

# EMM-Tek RMC300R User Manual

## Monitor & Control

using GSM signals

from wherever you are

Instructions on how to use the EMM-Tek RMC300R,  
GSM enabled remote monitoring and control system.  
[www.emmtek.co.uk](http://www.emmtek.co.uk)



**EMM - Tek Ltd**

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## Overview

The RMC300R is a versatile, SMS configurable, Remote Monitor and Control System. The user configurable parameters and flexible input/output (I/O) options make this device suitable for a wide variety of uses in domestic, commercial and industrial applications.

The RMC300R allows the user or users to retrieve remote data, control equipment and receive user definable alarms via SMS. The device is easily interfaced to a range of sensors and / or existing systems.

RMC300R Specification	
Input Supply Voltage:	5.5V to 30V
Current Consumption:	35 mA Network Registered. (approx average reading) 65 mA with optional GPS module fitted 10mA Sleep (approx average reading)
Dimensions (approx. bare PCB version)	55mm wide x 119mm long x 25mm tall
Antenna Connector:	Flying lead / SMA Female connector
SIM Colder Holder:	Locking Amphenol
SIM Card:	Any Contract or PAYG SIM (Not provided)
Analogue Inputs:	3 user inputs. 3V Maximum (extendible by external resistor divider) 1 fixed input to measure the power supply voltage
Analogue input bit resolution:	10
Digital Inputs:	4 user inputs. 5V Maximum
Digital Outputs:	2 - Relay Outputs: Double Pole Change Over 2 - 3.3v Sink 24mA Source 24mA

## Terminal Configuration Commands

### General

Commands are not case sensitive and will operate with upper, lower or mixed cases. For clarification only, all commands in this document are shown in upper case. All user defined labels are limited to 8 characters and should avoid being or containing command keywords. Care should be taken when defining labels, as characters over the 8 character limit, will be ignored. This could result in two apparently different labels appearing identical to the device.

Spacing is generally open but in some cases spaces are required as part of the correct command format. For the purposes of this document a 'space' will be represented by an underscore \_ in the Format: sections

Some commands can only be modified when the device is **not** in the armed state as indicated in the command tables. Commands defined using 'CALL ASSIGN' or 'COM DEF' will operate when armed only if the user assigned command is active when the system is armed. As a general rule when armed, the only active commands are 'DISARM', 'ARM' and the report functions 'STATUS', 'SETTINGS', 'USERS', LOCATION, COMMANDS and 'NETWORK'.

# SMS Security Commands

Command	Description	Access	Modify when Armed?	Multi Command SMS?
<b>PASSWORD</b>	Enables <b>USER1</b> only to change the password for the device. Default password is 'RMC300R'. The password is only required when changing the <b>USER1</b> name and number.	User 1 only	N	N
Command format	<b>PASSWORD</b> *old*new* spaces between the * delimiters will be included.  Example: <b>PASSWORD</b> *RMC300R*ABC123* changes from default password to <b>ABC123</b>			
<b>USER1</b>	Changes <b>USER1</b> settings. Must be initiated from the current <b>USER1</b> mobile number and must contain the current password.  Make sure the new number is correct before sending this message. If set in error to a mobile number that you do not have access to, you will <b>NOT</b> be able to change it.	User 1 only	N	N
Command format	<b>USER1password</b> *newname*newnumber* Do not include spaces in the number.  Example: <b>USER1RMC300R</b> *fred*+447887xxxxx* Changes user1 to FRED, +447887xxxx. We recommend that you include the international dial code for your location when setting numbers.			
<b>USER2</b>	Changes <b>USER2</b> settings. Must be initiated from the <b>USER1</b> mobile number. If set in error simply resend with correct data.	User 1 only	N	N
Command format	<b>USER2</b> *newname*newnumber* Do not include spaces in the number.  Example: <b>USER2</b> *fred*+447887xxxxx* Changes <b>USER2</b> to <b>fred</b> , 447887xxxx. We recommend that you include the international dial code for your location when setting numbers.			
<b>USER3</b>	As <b>USER2</b> above.	User 1 only	N	N
<b>CALL ASSIGN</b>	Defines which command will be activated when any registered user calls the device. Two commands maybe specified. Care should be taken to check the device behaviour is as expected when using more than one command.	User 1 only	N	N
Command format	<b>CALL_ASSIGN</b> *command1 _command2* Command2 is optional.  Example: <b>CALL ASSIGN</b> *DISARM PULSE OUT1* Disarm and pulse output1 when called.			
<b>COMMAND DEFINE</b>	Enables user1 (only) to assign a label to a command. The specified command will be actioned when the label is sent as an SMS to the device by a registered user. <b>Avoid defining a label that contains a keyword</b> . Two commands maybe specified. Care should be taken to check the device behaviour is as expected when using more than one command.	User 1 only	**	N
Command format	<b>COMDEF</b> *label*command1 _command2* Command2 is optional.  Example: <b>COMDEF</b> *reports*settings users* returns settings and user reports when an SMS containing 'reports' is sent to the device by a registered user. <b>**COMDEF</b> is unavailable when Armed, the defined command can be used when Armed.			

## SMS Reports

**STATUS:** By sending an SMS with the word 'STATUS' the device will respond with the current status including:

- User defined name for the device (see DEVNAME)
- Alarm status (disarmed, Armed or triggered),
- Device input supply voltage (VIN)
- Voltage of the analogue inputs A1, A2, A3 user defined label will be displayed in place of Ax (see Ax LABEL).
- Status of the Digital Inputs D1~D4. '0' indicates low or gnd. User defined label will be displayed in place of Dx (see Dx LABEL).
- The status of Outputs RELAY1, RELAY2, OUT1 & OUT2 along with the user defined label of OUTx (see OUTx LABEL)

Each input will also have an indicator showing the status of the input compared to the limits assigned to it (see Ax LIMIT and Dx ALARM commands).

Example message:

**RMC-300R ARMED**

**VIN=11.7 OK**

**A1=0.3 OK**

**A2=0.6 OK**

**A3=0.7 OK**

**D1=0 OK**

**D2=0 OK**

**D3=1 OK**

**D4=1 OK**

**RELAY1 = ON**

**RELAY2 = ON**

**OUT1 = OFF**

**OUT2 = OFF**

**Move=>**

**SETTINGS:** On sending an SMS containing the keyword 'SETTINGS' the device will respond with an SMS detailing the current device settings: The label name, upper and lower limit for the analogue inputs. The label name and logic trigger level of each digital input, the label names of the outputs, the user definable command to be actioned when the device receives a call (see CALL COM) and the user defined SMS label and command to be actioned (see COM DEF).

Example Message:

**RMC-300R**

**VIN L7.5 H19.0**

(Sets a power supply low limit of 7.5V & upper limit of 19.0V)

**A1 L0.0 H4.0**

(Sets analogue1 low limit of 0V & upper limit of 4V)

**A2 L0.0 H4.0**

**A3 L0.0 H3.3**

<b>D1 Tr 1</b>	←	Tr1 means trigger on high voltage (logic 1). Normal condition is low (0), alarm condition is high voltage (1)
<b>D2 Tr 1</b>		
<b>D3 Tr 1</b>		Tr0 means trigger on low voltage (logic 0). Normal condition is high voltage (1), alarm condition is low voltage (0).
<b>D4 Tr 0</b>	←	
<b>Move=3</b>		(Sets the widest area GPS alarm - Only applies when GPS is fitted)
<b>Rpt=1 M</b>		(Time in minutes between a repeated command)
<b>Slp=7 H</b>		(The time in hours for the device to Sleep or Nap)
<b>Pul=30 S</b>		(Pulse output length is 30 seconds)

**USERS:** Sending an SMS containing 'USERS' will cause the users report to be returned. This will show the name, number and Notify level (see NOTIFY command) of the three users.

Example Message:

**RMC-300R Users**  
**1 JAMES**  
**07929112233**  
**Notify=BOTH**

**2 MARK**  
**07822123456**  
**Notify=SMS**

**3 NOT SET**  
**0**  
**Notify=OFF**

**Server 07781111122** (This for use where SMS messages are sent to web gateway)

**NETWORK:** Returns a report showing Firmware revision, the network operator the device is connected to, signal strength and Bit Error Rate. Mostly used during installation or maintenance.

Example Message:

<b>RMC300R</b>	
<b>356895034659881</b>	(This is the unit serial number)
<b>FW 300R B1.0</b>	(The firmware version of the device)
<b>T-MOBILE</b>	(Network Name)
<b>+CSQ: 13,6</b>	(Signal strength & Bit Error rate)

**COMMANDS report description follows on next page.**

**COMMANDS:** Returns with device commands report showing Device Name and user definable commands Call Assign, On Wake, On Repeat and Comdef.

Example Message:

***RMC300R Commands  
Call Assign=Status  
On Wake=PUSHSMS  
On Repeat=PRELAY1 PRELAY2  
Comdef=HOME  
PRELAY1 PRELAY2***

For more information about how to use the commands refer to the table at the end of this manual.

# SMS Input & Output Configuration Commands

## Input & Outputs

### Analogue Inputs

There are four analogue inputs on the RMC-300R, A1 to A3. One analogue channel is internally fixed to monitor the device input voltage and has a fixed label VIN. Analogue inputs A1, A2 and A3 are user configurable as are their labels.

All Analogue inputs A1 to A3 have user definable upper and lower limit thresholds.

The input voltages applied to A1 to A3 must never exceed 3V or be lower than 0V with respect to GND. If these limits are exceeded, permanent device damage may occur. If a higher voltage requires monitoring then an external voltage divider should be fitted.

Note that voltages applied directly to the analogue inputs above 3.3V will be reported as 3.3V. i.e. If 5V were applied to the analogue input it would still report the voltage as 3.3V. This high input would also risk damaging the device.

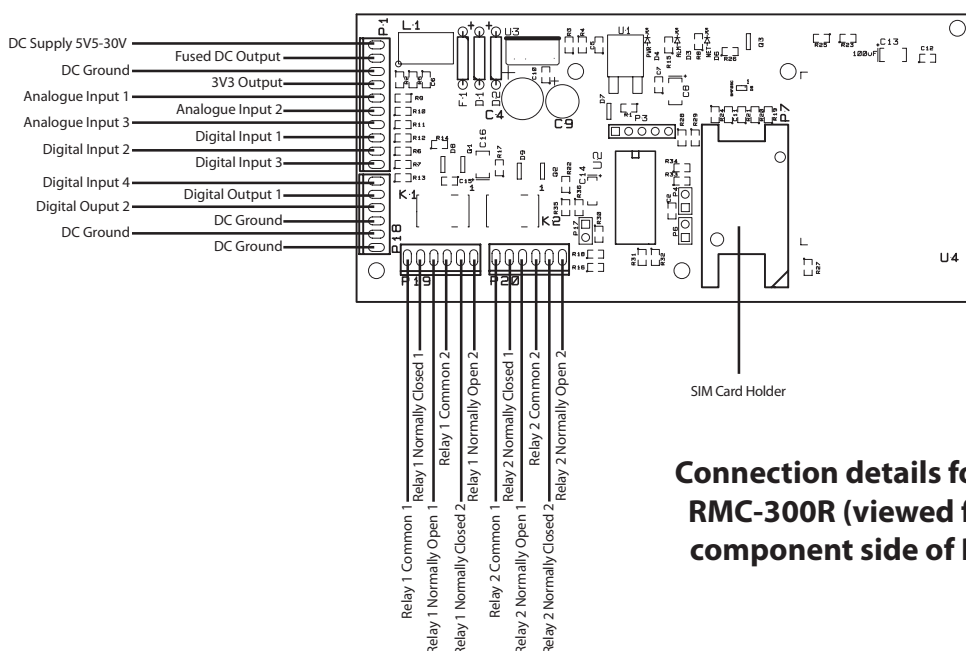
Remember to take an external voltage divider into consideration when setting high and low limits for A1 to A3. If, for example, a divide by 10 voltage divider is fitted then voltages of up to 30V can be monitored. In this case measurements and limits set will need to be multiplied by 10 (15V applied to the divider will produce a measured voltage at the analogue input of 1.5V)

### Digital Inputs

Four Digital Inputs are available on the RMC-300R. Each has a user definable label and trigger polarity. The user must take care to ensure that any voltage applied to a digital input never exceeds 5V or is lower than 0V with respect to the GND terminal of the RMC-300R. There is a 100ohm resistor in series with each digital input to act as a current limit but exceeding the limits may result in device damage.

### Outputs

A total of four outputs can be remotely switched with the RMC-300R. **RELAY1** and **RELAY2** have double pole change over relays, **OUT1** and **OUT2** are logic level (3.3V) outputs capable of sinking and sourcing 24mA. All four outputs have user definable labels and can be turned ON, OFF or PULSED momentarily by any registered user.



**Connection details for the RMC-300R (viewed from component side of PCB)**

## SMS Input & Output Configuration Commands

Command	Description	Access	Modify when Armed?	Multi Command SMS?
<b>PULSE DELAY</b>	Specifies the output time in seconds of a pulse applied to a relay or digital output. Minimum 1, maximum 3600 (1 hour) Default is 1.	User 1 only	<b>N</b>	<b>N</b>
Command format	<b>PULSE_DELAY*x*</b> (X = seconds of delay)			
<b>OUTx ON</b> <b>OUTx OFF</b> <b>POUTx</b> <b>PRELAYx</b>	Turns OUTx ON (x=1 to 4) Default is off Turns OUTx OFF (x=1 to 4) Turns OUTx ON for approx. 1 second (x=1 to 4)	All Users	<b>N</b>	<b>Y</b>
Examples	<b>OUT1_ON</b> Turns Output1 ON <b>OUT3_OFF</b> Turns Output3 OFF <b>POUT2</b> Turns Digital Output 2 ON for <b>PULSE DELAY</b> time. <b>PRELAY1</b> Turns on relay 1 for <b>PULSE DELAY</b> time.			
<b>Ax LIMITS</b>	Sets the upper and lower limits for analogue input in volts to one decimal place.  If the voltage applied to the analogue input is within the limits then the status of the input will be 'OK' and the alarm (if armed) will not be triggered.  If the applied voltage is higher than the upper limit the input status will be 'HI' and if lower than the lower limit it will be 'LO'. If the status is 'LO' or 'HI' and the alarm is armed then the alarm will be triggered. Default for VIN = Lower 8.0 Upper 19.0 Default for A1-A3 = Lower 0.00 upper 3.5	All Users	<b>**</b>	<b>N</b>
Command format	<b>Ax_LIMITS*lower*upper*</b> x=1 to 3. Lower & Upper should contain only characters 0 (zero) to 9  Example: <b>A2 LIMITS*1.5*3.0*</b> Sets limits for analogue input A2 to Low=1.5V High=3.0V <b>** Limits are used while the alarm is set but may not be changed whilst the alarm is set.</b>			
<b>CONFIGURING THE DIGITAL INPUTS (ALARM TRIGGERS)</b>				
<b>Dx LOW</b> <b>Dx HIGH</b>	Sets the logical condition that will trigger the alarm for digital input x. If the normal condition (non-alarm) of Digital Input 2 is Logic Low (0v / GND) then the alarm state of digital input 2 should be set to 'High'. Under normal input conditions the status of Digital input 2 will be 'OK', when the state is changed to logical 1 the status will be 'AL' and if armed the alarm will be triggered.	All Users	<b>N</b>	<b>N</b>
Command format	<b>Dx_LOW</b> Set digital input x to trigger on logic low <b>Dx_HIGH</b> Set digital input x to trigger on logic high D1-D4 available Example: <b>D1_LOW</b> Set digital input 1 to trigger when logic 0 is applied to Input D1			

# SMS Input & Output Configuration Commands

The RMC300R enables the user to assign meaningful labels to both the device itself (useful where a number of RMC300Rs are being deployed) and for individual inputs and outputs.

A message that says FRIDGE1 is HI is far more meaningful than referring to analogue input 2 for example. Similar label styles can be applied for both the analogue and digital inputs as well as the relay and digital outputs.

<b>LABELS</b>		Access	Modify when Armed?	Multi Command SMS?
Label messages can be sent in upper or lower case but will be displayed in upper case only in messages from the device				
<b>DEVNAME</b>	Sets the identifier (name) of the device. This is used to identify the device on alarm messages and reports. The default name is RMC300R.	User 1 only	N	N
Command format	Format: <b>DEVNAME*name*</b> Example: <b>DEVNAME*OFFICE1*</b> Sets device name to 'OFFICE1'			
<b>OUTx LABEL</b>	Sets the label for output x. This is used to identify OUTx on all messages. Output 1 is relay 1, output 2 is relay 2, outputs 3 and 4 are logic level digital signals driven by the microcontroller. The default names are OUT1-OUT4	User 1 only	N	N
Command format	Format: <b>OUTx LABEL*name*</b> x=1 to 4 Example: <b>OUT1 LABEL*BUZZER*</b> Sets out1 label to 'BUZZER'			
<b>Ax LABEL</b>	Sets the label for Analogue Input x. This is used to identify Ax on all messages. Valid inputs are A1, A2 & A3.	User 1 only	N	N
Command format	Format: <b>Ax LABEL*name*</b> x=1 to 3 Example: <b>A3 LABEL*BATT2*</b> Sets A3 label to 'BATT2'			
<b>Dx LABEL</b>	Sets the label for Digital Input x. This is used to identify Dx on all messages.	User 1 only	N	N
Command format	Format: <b>Dx LABEL*name*</b> x=1 to 4 Example: <b>D3 LABEL*TAMP SW*</b> Sets D3 label to 'TAMP SW'			

## Using The Alarm Function

### Alarm Feature

The alarm feature of the RMC-300R is sophisticated, yet easy to configure and use. Follow the guidance below and make reference to the command tables if required.

### Alarm Configuration

#### Analogue Inputs - Stage 1

Once you have determined which Analogue inputs will be monitored when the alarm is activated, you should decide on the limits and set them using the Ax LIMITS command. If an input is unused it should be set to low=0v and high=4V to prevent false trigger of the alarm using the following command:

**Ax\_LIMITS\*0\*4\*** (x is the unwanted or unused input number)

#### Digital Inputs - Stage 2

Each digital input need to be set to trigger on the appropriate digital level using D1 HIGH / D1 LOW commands. For Example; If you have a PIR connected to D1 which goes high when

movement is detected you should set D1 to trigger the alarm when it detects a high level using D1\_HIGH. If a digital input is unused it should be set to Dx HIGH to prevent false triggers. All digital inputs are pulled high by the RMC-300:

**Dx\_HIGH** (x is the unwanted or unused input)

### Users - Stage 3

Set additional users, if required, using the **USER2** and **USER3** commands. Once set, use the **NOTIFY** function to set their notify preference to OFF, SMS, CALL or BOTH.

To set User2 to 'Fred', with the number '07929112233' and notified by SMS only send the following 2 commands in separate SMS messages:

**USER2\*FRED\*07929112233\***  
**NOTIFY\_USER2\*SMS\***

### External Sounder Driver - Stage 4

If you require **RELAY1** to drive an external sounder in the event of the alarm being triggered, use the **COUPLE** function to turn **RELAY1** on if triggered.

**COUPLE\_ON**

### Alarm Operation

Once the four stages of alarm configuration are complete the alarm is ready for use. It can be **ARMed** or **DISARMED** by any of the 3 users. In the event that the alarm is **ARMed** and triggered, **RELAY1** will switch on if the **COUPLE** command is set to on. All users who have been setup by the notify command to receive a SMS message, will receive a message **\*\*\*ALARM\*\*\*** followed by the status report to indicate which input(s) have caused the alarm to trigger.

The RMC-300R will then call each user that has been set by **NOTIFY** to receive call notification in turn with approx. 2 minute gap between calls. This will continue until the alarm is disarmed by any user sending the **DISARM** command. When disarmed after a trigger event, all users who received notification that the alarm had been triggered will receive a message indicating who disarmed it.

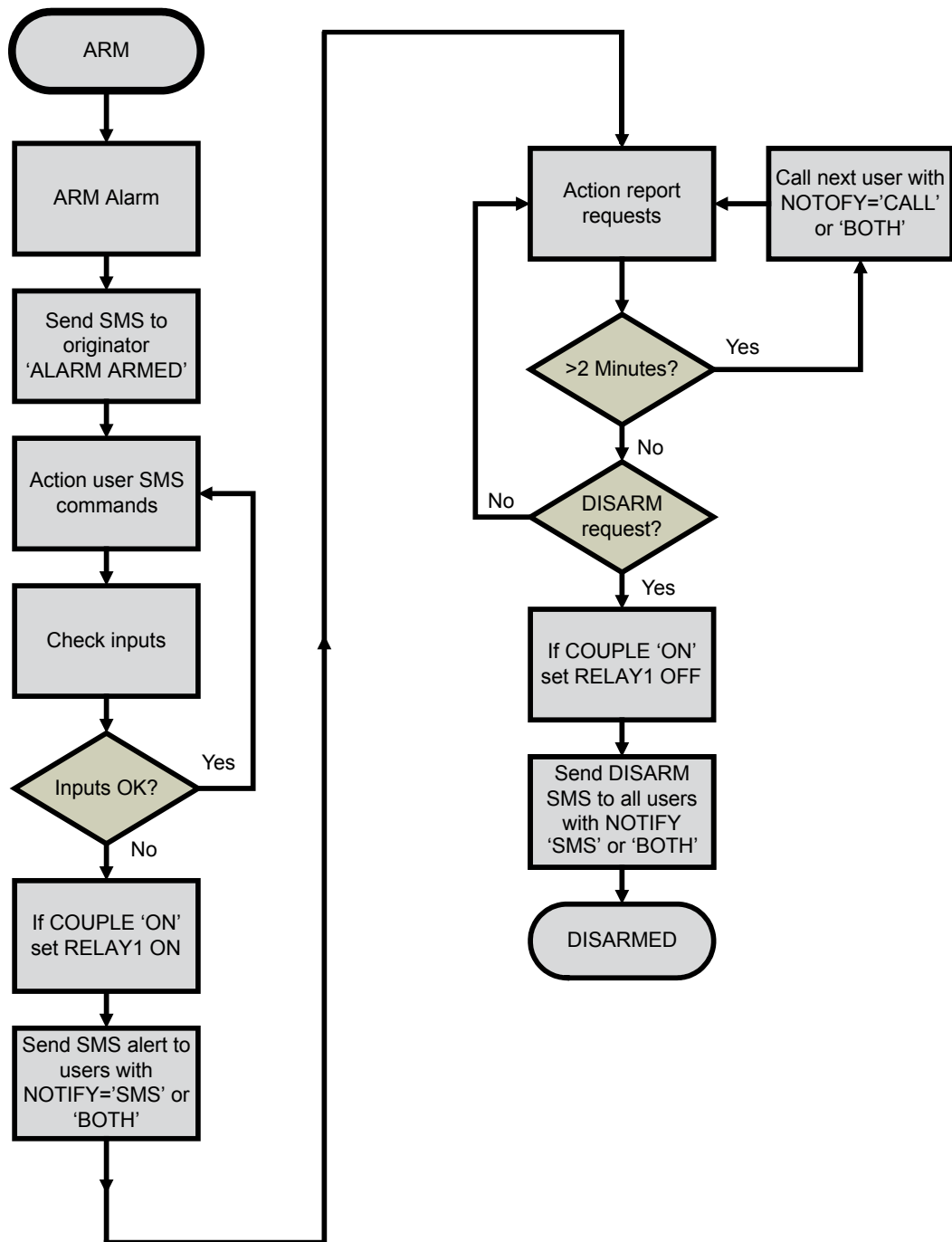
**COMDEF** and **CALL ASSIGN** commands can be very useful in situations where the user would like to disarm the RMC300R and then carry out another function. For example the device is configured as a garage alarm and **RELAY2** is connected to the electric door opener. Commands could be assigned that simultaneously disarmed the alarm and opened the door:

**CALL\_ASSIGN\*DISARM\_RELAY2\*** calling disarms and activates door  
**COMDEF\*OPEN\*DISARM\_RELAY2\*** SMS 'OPEN' to disarm and open

When the RMC-300R is armed or triggered it will still respond to report requests such as **STATUS** (very useful for assessing the current status), **SETTINGS**, **NETWORK**, **USERS**, **COMMANDS**, **LOCATION** (when GPS fitted) and **NETWORK**.

Refer to the Command list for details.

## Flowchart showing Alarm Operation



# Alarm Configuration Commands

Command	Description	Access	Modify when Armed?	Multi Command SMS?
<b>ARM</b>	<p>Activates the Alarm function. If any analogue input goes outside of its user defined, upper or lower limit, or a digital output is driven to the logic state set by Dx alarm, command then the alarm will be triggered.</p> <p>The alarm will also be triggered if a GPS unit is fitted and the RMC300R is moved outside of the Geo-Fence area set in the <b>MOVE</b> command.</p> <p>Once triggered, user notification will commence as selected by the notify command. Once armed, the device will NOT respond to all commands. Refer to the command list for further details.</p> <p>If <b>ARM</b> is sent when the alarm is triggered the device will 'Reset' the alarm state to not triggered. If all inputs are at their non-trigger status the alarm will be silenced. If not, it will be triggered again and trigger notifications will continue.</p> <p><b>The default setting is Disarmed.</b></p>	All Users	<b>Y</b>	<b>Y</b>
Command format	<p>Format: <b>ARM</b> Device sends message to requesting user indicating new alarm status.</p> <p>Example: <b>ARM</b> Arms Alarm Function</p>			
<b>DISARM</b>	<p>Deactivates alarm function. If alarm not triggered, a message will be sent to the requesting user indicating new device status (Disarmed). If the alarm was triggered, the alarm will be silenced and alarm triggered SMS / calls from the device will cease. A message will be sent to all users if specified to receive notification by '<b>NOTIFY</b>' command, indicating which user disarmed the triggered alarm.</p>	All Users	<b>Y</b>	<b>Y</b>
Command format	<p>Format: <b>DISARM</b> Device sends message to requesting user indicating new alarm status</p> <p>Example: <b>DISARM</b> Disarms Alarm Function</p>			
<b>COUPLE</b>	<p>This command couples <b>RELAY1</b> to the alarm status. When set, <b>RELAY1</b> will be turned on if the alarm is armed and triggered. It will remain on until the alarm is <b>DISARMED</b> or <b>ARMED</b> by a registered user, even if the condition(s) that triggered the alarm revert to their acceptable (non trigger) state.</p> <p>This enables <b>RELAY1</b> to drive a siren / sounder which will sound if the alarm is triggered. If '<b>COUPLE_ON</b>' is set, users will no longer have control of the output <b>RELAY1</b> via <b>ON</b>, <b>OFF</b> or <b>PULSE</b> commands.</p> <p><b>Default setting is COUPLE_OFF</b></p>	All Users	<b>N</b>	<b>N</b>
Command format	<p>Format:</p> <p><b>COUPLE_ON</b> Latches RELAY1 on when alarm triggered</p> <p><b>COUPLE_OFF</b> Returns RELAY1 to normal operation</p> <p>Example: <b>COUPLE_ON</b> latches an alarm condition to output1 (Relay1)</p>			
<b>NOTIFY</b>	<p>Sets which users should be notified when the alarm is triggered and the method of the notification. For each user notification can be set as follows:</p> <p><b>OFF</b> = No notification</p> <p><b>SMS</b> = SMS Only</p> <p><b>CALL</b> = Call Only</p> <p><b>BOTH</b> = SMS and Call</p> <p><b>The default setting is User 1 SMS all other users off.</b></p>	User 1 Only	<b>N</b>	<b>N</b>
Command format	<p>Format: <b>NOTIFY_USERx*notification*</b></p> <p>Example: <b>NOTIFY_USER1*BOTH*</b> Sets user1 to receive call and SMS alarm notification</p>			

## Alarm Configuration Commands (cont.)

Command	Description	Access	when Armed?	Multi Command SMS?
<b>POWER ALERT</b>	When set to 'ON'. Provides notification of power up and power failure of the device. Will be sent to each user who has 'notify' settings of SMS or both. Independent of Alarm status, operates if 'Armed' or 'Disarmed' The default setting is <b>POWER ALERT OFF</b>	All Users	<b>N</b>	<b>N</b>
Command format	POWER_ALERT_OFF POWER_ALERT_ON			

## Using The Sleep, Nap & Repeat Functions

The RMC300R has some powerful functions that enable the user to perform intermittent timed functions. The **SLEEP** and **NAP** functions enable the user to benefit from some substantial power saving whilst asleep (useful if the device is battery powered) and perform a pre-set sequence of actions when waking up. **SLEEP TIME** is set in whole hours from 1 hour to 255 hours (10 days 15 hours).

The **SLEEP** command sends the RMC300R to sleep, once for the pre-determined time. The **NAP** function causes the device to enter a sleep / wake / sleep cycle that continues until the **NAP OFF** command is received by the device or the alarm is triggered.

When you need a command to be repeated at regular intervals and do not wish to use the **NAP** function, **REPEAT** performs this task. The **REPEAT** time is set in whole minutes with a minimum of 1 minute and a maximum of 43200 (exactly 30 days). You might for example use repeat to give you an hourly **STATUS** report.

**REPEAT** cannot be used when either **SLEEP** or **NAP** are active

Command	Description	Access	Active when Armed?	Multi Command SMS?
<b>SLEEP TIME</b>	Sets the time in hours for the RMC300R to SLEEP or NAP. Maximum 255 hours, minimum 1 hour.	User 1 Only	N	N
Command format	<b>SLEEP_TIME</b> *x* Where x is the number of hours to sleep. The default setting is 1 hour.			
<b>ON WAKE</b>	The command to actioned when the RMC300R wakes from <b>SLEEP</b> or <b>NAP</b> .	User 1 Only	N	N
Command format	<b>ON_WAKE</b> *command* The default setting is to provide a status report.			
<b>SLEEP</b>	Enter <b>SLEEP</b> mode. The device will sleep for the time set the <b>SLEEP_TIME</b> command. If the RMC300R is ARMED before entering sleep mode, the module will return to full function mode if the alarm is triggered.	All Users	Y	Y
Command format	<b>SLEEP</b>			
<b>NAP ON</b>	The device will <b>NAP</b> for the time set by <b>SLEEP_TIME</b> . Once the sleep time has elapsed, the RMC300R will wake, receive and action any SMS messages. Once the message processing is completed, the device will re-enter nap mode. If the RMC300R is ARMED before entering the nap, the system will return to full function mode if the alarm is triggered.	All Users	Y	Y
Command format	<b>NAP_ON</b>			
<b>NAP OFF</b>	Will return the device to full function mode from the NAP mode. This will only take effect when the module wakes up after SLEEP TIME has expired. (It needs to wake up to process the SMS command that turns NAP off.)	All Users	Y	Y
Command format	<b>NAP_OFF</b>			

See the following page for the **REPEAT** command usage.

## Using The Sleep, Nap & Repeat Functions (cont.)

Command	Description	Access	Active when Armed?	Multi Command SMS?
<b>REPEAT TIME</b>	Sets time in minutes for device to repeat function defined by 'On Repeat'. Maximum 43200 (30 days), minimum 1 minute.	User 1 Only	<b>N</b>	<b>N</b>
Command format	<b>REPEAT_TIME*x*</b> The default setting is 60 minutes.			
<b>ON REPEAT</b>	Specifies the command to be actioned when device in repeat mode and repeat time is reached.	User 1 Only	<b>N</b>	<b>N</b>
Command format	<b>ON_REPEAT*command*</b> The default command is <b>STATUS</b>			
<b>REPEAT ON</b>	Activates repeat mode. Device will action command defined by 'On Repeat' at time interval specified by 'Repeat Time' Cannot be used when <b>SLEEP</b> or <b>NAP</b> are active	All Users	<b>Y</b>	<b>Y</b>
Command format	<b>REPEAT_ON</b>			
<b>REPEAT OFF</b>	Deactivates repeat mode	All Users	<b>Y</b>	<b>Y</b>
Command format	<b>REPEAT_OFF</b>			

## Setting USER1 – New Device Start Up

When the device is first powered up, or when the SIM card is changed, the settings of USER1 must be stored. The following procedure will store the user name and number of user1 and set all other settings and functions to the factory default values (refer to Command list for detail of factory defaults).

The SIM card must have credit (if PAYG) and we recommend disabling any diverts, including to voice mail. This is best achieved by fitting the SIM into a mobile phone and following your network providers instructions.

**NOTE:** Any information stored on the SIM will be erased when inserted into the RMC-300R.

- 1) Power Off
- 2) Insert SIM
- 3) Power On
  - Power LED comes on
  - Netlight Fast Flash (Acquiring Network)
- 4) Wait Approximately 30 seconds
  - Netlight transitions to slow flash (Network Acquired)
  - Wait 5 Seconds
  - Alarm LED slow flashing once per second (SIM card not initialised)
  - After 10 seconds
  - Alarm LED low flashing once per second (initialisation started)
  - After 30 seconds
  - Alarm LED rapid flashing (waiting for User1 SMS)
- 5) Send User1 SMS (any case but no spaces)  
USER1RMC300R\*name\*number\*  
After 15 seconds  
receive SMS on designated user1 number
- 6) Send Confirmation SMS (must be from User1 number any case, with space)  
CONFIRM USER1  
Alarm LED stops flashing  
User1 stored
- 7) RMC-300R performs normal startup (without power off/on or reacquiring network)

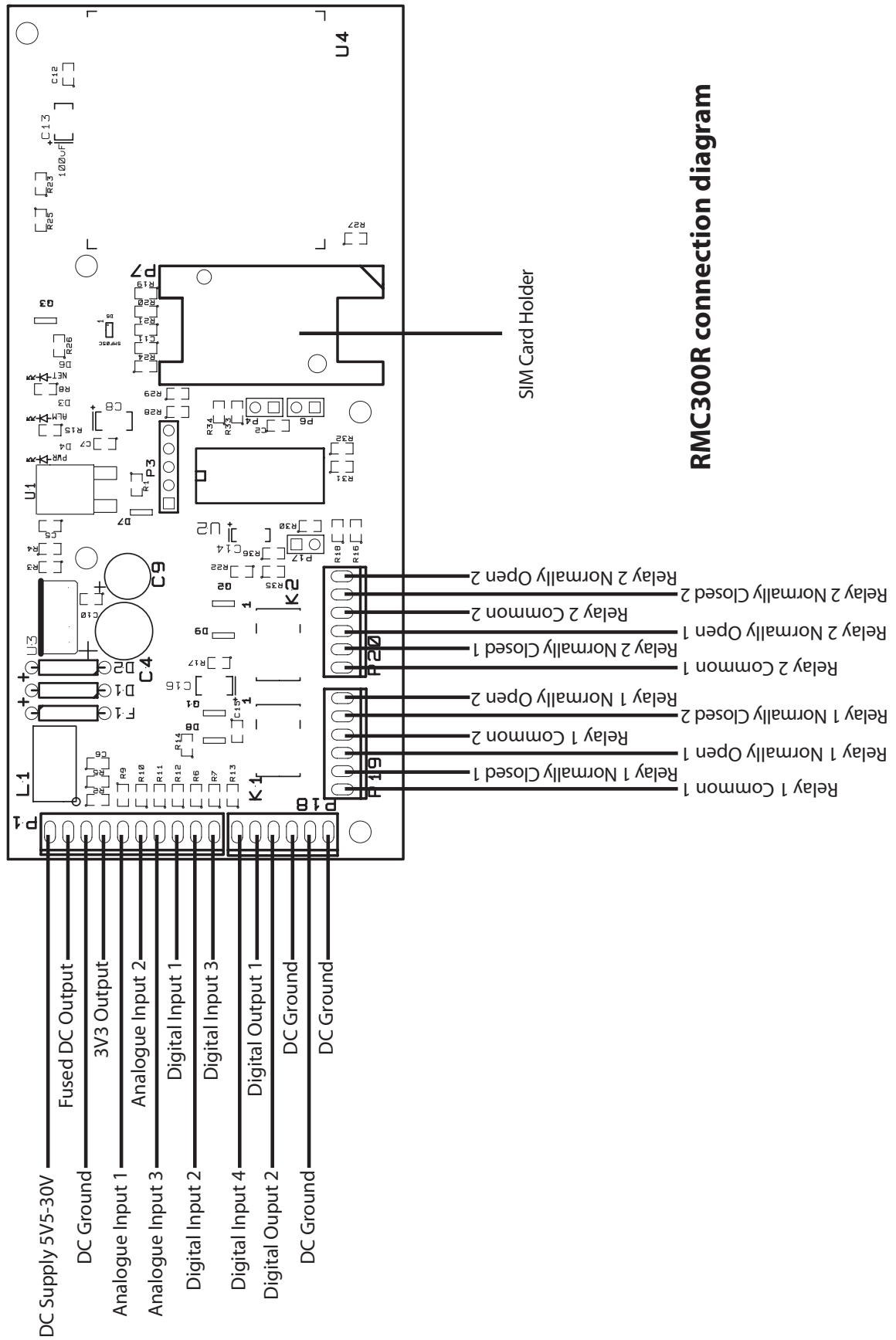
If after step 5) you do not get a message back from the device, check that the power light is on and the Netlight is flashing slowly.

You can resend the user1 setup message without powering down the device, rechecking the user1 number provided in your SMS. Check your SIM is active by fitting into a mobile phone and check credit if using a Pay As You Go SIM card.

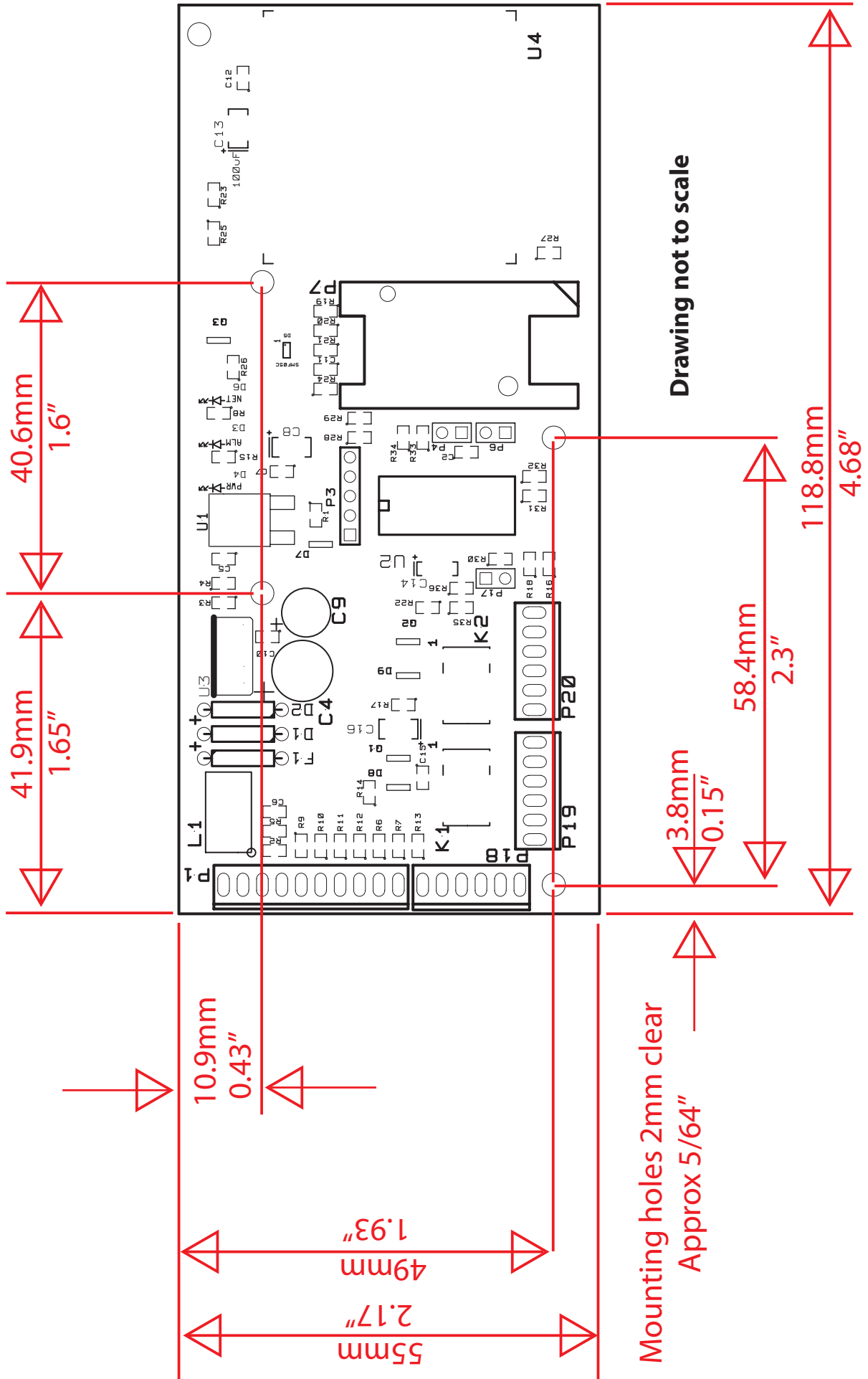
## **RMC300R Normal Start Up**

- 1) Power On
  - Power LED comes on (when fitted)
  - Netlight Fast Flash (Acquiring Network)
  
- 2) Wait Approximately 10-30 seconds
  - Netlight transitions to slow flash (Network Acquired)
  
- 3) After 1 Minute
  - Alarm LED rapid flashing for 3 seconds indicating device ready
  
- 4) If Power Alert was set, a message will be sent by RMC300R indicating power interrupted.

**RMC-300R is now ready to use.**



**RMC300R connection diagram**



## Optional GPS System for RMC300R

The RMC300R can be fitted with an optional GPS module with combined antenna. This option significantly adds to the capability of the system bringing the ability to report location by tracking movement and speed as well as Geo-Fencing whatever the RMC300R is installed into. For example, the user can be alerted as soon as the RMC300R moves outside of a set area.

Many of the functions set out in the manual can be combined with the additional GPS information, for example using the REPEAT function to send a LOCATION report at regular intervals.

The MOVE function allows the user to set a geo-fence area. In the event of the RMC300R being moved out of the area the alarm

Command	Description	Access	Modify when Armed?	Multi Command SMS?
<b>LOCATION</b>	Sets time in minutes for device to repeat function defined by 'On Repeat'. Maximum 43200 (30 days), minimum 1 minute.	User 1 Only	<b>N</b>	<b>N</b>
Command format	<b>REPEAT_TIME*x*</b> The default setting is 60 minutes.			
<b>ON REPEAT</b>	Specifies the command to be actioned when device in repeat mode and repeat time is reached.	User 1 Only	<b>N</b>	<b>N</b>
Command format	<b>ON_REPEAT*command*</b> The default command is <b>STATUS</b>			
<b>REPEAT ON</b>	Activates repeat mode. Device will action command defined by 'On Repeat' at time interval specified by 'Repeat Time' Cannot be used when <b>SLEEP</b> or <b>NAP</b> are active	All Users	<b>Y</b>	<b>Y</b>
Command format	<b>REPEAT_ON</b>			
<b>REPEAT OFF</b>	Deactivates repeat mode	All Users	<b>Y</b>	<b>Y</b>
Command format	<b>REPEAT_OFF</b>			
<b>MOVE</b>	Sets Geo fence based on current location. Becomes active when alarm is armed. 0 – Turns feature OFF 1 – Sets smallest 2 – Sets Medium 3 – Sets Largest  Only available when optional GPS installed.	All Users	<b>N</b>	<b>N</b>
Command format	<b>MOVE*0*</b> <b>MOVE*1*</b> <b>MOVE*2*</b> <b>MOVE*3*</b>			

Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS
Security						
password	Changes password for user1 setup	PASSWORD*old*new*	User1 only	RMC300R	N	N
user1	Changes User1 name and number	USER1password*name*number*	User1 only	blank	N	N
user2	Changes User2 name and number	USER2*name*number*	User1 only	blank	N	N
user3	Changes User3 name and number	USER3*name*number*	User1 only	blank	N	N
Call Assign	Assigns the command to be actioned when user calls device	CALL ASSIGN*command*	User1 only	STATUS	N	N
Command Define	Sets a user definable label for a user definable command	COMDEF*label*command*	User1 only	RPT, SETTINGS USERS	**	N
		** COMDEF unavailable when Armed, defined command can be used when armed				
Reports						
Status	Responds to sender with device status showing input and output status	STATUS	All Users	N/A	Y	Y
Settings	Responds to sender with device settings report showing device name, alarm limits and settings for Move, Repeat Minutes, Sleep Hours, Pulse Seconds and Power Alert settings.	SETTINGS	All Users	N/A	Y	Y
Commands	Responds to sender with device commands report showing Device Name and user definable commands Call Assign, On Wake, On Repeat and Comdef.	LIMITS	All Users	N/A	Y	Y
Users	Responds to sender with list of all authorized Users Name and Numbers. Includes Serversms number.	USERS	All Users	N/A	Y	Y
Network	Responds to sender with registered network and signal strength. Also includes device Firmware Revision and Serial Number.	NETWORK	All Users	N/A	Y	Y
Location	Provides report of lat, long, speed. Only functional if optional GPS installed.	LOCATION	All Users	N/A	Y	Y
Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS

	Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS
I/O	Pulse Delay	Specifies output on time in seconds when using pulse delay. Minimum 1, Maximum 3600 (1 hour)	PULSE DELAY*x*	User1 only	1	N	N
	Out1 on	Turn digital output 1 on	OUT1 ON	All Users	OUT1 off	N	Y
	Out1 off	Turn digital output 1 off	OUT1 OFF	All Users	OUT1 off	N	Y
	Pulse Out1	Pulses digital output1	POUT1	All Users	N/A	N	Y
	Out2 on	Turn digital output 2 on	OUT2 ON	All Users	OUT2 off	N	Y
	Out2 off	Turn digital output 2 off	OUT2 OFF	All Users	OUT2 off	N	Y
	Pulse Out2	Pulses digital output2	POUT2	All Users	N/A	N	Y
	Relay1 on	Turn Relay1 on	RELAY1 ON	All Users	RELAY1 OFF	N	Y
	Relay1 off	Turn Relay1 off	RELAY1 OFF	All Users	RELAY1 OFF	N	Y
	Pulse Relay1	Pulses Relay1	PRELAY1	All Users	N/A	N	Y
	Relay2 on	Turn Relay2 on	RELAY2 ON	All Users	RELAY2 OFF	N	Y
	Relay2 off	Turn Relay2 off	RELAY2 OFF	All Users	RELAY2 OFF	N	Y
	Pulse Relay2	Pulses Relay2	PRELAY2	All Users	N/A	N	Y
	A1 Temperature Sensor	Set 'A1 TEMP ON' when optional EMM-Tek temperature sensor is connected to Analogue Input 1 (A1). The input will then read temperature in Celsius	A1 TEMP ON A1 TEMP OFF	User1 only	OFF	N	N
Limits	Vin Limits	Sets upper and lower limits for Analogue Input 1 alarm in Volts	VIN LIMITS*lowerlimit*upperlimit*	All Users	Lower8 Upper 19	N	N
	A1 Limits	Sets upper and lower limits for Analogue Input alarm in Volts	A1 LIMITS*lowerlimit*upperlimit*	All Users	Lower0 Upper 3.5	N	N
	A2 Limits	Sets upper and lower limits for Analogue Input 3 alarm in Volts	A2 LIMITS*lowerlimit*upperlimit*	All Users	Lower0 Upper 3.5	N	N
	A3 Limits	Sets upper and lower limits for Analogue Input 4 alarm in Volts	A3 LIMITS*lowerlimit*upperlimit*	All Users	Lower0 Upper 3.5	N	N
	D1 Alarm	Sets input D1 to trigger alarm on high or low input	D1 Low D1 High	All Users	Trigger on high	N	N
	D2 Alarm	Sets input D2 to trigger alarm on high or low input	D2 Low D2 High	All Users	Trigger on high	N	N
	D3 Alarm	Sets input D3 to trigger alarm on high or low input	D3 Low D3 High	All Users	Trigger on high	N	N
	D4 Alarm	Sets input D4 to trigger alarm on high or low input	D4 Low D4 High	All Users	Trigger on high	N	N

	Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS	
Labels	Devname	Changes the equipment device name	DEVNAME*devicename*	User1 only	RMC300R	N	N	
	Out1 Label	Sets label for output 1	OUT1 LABEL *xxxxx*	User1 only	OUT1	N	N	
	Out2 Label	Sets label for output 2	OUT2 LABEL *xxxxxx*	User1 only	OUT2	N	N	
	Relay1 Label	Sets label for Relay 1	RELAY1 LABEL *xxxxx*	User1 only	RELAY1	N	N	
	Relay2 Label	Sets label for Relay 2	REALY2 LABEL *xxxxxx*	User1 only	RELAY2	N	N	
	A1 Label	Sets Label for Analogue Input 1	A1 LABEL *xxx*	User1 only	A1	N	N	
	A2 Label	Sets Label for Analogue Input 2	A2 LABEL *xxx*	User1 only	A2	N	N	
	A3 Label	Sets Label for Analogue Input 3	A3 LABEL *xxx*	User1 only	A3	N	N	
	D1 Label	Sets Label for Digital Input 1	D1 LABEL *xxx*	User1 only	D1	N	N	
	D2 Label	Sets Label for Digital Input 2	D2 LABEL *xxx*	User1 only	D2	N	N	
	D3 Label	Sets Label for Digital Input 3	D3 LABEL *xxx*	User1 only	D3	N	N	
	D4 Label	Sets Label for Digital Input 4	D4 LABEL *xxx*	User1 only	D4	N	N	
	Alarm	Arm	Activate alarms	ARM	All Users	Disarmed	Y	Y
		Disarm	Disable alarms	DISARM	All Users	Disarmed	Y	Y
		Couple	Latches RELAY1 ON when alarm triggered if in armed mode. Disables user control of RELAY1	COUPLE ON COUPLE OFF	All Users	COUPLE OFF	N	N
		Notify	Defines which users should be notified of alarm trigger and method of notification.	NOTIFY USERx*OFF* NOTIFY USERx*SMS* NOTIFY USERx*CALL* NOTIFY USERx*BOTH*	User1 only	User 1 SMS All other users off	N	N
	Power Alert	When set to 'ON'; Provides notification of power up and power failure of the device. Will be sent to each user who has 'notify' settings of SMS or both. Independent of Alarm status; operates if 'Armed' or 'Disarmed'	POWER ALERT OFF POWER ALERT ON	User1 only	Notify OFF	N	N	

	Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS
Sleep	Sleep time	Sets time in hours for device to sleep or nap. Maximum 255hours, minimum 1hour.	SLEEP TIME*X*	User1 only	1	N	N
	On Wake	Command to be actioned when module wakes from 'Sleep' or 'Nap' mode	ON WAKE*command*	User1 only	STATUS	N	N
	Sleep	Enter sleep mode. Device will sleep for time set by Sleep Time. If ARMED before entering sleep mode, module will return to full function mode if alarm is triggered.	SLEEP	All Users		Y	Y
	Nap On	Device will 'Nap' for time set by Sleep Time. Once sleep time has elapsed, device will wake, receive and action SMS messages. Once message processing is complete, device will re-enter Nap mode. If ARMED before entering sleep mode, module will return to full function mode if alarm is triggered.	NAP ON	All Users		Y	Y
	Nap Off	Will return module to full function mode from nap mode. This will only take effect when the module wakes after sleep time has expired	NAP OFF	All Users		Y	Y
Repeat	Repeat Time	Sets time in minutes for device to repeat function defined by 'On Repeat'. Maximum 43200 (30 days), minimum 1 minute.	REPEAT TIME*X*	User1 only	60	N	N
	On Repeat	Command to be actioned when device in repeat mode and repeat time is reached	ON REPEAT*command*	User1 only	STATUS	N	N
	Repeat On	Activates repeat mode. Device will action command defined by 'On Repeat' at time interval specified by 'Repeat Time' Can not be used when sleep or nap are active.	REPEAT ON	All Users		Y	Y
	Repeat Off	Deactivates repeat mode	REPEAT OFF	All Users		Y	Y

Command	Description	Format	Access	Default	Modify When Armed	Multi Command SMS
GPS						
Move	Sets Geo fence based on current location. Becomes active when alarm is armed. 0 – Turns feature OFF 1 – Sets smallest 2 – Sets Medium 3 – Sets Largest  Only available when optional GPS installed.	MOVE*0* MOVE*1* MOVE*2* MOVE*3*	All Users	N/A	N	N
SERVER						
serversms	Sets phone number for server	SERVERSMS*number*	User1 only	N/A	N	N
pushsms	Pushes device data to server via SMS	PUSHSMS	All Users	N/A	Y	Y

End of RMC300R manual  
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