' if you want a new logging start or not. Once this has been completed, you will be prompted with 'Do You Wish To Update Controller Com Now'- select Yes

C. Setting up Modem Handler

1. Once all COM ports and cables are connected, select the Modem Handler Icon to start the software
2. Now select 'Go' on your Modem Handler screen and your GSM Modem should start to scan for SMS messages after a short communication pause

D. GSM Signal Test-On-Site

1. With the controller and Controller Com connected, place a magnet (the aerial one will do) between the center pair of lugs on one long side of Controller Com until the green LED light beside the aerial connection is illuminated
2. When this green LED light is on, place a magnet at the same position on the opposite side of the Controller Com until the LED light turns red. The Modem is now registering with the network
3. Now place Controller Com unit in the final chamber installation position and close all covers/doors
4. Once registered the LED on the Controller Com will either:
    - Double flash every 3 seconds (indicating very poor signal area)
    - Single flash every 3 seconds (indicating good signal area)

This process will continue for 5 minutes

5. Once 5 minutes has passed the GSM signal strength can be checked using RM301. (The red LED light will have stopped flashing now)
6. Communicate with the controller via the I/R Probe and select F1- Setup Logger
7. Select F9- Dial Back
8. Select F5- 3s Signal Log
9. Displayed are the signal results for every 3 seconds of the test. All poor signals are displayed in red and all good signals are displayed in black
10. If poor GSM signal is experienced, check all aerial connections and move aerial as required

E. Initialising Controller Com

Before you start the installation procedure, ensure that the GSM Modem Handler is running at the host PC.

If you need confirmation that the messages have been sent from the Controller Com to your host PC carry out the following:-

In explorer locate the C:\Logrmate folder and open it. Now locate the sms-imp.txt file and open it. You should now see:-

A
c:\logrmate\sms\pdu ;logged data
c:\logrmate\sms\tx ;immediate transmit
c:\logrmate\sms\delay ;delayed transmit
c:\logrmate\sms\receipt ;receipts folder

Create a new line at the bottom (line 6) and enter the mobile telephone number that should receive the installation reports

Once entered save the alterations to this file

1. Now carry out steps in D1 & D2. During the 3-second flash mode, place a magnet on the side of the Controller Com (either side will do) until a green LED light is seen
2. Shortly after this the LED light will flash red every second to show that the installation is proceeding and the install messages are being sent
3. Installation messages should shortly be seen (within approx. 5mins) at the host PC and if set up, reported to your mobile phone