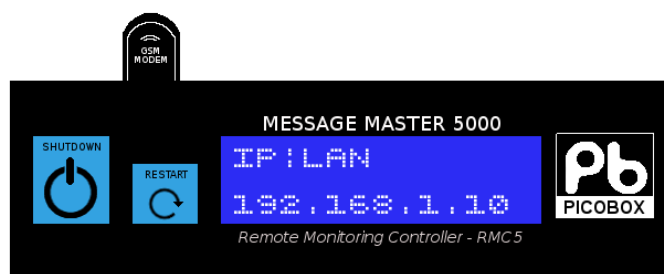# Message Master 5000

Remote Monitoring Controller
User Manual Version 5.0
Model: RMC-5

Important!
Please read this user manual carefully before using this device.

Table of Contents

Chapter 1: Introduction

Thank you for your purchase of PICOBOX Message Master 5000 series Remote Monitoring Controller. This controller has lots of powerful built-in features and functionalities yet it is easy to setup and use. You are advised to read through this manual to understand each feature in details so as to fully exploit the capabilities of this product.

MM5K is an alarm controller and also a SMS gateway. When used as an alarm controller, the device can monitor up to 12 digital inputs from different equipment interfaced to it. It accepts dry contact (voltage-free). The user can define each input according to the type of equipment the inputs are interfaced to. When the inputs changes state from normal to alarm or vise-versa, SMS and E-Mail are send out to recipients. MM5K has powerful features and is flexible, allowing users to decide how the messages are sent.

MM5K also has 2 relay outputs. The outputs can be turned On/Off via remote SMS command.

MM5K supports high level protocols such as Modbus RTU via Serial or TCP/IP and SNMP. When the system requires analog monitoring points, a Picobox DAQ will be included in the packaged.

MM5K and Picobox DAQ combination offers wide variety of selection. It can support up to 84 tags, combination of digital and analog points.

Figure 1: Product Overview

Chapter 2: Safe Use of Device

The following section contains important operating and maintenance instructions.
Please read it carefully.

Warnings

To reduce the risk of electric shock:
- Do not remove the cover of this device. There are no user-serviceable parts inside.
- Do not expose this device to rain or moisture.

To reduce the risk of electric shock and electromagnetic interference, please use recommended accessories only.

Note

The serial number of this device is show on the side of the product. You should record the number and other vital information here and retain this booklet as a permanent record of your purchase.

Mode No:

Serial No:

Date of Purchase:

Dealer Purchase from:

Dealer Address:

Dealer Telephone No:

Important Safety Instructions

In these safety instructions, the word [device] refers to Message Master 5000 (RMC5) and all its accessories.

Read Instructions – Read all the safety and operating instructions before operating the device.

- Retain Instructions – Save the safety and operating instructions for future reference.
- Heed Warnings – Heed all warnings on the device and in the operating instructions.
- Follow Instructions – Follow all operating and maintenance instructions.
- Cleaning – Unplug this device from the wall outlet before cleaning. Wipe the device with a clean soft cloth. If necessary, out a cloth in diluted neutral detergent and wring it well before wiping the device with it. Finally, clean the device with a clean dry cloth. Do not use benzene, thinner or other volatile liquids or pesticides as they may damage the product's finishing. When using chemically treated cleaning cloths, observe their precautions accordingly.
- Accessories – Use only accessories recommended in this manual. Always use specified connection cables. Be careful to connect devices correctly.
- Water and Moisture (Hazard of electric shock) – Do not use the device near water or in rainy or moist situations.
- Ambient Temperature – Do not put this device near a heater.

- Placing or Moving – Do not place this device on an unstable cart, stand, tripod, bracket or table. The device may fall and cause serious damage to itself and serious injury to others. A device and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the device and cart combination to overturn.
- Power Sources – The AC adapter should be operated only from the type of power source indicated on the making label. If you are not sure of the type of power supply to your premises, consult your device dealer or local power company.
- Power Cord Protection – Power cords should be routed so that they are not likely to be walked on, or pinched by items placed upon or against them. Pay particular attention to plugs and the point from which the cords exit the device.
- Overloading – Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- Object and Liquid Entry – Never push objects of any kind into this device through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Be careful not to spill liquid of any kind onto the device.
- Servicing – Do not attempt to service this device yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified personnel. Opening the cover will void your warranty.
- Do not install the device in the following locations as this can cause a fire or electric shock:
  - Hot locations
  - Close to a fire
  - Very humid or dusty locations
  - Locations exposed to direct sunlight
  - Locations exposed to salt spray
  - Close to flammable solvents (alcohol, thinners, etc.)
- If any of the following occurs, immediately switch the device OFF, unplug it from the mains power supply and contact your distributor or agent:
  - The device emits any smoke, heat, abnormal noise, or unusual odor
  - A metal object falls into the device
  - The device is damaged in some way

  Do not continue to use the device as this can cause a fire or electric shock.
- Please observe the following when using the device. Failure to do so can result in a fire or electric shock.
  - Do not use flammable sprays near the device
  - Do not subject the device to strong impact

Chapter 3: Product Overview

The Message Master 5000 series is a standalone device built around a 32 bit microcontroller. It has built-in communication drivers that can communicate with Modbus RTU via Serial RS-485 or TCP/IP. It supports RS-232 GSM modem or USB GSM modem.

Physical	
Name	Message Master 5000
Model	RMC-5
Operating Voltage	9 to 30 VDc, 2 Watts max power consumption
Processor	32 bit 536MHz microprocessor
Memory	Non-volatile storage memory stores history logs
GSM Model	USB Modem Quad-Band HSDPA/UMTS (900/2100MHz) GSM/GPRS (850/900/1800/1900MHz)
Operating Environment	0 – 55 degree Celsius, 0 – 90% non-condensing
Size & Weight	160 (L) x 40 (H) x 110 (D) mm, 500gm
Security Level	2 Level security, Administrator and User Level
Real Time Clock	Date & Time with Network Time Protocol Support
LCD Display	16 x 2 Characters with backlight, selectable status display
	Displays I/O, Network, Telco and System Information
Communication Port	RS-232, USB Port, 1 x RJ45 Ethernet 10/100 Mbps
Interface	Web-based, accessible via web browser software
Network	
Network support	Static IP support
Mobile Network	APN
Network Protocol	TCP/IP, UPD, HTTP, DNS, SMTP, SNMP
Modbus TRU	Serial, TCP/IP
Tags	
Digital Inputs	12 built-in digital inputs
Relay Outputs	2 built-in relay outputs, Local/Remote activation.
Tag Configuration	Supports up to 84 tags, combination of digital/analog inputs and relay outputs.
Digital Inputs Configuration	Independent configuration of input description, alarm state and response time.
Analog Inputs Configuration	Independent configuration of input description, scaling, hysteresis, alarm threshold and alarm delay.
Contacts	
Operation Group	Up to 64 contacts
Authorizer Group	Up to 8 contacts
Escalation Group	Up to 8 contact each level. Level 1 & 2
Forward Number	1 mobile phone number

Notification & Alerts	
SMS Alerts process speed	5-7 seconds
E-Mail Alerts	Supports Gmail & Yahoo mail servers. Requires authentication.
Repeat SMS Alert	Up to 3 times
Repeat Interval	2 to 30 minutes
Escalation Interval	5 to 60 minutes
Event Log	
Event logging	Stores up to 500 History Logs. First In First Out event recording.
Data Format	XML format
Alarms	
SMS Alert	Enable individually per tag per group or Enable all per group.
E-Mail	Enable individually per tag or Enable All.
Trending	
Configuration	Can configure up to 8 tags per chart
Log Interval	Minimum 10 minutes
Mimic	
Screen	Up to 4 mimic screens
Configuration	HTML based configuration. Requires HTML knowledge.
Admin	
User	Can configure up to 5 users.
Auto Health Message	Send system check report

Table 3.1: MM5K Technical Details

Getting to know our MM5K
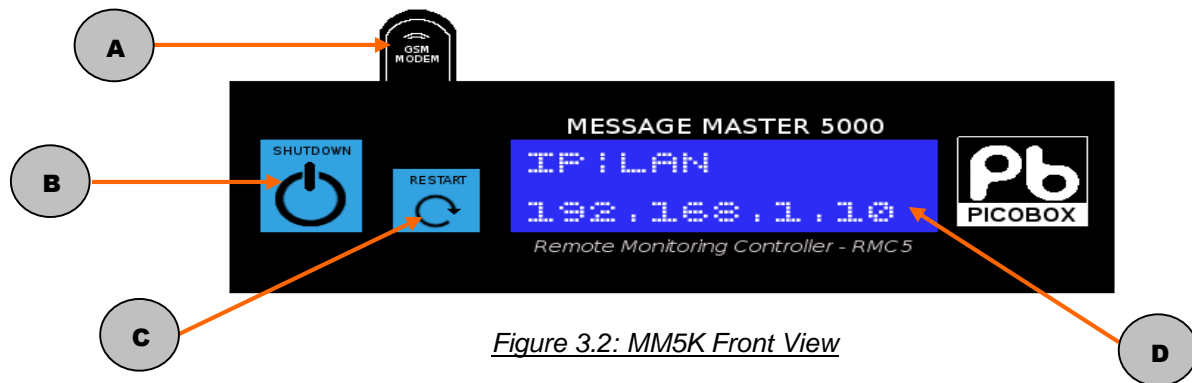
Figure 3.2: MM5K Front View

Label	Description	Comment
A	GSM Modem	USB Quad-Band GSM Modem
B	Power Button	Shutdown device
C	Restart Button	Restart device
D	LCD	Display device information

Table 3.3: MM5K Front View Details
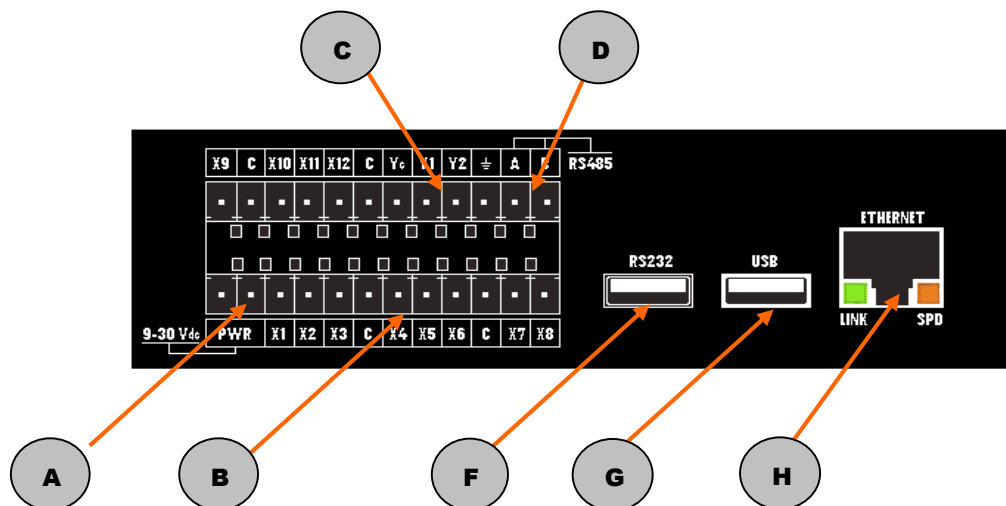
Figure 3.4: MM5K Rear View Details

Label	Description	Comment
A	Power Supply Connection	USB Quad-Band GSM Modem
B	Digital Inputs (12 points)	Shutdown device
C	Relay Outputs (2 points)	Restart device
D	Modbus RTU Serial Connection	
E	RS232 Serial GSM Modem Port	
F	USB GSM Modem Port	
G	Ethernet Port	RJ-45 connector 100 Mbps

Table 3.5: MM5K Rear View Details

Ethernet Port	Color	Function
Link/Act (Green)	On	Ethernet cable connected
	Blinking	Communication is active
Speed (Orange	Off	10 Mbits
	On	100 Mbits

Table 3.4: Ethernet Port

LCD Panel Display

After applying power to MM5K the system will initialize for 15 seconds. The LCD panel display will then lit displaying the general information about the system in the following order. Firmware version, Input/Alarm status, Device ID, Date & Time, IP address and finally the Telco signal strength.

Chapter 4: Hardware Installation

This section will guide you through the installation of your MM5K. Just follow the instructions here and you will have your MM5K installed very quickly.

Before starting installation, ensure that the unit is powered OFF and the power adapter plug is disconnected from the POWER connectors of the unit.

1) Determine a suitable location for the MM5K in selecting location, remember that you will need to connect the power adapter, termination blocks, Ethernet cable, and have GSM signals available. Follow carefully the instructions provided earlier in this manual on the safe use of this device.
2) Wire the input/output/Modbus RS-485 connections between the equipment and MM5K using the supplied pluggable screw terminal connectors to the unit.

Wiring Instructions: Example

(Figure 4.1) Show the power supply connection to MM5K. Power supply can be from 12-24 volts dc. A 12Vdc adapter is supplied as a standard accessory. The digital inputs shown are dry contact types only. The 2 outputs are relay types with contact ratings of 30V, 2 amps DC max. Also shown in the figure is the connection of high level communication via Modbus Protocol using Serial RS-485. The ground must be connected in MM5K.
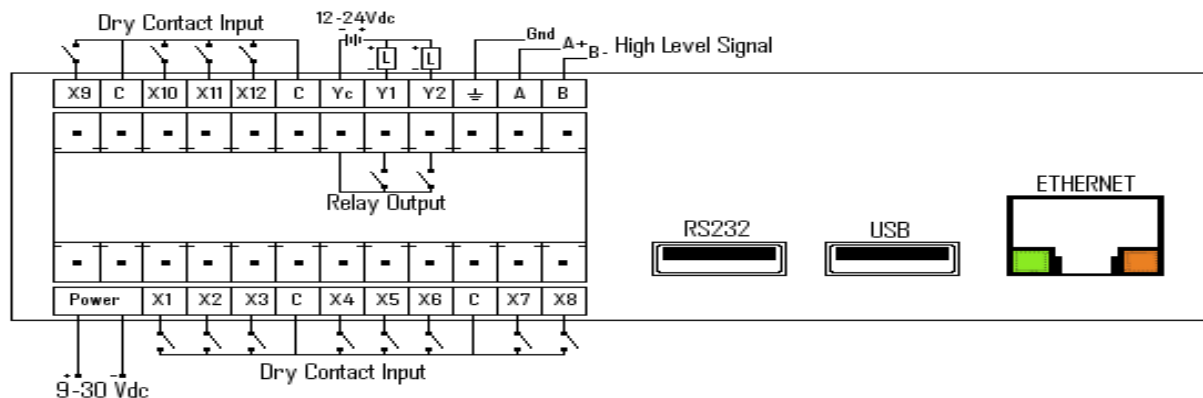
Figure 4.1: MM5K Wiring Diagram (Rear View)

3) Insert a valid GSM mobile SIM card into the USB GSM modem. Plug in the USB GSM modem in the correct port. The port allocated for USB GSM modem is the port with label 'USB' beside the Ethernet port. Refer to Figure 4.2.
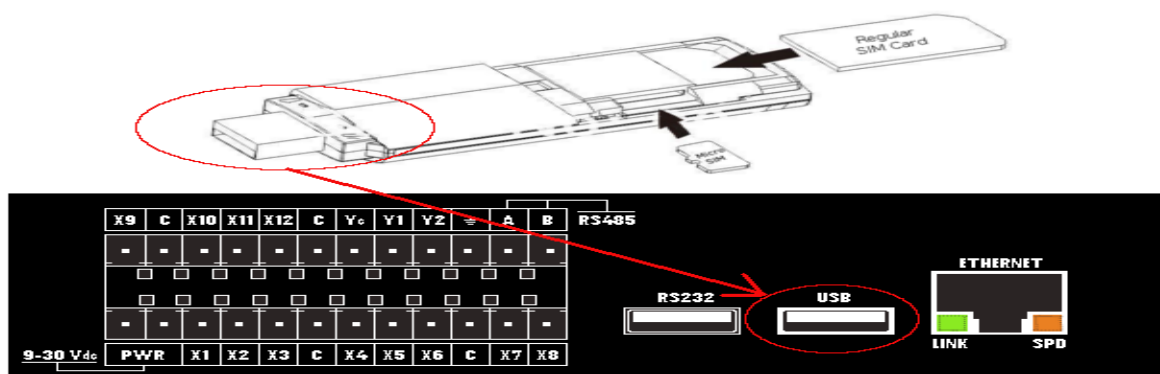
Figure 4.2: Inserting a USB Modem

Chapter 5: Software Configuration

Configuration of messages, contacts, email etc. is done using a PC connected via Ethernet cable.

Alarm Triggering
An alarm event happens when any one or more digital/analog input changes state. MM5K continuously monitor the input for these events. When an alarm event occurs, it picks up information from the configuration memory and performs the necessary SMS/E-mail actions. Depending on the configuration, some or all the mobile phones specified will receive the SMS message.

The format of the message is [Date/Time][Device ID][Input Description]→ [Status]

Date/Time
The time of alarm event occurs. The real-time clock within MM5K provides the time stamping information.

Device ID
The identity assigned by the user during software configuration.

Input Description
The user defines input description and status during software configuration. Each digital/analog input will have its own unique input description name and status test.

Example of an SMS alarm message:

08/10/2015 15:08 > (North Tower) Power Supply in Basement 1 →Failure

Up to 64 mobile phones can be alerted to. This group of phone number is known as operation group. Additionally, if a forward phone number is specified, it will receive the alarm notification as well.

Please refer to the following pages on how to configure MM5K.

Configuring the Device
MM5K is a web-based product. Using any web-browser on the PC, the user with administrative rights can access all the user configuration pages.

Power-Up
Ensure that the GSM modem has a SIM card inserted to it before power up the MM5K. Upon power up, the MM5K default Device ID and firmware version will be displayed on the LCD panel:

Next, the LCD displays the Digital Input State (depending on the DI state):
If connected equipment is in Open State, a '0' will display on the respective column.
If connected equipment is in Close State, a 'c' will display on the respective column.

Next, the LCD displays the Digital Input Alarm State:
If connected equipment is in Normal State, a '_' will display on the respective column.
If connected equipment is in Alarm State, an 'X' will display on the respective column.

Next, the LCD displays the default Device ID:

Device ID:
MM5K
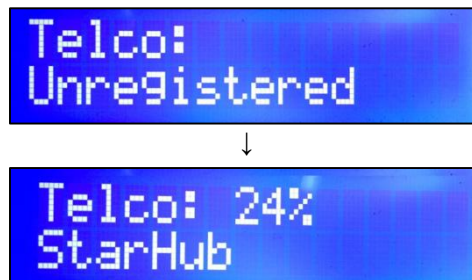
Next, the LCD displays the Date and Time:
The date and time is formatted as dd-mm-yyyy.

Date: 2015/10/08
Time: 14:01:03

Next, the LCD displays the IP address:

IP: LAN
192.168.1.10

Upon successful detection of the GSM modem and GSM network, the display shows the network service provider and the signal strength:

Telco:
Unregistered

↓

Telco: 24%
StarHub

5.1. Standalone Configuration

In a standalone environment, MM5K is directly connected to a PC which requires crossover Ethernet cable. Crossover Ethernet cable together with MM5K.

In order for the PC to be connected to MM5K, the PC must be manually set to a static IP address that is within the same subnet as the MM5K. Given the default configuration of IP address 192.168.1.10 and 255.255.255.0 for the subnet mast, a suitable IP addresses for the PC would be 192.168.1.100 or any other IP address other than 192.168.1.10.

Warning
Remember that you **SHOULD NOT** use the same IP address for your PC and MM5K. If you are unsure of how to set static IP address for your PC, please refer to Appendix A.

5.2. Network Environment Configuration

If the MM5K is connected to a network with multiple PCs, be careful of the effects of any DHCP servers. MM5K does not contain DHCP capabilities, and remember that of the PC and RMC to communicate to each other, the IP addresses of the PC and MM5K must be in the same subnet.
For the network with a DHCP server, you must allocate a fixed IP address for use by the MM5K, and your MM5K's IP address must be set to this address. If the MM5K default settings are not suitable, connect MM5K to a standalone PC to change its networking settings first before connecting to your network. Consult your network system administrator if you have doubts.

When swapping a MM5K connection between a network and a standalone PC, remember that a direct connection to a standalone PC requires a crossover Ethernet cable, which is supplied together with the MM5K.

Accessing MM5K Web Pages

Once the IP address of MM5K is known, the user can setup the device using any web browser.

Open a web browser application on your PC. It can be Firefox, Chrome, Internet Explorer or any other standard web browser. At the address bar, type in the IP address of MM5K and press enter, the Login Page will then loaded.
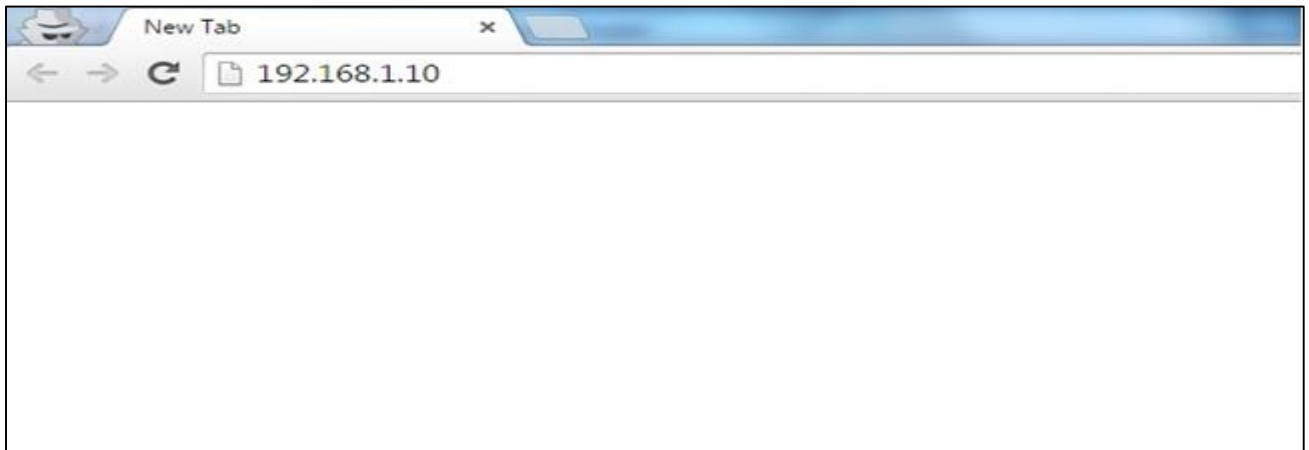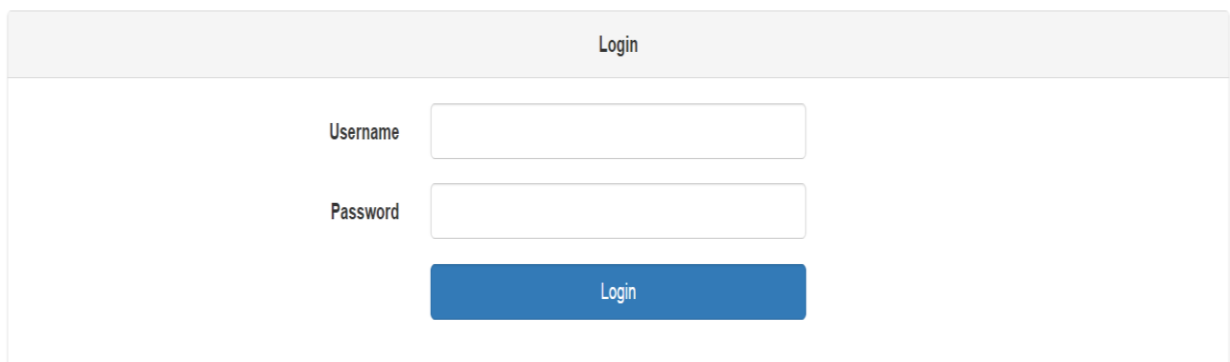
Figure 5.2.1: Address Bar

5.3. Login Page

The login page will then be loaded. Enter the Username and Password on the text box. The default user name for administrator is 'admin' and Password is 'admin.

Figure 5.3.1: Login Page

If you type in any of the fields wrongly, an error message will appear as shown in the figure.

Figure 5.3.2: Login Page

5.4. Status Page

Once you're successfully logged in, you will be directed to status page.

Figure 5.4.1: Status Page

As you notice, '**Status**' button is emphasized to distinguish which page you are currently viewing.

On the upper left panel of the page is the navigation title buttons which you will be using to navigate to each page. On the upper right panel is general information displaying the 'Device ID', 'IP Address', 'Date & Time', 'Telco Signal Strength', 'Username' and 'Logout Button'.
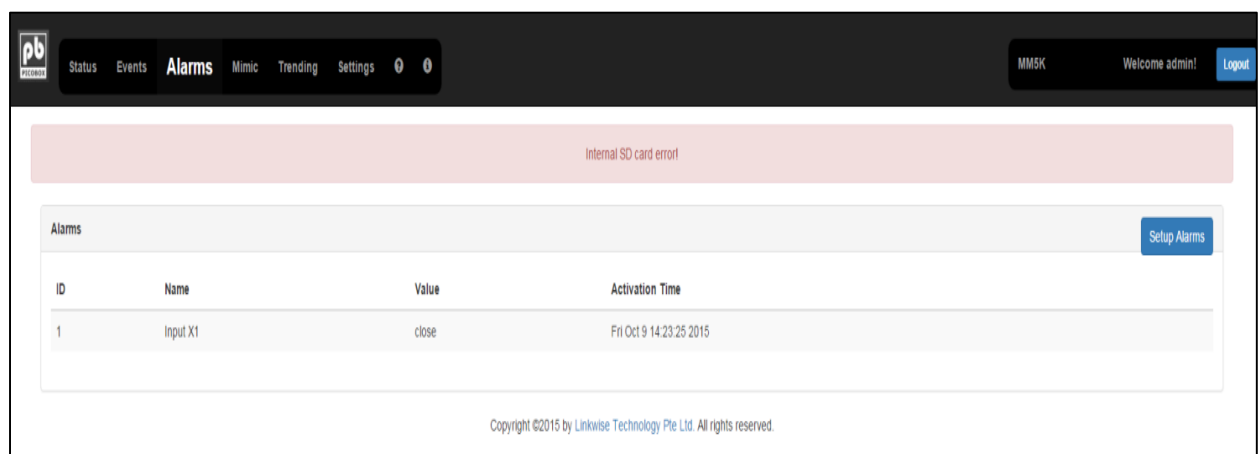
Figure 5.4.2: Device Information

5.5. Alarms Status Page

Alarms page displays any online alarm. Online alarms can also be queried remotely by sending? **Alarms** command. Make sure your phone number is configured inside the contacts.

Figure 5.5.1: Alarms Page

5.6. Mimic Status Page

Mimic page gives graphical representations of the current status of the inputs being monitored. When monitored points are in Normal State, the respective inputs are in **Green** state. Otherwise, when the monitored points are in Alarm State, the inputs will flash in **Red**.
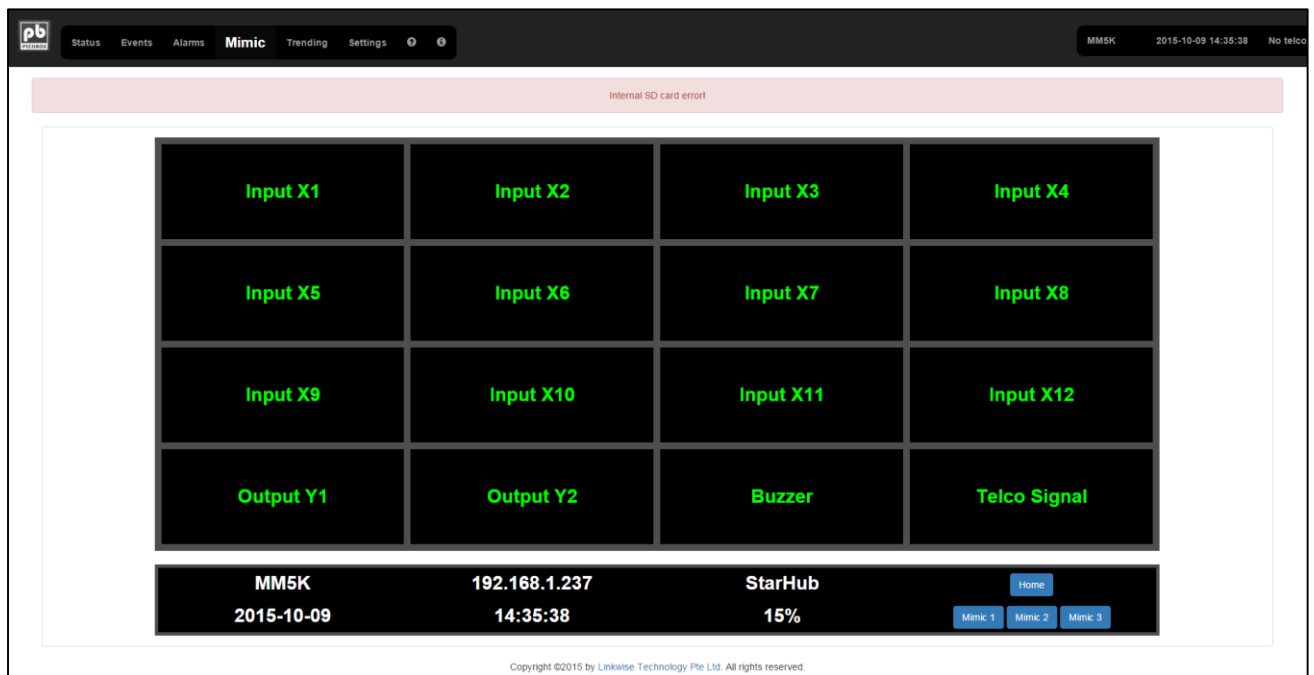
Figure 5.6.1: Mimic Page

5.7. **Trending Status Page**

Trending display graphical representation of data logs from inputs when value changes or when the log interval expires. Trending page consist of 4 panels, each panel can support 8 inputs simultaneously. Each input in single panel will be displayed in different colors for distinction. This page is very useful when you are monitoring your data within a given period.
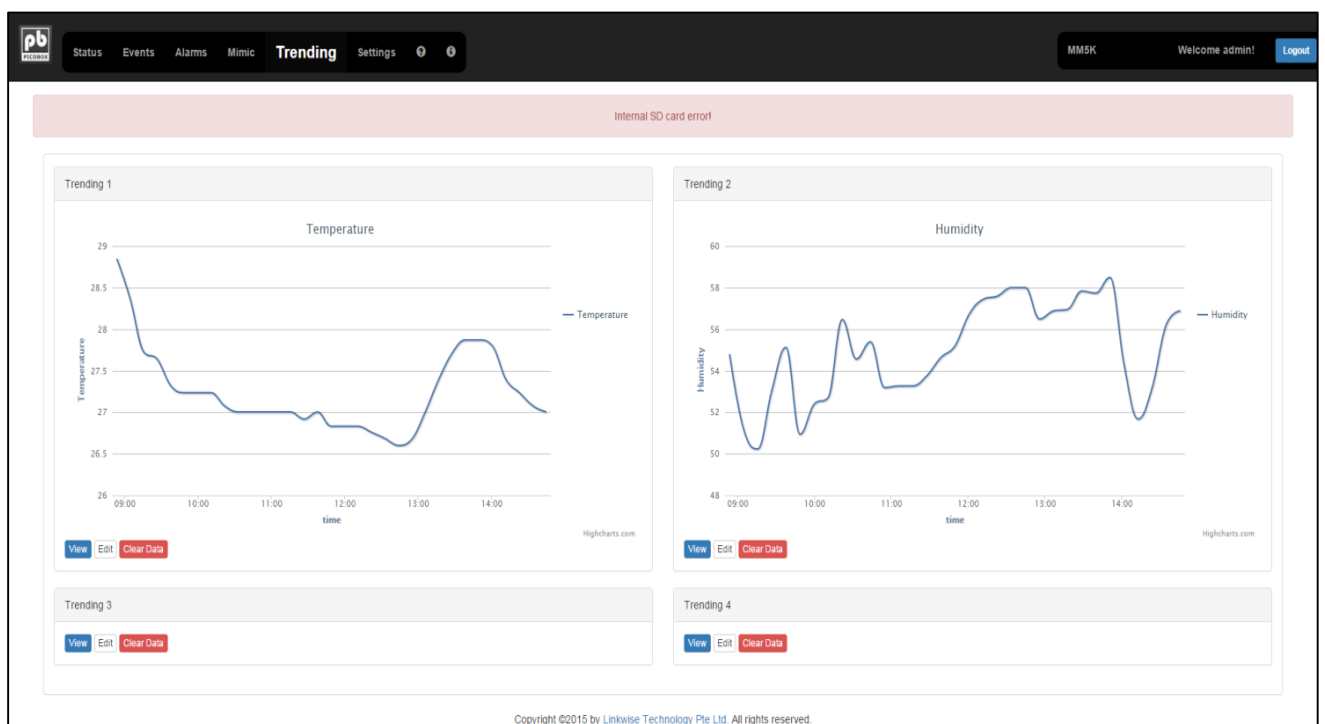
Figure 5.7.1: Trending Page

5.8. Settings Page (Tags)

This page shows the template for defining the tag description, tag type, tag address and device address for high level communication.

A standalone alone can support 12 digital inputs and 2 relay outputs. Relay output can be triggered via web-based GUI or through remote by sending command the MM5K

If system requires analog inputs or more digital inputs, a Picobox DAQ module will be added to the package. Picobox DAQ offers wide varied of selection depending on the system requirements. Please refer to Picobox DAQ for more detailed information. Remember to press 'Submit button for any changes to take effect.

Figure 5.8.1: Tag Page

1. **ID** – Is the unique distinction of each 'Tags'. For Tags ID 1-12 are assigned to 12 built-in digital inputs, Tags ID 13-14 are assigned to built-in relay outputs, Tags ID 15-20 are assigned to other internal functions of the system and Tags ID 21-84 are available to cater additional analog/digital inputs.

2. **Enable** – This field is for the user to enable polling of tag connected via high level communication. Built-in tags are always enabled.

3. **Name** – This field is for the user to provide meaningful name for the point being monitored. The name can be up to 32 characters long.

4. **Device Address** – This filed is for the user to input the Picobox DAQ device address. Each module/equipment will have unique addresses from 1-32. If protocol is Modbus TCP/IP, <device id>:<ip address>. Example: 1:192.168.1.10, 2:192.168.1.10.

5. **Tag Type** – Type of tag depending on the protocol. Examples are: Modbus Input, Modbus holding register, Modbus Input registers.

Tags Page is divided into two subpages, the Digital Input subpage and Analog Input subpage.

A. **Digital Inputs**

This subpage allows the user to define E-mail/SMS alert description as well as the response time. Remember to press 'Submit' button after any configuration for the changes to take effect.

Figure 5.8.2: Digital Tag Page

1. **Name** – This filed is for the user to provide meaningful name for the point being monitored. The name can be up to 32 characters long. Name provided in 'All Tags' will be carried in Digital/Analog tags respectively.

2. **Open State** – This field describe the state of the input when the contact is open. It can be any description up to 32 characters. Examples are: Alarm, Normal, Start, Stop, Activated, Fault and the like.

3. **Close State** – This field describe the state of the input when the contact is close. It can be any description up to 32 characters. Examples are: Alarm, Normal, Start, Stop, Activated, Fault and the like.

4. **Response Time** – This defines the minimum time the input state must remain when toggled from close to open or vice versa for the device to register a change in state. This also helps to eliminate spurious triggering due to noise. The default setting is 0.2 seconds or 200 milliseconds. The value can be set between 0.2 to 3600 seconds.

5. **Digital Alarm** – This field defines the alarms state of each point being monitored. The status page will display the state of the input based on the state description configured. If none is selected, the input is used as a status monitoring, no SMS will be send when the input changes state.

B. **Analog Inputs**

This subpage allows the user to define E-mail/SMS alert description as well as the response time. Remember to press '**Submit**' button for any changes to take effect.

Figure 5.8.3: Analog Tag Page

1. **Name** – This field is for the user to provide meaningful name for the point being monitored. The name can be up to 32 characters long. Name provided in 'All Tags' will be carried in Digital/Analog tags respectively.

2. **Divide by** – This field is for the user to set value for scaling purpose.

3. **Offset** – This field is for the user to input value to add/subtract to the final value after scaling before determining state of analog input.

4. **Hysteresis** – This field is for the user to set a threshold from alarm value to normal value to prevent spurious triggering of analog alarms.

5. **Unit** – This field is for the user to define the unit of analog input.

6. **Lo-Lo (Critical Low)** – This field is for the user to define the critical low value of analog input. Tick the box beside the value to enable critical low alarm.

7. **Lo (Low)** – This field is for the user to define the low value of analog input. Tick the box beside the value to enable low alarm.

8. **Hi (High)** – This field is for the user to define the high value of analog input. Tick the box beside the value to enable high alarm.

9. **Hi-Hi (Critical High)** – This field is for the user to define the critical high value of analog input. Tick the box beside the value to enable critical high alarm.

10. **Alarm On delay –** This defines the minimum time the analog input value must be higher or lower than their normal value before it triggers alarm. The default setting is 0 second. The value can be set between 0 to 3600 seconds.

11. **Alarm Off delay –** This defines the minimum time the analog input value must be within the normal range value before the alarms be cleared out. The default setting is 0 second. The value can be set between 0 to 3600 seconds.

5.9. Contacts Page (Phone Group)

This page allows the user to configure the recipients of SMS/E-Mail alerts. It is also used for authenticating received remote query and commands via SMS. Each group can cater 8 contacts except for 'Forward Group'. Remember to press '**Save**' button for any changes to take effect.

Figure 5.9.1: Contacts

1. **Operation Group** – These groups of users are those that will receive SMS/E-Mail alert when one or more alarms are activated. To acknowledge alarms, send acknowledgement command (#ack).

   a. **Phone –** The phone number to use for sending SMS alerts and health check. Key in phone number using +6512345678. Where +65 is the country code.

   b. **Name** – The name to use for displaying in event logs

   c. **E-Mail** – The E-Mail address to use for sending E-Mail alerts and health check. Key in valid E-Mail i.e. enquiry@linkwisetech.com

2. **E-Mail Preference** – This field allows the user to select the frequency of receiving E-Mail alerts. Select 'Immediate' to received E-Mail and sms at the same time.

3. **Authorizer Group** – These groups can perform all remote queries, commands and update contact details. These groups will not receive SMS/E-Mail alert.

4. **Forward Group –** This group (if assigned) will receive all incoming and outgoing SMS/E-Mail to MM5K.

   Note: *Do not set sim card number used in MM5K in forward group. This will cause the device to send no-ending SMS to it and can cause the unit to malfunction.*

5. **Escalation Group –** These groups will receive notification when SMS alerts are not acknowledged by the 'Operations Group'.

6. **Group A –** If set and alarms are not acknowledge. Notification will be sent to group A. Time starts from the 1st SMS alert to operation group.

7. **Group B –** If set and alarms are not acknowledge. Notification will be sent to group B. Time starts from the notification to escalation group A.

   Note: *If alarms are not acknowledged, new SMS alerts would not escalate to Escalation Group A and B. In order to receive new Escalation notification, any operation group should send acknowledge command (#ack) to MM5K.*

5.10. Notification Page

This page determines how alerts are sent and how many times to repeat an alert if not acknowledged. This page also includes 'E-Mail Configuration' as well as sending test E-mail/SMS and deleting E-Mail/SMS.

A. **Notification & Alerts** – Notification settings determine how user is notified when alarm is present. Remember to press '**Submit**' button for any changes to take effect.

Figure 5.10.1: Notification & Alerts

a.   **Repeat On Alarms** – If enabled SMS alerts are repeated based on the frequency specified in this field if alarm is not acknowledged.

b.   **Repeats Interval** – Time interval from alarm activation, after which a repeat SMS alert will be send out if alarm was not acknowledged.

c.   **Notify On Normalize** – Sends notification when input returns to normal state from alarm state.

d.   **Escalation Interval A** – Time interval from alarm activation, after which a notification to escalation group A (level 1) will be send out.

e.   **Escalation Interval B** – Time interval from escalation interval A, after which a notification to escalation group A (level 1) will be send out

B. E-Mail Configuration – This feature enables MM5K to send E-Mail alert. If enabled, alert message will be send to specific operations group configured in contacts. Remember to press '**Submit**' button for any changes to take effect.

Figure 5.10.2: E-Mail Configuration

a. **E-Mail Alert** – Tick this box to send alarms through E-Mail.

b. **Outgoing Server** – This field is for the user to configure a valid SMTP server in order to send email alerts.

c. **Port** – The port to use, default for SMTP without encryption is 25 (584, 2525 are also used). For encrypted TLS usually 587.

d. **Authenticate** – If user's mail server requires authentication, tick this box. A login and password is required when enabled.

e. **Login** – The login credentials to use when authenticating

f. **Password** – The password credential to use when authenticating.

g. **Start TLS** – Tick this box if your mail server is encrypted.

h. **Mail from** – The E-Mail address in which the MM5K uses to send email notifications.

C. E-Mail & SMS Test – Key in valid phone number or E-Mail address then press the button accordingly to test if MM5K can send out E-Mail or SMS after all settings are completed without triggering any alarm.

Figure 5.10.3: E-Mail & SMS Test

D. Delete E-Mail or SMS – Press any of the buttons accordingly to clear the outbox.

Figure 5.10.4: Delete (Outbox)

5.11. Alarms Page (Alarm Groups)

This page allow the user to configure which phone group be notified when a specific alarm is triggered. Tick 'All' to set all monitoring points to be sent out to each phone group accordingly. Tick 'E-Mail Alert' to be able to send out notifications through email. Groups A-H represents Operations Group A-H. Remember to press '**Submit**' button for any changes to take effect.

Figure 5.11.1: Alarms

5.12. Trends Settings Page

This page allow user to configure how MM5K store data to draw charts. Each trend can save data for up to 8 tags. The data is saved when the value changes or the log interval expires for the particular tag. Remember to press '**Submit**' button for any changes to take effect.

A. **Name** – Any description for each trend panel which can be defined by the user.

B. **Log Interva**l – Time in which MM5K logs data from input monitoring points. Minimum log interval time is 10 minutes. Default is 0, which means the MM5K will only log data when there is a value changed from normal to alarm state.

C. **Tags (1-8)** – The tags to be log on a particular trend.

Figure 5.12.1: Trends Settings

5.13. Mimic Settings Page

This page is used for mimicking traditional indication panels used in factories and buildings. MM5K provides up to four different Mimic screens. Mimic configuration requires some knowledge of HTML tables. Press '**Default**' button to reset back the settings to its default value. Remember to press '**Submit**' button for any changes to take effect.

Figure 5.13.1: Mimic Settings

5.14. Admin Page

This page gives the user the administrator control over MM5K. It allows the user to set the date & time, device ID and NTP server. This page also allows user to configure additional user, it can be an admin or guest user. Remember to press 'Submit button in each configuration box for any changes to take effect.

Date & Time – The date and time should use the following format: date/month/year (dd/mm/yyyy/) and hour:minute:second (hh:mm:ss). For setting the real-time clock of MM5K. Date and time information are also sent to mobile phone(s) when an alarm is triggered. Remember to press 'Submit button for any changes to take effect.

Figure 5.14.1: Date & Time Settings

Device ID – This entry is for the Administrator to assign unique name to MM5K. It accepts up to 32 alphanumeric characters. The device id will be included along with other information when an alarm is triggered. It is advisable to change the device id according to **location** or site name for the user to identify which unit or location send the SMS alerts especially when the Sim card has been replaced. Remember to press 'Submit button for any changes to take effect.

Figure 5.42.2: Device ID Setting

NTP Synchronization – Tick the box to enable time to synchronize with NTP server. Set the host of the NTP server to be used. Select the time zone from the drop down box. After completing the settings, restart the MM5K for the changes to take effect. Remember to press 'Submit button for any changes to take effect.

Figure 5.14.3: NTP Settings

User Authentication – This page allows user with admin privilege to change password, add user, either user with admin privilege or a guest user. A guest user is only allowed to view the status pages. A guest user will be kicked out from MM5K page if it tries to access the settings page. User with admin privilege can add another user with admin privilege by ticking the 'is admin' check box. Subsequently, user with admin privilege can add a guest user by simply adding username and password. MM5K can support up to 4 additional users. Remember to press 'Submit button for any changes to take effect.

Figure 5.14.4: User Authentication

Auto Health Message – This feature automatically sends a system check report over SMS and E-Mail if enabled. The system check report will include Telco Signal Strength, Services Status, and IP address and up time in hours. Auto health message can be configure in daily or weekly basis. Remember to press 'Submit button for any changes to take effect.

Figure 5.14.5: Auto Health Message Settings

Configuration Management – These features allow the user to back up, update and reset the MM5K. Resetting the configuration will include the IP address to reset back to default IP which is 192.168.1.10. Remember to press 'Submit button for any changes to take effect.

Firmware Management – This feaure allow the user to update the firmware version of MM5K. Please take note to only use the firmware provided by Linkwise.
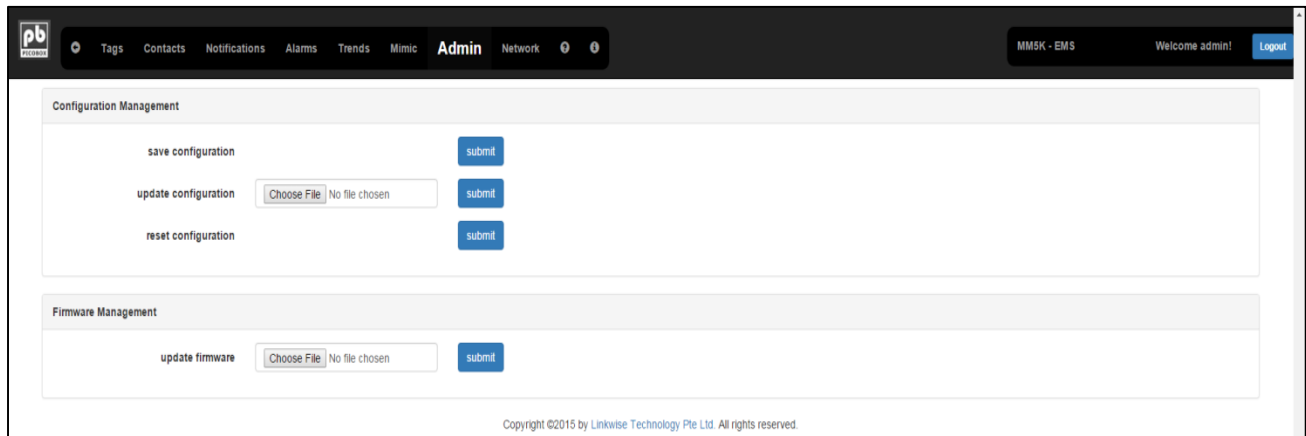
Figure 5.14.6: Configuration and Firmware Management

5.15. Network Settings Page

This page is used to configure the MM5K network and communication settings.

Network – This feature allows user to customize the IP address and subnet mask of the MM5K, this is the IP that is required to access the MM5K web page. When MM5K is connected to a corporate network and MM5K is using the user's company network to send E-Mail alerts, the DNS and Gateway must be set accordingly. Remember to press 'Submit button for any changes to take effect
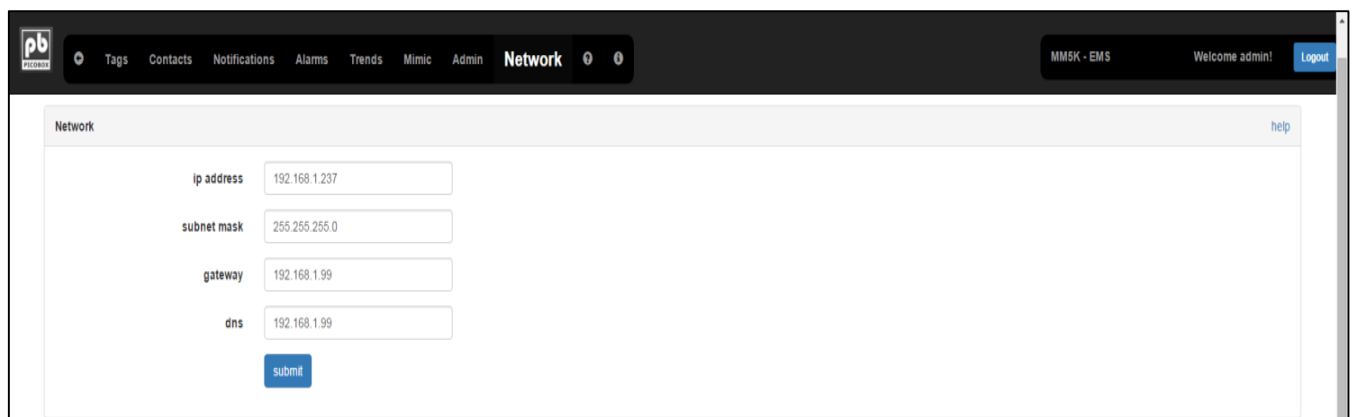

Figure 5.15.1: Network Settings

Telecommunication Provider – MM5K comes with preset configurations of mobile internet, for many telecom providers. To use the preset configuration, simply select the country, the carrier and the correct APN. This information is available from the telecom provider. If the preset information for your carrier is not available, you may ignore the above steps and simply type in the information. This feature must be enable if user want to use mobile data to send E-Mail either standalone system or connected to corporate network. When this feature is enabled, MM5K will send E-Mail via mobile internet. Remember to press 'Submit button for any changes to take effect.

Figure 5.15.2: Mobile Internet Settings

Figure 5.15.3: Mobile Internet Event Log

Events log will log when MM5K is already connected to mobile internet. On the status bar, the GPRS IP will show 0.0.0.0 while it the MM5K is connecting to the internet. Once it is already connected, the status bar will display valid GPRS IP address. Refer to figure 13.2.A and 13.2.B for example.

Figure 5.15.4: Mobile Internet Status Bar

Modem Configuration –MM5K can connect to a serial RS232 modem or to a USB modem. By default, MM5K uses USB modem which comes together in package. If MM5K is using a serial provider please set the correct configuration for proper communication with the modem. The RS232 modem would require a special cable to connect, which is available from Linkwise Technology.
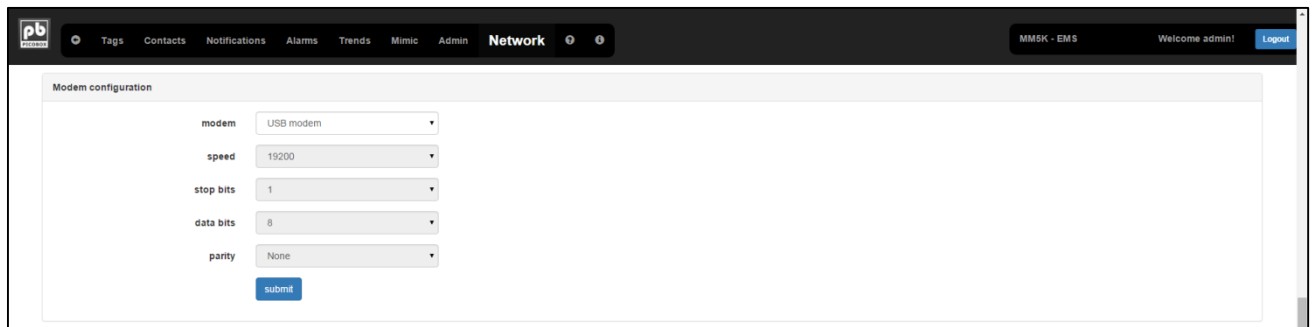

Figure 5.15.5: Modem Configuration Settings

Modem Network Settings – This feature allows the user to set the SIM card SMS center depending on the telco provider.
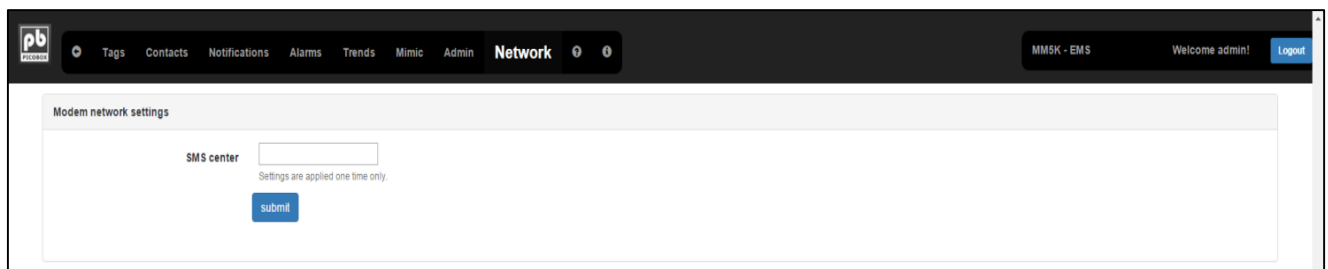
Figure 5.15.6: Modem Network Settings

Modbus Configuration – MM5K can communicate with RS485 RTU Modbus devices, the default configuration is suitable for most slave devices, if not please configure the correct serial configuration; otherwise no communication would be possible with the Modbus slave.
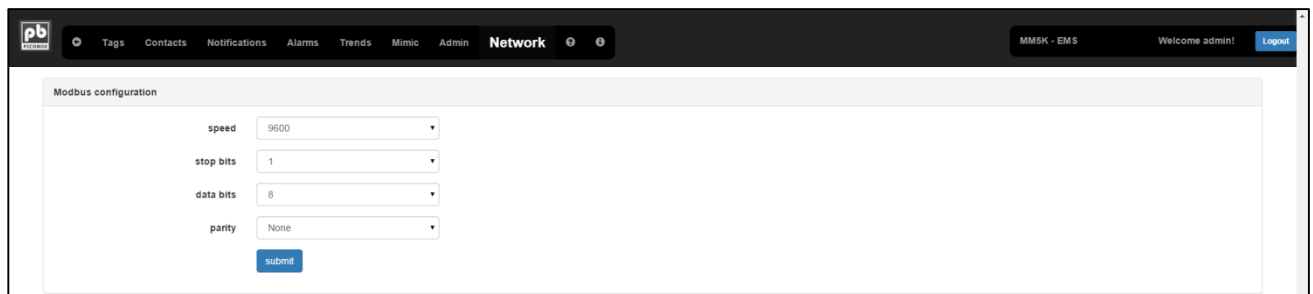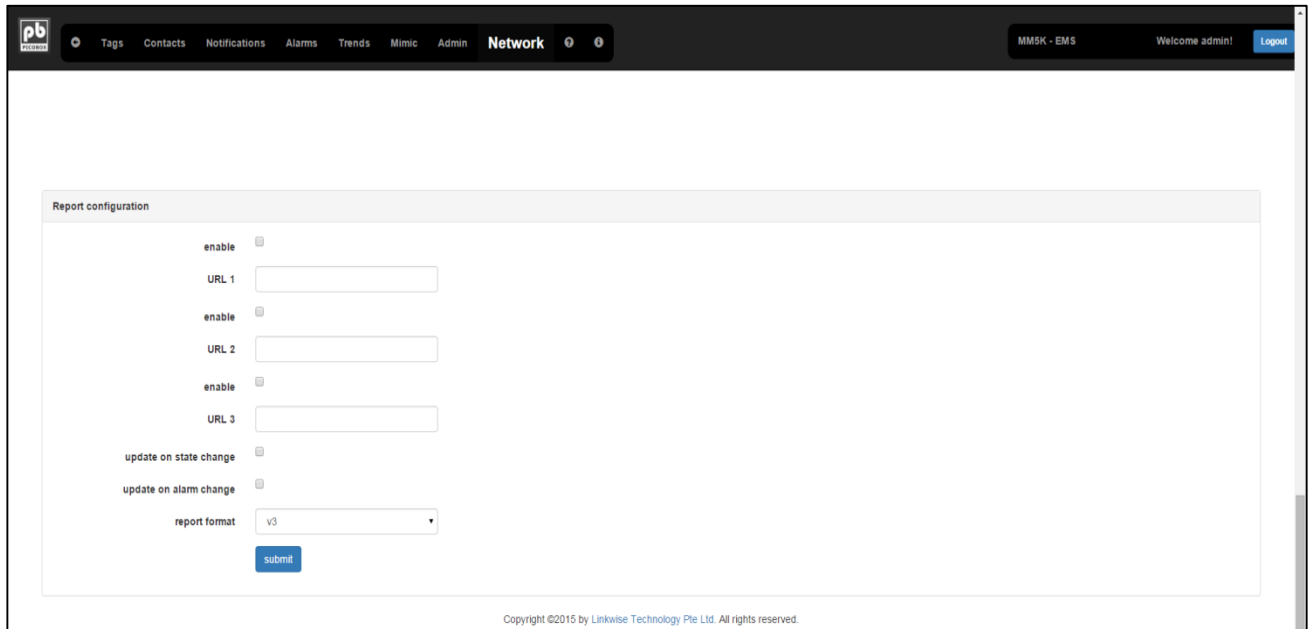
Figure 5.15.7: Modbus Configuration

Report Configuration – MM5K sends reports as HTTP POST to remote servers. Each report contains current status information for the tags. The report format is in easy to parse text format, the format is available on request from Linkwise Technology. For communicating with new servers it is recommended to use the V3 format, which includes much more information than the V2 format. The V3 format also contains values from last reports if last reports were not sent, V2 format only contains the most recent value of each tag.

Figure 5.15.8: Report Configuration

Chapter 6: Remote Management (Help Page)

MM5K allows a number of important functions to be accessed and controlled remotely via SMS by the listed and authorized mobile numbers. The four categories of users (Operation, Escalation, Forward and Authorizer) have specific rights in the use of various remote control functions.

Two important arguments are used in conjunction with the action commands. [?] is a query and [#} is a set of argument.

> Example: ?user op 1 is to query all users in Operation Group 1
> #phone op 1 1 +6512345678 is to set phone number of Contact 1 in Operation   Group 1 to "+6512345678"

All SMS remote commands are non-case sensitive. Space is necessary after each command and parameters passed are separated by commas. Escalation, Forwarder and Operation group have the same remote rights.

Note: If a command sent to MM5K does not match the required format or is invalid, MM5K will not respond to the querying mobile phone no action is taken. Similarly, if any unauthorized mobile phones try to query a status or set command, it will not also respond to that mobile phone.

Query Contacts
An authorized person can perform query and changing of Operation, Forward, Escalation and Authorizer mobile phone numbers stored in the unit's memory.

SMS Remote Action	SMS Command	Sample Command	Comment	Rights
Query Users	?user <group label><group number> [<contact index>]	?user op 1	Query all users in Operation Group 1	All
		?user esc 1	Query all users in Escalation Group 1	
		?user auth	Query all users in Authorizer Group	
		?user fwd	Query forward number	
		?user op 1, 2	Query user in Operation Group 1, Contact 2	

Contacts Management
An authorized person can remotely manage the contacts stored in the unit's memory. The authorizers are allowed to perform, addition, replacement, and deletion of mobile phone numbers remotely using SMS commands.

SMS Remote Action	SMS Command	Sample Command	Comment	Rights
Update User Phone	#phone <group label><group number> <contact index><phone>	#phone op 1 1 +6512345678	Set phone number of contact 1 in Operation Group 1 to "+6512345678"	Authorizer
		#phone auth 1 2	Delete phone number of Contact 2 in Authorizer Group	

Query IO & System Status

Operation and authorized users can query the status of Inputs/Outputs and perform system checks. MM5K will reply the current state of the Input/output and the system status using the respective commands.

SMS Remote Action	SMS Command	Sample Command	Comment	Rights
Query Tag	?tag <tag id / tag name>	?tag 1	Query status of tag ID 1	All
		?tag Power Supply Status	Query status of tag with Name 'Power Supply Status'	
Query Digital Input	?ip <tag id / tag name>	?ip 1	Query status of digital input tag with ID 1	
		?ip Power Supply Status	Query status of digital input tag with Name 'Power Supply Status'	
Query Analog Input	?ai <tag id / tag name>	?ai 20	Query status of analog input tag with ID 20	
		?ai Temperature	Query status of analog input tag with Name 'Temperature'	
Query all Active Alarms	?alarms	?alarms	Query all active alarms	
Query System Status	?sys	?sys	Query system status	

Output Control

Operation and authorized users can switch the 2 outputs ON, OFF.

SMS Remote Action	SMS Command	Sample Command	Comment	Rights
Set Relay Output / Coil On/Off	#on <tag name>	#on Buzzer	Set tag with name 'Buzzer' to 1 or ON	All
	#off <tag name>	#off Buzzer	Set tag with name 'Buzzer' to 0 or OFF	
Set Value (For all rewritable tag)	#tag <tag name>	#tag Thermostat 25	Set tag with name 'Thermostat' to value of 25	

Acknowledge Command

To cancel repeat sms alert sending, any phone configured in operation or forward must acknowledge the alarms by replying acknowledge command (#ack).

SMS Remote Action	SMS Command	Sample Command	Comment	Rights
Acknowledge Alarm	#ack	#ack	Acknowledge alarms and stops sending repeat SMS alerts.	All

Remote SMS command Benefits

With the remote command functionality above it saves time and effort.

- Re-assigning of operation personnel, a change of mobile phone number is also common. Rather than having physically go to the installation site with a laptop, the authorized personnel can perform the change from anywhere using their mobile phone. Where there are many installed sites this becomes very efficient.

End of document!

Thank you for purchasing Picobox MM5K!