



PM05x

Wireless Remote Alarm Datalogger Gateway

User Guide (Valid Version 1.31B)

CONTENTS

1	OVERVIEW.....	1
1.1	Preface	1
1.2	Configurations.....	1
1.3	Typical Applications.....	1
1.4	General Specifications.....	2
2	CONNECTIONS.....	3
2.1	PM050E Input Connections.....	3
2.1.1	Connecting Digital Voltage Inputs and Dry Contacts	3
2.1.2	Input Latches	4
2.1.3	Relay Outputs	4
2.2	PM051E Input Connections.....	5
2.2.1	4-20mA Input Connection	5
2.2.2	Loop Power Sensor	5
2.2.3	Sensor Output 4-20mA.....	6
2.2.4	V+ Fused Supply Output.....	6
3	GETTING STARTED	7
3.1	Driver Installation and Hardware Setup	7
3.1.1	SIM Card	7
3.1.2	GSM Antenna.....	7
3.1.3	Micro SD Card	7
3.1.4	Installing USB Driver for the PM05x for the first time.....	7
3.2	Powering Up	8
3.2.1	Boot-Up.....	8
3.2.2	Error Messages	9
3.2.3	Front-Panel LEDs.....	9
3.3	Setting up HyperTerminal.....	10
4	SETUP GUIDE USING CONSOLE MENU	12
4.1	Login In	12
4.2	Viewing IO Status.....	13
4.2.1	Digital Inputs Status	14
4.2.2	Analog Inputs Status.....	14
4.2.3	Digital Relay Outputs Status	14
4.3	Change IO Setup.....	15
4.3.1	Change Digital Input Setup	16
4.3.2	Change Analog Input Setup.....	17
4.3.3	Change Digital Input Debounce Time.....	18
4.4	Calibration Menu.....	18
4.4.1	Analog Input Calibration	18
4.4.2	Analog Display Offset.....	19
4.4.3	Power Input Calibration	20
4.5	Group and Phone Setup	21
4.5.1	View Group Phone	22

4.5.2	Modify Group	22
4.5.3	Modify Phone	23
4.6	Notification Setup	23
4.6.1	Global Alert Setup	24
4.6.2	Group Notification Setup	25
4.6.3	Phone Notification Setup	26
4.6.4	Inputs Notification Setup	27
4.6.4	Notification Settings	28
4.7	File System	31
4.7.1	Directory Listing	31
4.7.2	Miscellaneous Options	32
4.7.3	Upload Datalog File	32
4.7.4	Upload Datalog	33
4.7.5	Delete Datalog	34
4.8	Alarm Setup	34
4.9	GPRS Setup	35
4.9.1	Access Point Name (APN)	36
4.9.2	Server Setup	36
4.9.2	RTU Setup	37
4.10	Events Logging	37
4.10.1	General Event Log	37
4.10.2	SMS Event Log	38
4.10.3	Status Event Log	39
4.11	View System Status	41
4.12	System Admin	42
4.12.1	Change RTU Name	43
4.12.2	Change RTU GSM Number	43
4.12.3	Change Date and Time	43
4.12.4	Enable/Disable Data Logging	44
4.12.5	Enable/Disable GSM Modem	45
4.12.6	Change GSM Reset Setup	45
4.12.7	Change Health Check Setup	46
4.12.8	Change SMS Alert Mode	48
4.12.9	Change Backlight Settings	49
4.12.10	Change IP Setup	49
4.12.11	Change Login Accounts	51
4.13	Setup Save/Reset/Update	52
4.13.1	Save Setup	52
4.13.2	Reset Setup	52
4.13.3	Update Setup	53
4.14	Hardware Reset	54
4.15	Firmware Update	54
4.16	Console Menu Session Timeout	55
5	SETUP GUIDE USING KEYPAD/LCD MENU	57
5.1	Alarm Setup	57
5.2	IO Setup	58
5.2.1	Calibration	58
5.2.2	View ADC	60
5.2.3	ADC Setup (ADC-1 & ADC-2)	60
5.3	System Admin	61

5.3.1	Accounts	61
5.3.2	RTU Info	61
5.3.3	Clock	62
5.4	Notification	62
5.4.1	Global	62
5.4.2	Groups	63
5.4.3	Phones	63
5.4.4	Setup	63
5.4.5	DIn	64
5.4.6	AIn	64
5.5	Groups	65
5.5.1	View	65
5.5.2	Modify	65
5.6	Phones	65
5.6.1	Add New	66
5.6.2	Delete	66
5.6.3	Modify	66
5.7	Setup Save/Restore	66
5.7.1	Restore	67
5.7.2	Save	67
5.8	Reset	67
5.9	Exiting	67
5.10	Keypad Menu Session Timeout	68
6	SETUP GUIDE USING WEBSERVER	69
6.1	Login	69
6.2	IO Status	71
6.3	Menu & RTU Info	72
6.4	System Status	72
6.5	Digital Inputs Setup	73
6.6	Analog Inputs Setup	74
6.7	Latch Inputs Setup	75
6.8	Relay Outputs Setup	76
6.9	Relay Activation Setup	77
6.10	System Power Setup	80
6.11	Groups Setup	81
6.12	Phones/Emails Setup	82
6.13	Mail Setup	83
6.14	Ping Setup	84
6.15	Global Notification Setup	85
6.16	Digital Inputs Notification	86
6.17	Analog Inputs Notification	87
6.18	Latch Inputs Notification	88
6.19	System Admin Setup	89
6.20	Save/Reset Setup	90
6.21	Logout	91
7	SMS COMMANDS	92
7.1	IO Query	92

7.2 System Query	93
7.3 Reset.....	93
7.4 RELAY ON/OFF/PULSE	93
7.5 Notification Setup	94
7.6 LCD Display of SMS Commands	95
SERVICE AND MAINTENANCE	96

1 OVERVIEW

1.1 Preface

The Testech Electronics PM05x series of Wireless Remote Alarm Datalogger Gateway is a comprehensive GSM-enabled Remote Terminal Unit (RTU) designed to incorporate multiple features such as data logging, remote alert notification and real-time monitoring, allowing for easy integration of customer requirements.

The unit can be used as a pure data logger with data being logged to non-volatile memory or removable SD card. The RTU may also be configured to send alert notifications to preset users upon changes in inputs status. Real-time monitoring via GPRS or SMS is also possible and can be easily integrated with customer's servers or Testech Electronics web-based solution WEBMON.

1.2 Configurations

The PM05x series comes in the following configurations:

- PM050E: 16 digital inputs, 2 digital latches, digital relay outputs.
- PM051E: 8 digital inputs, 4 analog inputs, 2 digital latches, 3 digital relay outputs.

1.3 Typical Applications

Computer Data Centre	Remote Alert of Aircon breakdown, System server breakdown, UPS activated
Cold Room	Remote Alert of Cold Room Temperatures (via Temperature Transmitter, 4-20mA)
Building Automation	Interface to BAS Systems for System Alert
Pump Room/Compressor Room	Remote Alert of Pump, Compressor, and Breaker Tripped
Remote Control	Remote Control of Water Pump and essential utilities
Fire Alarm Panel	Remote Alert of Zone Alarm

1.4 *General Specifications*

PC Interface: USB

DC Input: 6.5VDC to 12VDC

GSM Modem: Embedded GSM 900/1800 GSM Modules.

SIM Card: Support 3V to 5V SIM Card

Removable Storage: Micro SD Card (Up to 2GB support)

Internal Memory: Non-volatile Flash Memory

LCD: Backlit 4 x 20 LCD

Indicator: LED indicator for DC Power, GSM status, CPU Status.

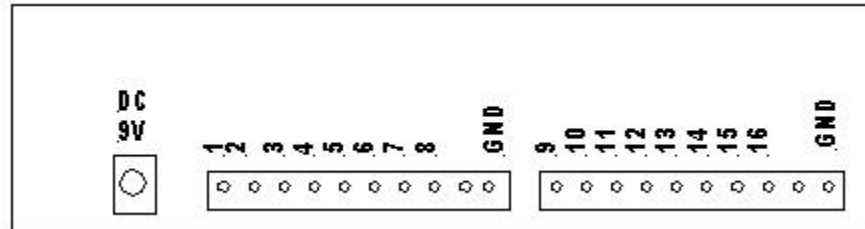
Internal Battery: 3V Battery for internal Real Time Clock backup.

Physical Dimension: 19cm x 16cm x 5cm

2 CONNECTIONS

2.1 PM050E Input Connections

The PM050E RTU has a total of 16 Digital Inputs and these are connected to Connectors 1 to 16. Each input should be ground by connecting to the GND pin.

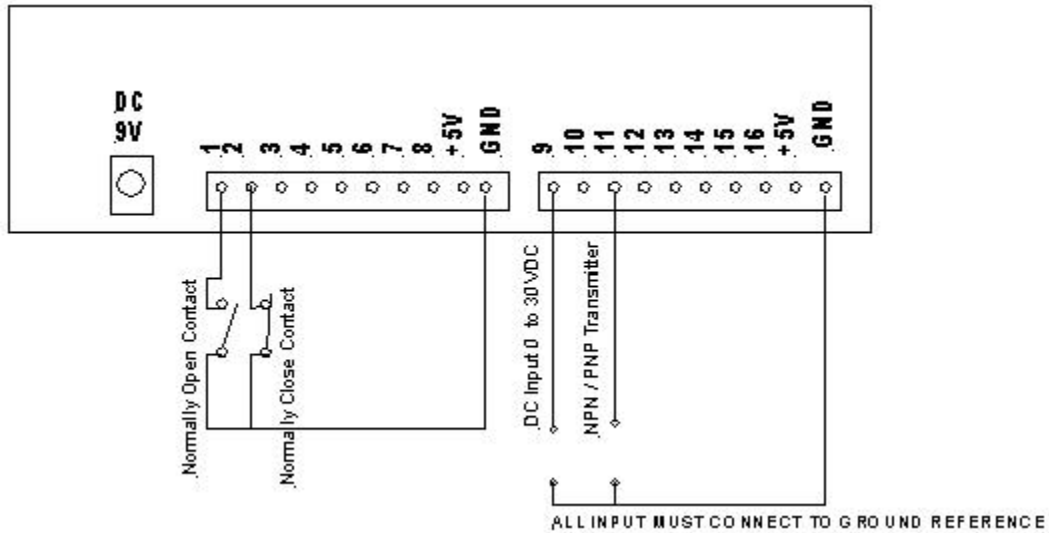


Below are examples of the typical Digital Inputs that can be connected to the PM050E.

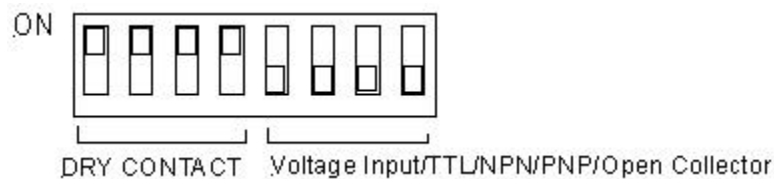
- Dry Contact Input, Normally Open or Normally Close
- DC Input 0 to +30VPeak
- NPN Output
- PNP Output
- TTL/CMOS Output
- Opto-Coupler Output
- Open Collector Output
- Mechanical Contact Switch Output

2.1.1 Connecting Digital Voltage Inputs and Dry Contacts

When connecting dry contact digital inputs to the PM050E, the Piano DIP Switch inside the PM050E must be set to the ON Positions. If you are using DC voltage supply (0 to +30V peak), the Piano DIP switch corresponding to the input channel must be set to OFF position.



There are two DIP switches on the main PCB (requires the enclosure to be opened) for setting the Pull High. Setting the DIP switch to ON position will put a Pull up resistor in series with the switch for dry contact input.



2.1.2 Input Latches

The RTU also includes 2 inputs latches which may be connected to 2 instantaneous Latch Inputs.

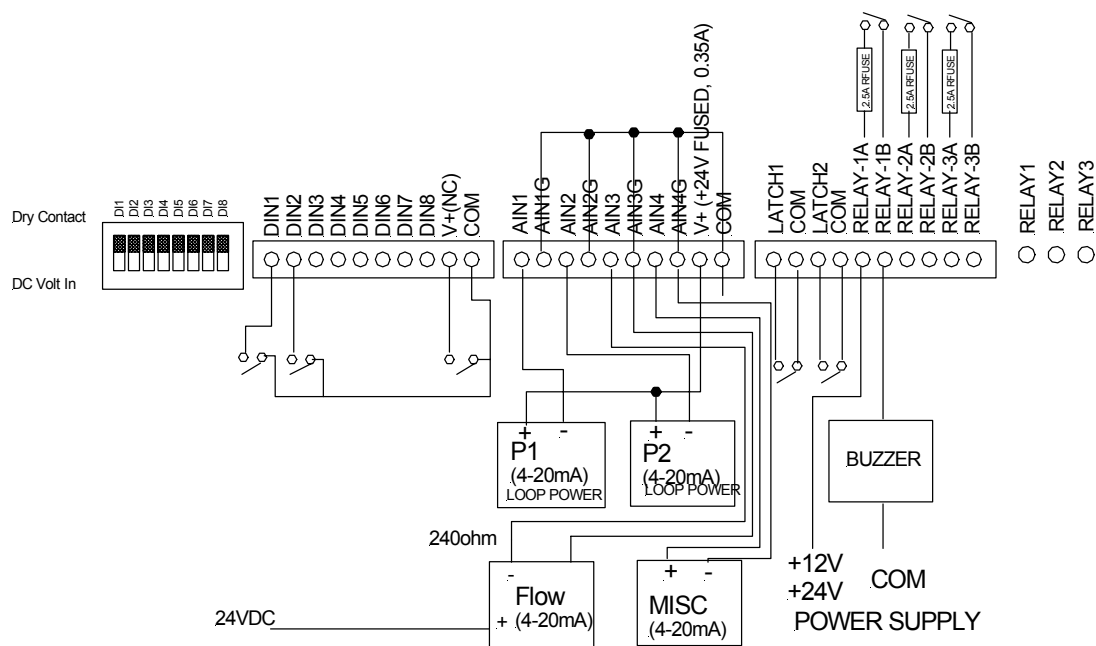
2.1.3 Relay Outputs

There are 3 relay outputs which may be connected to external devices such as pumps, buzzers etc. These can be manually activated or programmed to be activated based on a combination on inputs conditions.

2.2 PM051E Input Connections

The PM051E RTU consists of 8 digital inputs as well as 2 latches and 3 relay outputs which should be connected and configured as per the description for the PM050E in the previous section.

The Analog Input Connection diagram below shows the typical type of connections for analog inputs.



2.2.1 4-20mA Input Connection

The PM051E analog input by default is 4-20mA and can be either Loop Powered or generate 4-20mA. **Note that for the PM051E model where the input range is 0 - 5V, connect a 240ohm 1% resistor at the AIN and the AING connector to convert the 4-20mA to 1-5V.**

2.2.2 Loop Power Sensor

Connect the +ve of the sensor to +12V/+24V DC Supply to +ve of sensor.
Connect the -ve of the sensor to AIN* (* is the AIN channel number).
Connect the AIN*G to COM on the connector.

2.2.3 Sensor Output 4-20mA

For Sensor Instruments that generate a 4-20mA Output (and not loop powered)

Connect the +ve Output of the sensor to the AIN*

Connect the -ve Output of the sensor to the AIN*G

2.2.4 V+ Fused Supply Output

For certain model, the V+ connector output for the analog IO connector is connected to the incoming supply of the PM051E and is diode protected against reverse polarity and is fused by a resettable fused 0.34A standing current. Do not exceed 24V for the rated fuse.

3 GETTING STARTED

3.1 *Driver Installation and Hardware Setup*

3.1.1 SIM Card

A valid SIM Card is required and should be inserted in the SIM card tray before powering up.

1. First ensure that the SIM card PIN code is cleared as it is not needed for the PM05x.
2. Press the yellow button with a fine object (like a paper clip) to remove the SIM card tray.
3. Place the SIM card with the contact facing upward.
4. Re-insert the SIM card tray.

3.1.2 GSM Antenna

Ensure that the provided GSM antenna is fitted onto the antenna connector and properly secured.

3.1.3 Micro SD Card

Ensure that the provided Micro SD card is properly inserted in the slot. The PM05x RTU supports Micro SD cards of up to 2GB for data logging.

3.1.4 Installing USB Driver for the PM05x for the first time.

To setup the RTU using a Windows PC, a USB connection is required between the RTU and the PC. Follow the steps below to install the USB driver.

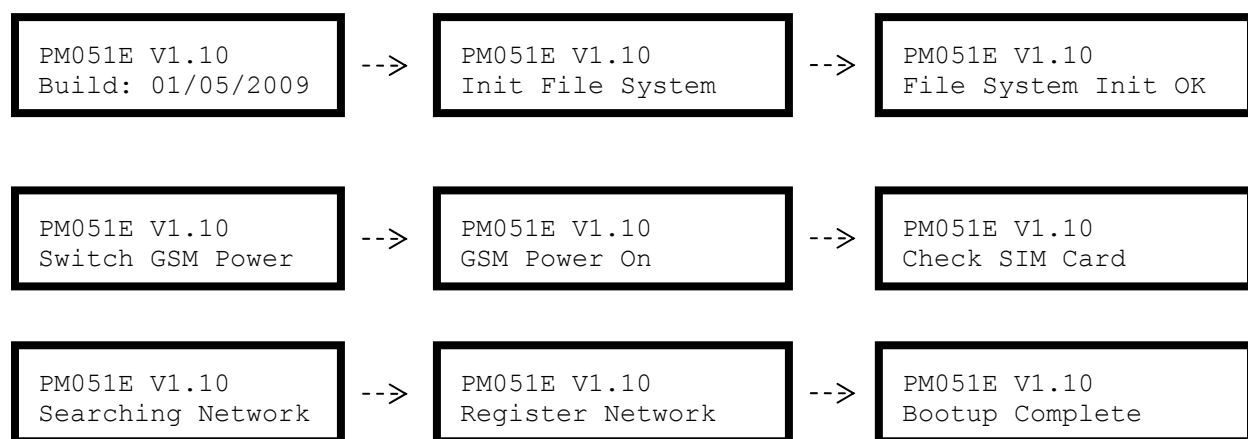
1. Connect the PM05x to a USB Port on the Host PC using the provided USB cable. The first time the unit is connected to the Host PC via USB, it will request for the USB Driver.
2. Browse to the USB driver \i386 folder on the accompanying CD and install the USB Driver. When this is installed, a Virtual COM Port will be installed on the PC every time the PM05x is connected to the PC.
3. Then go to Control Panel → System → Hardware → Device Manager → Ports (COM & LPT). Select the Virtual COM Port and change the Port Number (for example Port2 or Port 3 or Port4). Sometimes the PC will assign for example Port10 by default.

3.2 Powering Up

Connect the provided DC adaptor 6.5VDC-1A to the PM05x DC Input and turn the power on. The power LED and status will light up and the LCD will be turned on. The RTU will proceed to boot-up.

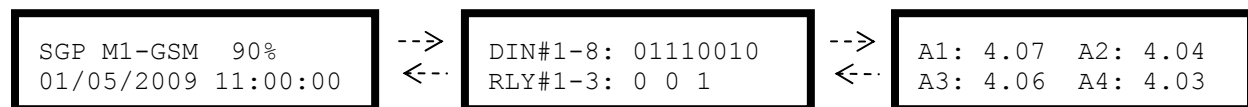
3.2.1 Boot-Up

The following sequence of messages (details may defer depending on model and build) will be shown on the LCD:



If the PM05X is able to successfully boot and log onto the GSM Network, it is then ready for operation.

The LCD Message will show the GSM Network Status and the System Date and Time. The clock will be updated every 1 seconds, the GSM Network will be updated approximately every 45 seconds.



The LCD message can be configured to alternate between the Digital Inputs Status, the Analog Inputs Status and the GSM Network Status / Date and Time, as shown above.

3.2.2 Error Messages

During boot-up, the following error messages may be displayed and these indicate that the particular setup is incorrect.

Error Message	Description/Resolution
PLEASE RESTORE+RESET RTU VIA CONSOLE	The system setup is invalid. Please reset the system setup to factory default settings.
ERROR: FILE SYSTEM SD CARD DISABLED	The Micro SD card is not properly inserted. Please remove and re-insert the Micro SD card.
INSERT SIM CARD	The SIM card is not properly inserted. Please remove and re-insert the SIM card.
SIM PIN/PUK REQUIRED	The SIM card PIN/PUK code is enabled. Please disable it.
SIM CARD ERROR	The GSM modem cannot communicate with the SIM card. Check that the SIM Card is not damaged or incorrectly inserted.
REGISTRATION DENIED	The SIM card is expired.
REGISTRATION FAILED	The RTU couldn't register to the GSM network.
RESTORE LOG & LIST	The non-volatile log memory is corrupted. Please reset the log (See section 4.2.7)
NO NETWORK	The RTU is not within the GSM network range.

3.2.3 Front-Panel LEDs

There are four LEDs on the front panel and their status indicates the following system states.

#	LED	Description/Indicator
1	GSM	Indicates GSM Activity: • Blinks on Network Registration • Blinks on Incoming/Outgoing SMS, GPRS and data call. • If permanently Off, GSM Network Error or GSM Modem Failure
2	Logging	Indicates Data Logging Status • Blinks during data logging • If permanently Off, data logging error

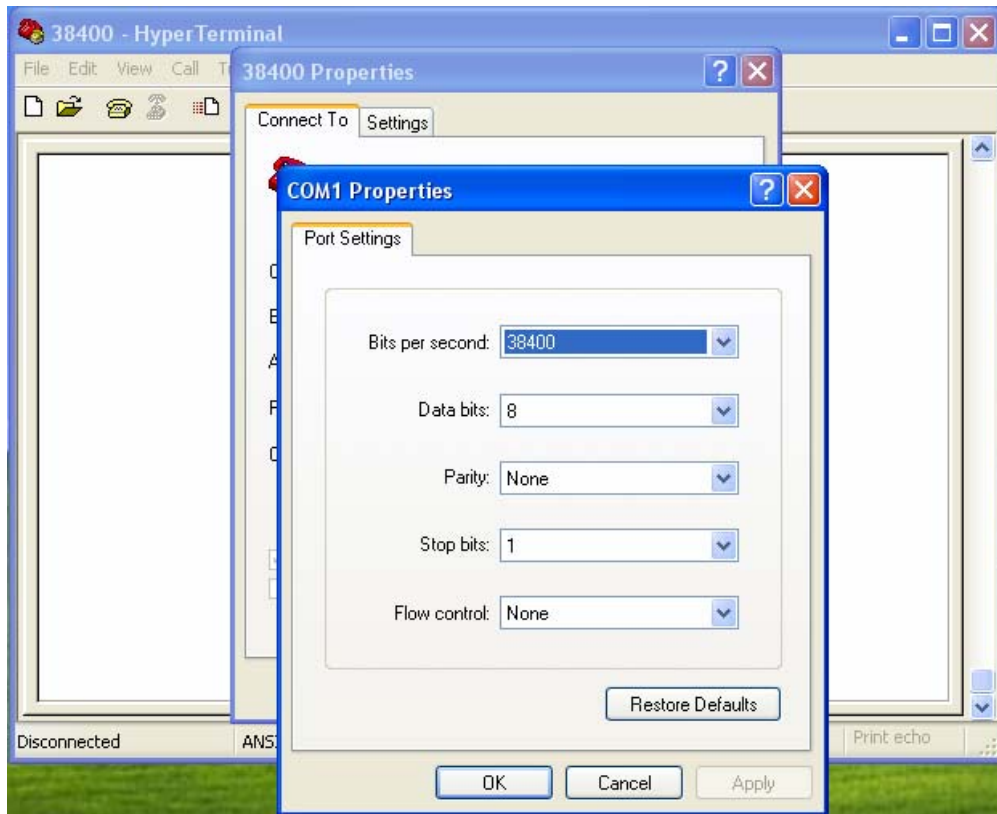
3	CPU	Indicates CPU Status - Continuously blink to indicate CPU running OK - If not blinking, system may have stopped operating normally
4	GPRS	Indicates GPRS Status: - If permanently Off, GPRS is disabled. - If permanently On, GPRS error.

3.3 Setting up HyperTerminal

Windows HyperTerminal is a FREE program that is built into Windows Operating System including WIN95, WIN98, WIN2000, and WINXP. This means that you do not need to install any external program in order to link up the PM05x to setup the RTU if you are using one of these Windows OS. Windows Vista does not include HyperTerminal and alternative serial terminal software need to be used.

Follow the steps below to setup HyperTerminal.

1. HyperTerminal can be accessed from the Windows Start Menu from: Start → All Programs → Accessories → Communications → HyperTerminal.
2. Start HyperTerminal. The program may ask you if you want to use HyperTerminal as your default Telnet client. Check the box before 'Don't ask me this question again' and select 'No' to dismiss the prompt. This does not affect the operation of the PM05x.
3. Name the connection as desired e.g. 'PM05x'.
4. Next select the COM port that will be used to connect to the PM05x, e.g. COM10.
5. Set the COM port settings as follows: Bits per second = 38400, Data bits = 8, Parity = None, Stop Bits = 1 and Flow Control = None, as shown below.
6. Note that if the PM05x is turned off, the Virtual COM Port connection will no longer be valid but HyperTerminal will not be aware of this. Therefore you need to disconnect the HyperTerminal ('Hang up') and then connect again when the PM05x is turned on again.

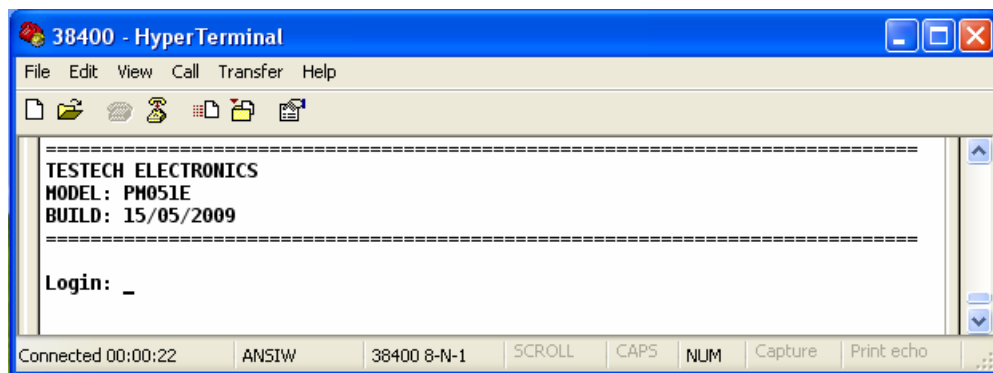


4 SETUP GUIDE USING CONSOLE MENU

The PM05x allows the user to setup the RTU via the Console Menu using HyperTerminal. Only the Admin user may modify the RTU setup and retrieve log data. Simple users may only view the IO status and System status.

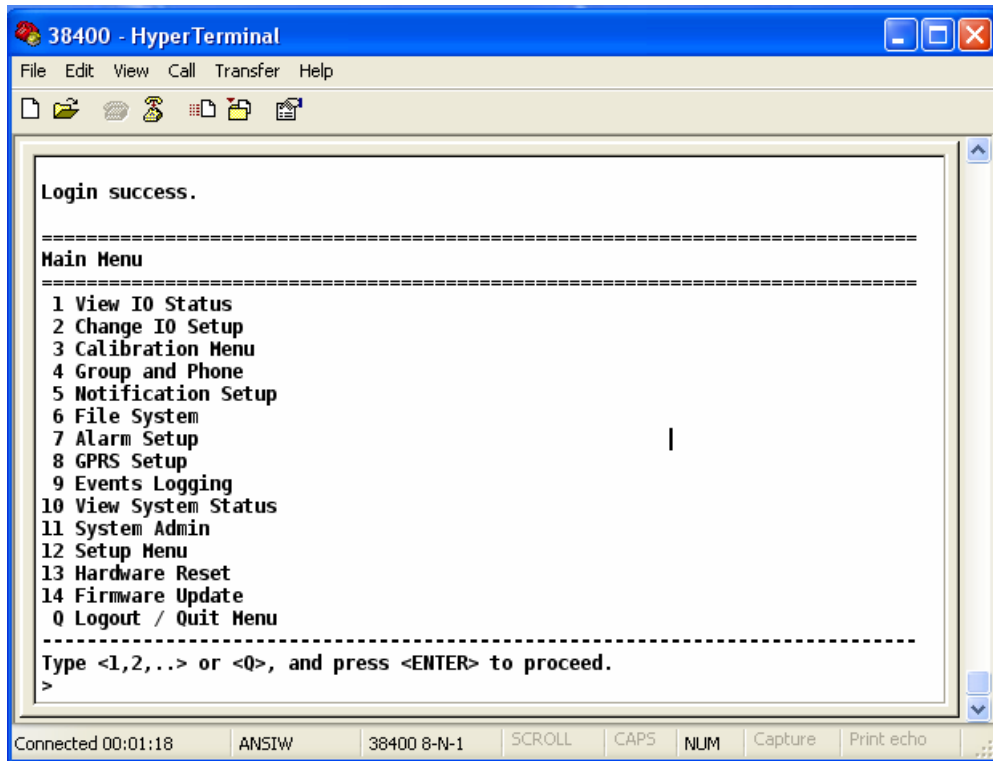
The default Admin login name is “admin” and the password is “admin” also. This may be changed from the Console Menu. Please note that if the login details are changed, they must not be lost/forgotten, otherwise the RTU would need to be returned to reset the Login to factory default. This may also result in lost of modified setup data.

If you have connected the PM05x to the correct COM Port on the PC, upon power up the following login prompt is shown.



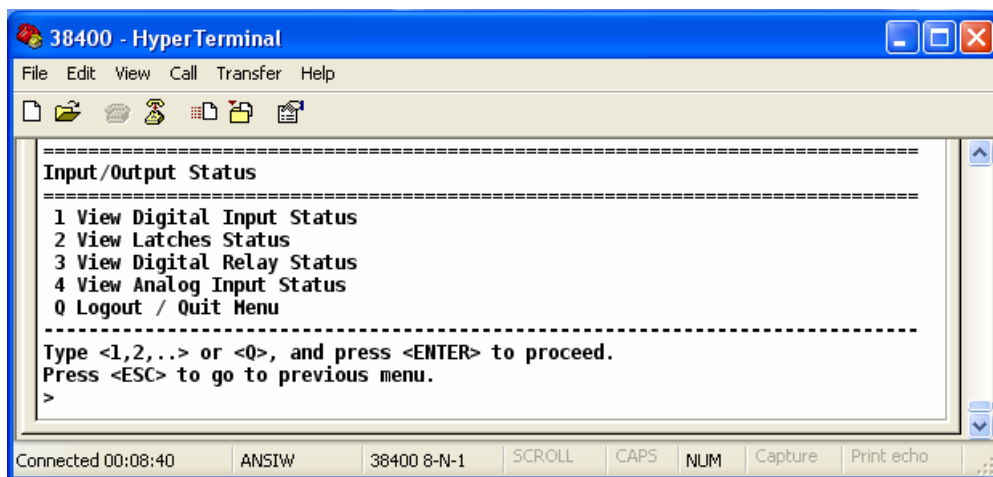
4.1 Login In

The default factory Login name is “admin” and the Password is “admin”. Enter the Login name and password and then press Enter.



4.2 Viewing IO Status

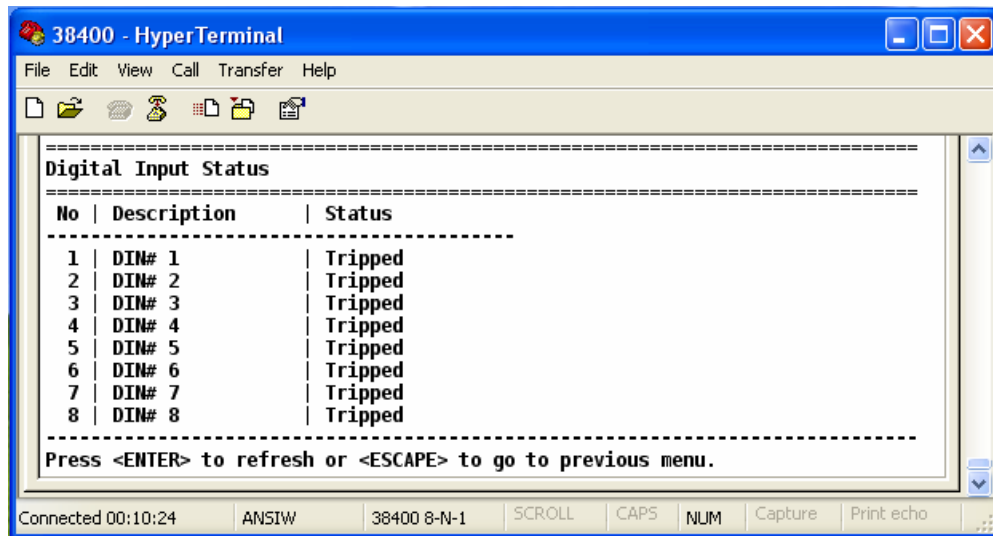
Select View IO status from the Main Menu and select the type of IO you want to view as below.



The Inputs/Outputs displayed depend on the RTU Model – PM050E has 16 digital inputs but no analog inputs while the PM051E has 8 digital inputs and 4 analog input channels.

4.2.1 Digital Inputs Status

An example of the Digital Input Status is shown next.



Digital Input Status

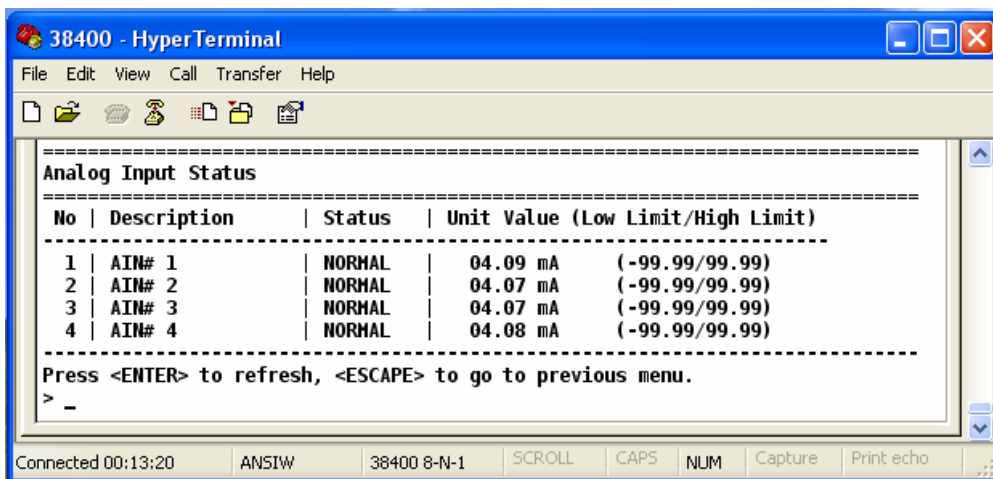
No	Description	Status
1	DIN# 1	Tripped
2	DIN# 2	Tripped
3	DIN# 3	Tripped
4	DIN# 4	Tripped
5	DIN# 5	Tripped
6	DIN# 6	Tripped
7	DIN# 7	Tripped
8	DIN# 8	Tripped

Press <ENTER> to refresh or <ESCAPE> to go to previous menu.

Connected 00:10:24 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

4.2.2 Analog Inputs Status

The analog input display is as follows.



Analog Input Status

No	Description	Status	Unit Value (Low Limit/High Limit)
1	AIN# 1	NORMAL	04.09 mA (-99.99/99.99)
2	AIN# 2	NORMAL	04.07 mA (-99.99/99.99)
3	AIN# 3	NORMAL	04.07 mA (-99.99/99.99)
4	AIN# 4	NORMAL	04.08 mA (-99.99/99.99)

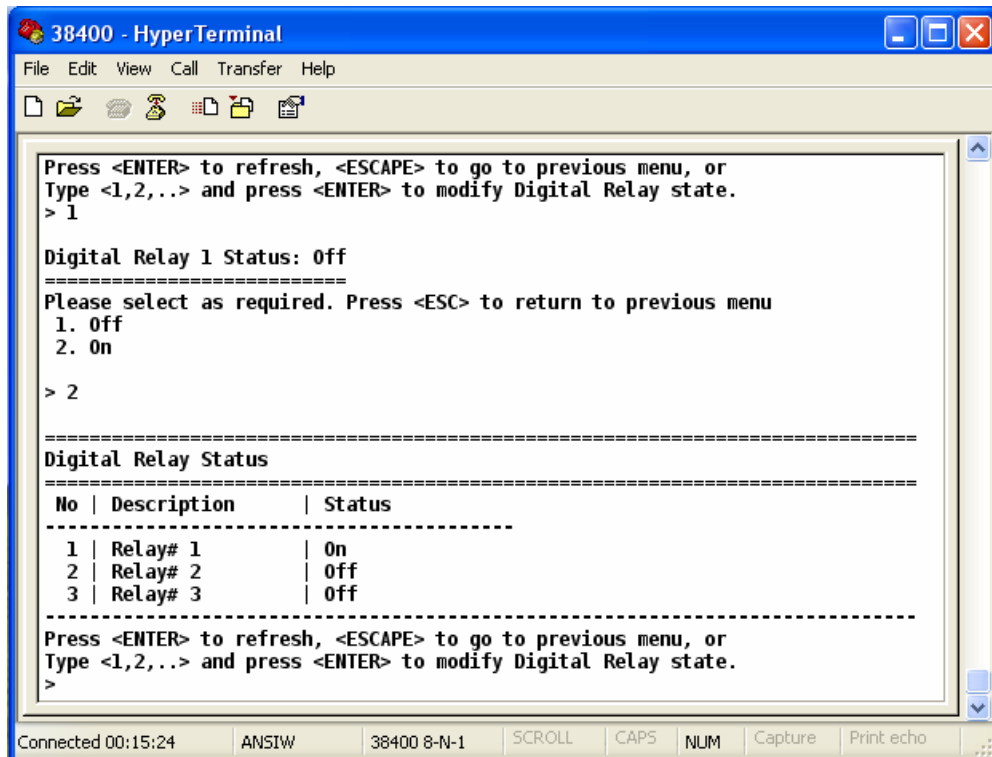
Press <ENTER> to refresh, <ESCAPE> to go to previous menu.

> -

Connected 00:13:20 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

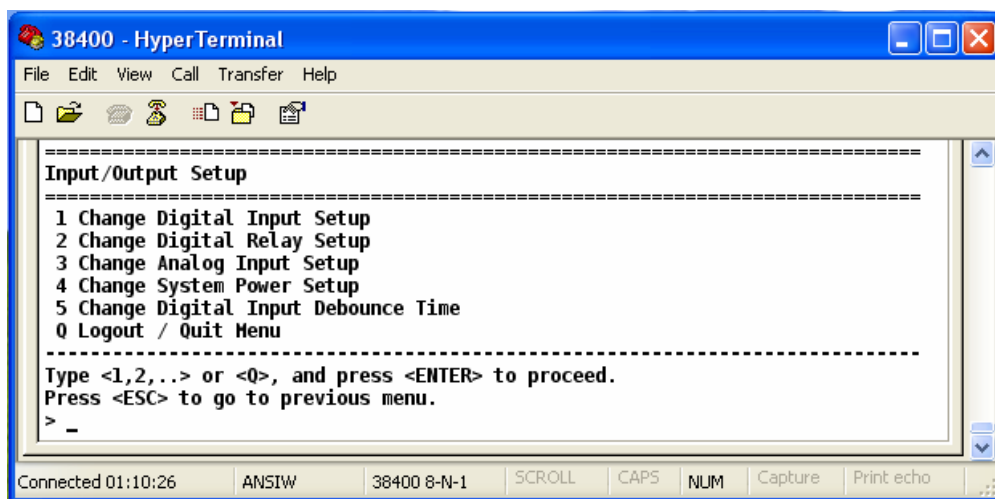
4.2.3 Digital Relay Outputs Status

The digital relay output status is as follows. As can be seen, the digital output relay menu also provides the option to set the relay. The status can be set as desired and the relay is turned on or off accordingly.

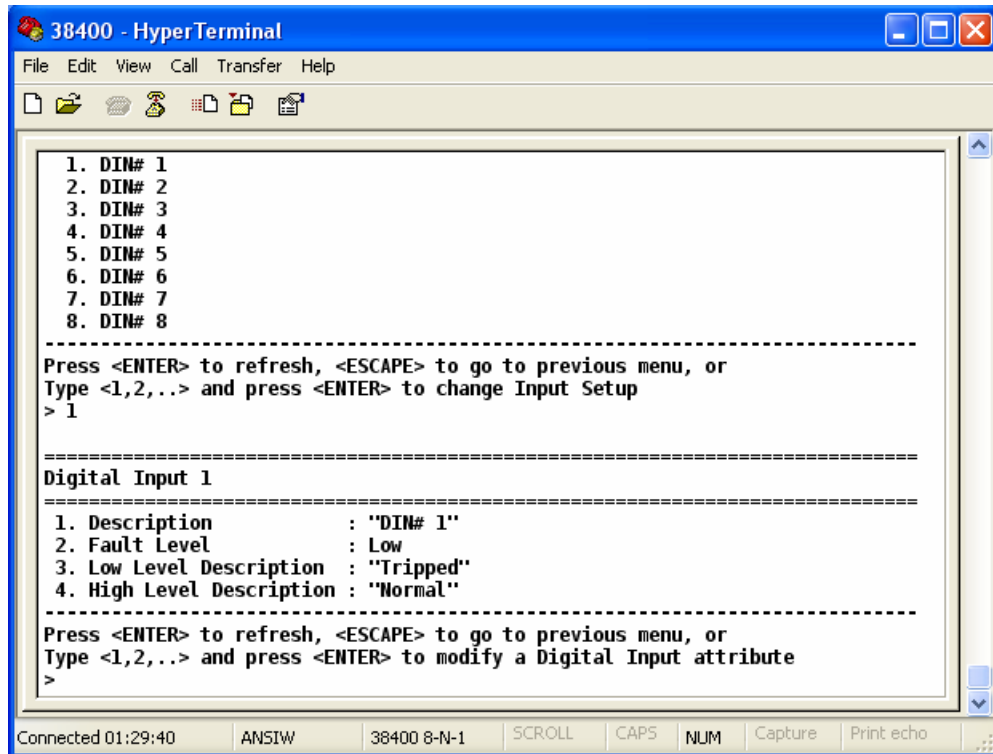


4.3 Change IO Setup

Select Change IO Setup from the Main Menu and select the type of IO you want to change as below. Next select which IO item needs to be modified after which the different attributes that can be changed are listed.

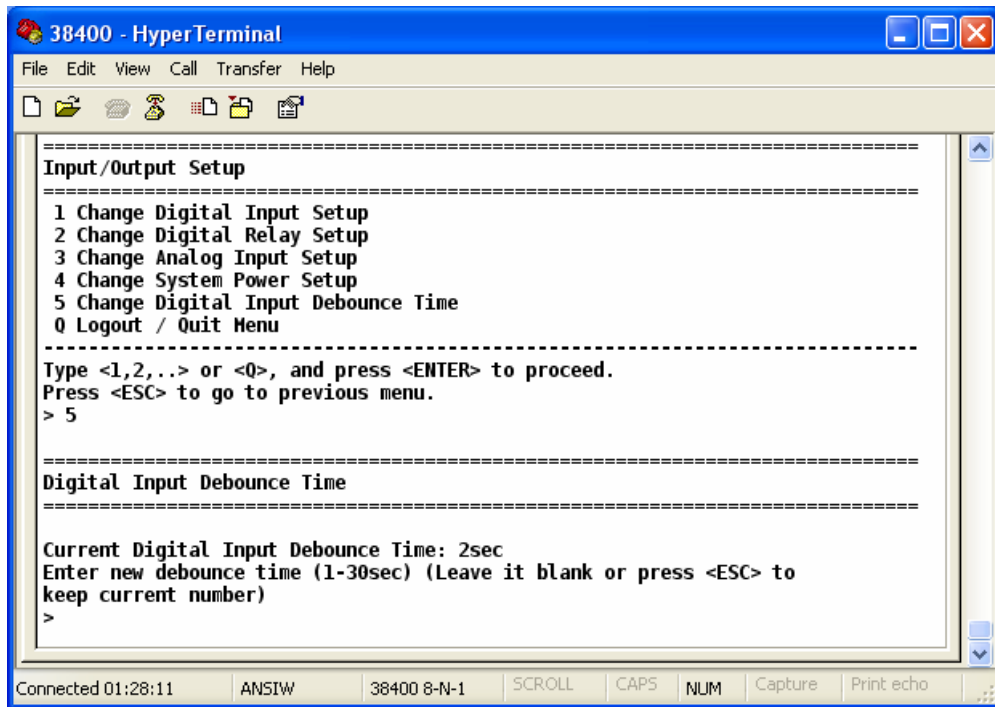


4.3.1 Change Digital Input Setup



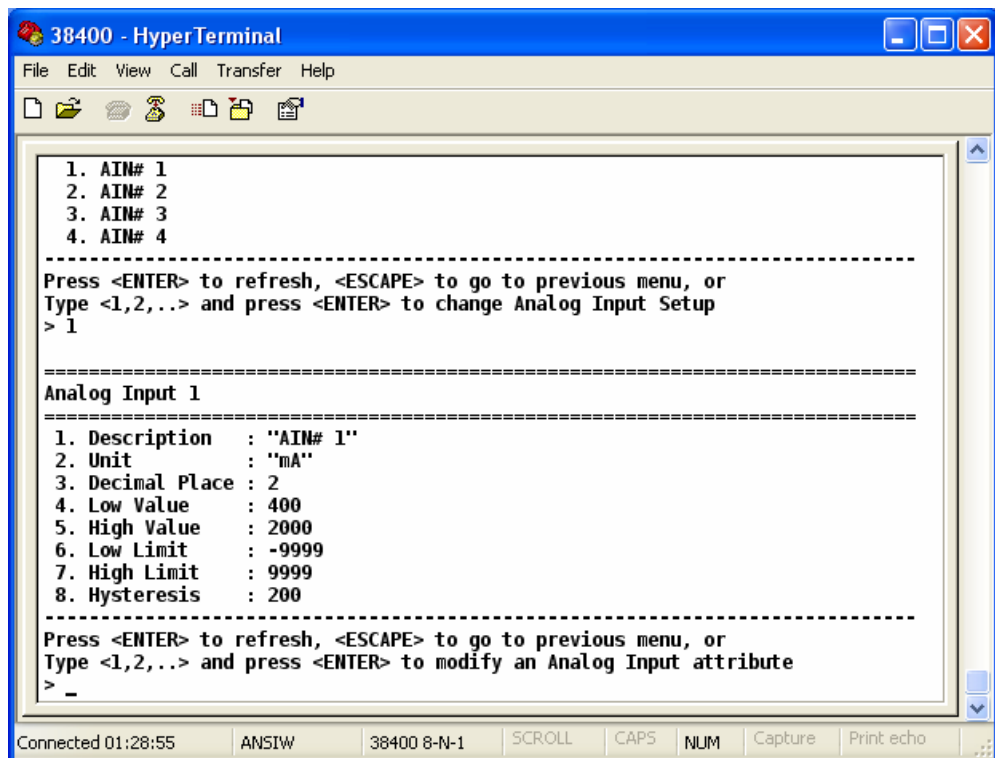
For example, to modify the attributes of Digital Input 1, select Change Digital Input Setup and the Digital Inputs will be shown. Then select the Digital Input Channel desired and edit the attributes.

Select any of the Input Channel Description, the Low Level description and High Level Description (i.e. the description text that will be used to represent the input status) when the input changes are Low (0V) or High (> 2VDC). The fault level is used to know when the current status is faulty.



4.3.2 Change Analog Input Setup

The Analog Input setup is as follows:



In this case, the values for 'Low Value', 'High Value', 'Low Limit', 'High Limit' and 'Hysteresis' are the desired values without the decimal point. That is, in the example above, 2000 for High Value is in fact 20.00 when the desired number of decimal places of 2 is taken into account. The same applies to the other fields mentioned above.

4.3.3 Change Digital Input Debounce Time

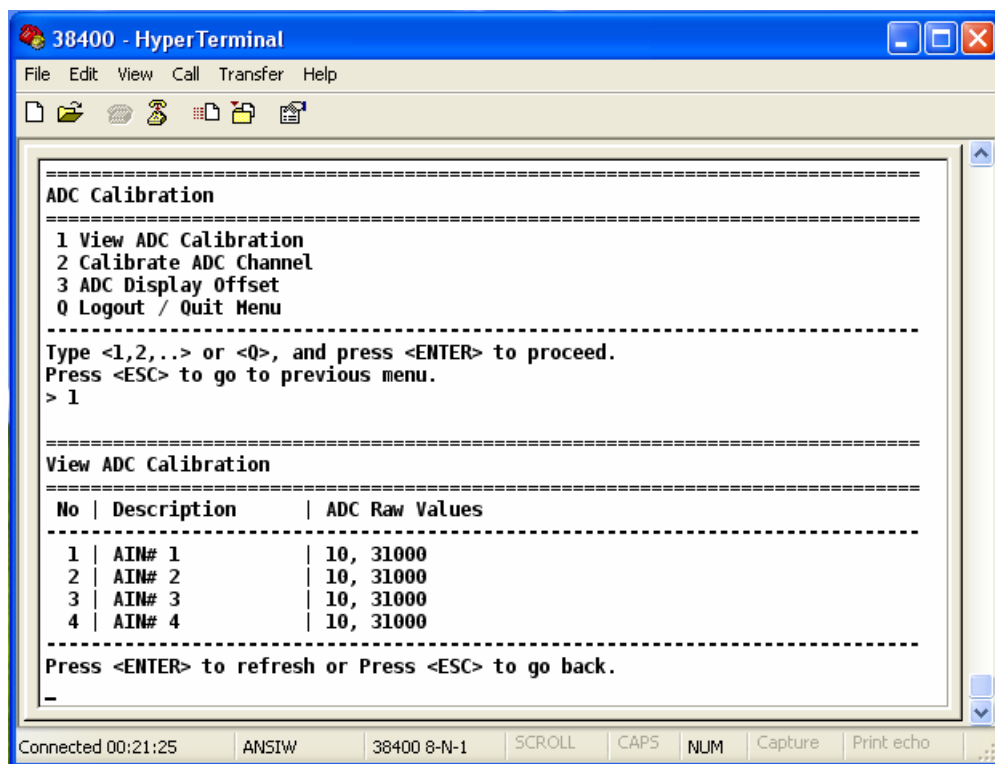
The debounce time for the Digital Input can also be set via option 5. This allows setting the number of seconds to debounce the digital input upon a state change.

4.4 Calibration Menu

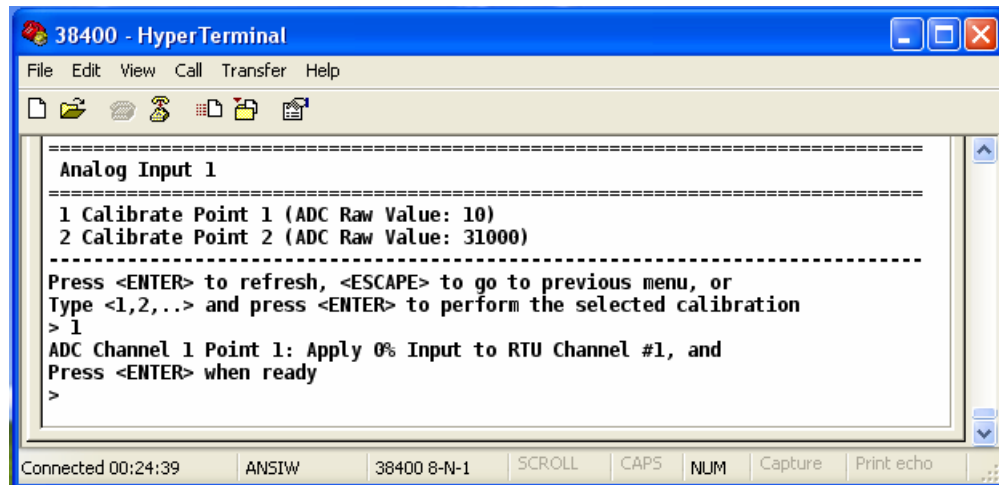
This menu allows the user to calibrate the analog input channel for more accurate readings. Two-point calibration (low point and high point) is available. The default two-point calibration values are set for 4-20ma analog inputs and are as shown below.

4.4.1 Analog Input Calibration

To calibrate a channel, select Calibrate ADC Channel and select the desired channel.

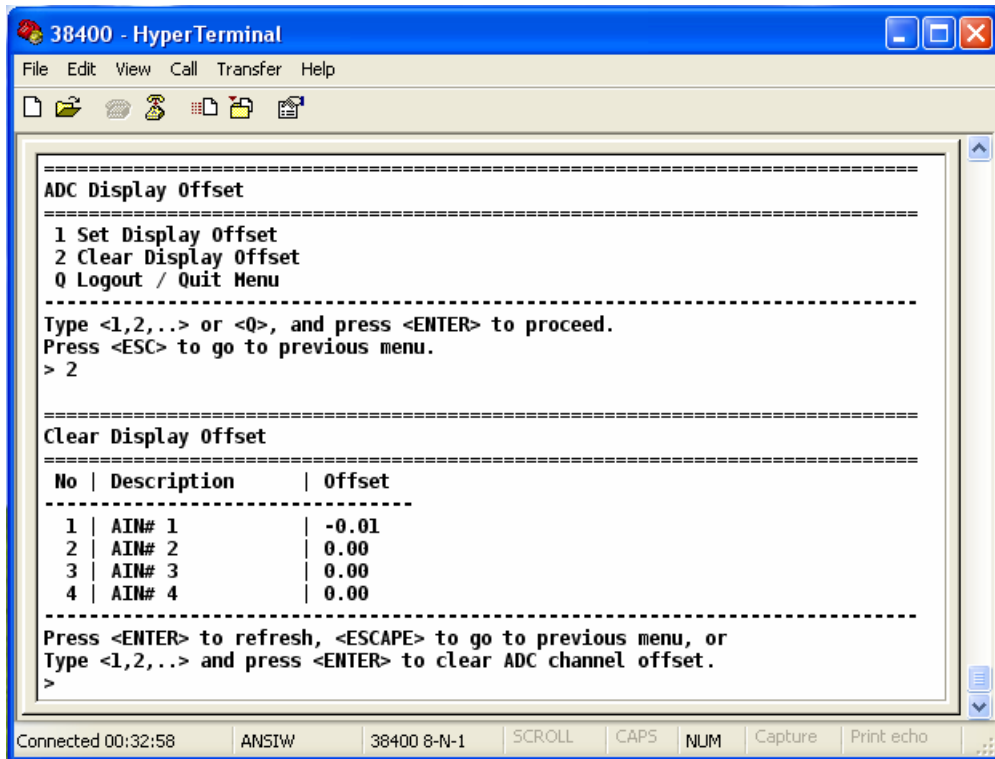


Select point 1 and apply 0% input (eg 4mA) to the ADC channel. Then select point 2 and apply 100% input (eg 20mA) to the ADC channel. Both points need to be calibrated for the calibration values to be updated to the setup.



4.4.2 Analog Display Offset

The option to adjust the ADC reading is also available under ADC Display Offset. This is helpful in cases where the resolution of the Analog Input is too small and there is a discrepancy between the RTU reading and the sensor/analog device reading. The offset may then be set for all analog channels.

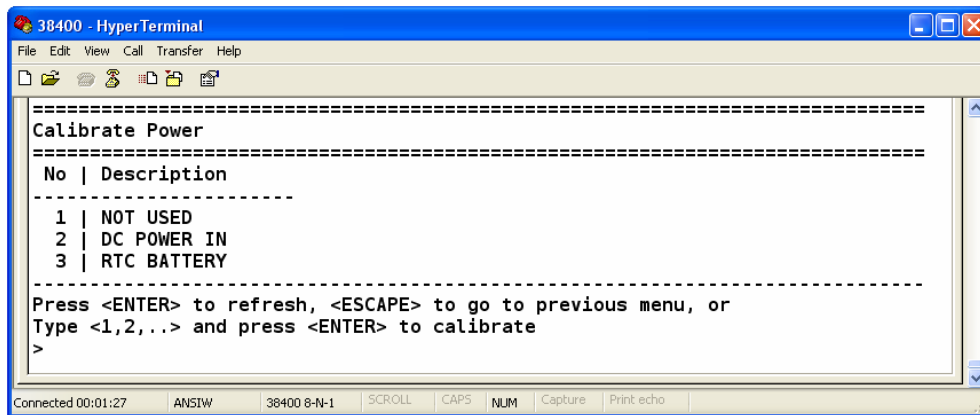


For example if you have a Temperature Meter with display that output a 4-20mA to the PM05xRTU and the PM05x reads for example 1deg lower than the Temperature Meter, in this case, you can set the Display Offset so that it force the PM05x to have same reading as the Temperature Meter. These can be cleared easily too which will remove the Display Offset.

4.4.3 Power Input Calibration

The RTU System Power may also be calibrated to improve the reading accuracy. This is done by entering the actual power voltmeter reading as shown next.

Use a voltmeter to measure the DC Voltage Input to the RTU as well as the COIN battery voltage inside the PM05x RTU (the 4 screws on the side of the front cover need to be removed). Measure the Battery Top Contact (+ve) with respect to the Power Supply Ground (or use the GSM Antenna Contact Ground as reference).

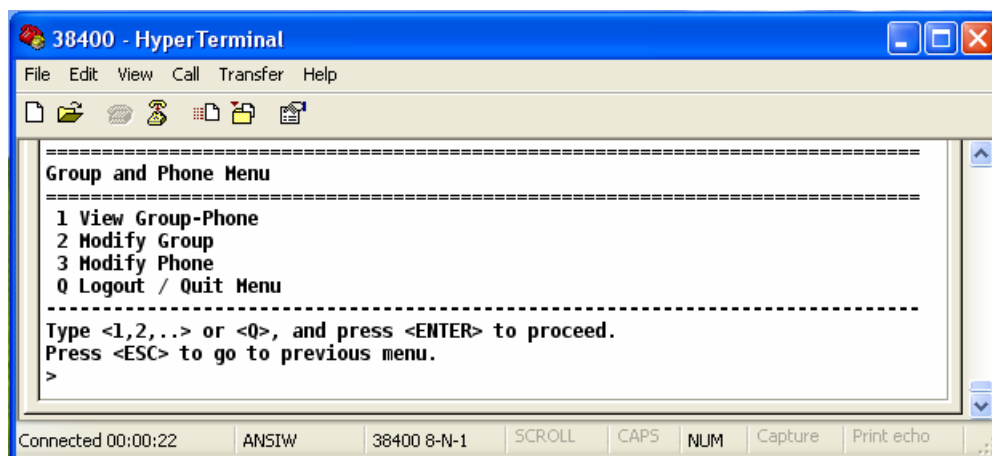


Select option 2 DC Power In. Enter the actual DC Input voltage measured by the voltmeter up to 2 decimal places (for example if the voltmeter measures 12.50V you should enter “12.50”).

Select option 3 RTC Battery. Enter the actual RTC Battery voltage measured by the voltmeter up to 3 decimal places (for example if the voltmeter measures 3.055V you should enter “3.055”).

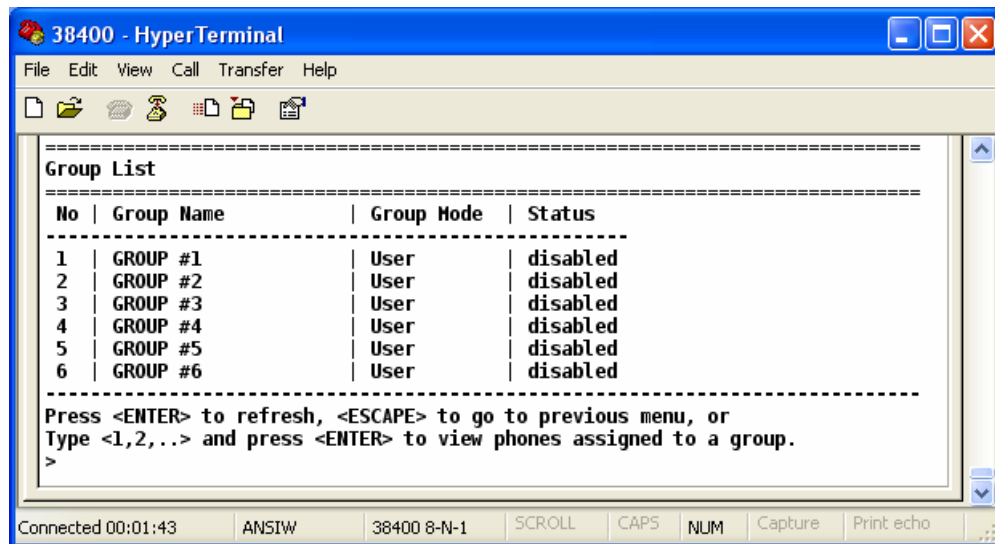
4.5 Group and Phone Setup

The Group and Phone setup is an important setup; it allows the user to create groups of handphones that can be notified on selected input classification. That is, each input can be assigned to different group, with each group containing of up to 5 handphones. In addition, each Group and each handphone can be individually Enabled/Disabled (for example some employee may be on holiday), each group and handphone name can be edited individually. This is accessed from Group and Phone Setup.



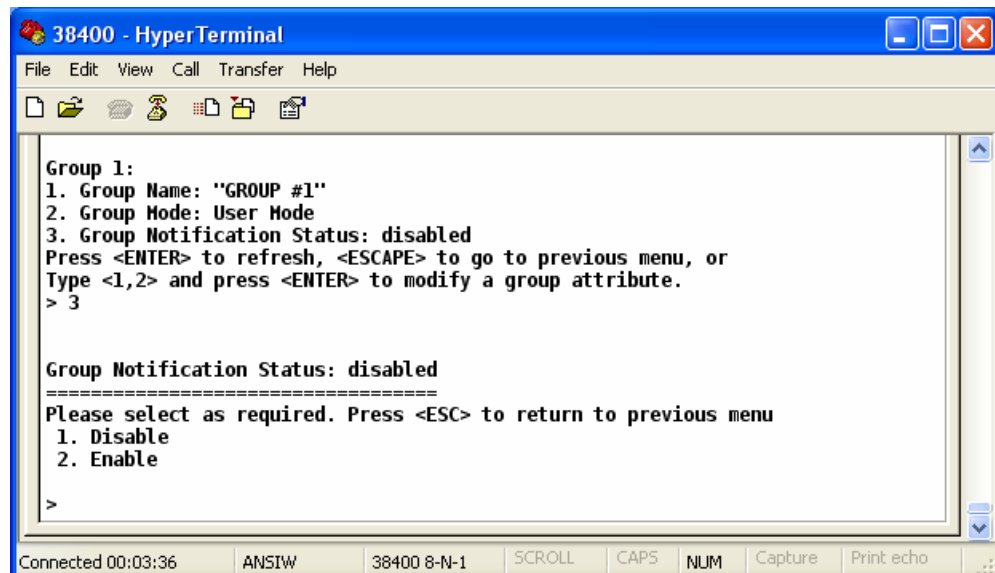
4.5.1 View Group Phone

The View Group Phone allows you to see the status of the groups and phones. The Group Mode (User Mode or Server Mode) as well as enable status can be viewed here.



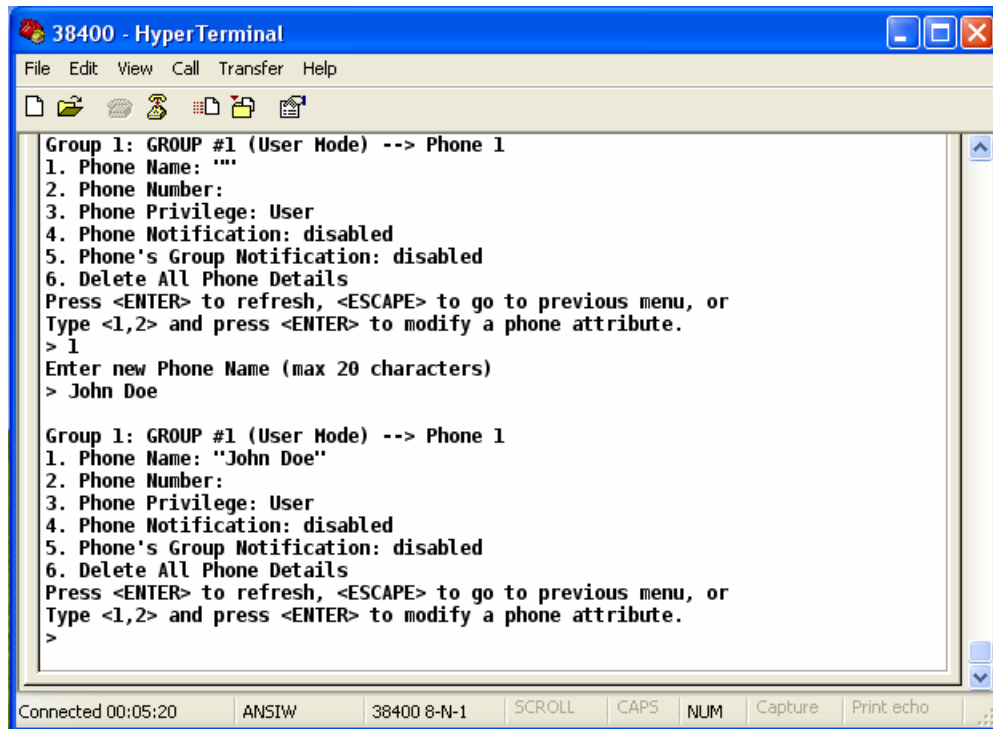
4.5.2 Modify Group

This menu lists the entire List of Group Name, Status, and the user can select which group to modify. Upon selecting the group, the Group Name and the Group Mode are displayed. You can modify the Group Name and the Group Mode. Also, the group notification status can be updated here directly (as well as under the notification menu – see next under Notification Setup).



4.5.3 Modify Phone

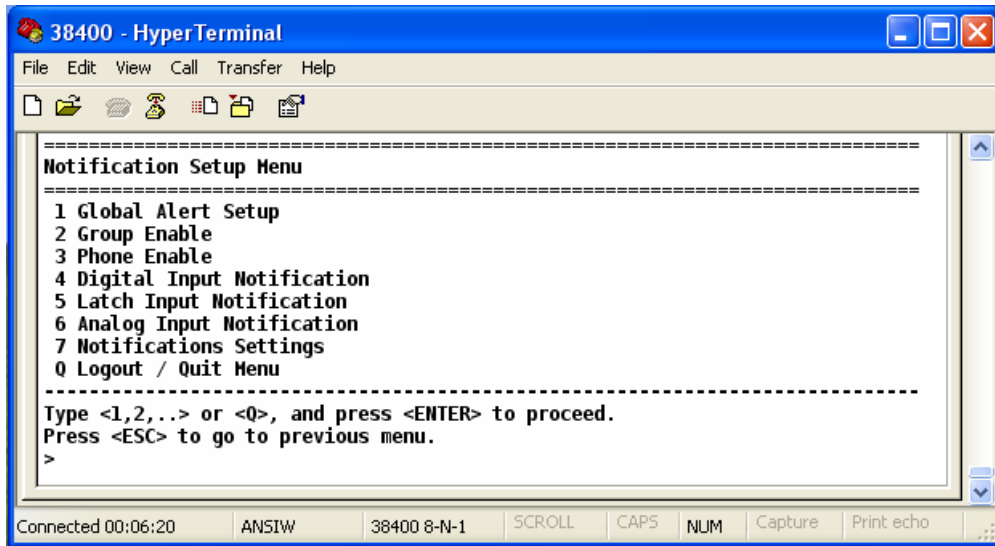
Select the Option 3 and select the Group which contains the phone to modify. Then you may modify the name and phone number of each individual phone that belongs to the group.



This menu also allows other options to be modified as shown above. The user privilege can be set, either Admin User or Simple User. Admin Privilege gives the user rights to modify system settings via SMS commands (see SMS Commands section). A simple user is not allowed such rights. As before for the group modification, the phone notification status and the phone's group notification status can be changed here directly, as shown above.

4.6 Notification Setup

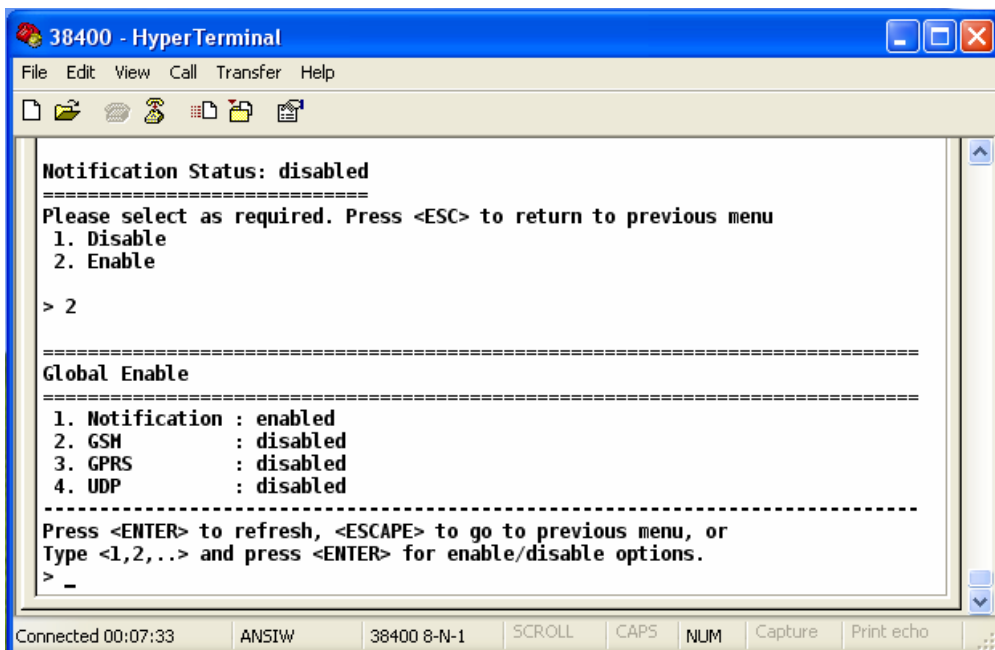
Notification setup is very important. It is very important for the user to check that all required notifications are enabled before deploying the unit, and after you perform system diagnostic or routine maintenance. The PM05x allows the user to disable the sending out of SMS or GPRS data logging for example during routine diagnostic, on site checking etc.



4.6.1 Global Alert Setup

Select the option 1 Notification and it will display the options of to enable and disable the notification. After the option is selected, the screen will show the current status. When global alert is disabled the unit will not send any Remote Alert Notification.

Select the GSM notification option 2 to toggle the SMS Alert status. The status is instantly changed and displayed on the return screen.



Real-time monitoring by GPRS can also be disabled by selecting option 3. Please note that when GPRS is disabled, the RTU will attempt to terminate any GPRS session which may take a few seconds.

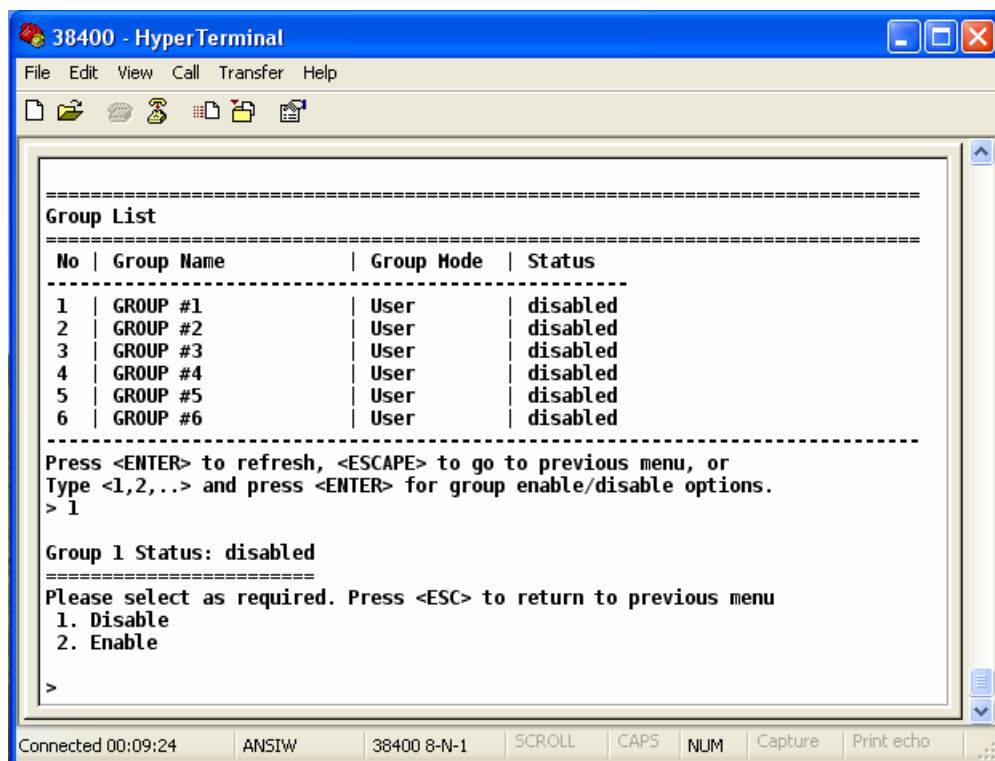
The fourth option UDP alert is enabled on the PM05xE RTU which is equipped with an Ethernet option.

When Notification or GSM is disabled, the inputs are still monitored and the PM05x Console status and IO status are still active. However if an alert is detected, the disabled notification message will be displayed on the LCD.

```
INPUT ALERT!  
NOTIFICATION = OFF
```

4.6.2 Group Notification Setup

The Group Notification Setup allows the user to individually enable or disable the entire group.



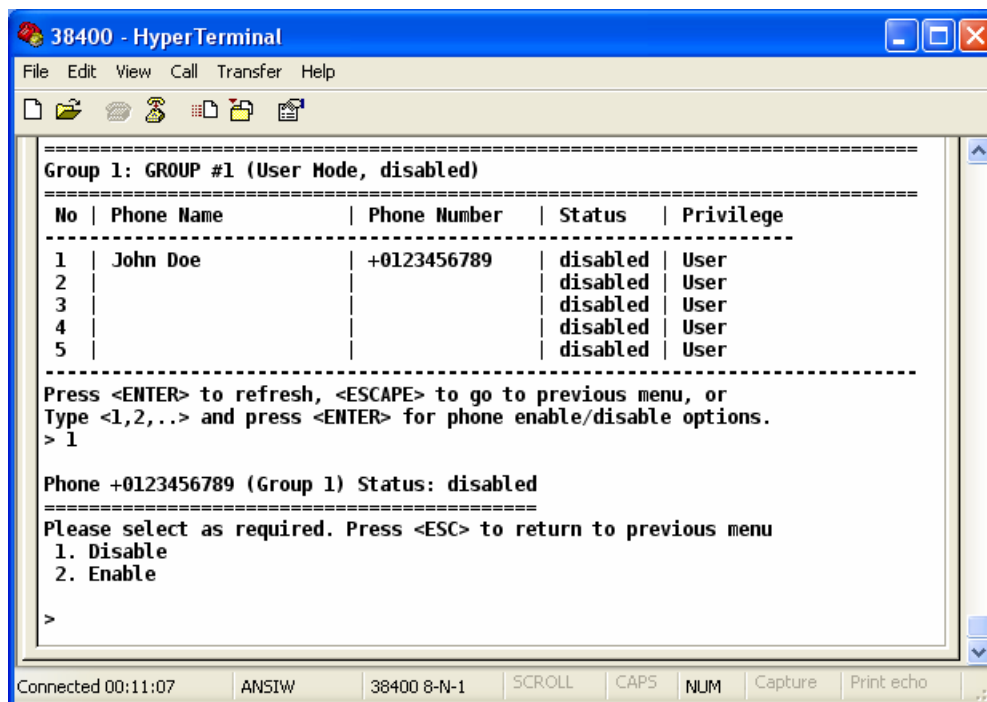
This will overwrite any individual phones that are enabled, i.e. if a group is disabled, all phones inside the disabled group will not receive notifications SMS even if the phones notifications are enabled. Select the Group Number to enable or disable it.

4.6.3 Phone Notification Setup

The Phone Enable/Disable option allows you to individually enable the Phone Notification.

- If the Group which these phones belong to are disabled, then all phones in this group will be disabled and will not receive any notification.
- If the Group is enabled, only phone numbers that are enabled and for which the Input are assigned to the group will receive alarm notification.
- Only valid phone numbers can be enabled. If no phone number is entered, this user's phone notification cannot be enabled.

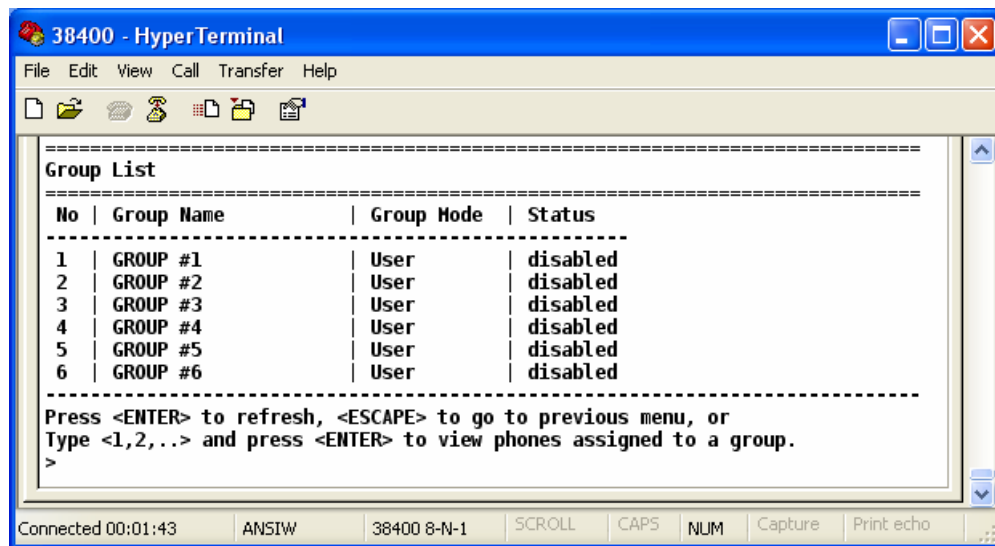
Select the Group and then followed by individual Phone Number to enable or disable the phone, as below.



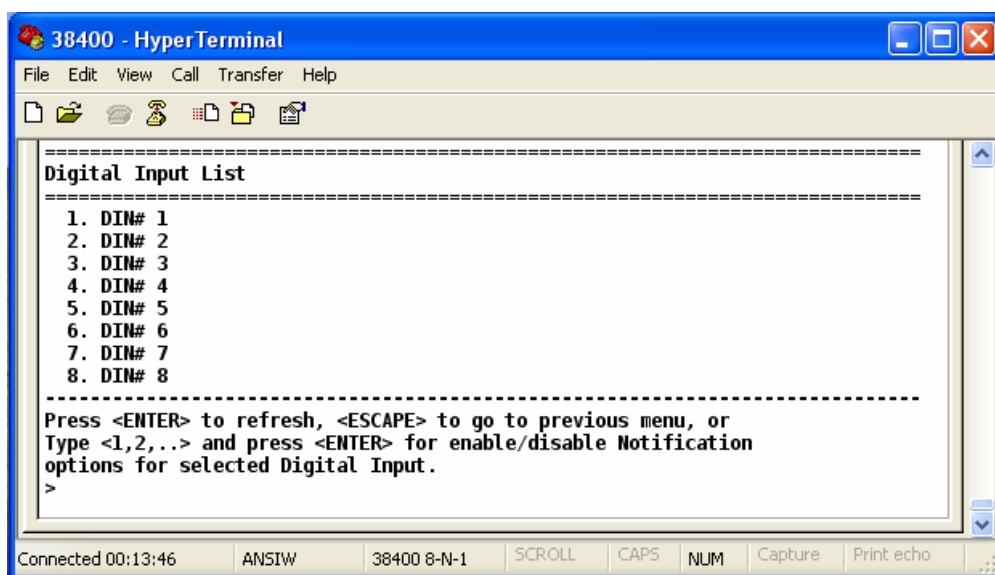
4.6.4 Inputs Notification Setup

This Menu allows you to assign different inputs to specific groups of handphones. For example you may segregate Digital Inputs to different groups of maintenance personnel (e.g. MECH TEAM, ELECTRICIAN TEAM, FACILITIES TEAM). An example for Digital Input Notification (option 4) is shown and the same applies to Analog Input Notification (option 5).

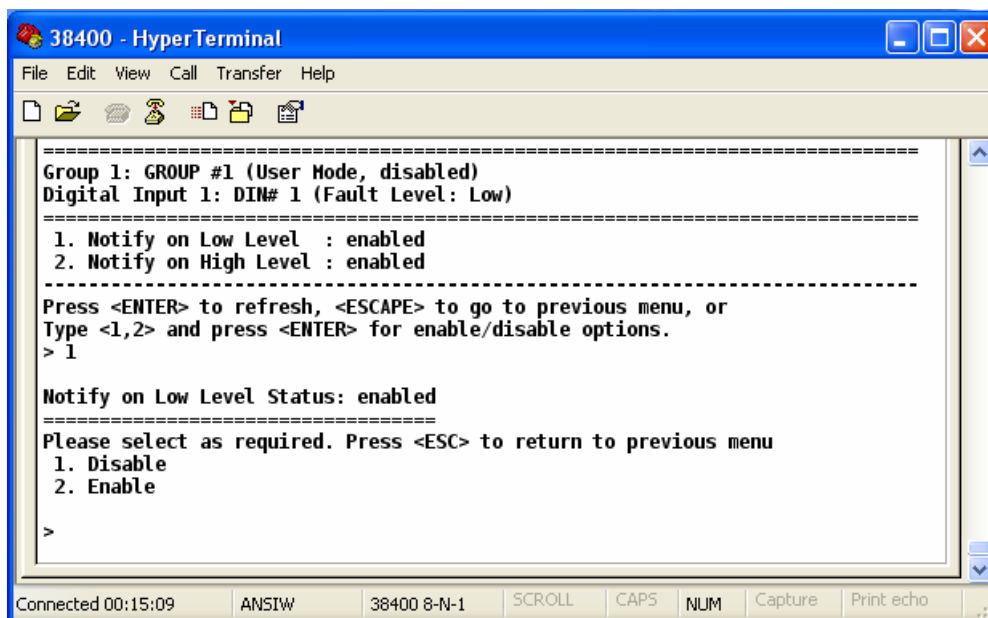
Step 1: The list of group will be shown. Select the group.



Step 2: Select the digital input list that you wish to assign.



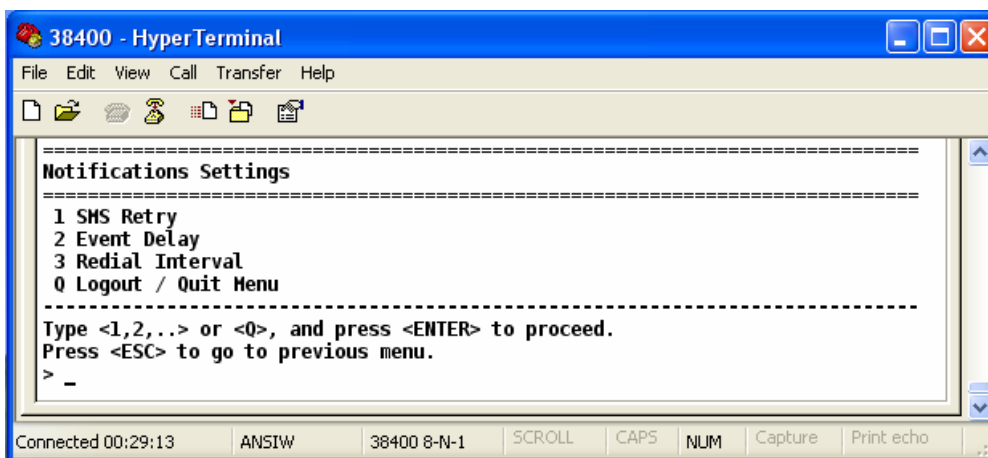
Step 3: Select the alert level to enable/disable for this digital input for this group..



Latch Inputs Notifications and Analog Inputs Notifications can also be setup in a similar way under options 5 and 6 respectively.

4.6.4 Notification Settings

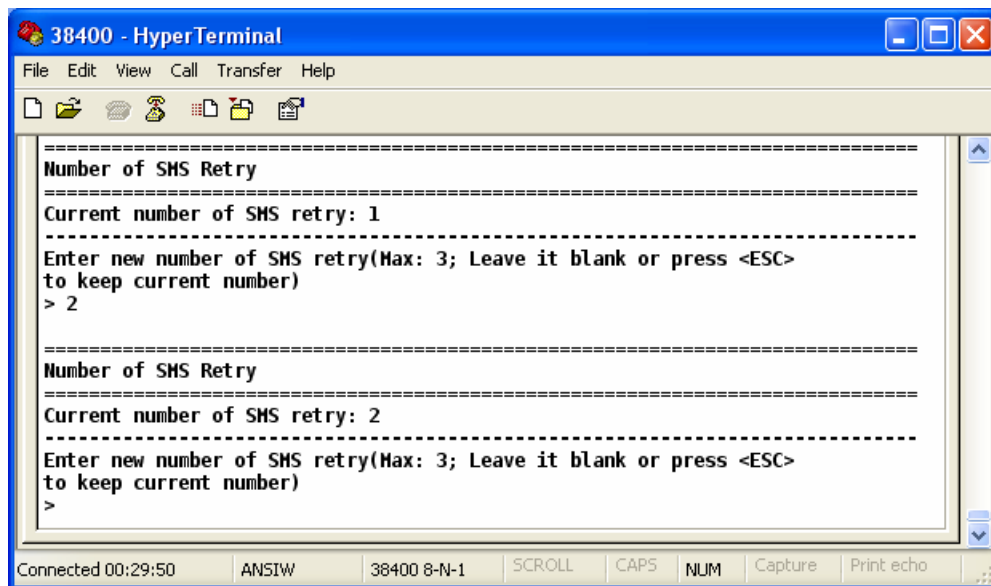
The notifications can be further setup to accommodate various requirements such as resending failed SMS, or delaying sending of SMS as well as the interval between resending of failed SMS.



1. SMS Retry

Any failed SMS can be resent or not. This can be set by the user through the Notification Setting submenu.

Pressing 1 from the Notification Setup will give the SMS Retry menu which allows the user to set the number of times a failed SMS should be resent before being discarded. The number of retries desired should be entered and the setup will be updated.

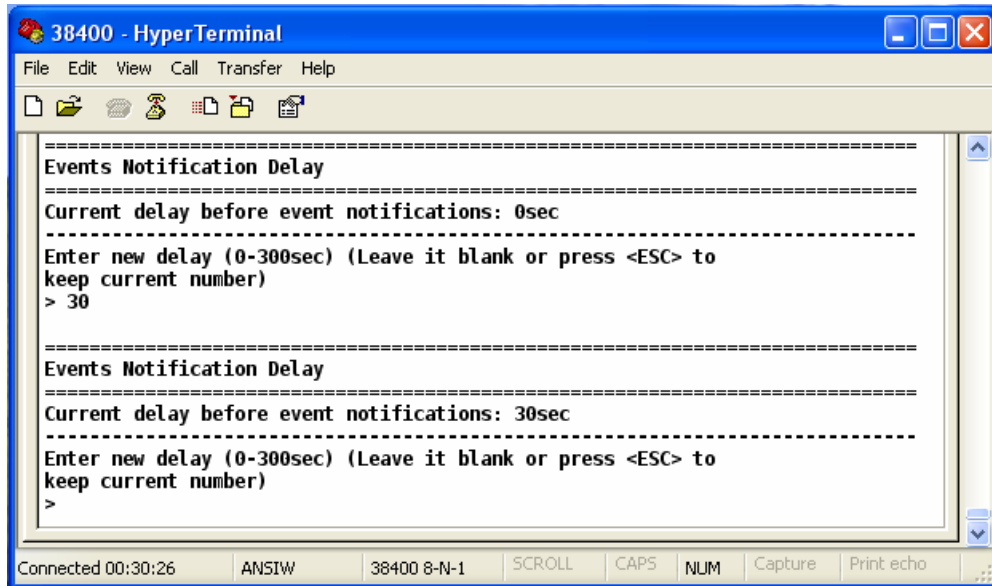


Thus any SMS that is not sent successfully will be queued and resent up to a maximum of 2 times.

2. Event Delay

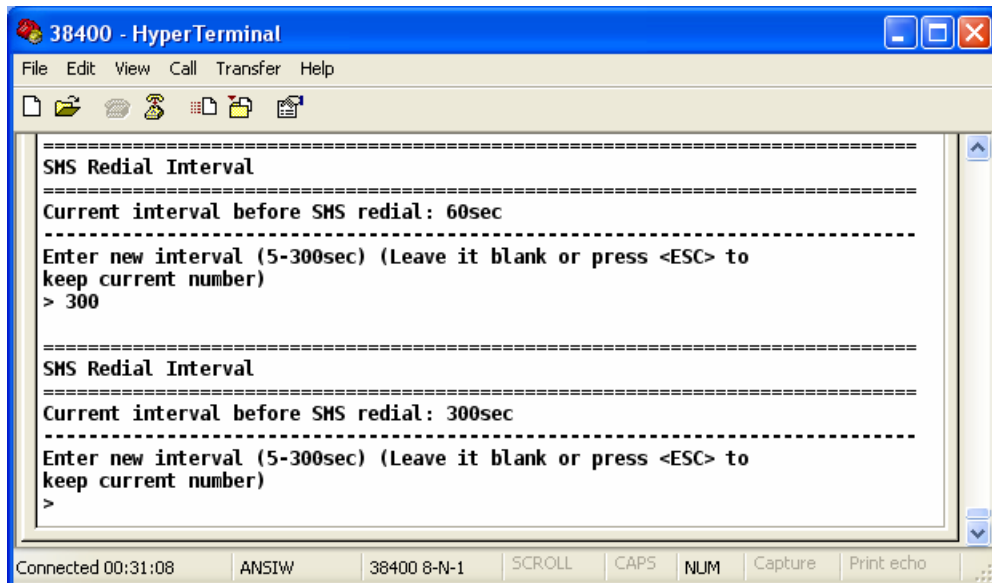
When an input changes, the notification SMS can either be sent immediately or delayed for a certain amount of time.

This is useful in the case that inputs change often and thus overall status change over a period of time is better than individual changes too often. This is accessed via option 2. Thus any input changes from the first change will be recorded within the following minute and all changes will be sent via SMS.



3. Redial Interval

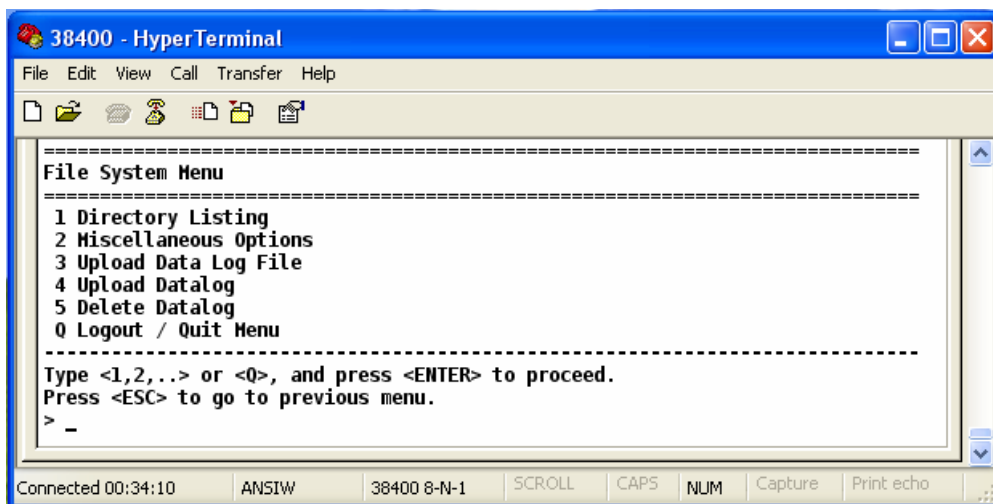
The failed SMS will be resent after a certain interval which can be set by the user under the Redial Interval option. By default, the redial interval is 5 seconds which the minimum interval allowed while a maximum interval of 300sec can be set. Once the new value is entered, the setup is updated.



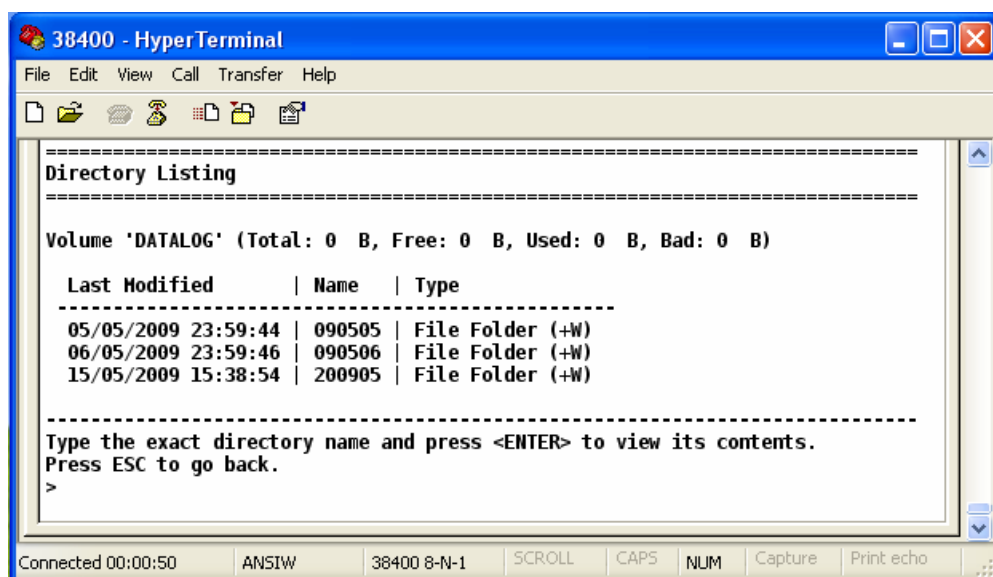
Any failed SMS will be scheduled for resend (if the number of retries is greater than 0) 100 seconds after the first failed attempt. If the number of retries is 2 or 3, then any subsequent resending will be scheduled 100 seconds from the previous attempt.

4.7 File System

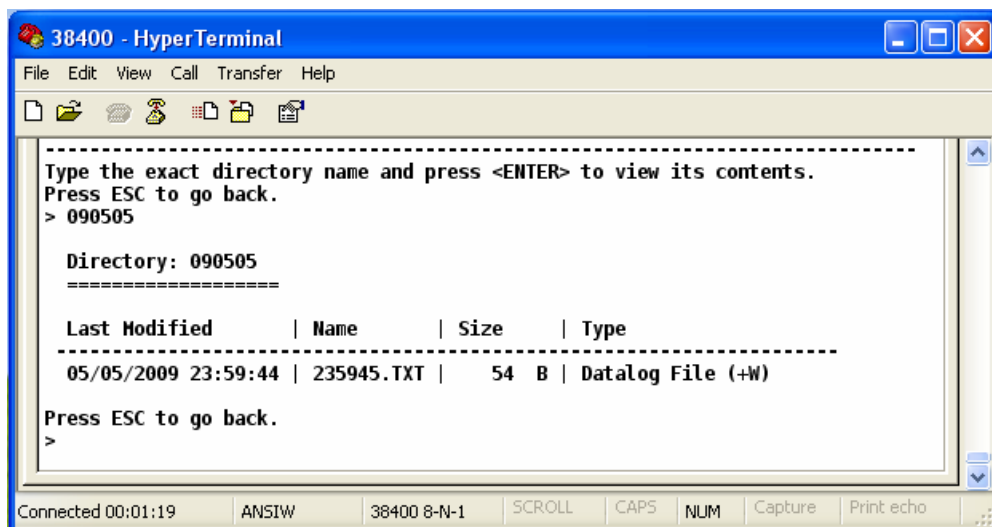
This menu allows the user to retrieve data log files, both from the Micro SD card and the RTU's non-volatile memory.



4.7.1 Directory Listing

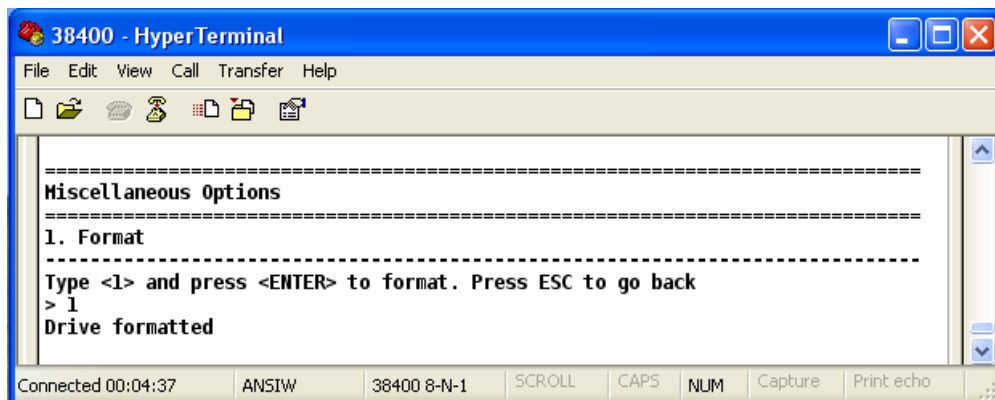


Option1 Directory Listing allows the user to view all directories on the Micro SD card, as shown below. After the directories are listed, the user may type a directory name to view its contents.



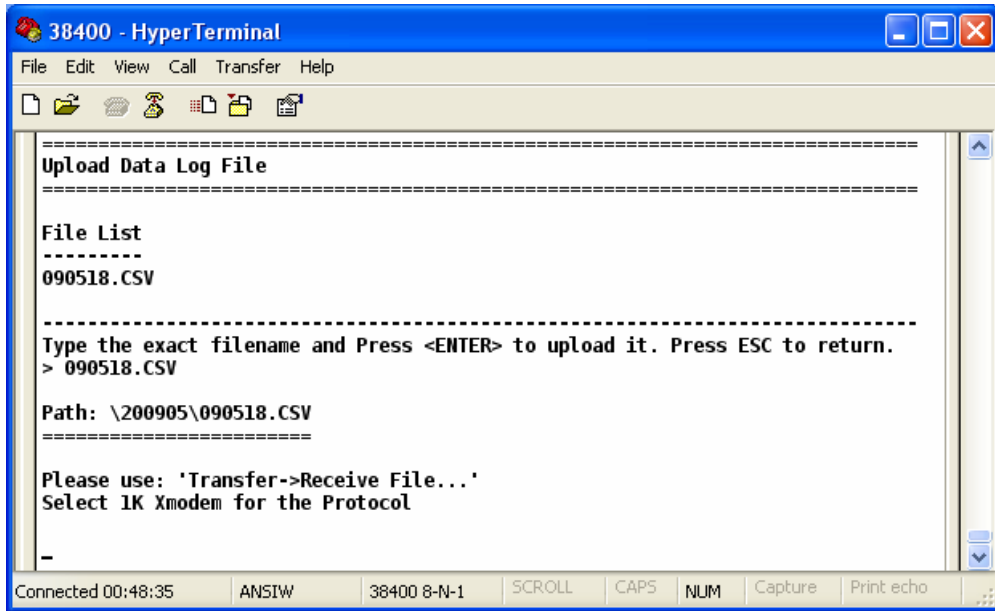
4.7.2 Miscellaneous Options

Option 2 Miscellaneous Options allows the user to format the Micro SD card, using the FAT file system format. All data will be lost after formatting.



4.7.3 Upload Datalog File

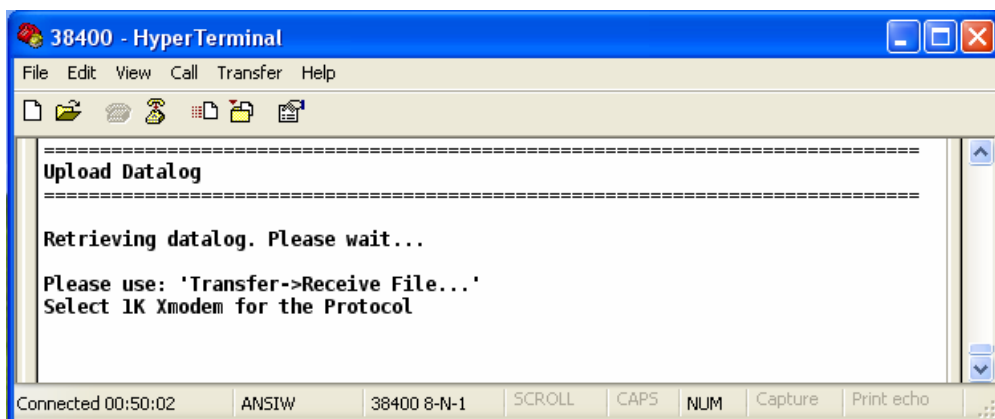
Option 3 allows the user to upload a single data log file stored on the Micro SD card. All files saved on the SD card will be listed and the user may select any file by typing its full name. After that, the user will be prompted to use the file transfer protocol to upload the file to the PC, as below.



Note that the files saved onto the Micro SD card are saved as Comma-Separated-Values (.CSV) files that can be opened by spreadsheet software such as Microsoft Excel and OpenOffice.org Calc.

4.7.4 Upload Datalog

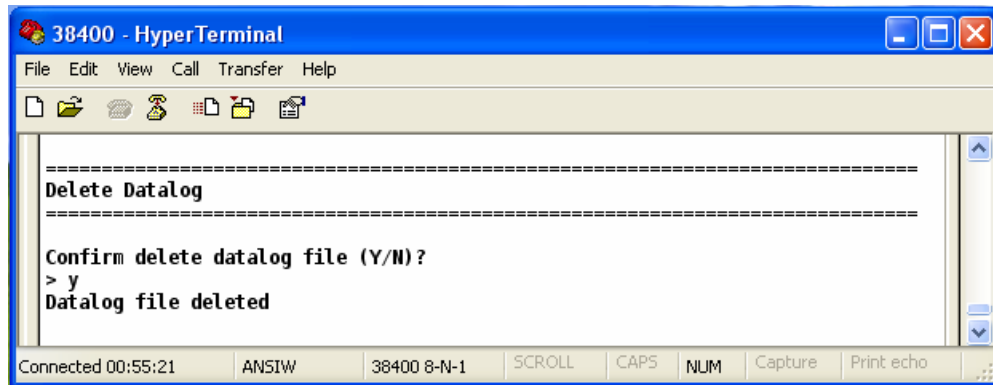
Option 4 allows the user to upload the entire log found in the RTU non-volatile memory. This log contains the most recent data.



The log data from the non-volatile memory is saved as pre-formatted ASCII text that can be opened by a simple text editor like Notepad.

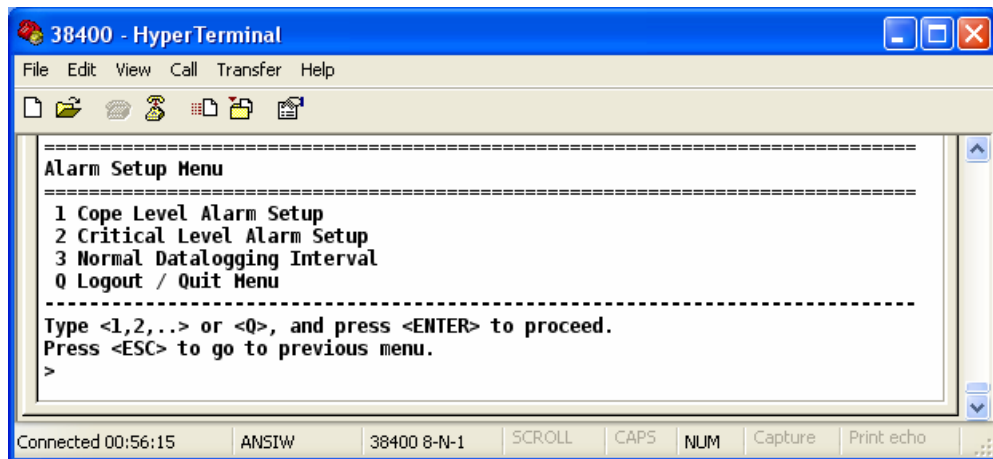
4.7.5 Delete Datalog

Option 5 Delete Log is to be used only when a logging error occurred and the log data is invalid (error message: 'Restore Log & List'). This will result in the log being wiped out and reset to initial state, but this doesn't affect the files on the SD card.

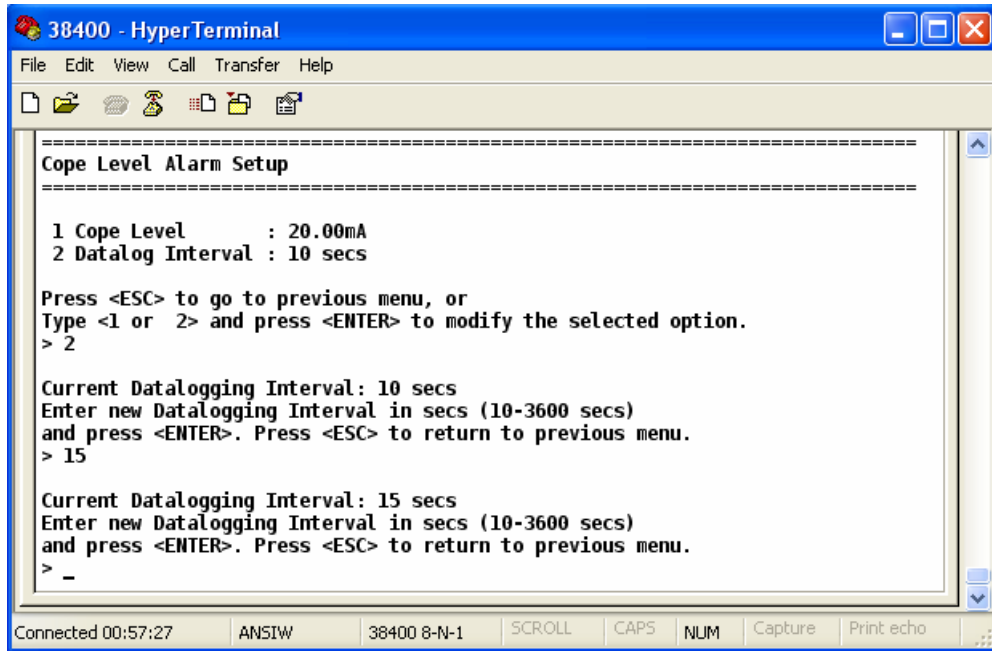


4.8 Alarm Setup

The RTU supports different levels of alarms for monitoring the level of the Analog Inputs. This allows the user to set different data logging intervals and GPRS alert frequency depending on the level of the Analog Inputs.



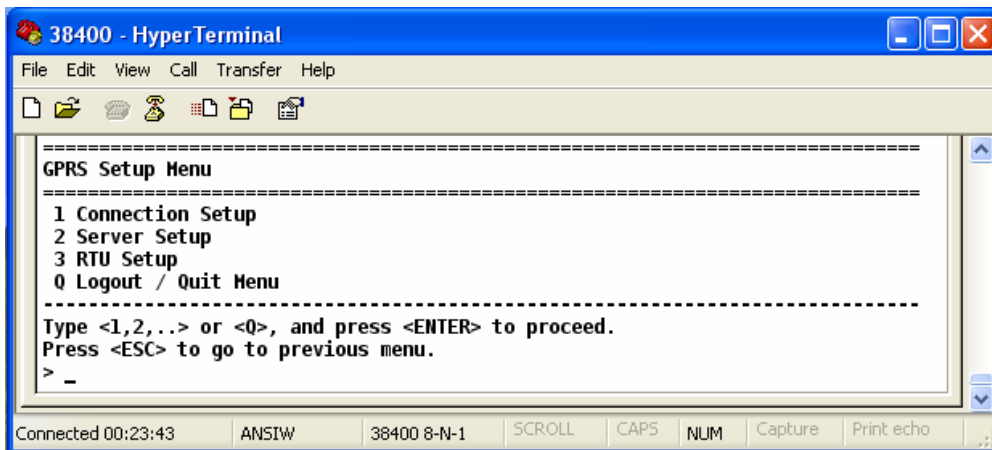
Three levels are defined in the RTU and these are Normal, Critical and Cope. Each level can be set and the data logging interval for each level can also be specified.



This means that when the Analog Input is at Normal level, data will be logged at the specified interval. If the level of the input rises to Cope or Critical, the data will be logged at these respective intervals.

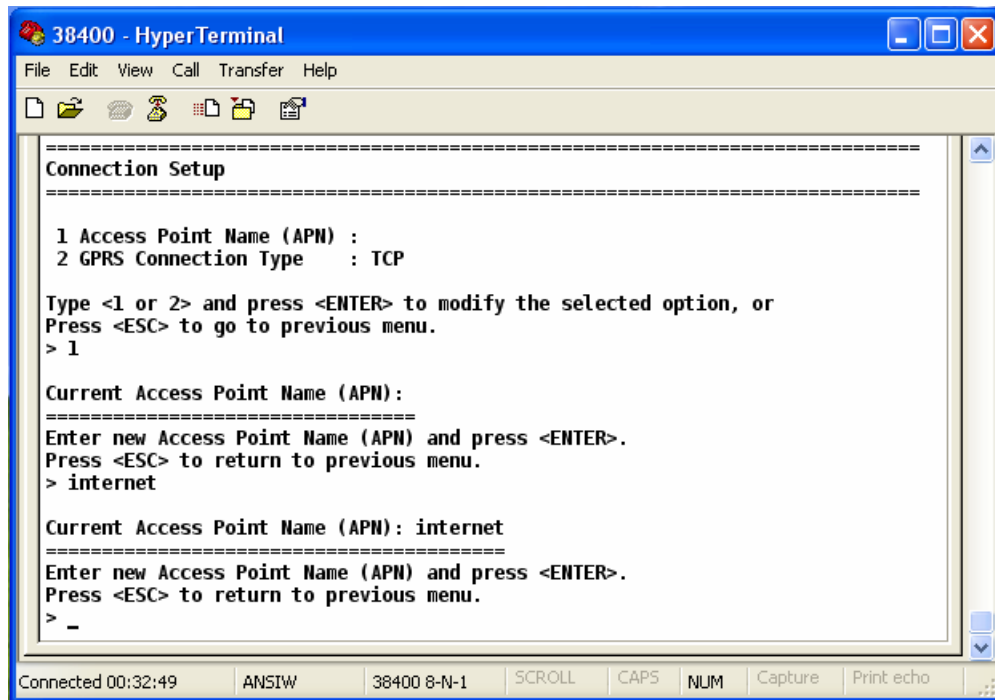
4.9 GPRS Setup

Before enabling any GPRS connection for wireless communication, the GPRS fields must be set up properly. These mainly include the server Access Point Name (APN), the URL of the server that one wants to communicate to and the server port, as shown below.

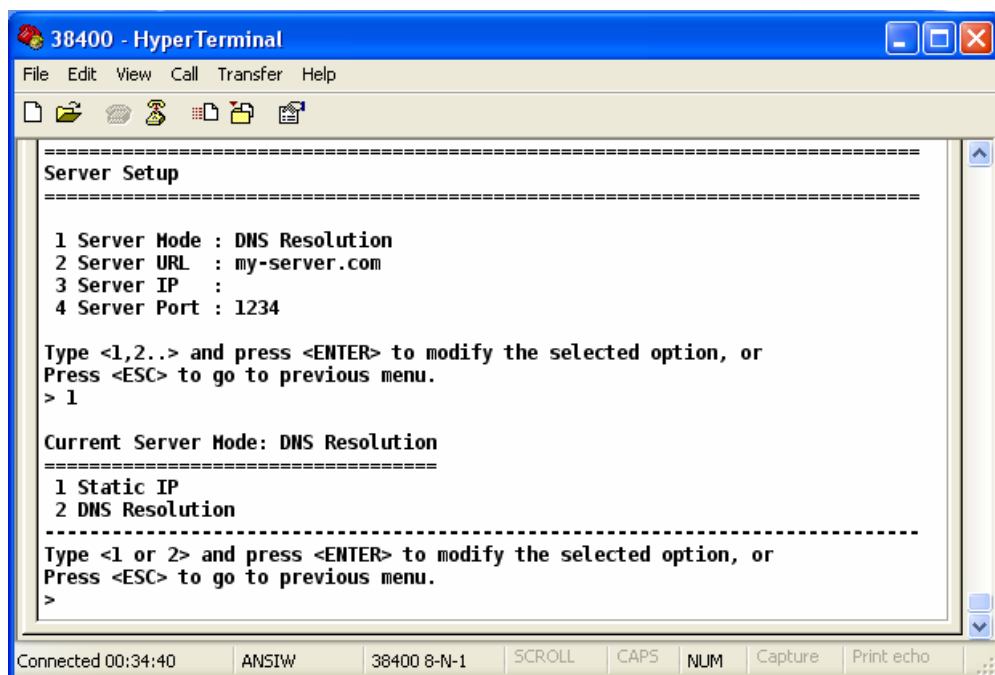


4.9.1 Access Point Name (APN)

Select option 1 to set the APN and to set the connection/server type (TCP/UDP).



4.9.2 Server Setup



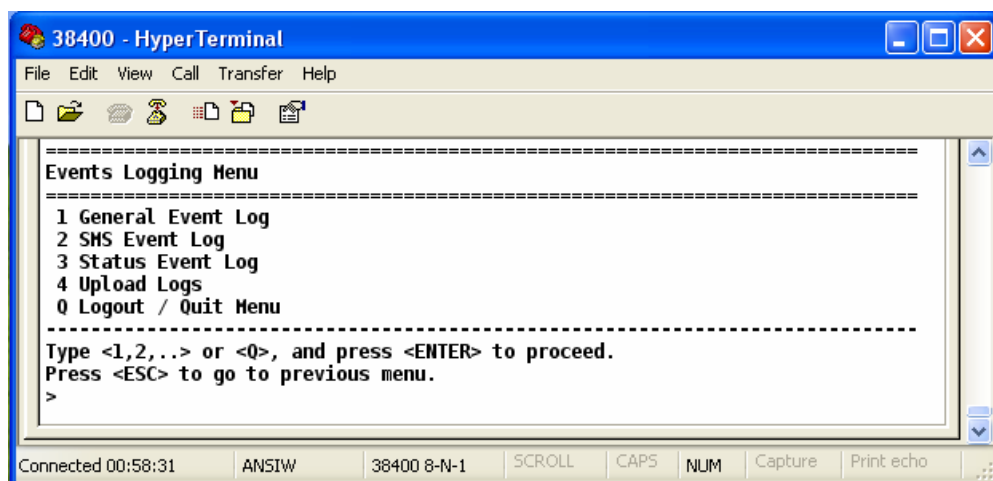
Select option 2 to set up the server details. The server IP or URL may be entered depending on the mode, either if using a Static IP or using a DNS server to resolve the server URL. The listening server port needs to be entered as well.

4.9.2 RTU Setup

Option 3 RTU setup is for setting the RTU port in cases where the RTU needs to be running as a server.

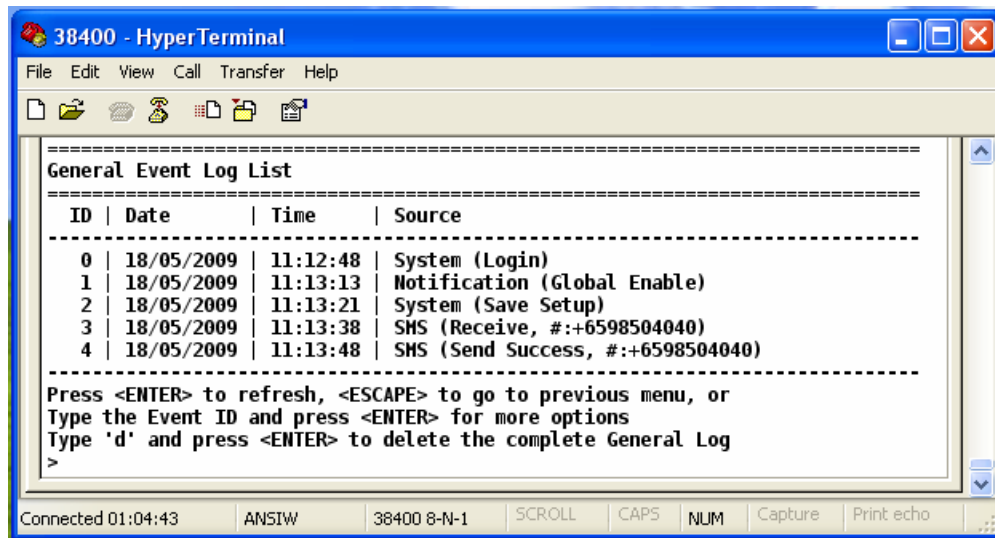
4.10 Events Logging

Events occurring while operating the RTU are logged and stored for retrieval at a later time. The logs can be accessed from the Main Menu by selecting the option Events Logging. A general log is maintained for the purpose of logging all events such as login in, system reset, send SMS. A specific SMS log is also kept for all SMS operations, such as send, receive, resend. A status log is kept for all IO status change. These are listed below.

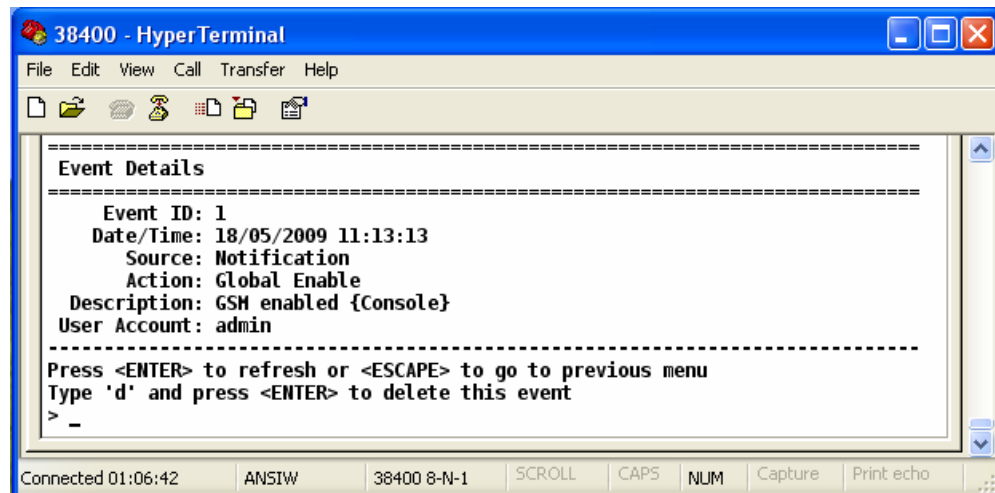


4.10.1 General Event Log

Pressing on 1 will display the general event log which is as below.

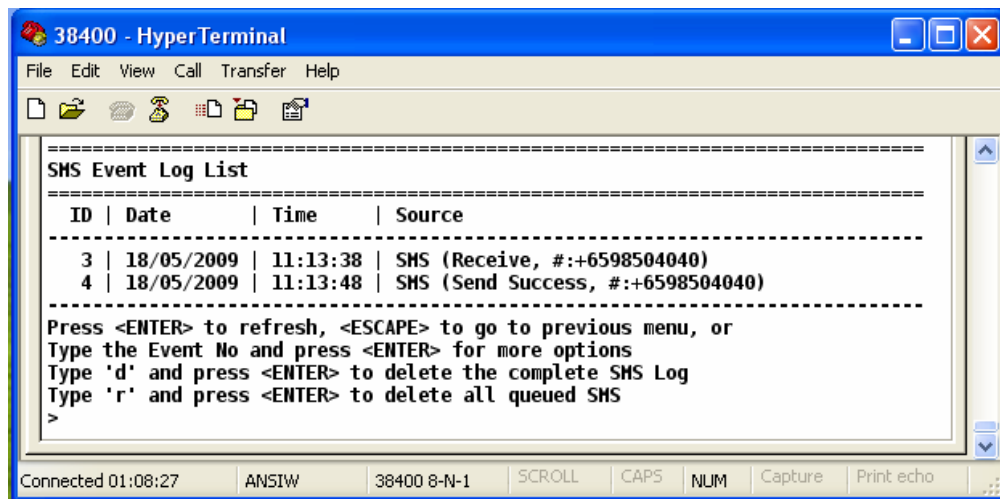


Pressing the event no will display the event details. For example pressing 1 will show event with ID 1, as follows:

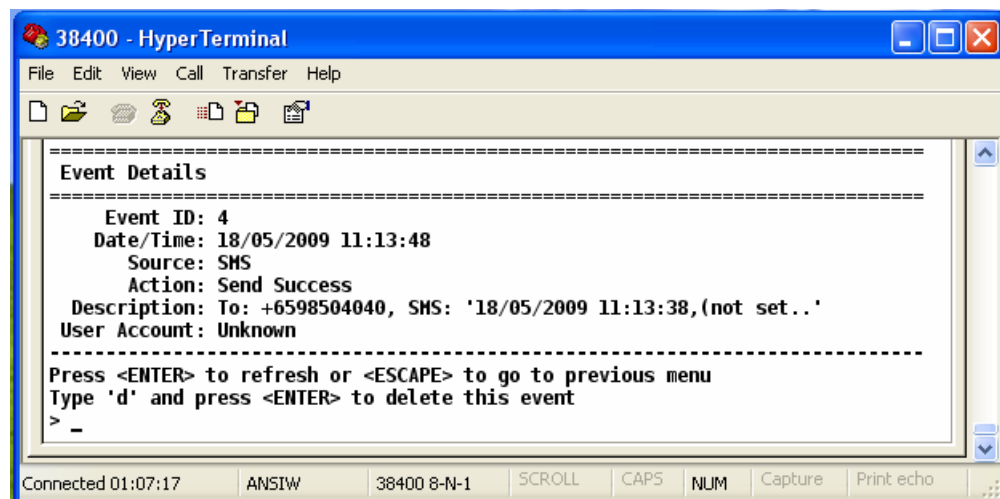


4.10.2 SMS Event Log

The SMS event log is as follows and event 4 is as shown next.

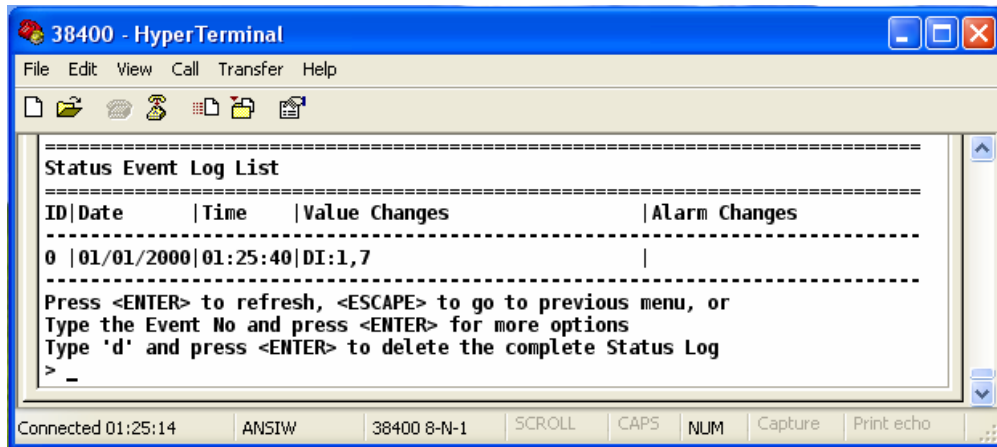


The events as well as the entire logs can be deleted as necessary by typing 'd' and pressing 'Enter' as shown above. To prevent SMS that have been rescheduled from being resent, assuming these have not been sent yet can be done by typing 'r' and pressing ENTER as above.

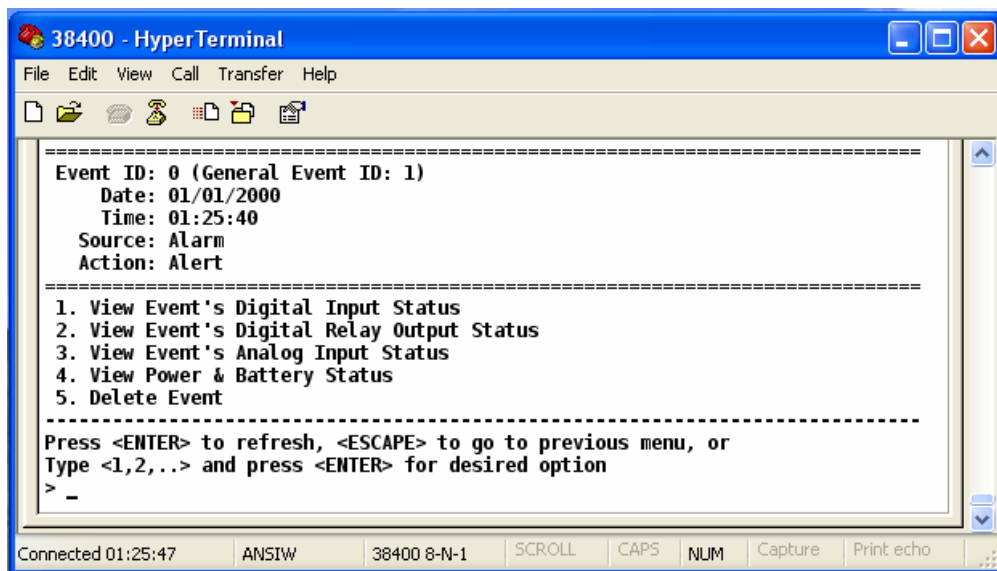


4.10.3 Status Event Log

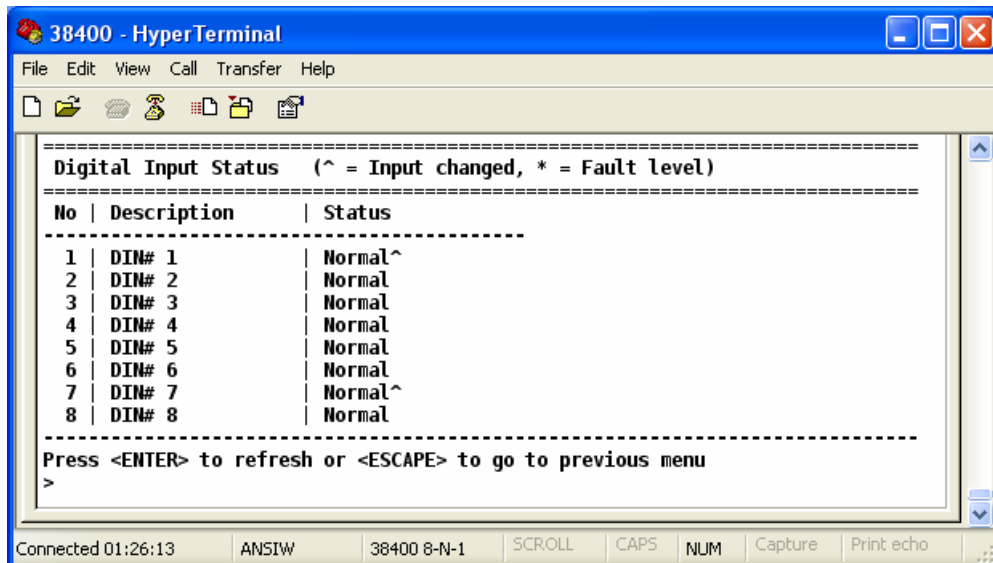
The status event log is as follows, displaying the input changes and the alarm changes where DI is for Digital Input, AI for Analog Input.



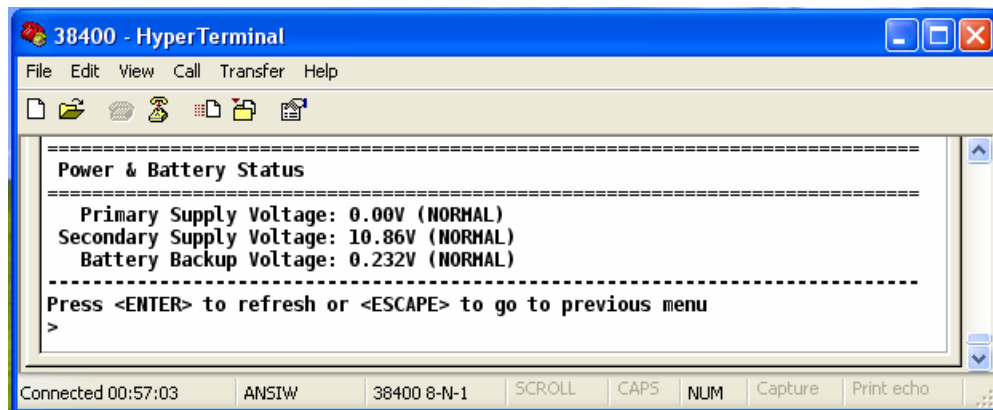
After an event no is pressed, options to view the event details are available as follows:



These will show the IO status in details at the event time and the power and battery status can also be obtained. For example, for Digital Input Status, the details are displayed as below. As listed 'DI:4' changed and the Digital Input 4, is marked as changed in the detailed view. The IO which current status is the fault level are marked with a '*'.

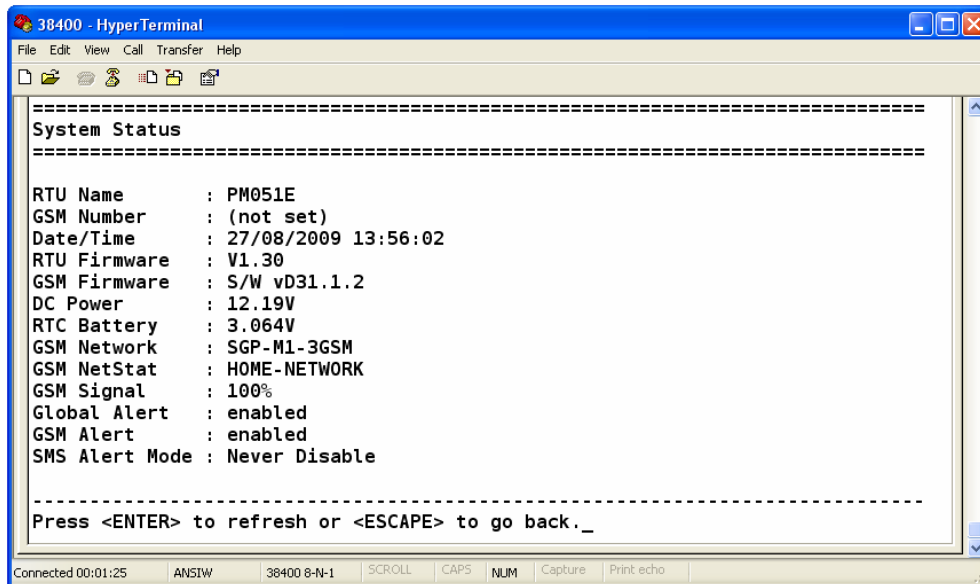


The battery and power status can be seen as follows:



4.11 View System Status

This menu gives the options to view the status of the RTU such as the RTU name, GSM Network Strength, whether the GSM is logged onto Home Network or Roaming as well as the power status.



```
38400 - HyperTerminal
File Edit View Call Transfer Help

=====
System Status
=====

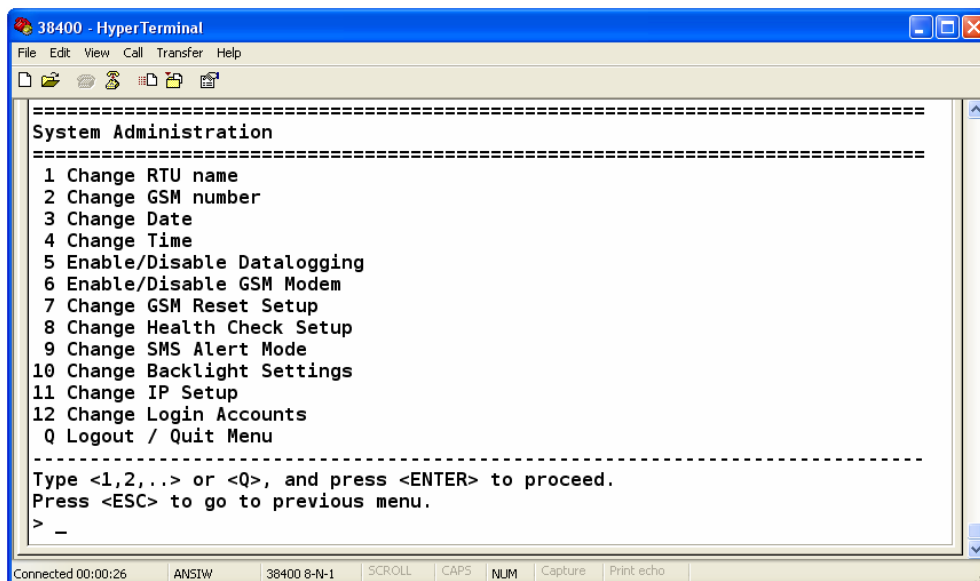
RTU Name       : PM051E
GSM Number     : (not set)
Date/Time      : 27/08/2009 13:56:02
RTU Firmware   : V1.30
GSM Firmware   : S/W vD31.1.2
DC Power       : 12.19V
RTC Battery    : 3.064V
GSM Network    : GPRS-M1-3GSM
GSM NetStat    : HOME-NETWORK
GSM Signal     : 100%
Global Alert   : enabled
GSM Alert      : enabled
SMS Alert Mode : Never Disable

-----
Press <ENTER> to refresh or <ESCAPE> to go back._

Connected 00:01:25  ANSIW  38400 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

4.12 System Admin

This menu allows you to change the system RTU name and GSM number which are important to identify the RTU. The date and time as well as the login accounts can also be changed through this menu.



```
38400 - HyperTerminal
File Edit View Call Transfer Help

=====
System Administration
=====

1 Change RTU name
2 Change GSM number
3 Change Date
4 Change Time
5 Enable/Disable Datalogging
6 Enable/Disable GSM Modem
7 Change GSM Reset Setup
8 Change Health Check Setup
9 Change SMS Alert Mode
10 Change Backlight Settings
11 Change IP Setup
12 Change Login Accounts
Q Logout / Quit Menu

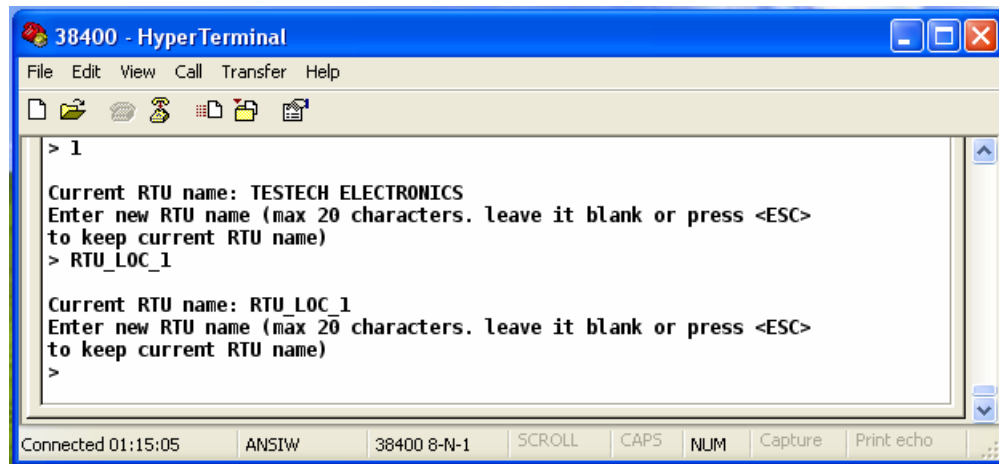
-----
Type <1,2,...> or <Q>, and press <ENTER> to proceed.
Press <ESC> to go to previous menu.
> _

Connected 00:00:26  ANSIW  38400 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

Note that the IP Setup option is only important for the PM05xE RTU model which includes an embedded web server.

4.12.1 Change RTU Name

Select 1 to change the RTU name.



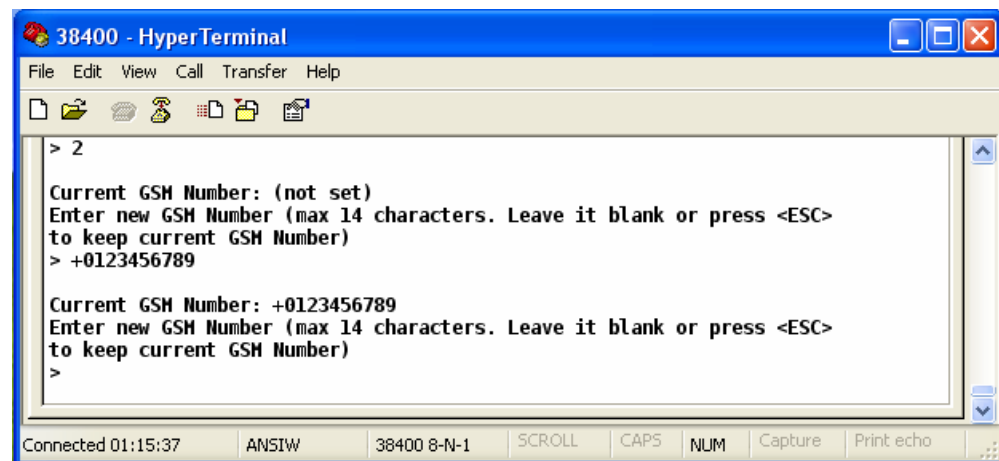
The screenshot shows a HyperTerminal window titled "38400 - HyperTerminal". The menu bar includes File, Edit, View, Call, Transfer, and Help. Below the menu is a toolbar with icons for file operations and communication. The main text area displays the following sequence of commands and responses:

```
> 1  
  
Current RTU name: TESTECH ELECTRONICS  
Enter new RTU name (max 20 characters. leave it blank or press <ESC>  
to keep current RTU name)  
> RTU_LOC_1  
  
Current RTU name: RTU_LOC_1  
Enter new RTU name (max 20 characters. leave it blank or press <ESC>  
to keep current RTU name)  
>
```

The status bar at the bottom shows "Connected 01:15:05", "ANSIW", "38400 8-N-1", and buttons for SCROLL, CAPS, NUM, Capture, and Print echo.

4.12.2 Change RTU GSM Number

Select 2 to change the RTU name.



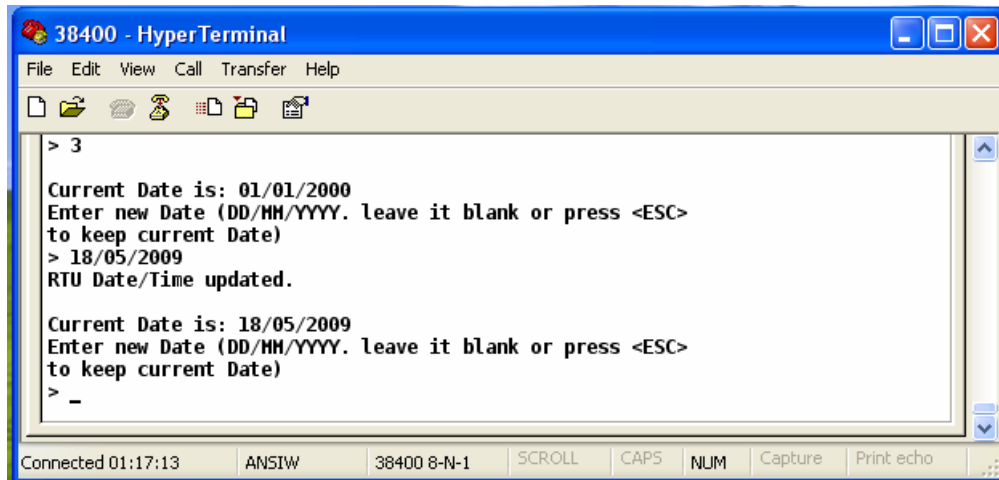
The screenshot shows a HyperTerminal window titled "38400 - HyperTerminal". The menu bar includes File, Edit, View, Call, Transfer, and Help. Below the menu is a toolbar with icons for file operations and communication. The main text area displays the following sequence of commands and responses:

```
> 2  
  
Current GSM Number: (not set)  
Enter new GSM Number (max 14 characters. Leave it blank or press <ESC>  
to keep current GSM Number)  
> +0123456789  
  
Current GSM Number: +0123456789  
Enter new GSM Number (max 14 characters. Leave it blank or press <ESC>  
to keep current GSM Number)  
>
```

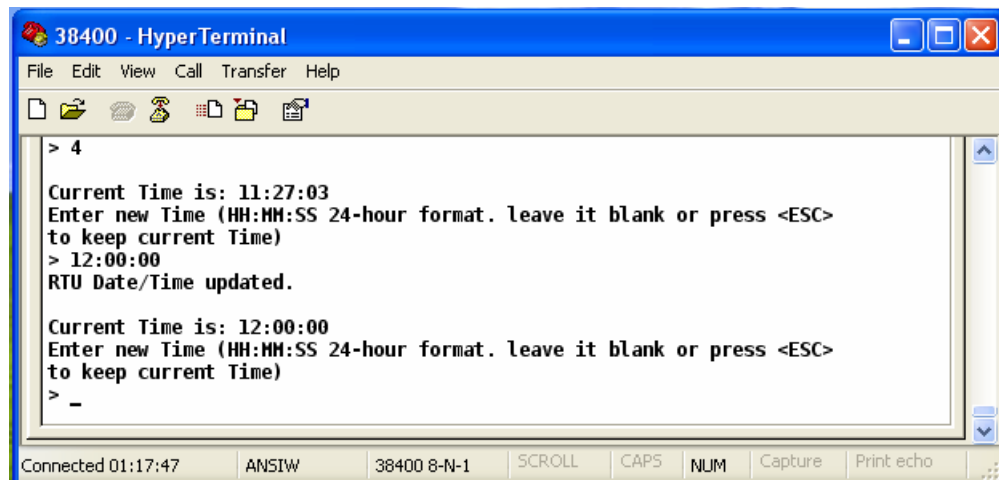
The status bar at the bottom shows "Connected 01:15:37", "ANSIW", "38400 8-N-1", and buttons for SCROLL, CAPS, NUM, Capture, and Print echo.

4.12.3 Change Date and Time

Select 3 to change date and enter the date in DD/MM/YYYY format and then press the Enter Key.



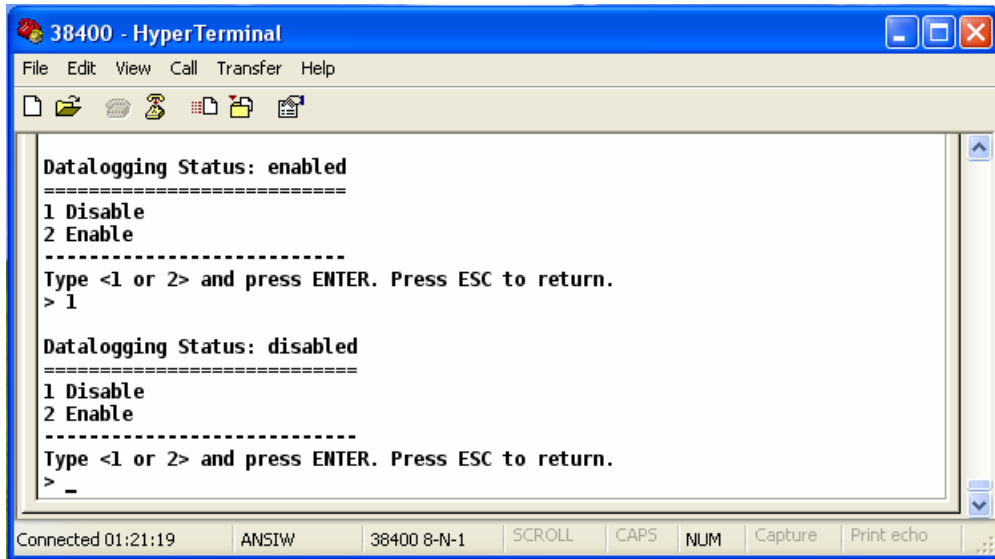
Return to the system setup menu and enter 4 to change time in HH/MM/SS format and then press the Enter Key



At this point the real time clock date and time will be saved and backup by the 3V COIN battery. The backup battery will last for 3 years continuously.

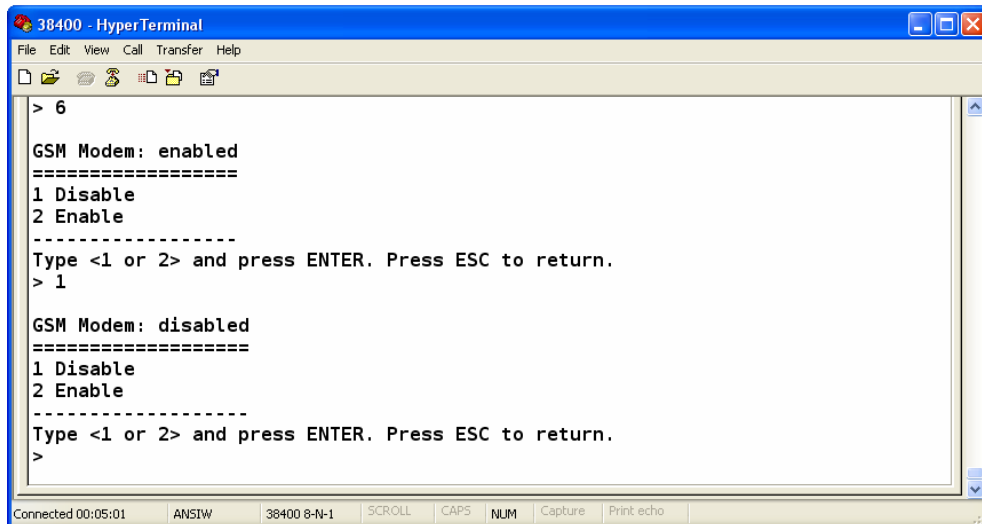
4.12.4 Enable/Disable Data Logging

Data logging on the Micro SD card can be enabled and disabled through this option. When this option is disabled, the RTU will not log any data to the Micro SD card.



4.12.5 Enable/Disable GSM Modem

This option allows the user to completely disable the GSM modem and functionality and operate the RTU as a pure data logger. After enabling/disabling the GSM Functionality, save setup and reboot the RTU for the change to take effect.

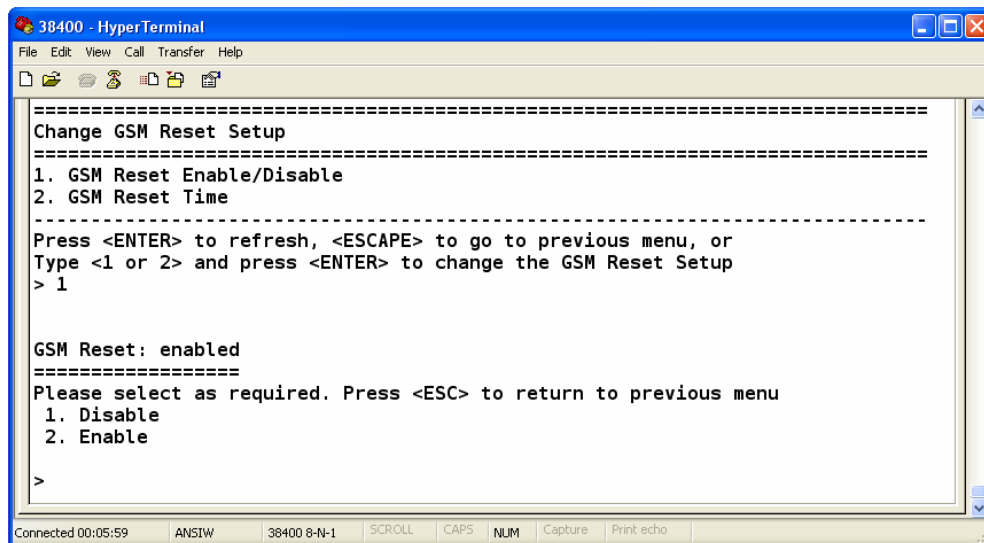


4.12.6 Change GSM Reset Setup

This option allows the user to configure the RTU to reset the GSM modem at a specified time daily. When enabled, the RTU will proceed to deregister the GSM modem from the network, power cycle the modem and register it to the network. This is useful especially when the GSM

network coverage is not very good and the user is not able to get a response to an SMS command from the RTU.

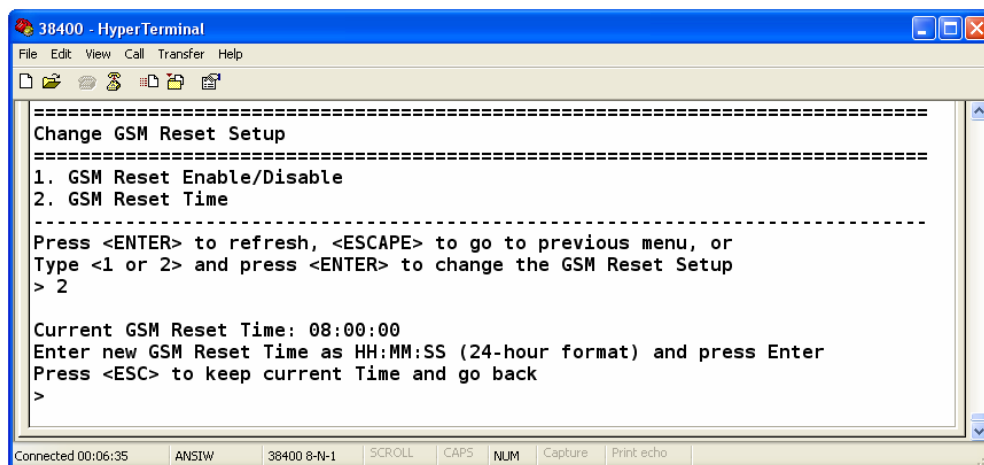
This reset option can be enabled via option 1. The time at which the modem is to be reset can also be configured as shown below.



```
38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Change GSM Reset Setup
=====
1. GSM Reset Enable/Disable
2. GSM Reset Time
=====
Press <ENTER> to refresh, <ESCAPE> to go to previous menu, or
Type <1 or 2> and press <ENTER> to change the GSM Reset Setup
> 1

GSM Reset: enabled
=====
Please select as required. Press <ESC> to return to previous menu
1. Disable
2. Enable
>
```

Connected 00:05:59 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo



```
38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Change GSM Reset Setup
=====
1. GSM Reset Enable/Disable
2. GSM Reset Time
=====
Press <ENTER> to refresh, <ESCAPE> to go to previous menu, or
Type <1 or 2> and press <ENTER> to change the GSM Reset Setup
> 2

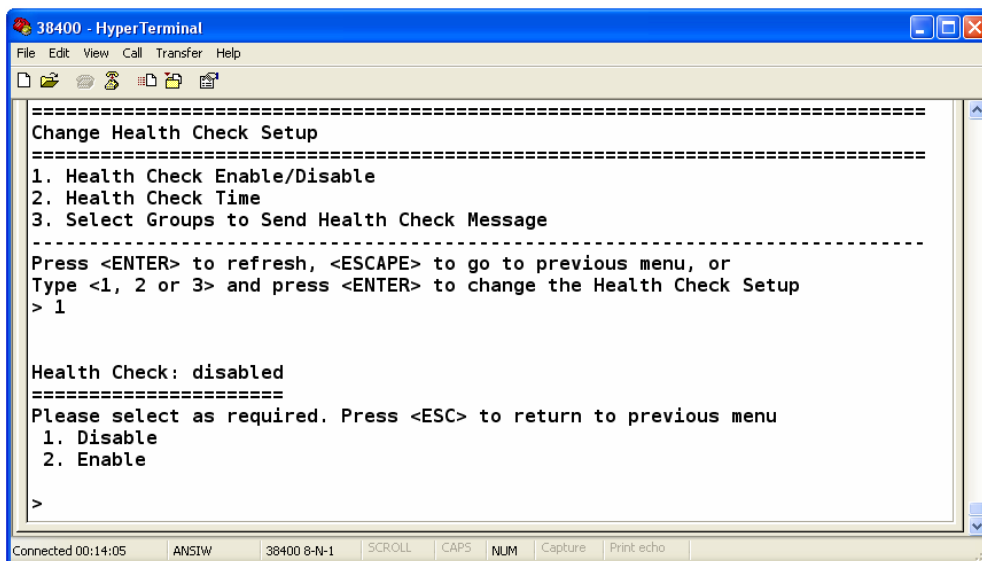
Current GSM Reset Time: 08:00:00
Enter new GSM Reset Time as HH:MM:SS (24-hour format) and press Enter
Press <ESC> to keep current Time and go back
>
```

Connected 00:06:35 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

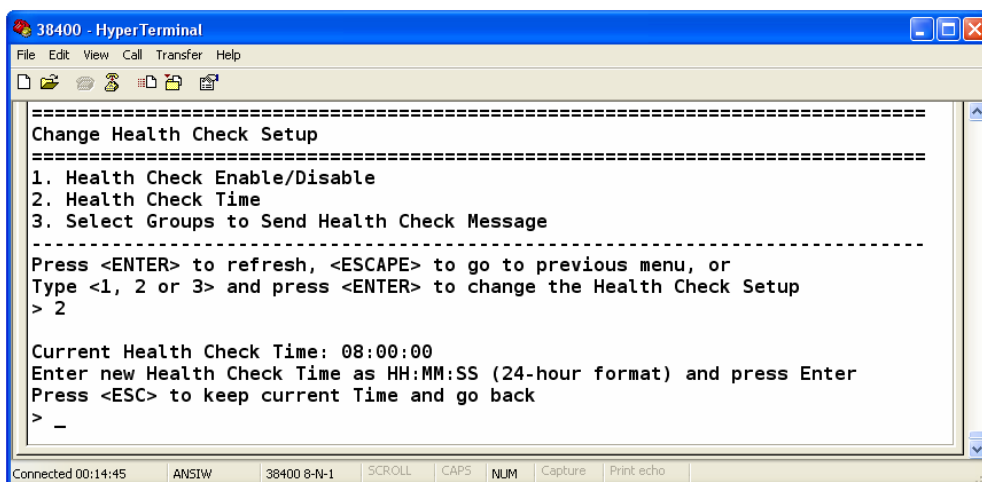
4.12.7 Change Health Check Setup

This option allows the user to configure the RTU to send a health-check message to a selected number of users daily. The health-check message will consist of system status i.e. GSM network status, system power status, notification status.

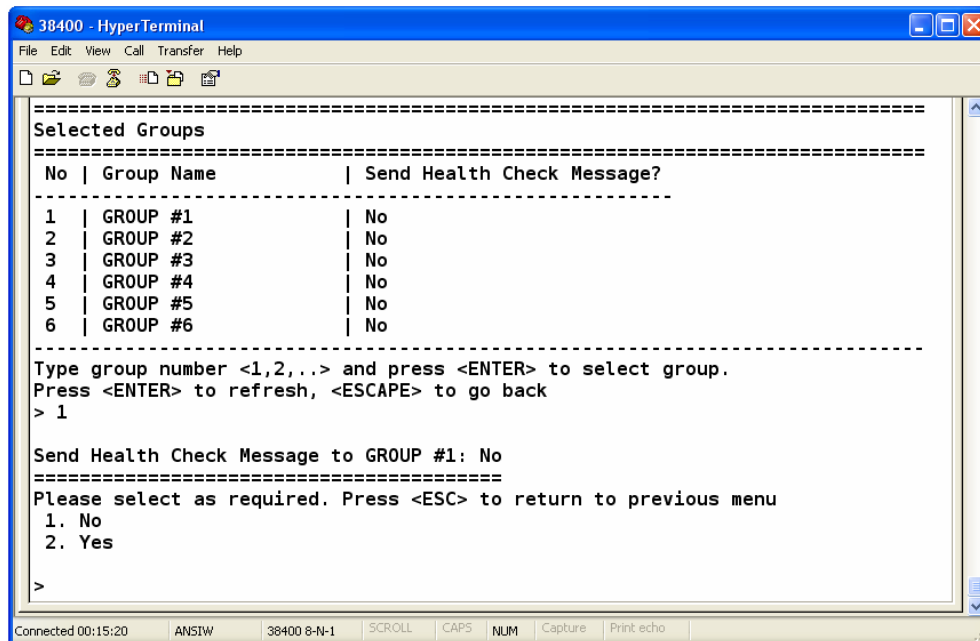
The user can enable or disable this health-check message via option 1.



The time at which this message is to be sent daily can also be set up via option 2.

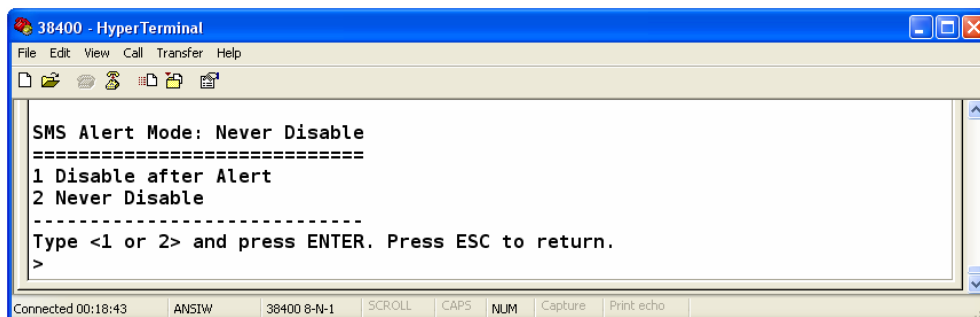


The groups of users to which this message is to be sent out can be configured via option 3.
Note that only enabled phones of the selected groups will receive the health-check message.



4.12.8 Change SMS Alert Mode

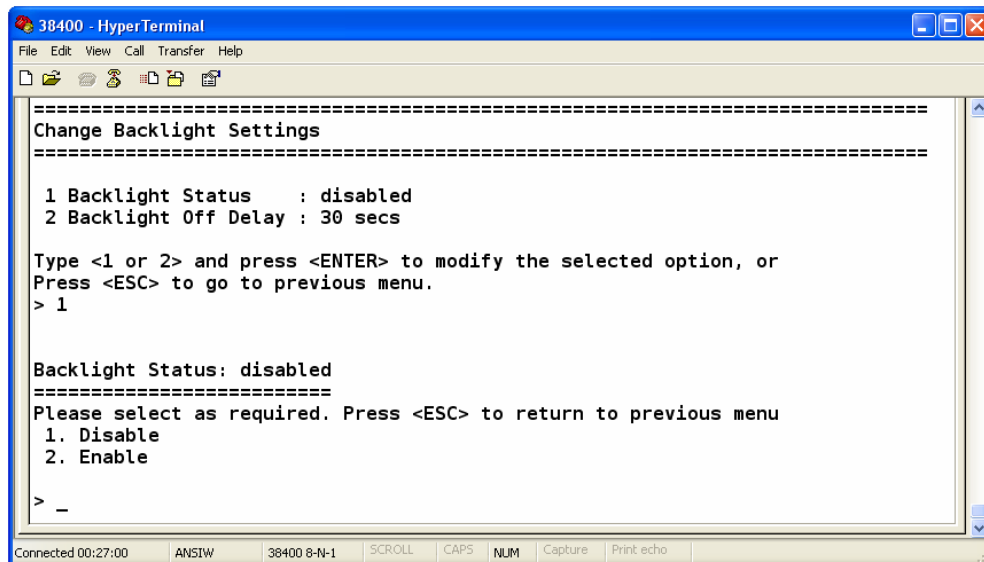
This option allows the user to configure the mode of sending SMS alerts.



The normal operation of the RTU is that upon an input change, an SMS alert will be sent to the users as configured. This option allows the user to configure whether subsequent alerts should be sent to users or not. If the mode is set to 'Disable after Alert', any subsequent alerts are disabled after the first one and the system needs to be re-armed by the user. This is useful for applications where inputs might fluctuate considerably, causing many SMS alerts to be sent out within a short period of time.

4.12.9 Change Backlight Settings

This option allows the user to configure the backlight settings, notably whether the backlight should be turned off after a certain period of time or not. The off delay can also be configured as shown below.



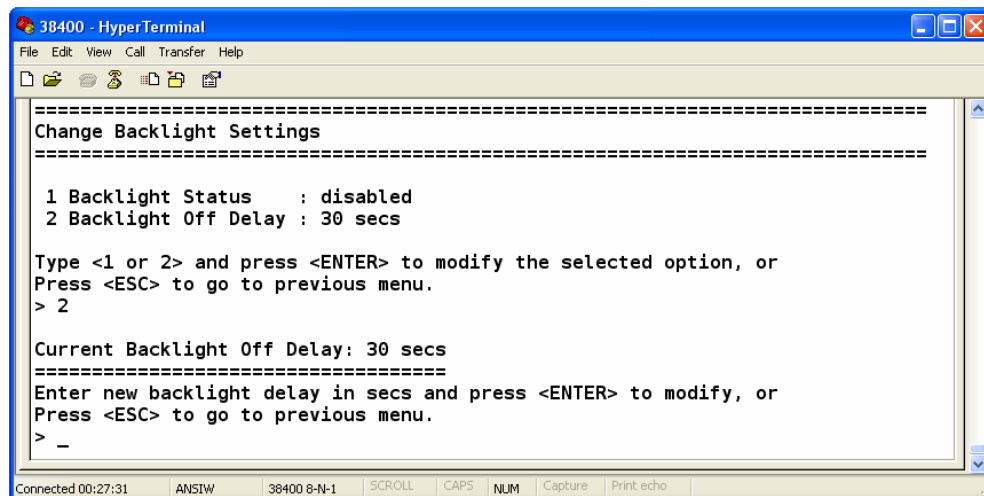
```
38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Change Backlight Settings
=====

1 Backlight Status    : disabled
2 Backlight Off Delay : 30 secs

Type <1 or 2> and press <ENTER> to modify the selected option, or
Press <ESC> to go to previous menu.
> 1

Backlight Status: disabled
=====
Please select as required. Press <ESC> to return to previous menu
1. Disable
2. Enable
> -

Connected 00:27:00  ANSIW  38400 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```



```
38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Change Backlight Settings
=====

1 Backlight Status    : disabled
2 Backlight Off Delay : 30 secs

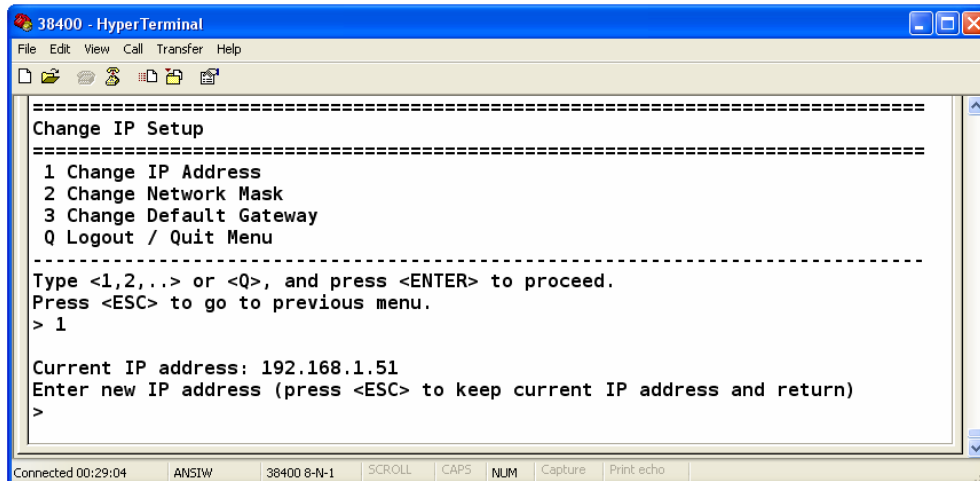
Type <1 or 2> and press <ENTER> to modify the selected option, or
Press <ESC> to go to previous menu.
> 2

Current Backlight Off Delay: 30 secs
=====
Enter new backlight delay in secs and press <ENTER> to modify, or
Press <ESC> to go to previous menu.
> -

Connected 00:27:31  ANSIW  38400 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

4.12.10 Change IP Setup

This option allows the user to configure the IP setup to use the PM05xE RTU web server. The default IP address of the RTU is 192.168.1.51 and this can be changed via option 1.

A screenshot of a HyperTerminal window titled "38400 - HyperTerminal". The window has a menu bar with "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations. The main text area displays a menu titled "Change IP Setup" enclosed in dashed lines. The menu options are: "1 Change IP Address", "2 Change Network Mask", "3 Change Default Gateway", and "Q Logout / Quit Menu". Below the menu, instructions state: "Type <1,2,...> or <Q>, and press <ENTER> to proceed. Press <ESC> to go to previous menu." The user has entered "> 1". The screen then shows "Current IP address: 192.168.1.51" and "Enter new IP address (press <ESC> to keep current IP address and return)". The user has entered ">". At the bottom of the window, a status bar shows "Connected 00:29:04", "ANSIW", "38400 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

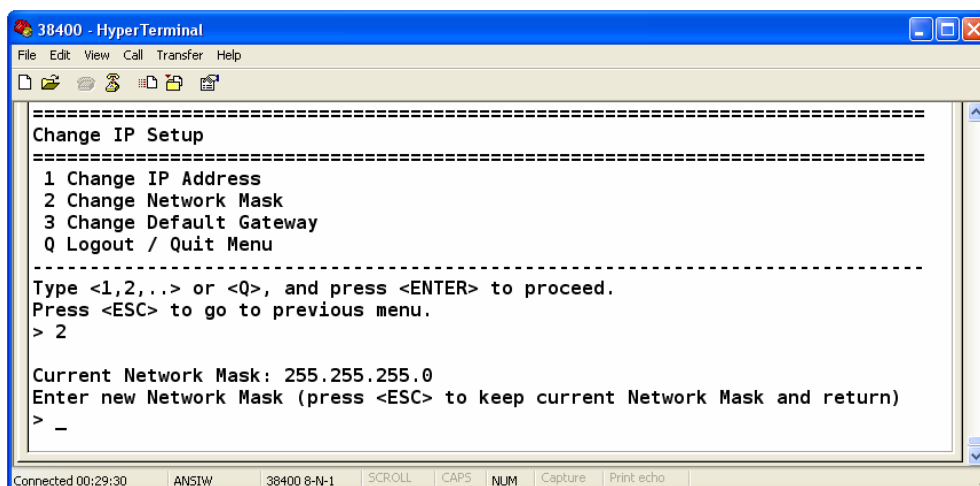
```
38400 - HyperTerminal
File Edit View Call Transfer Help

=====
Change IP Setup
=====
1 Change IP Address
2 Change Network Mask
3 Change Default Gateway
Q Logout / Quit Menu
=====
Type <1,2,...> or <Q>, and press <ENTER> to proceed.
Press <ESC> to go to previous menu.
> 1

Current IP address: 192.168.1.51
Enter new IP address (press <ESC> to keep current IP address and return)
>
```

Note that the RTU doesn't support DHCP and dynamic IP address assignment and thus the IP address must be set as above. Also the IP address assigned to the RTU must not be in use by other devices on the LAN.

The network mask and default gateway must also be set up following the respective LAN setup as below.

A screenshot of a HyperTerminal window titled "38400 - HyperTerminal". The window has a menu bar with "File", "Edit", "View", "Call", "Transfer", and "Help". Below the menu bar is a toolbar with icons for file operations. The main text area displays a menu titled "Change IP Setup" enclosed in dashed lines. The menu options are: "1 Change IP Address", "2 Change Network Mask", "3 Change Default Gateway", and "Q Logout / Quit Menu". Below the menu, instructions state: "Type <1,2,...> or <Q>, and press <ENTER> to proceed. Press <ESC> to go to previous menu." The user has entered "> 2". The screen then shows "Current Network Mask: 255.255.255.0" and "Enter new Network Mask (press <ESC> to keep current Network Mask and return)". The user has entered "> -". At the bottom of the window, a status bar shows "Connected 00:29:30", "ANSIW", "38400 8-N-1", "SCROLL", "CAPS", "NUM", "Capture", and "Print echo".

```
38400 - HyperTerminal
File Edit View Call Transfer Help

=====
Change IP Setup
=====
1 Change IP Address
2 Change Network Mask
3 Change Default Gateway
Q Logout / Quit Menu
=====
Type <1,2,...> or <Q>, and press <ENTER> to proceed.
Press <ESC> to go to previous menu.
> 2

Current Network Mask: 255.255.255.0
Enter new Network Mask (press <ESC> to keep current Network Mask and return)
> -
```

```

38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Change IP Setup
=====
1 Change IP Address
2 Change Network Mask
3 Change Default Gateway
Q Logout / Quit Menu
=====
Type <1,2,...> or <Q>, and press <ENTER> to proceed.
Press <ESC> to go to previous menu.
> 3

Current Default Gateway: 192.168.1.1
Enter new Default Gateway (press <ESC> to keep current Default Gateway and return)
> _

```

Connected 00:30:06 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

4.12.11 Change Login Accounts

Select Login Accounts to change the system login account and password. You must not lose the admin name and password or else it will not be possible to login the next time and will require the unit be restored at factory. Please remember to keep a record safely of the admin login name and password.

```

38400 - HyperTerminal
File Edit View Call Transfer Help
=====
Enter new login name for Group 1 (max 10 characters)
> MECH_TEAM
Enter new password for Group 1 (max 6 characters)
> #####
Retype new password for Group 1
> #####
Username and password have been updated.

=====
Login Accounts
=====
| Account | Login Name |
|-----|
A | Admin | admin
1 | Group 1 | MECH_TEAM
2 | Group 2 | group2
3 | Group 3 |
4 | Group 4 |
5 | Group 5 |
6 | Group 6 |

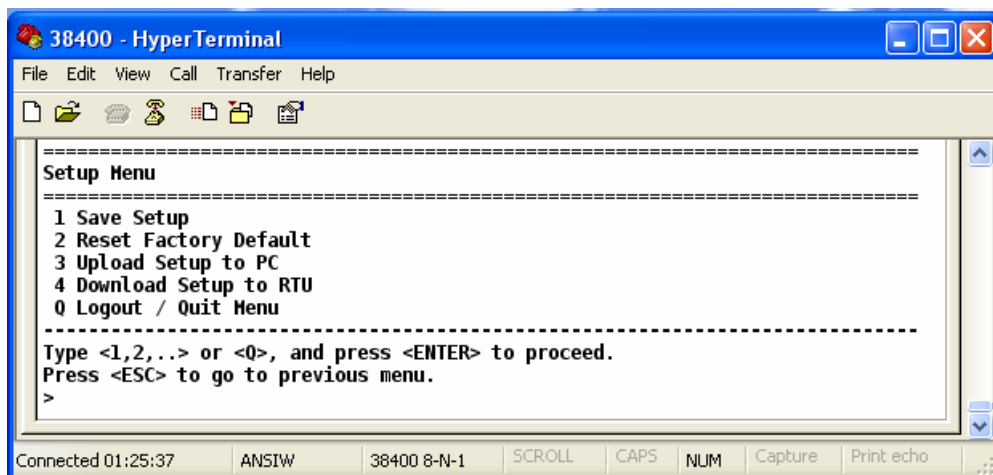
=====
Press <ENTER> to refresh, <ESC> to go to previous menu, or
Type <A,1,2,...> and press <ENTER> to modify a login account.
> _

```

Connected 01:20:14 ANSIW 38400 8-N-1 SCROLL CAPS NUM Capture Print echo

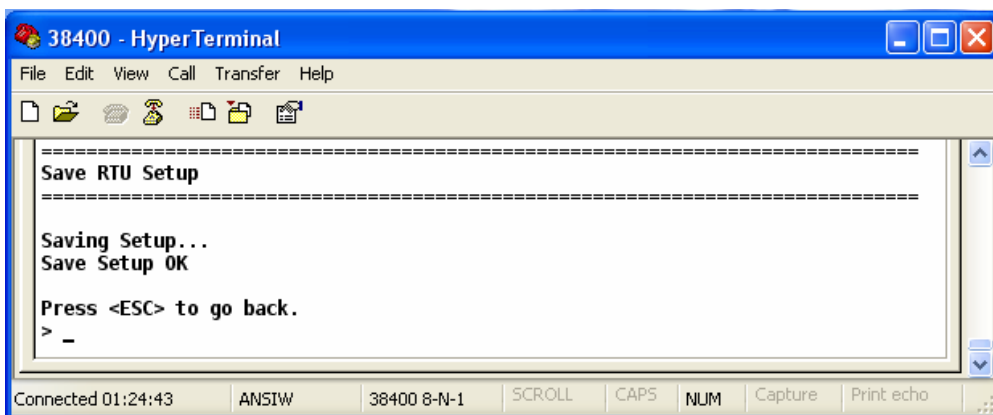
4.13 Setup Save/Reset/Update

This menu allows you to save the current setup into the RTU's non-volatile memory. You must select option 1 to save the setup.



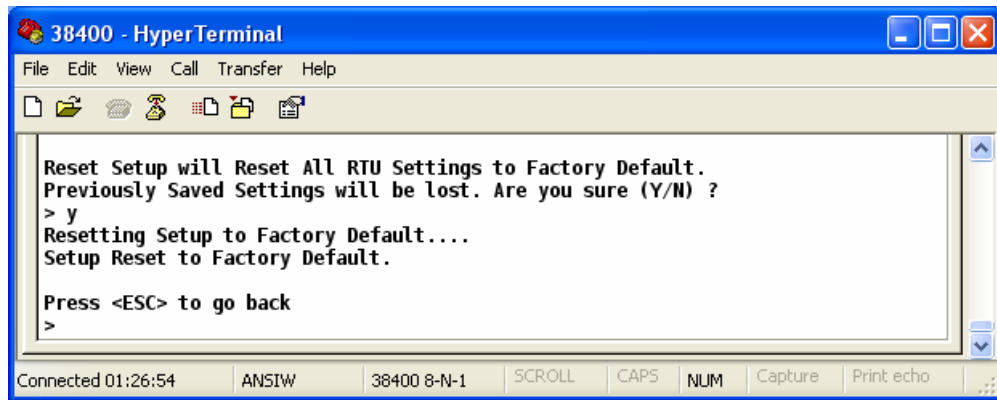
4.13.1 Save Setup

Saving is done by pressing 1 and the system setup is saved to memory as below. The 'Save Setup OK' message shows that the setup was successfully saved. In case of failure, the message 'Save Setup Failed' will be displayed will be displayed.



4.13.2 Reset Setup

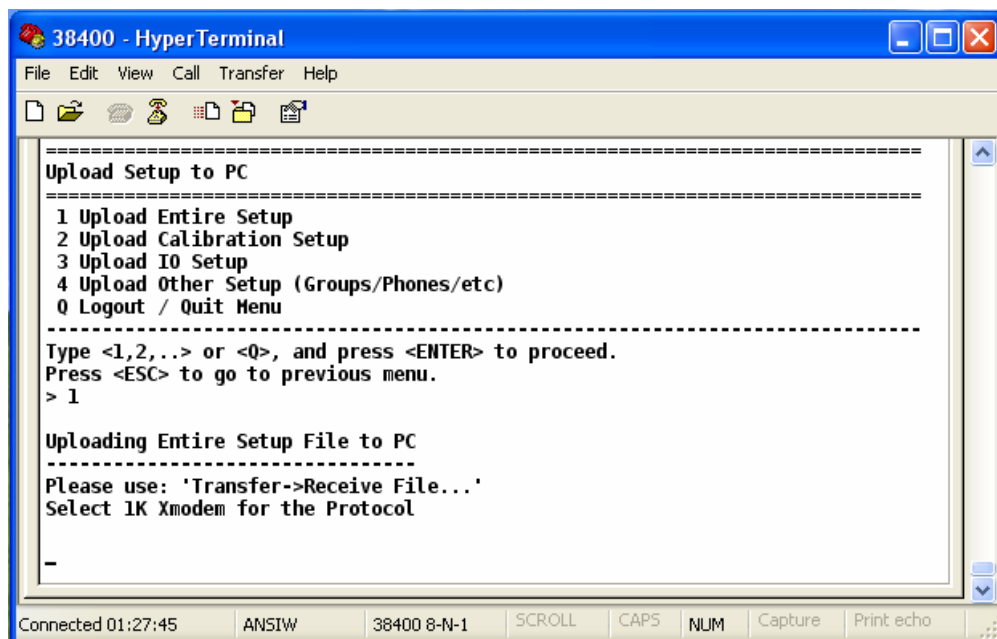
In case the user needs to reset the system to factory settings, option 2 can be used and this is displayed as below. Again if any error occurs during saving, the error message 'Reset Factory Default Failed.' will be displayed while a successful restore operation will be as below.



The Reset factory default is used in the exceptional condition where the unit needs to have all its setting clear out and reset to the default settings. All prior changes will be lost when the setup is reset.

4.13.3 Update Setup

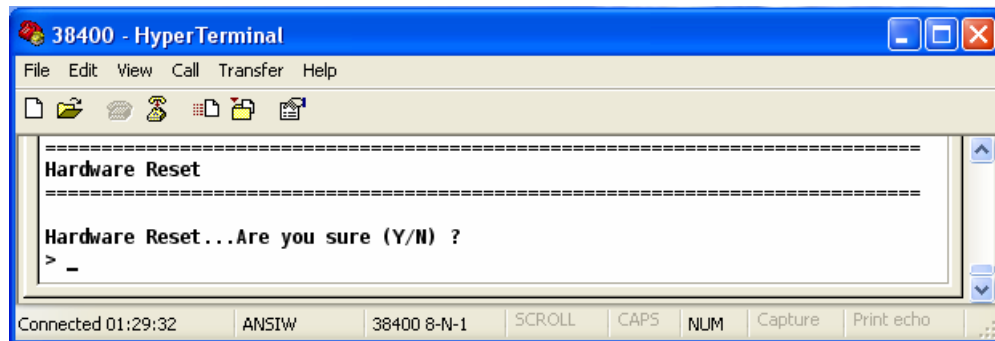
The current system setup can also be saved to a PC as a binary file and/or a binary setup file can be downloaded and saved to the RTU. This is done through option 3 which is as follows.



The entire setup or a specific setup may be uploaded as shown above. Follow the instructions to upload or download the file using the built-in file transfer protocol in HyperTerminal.

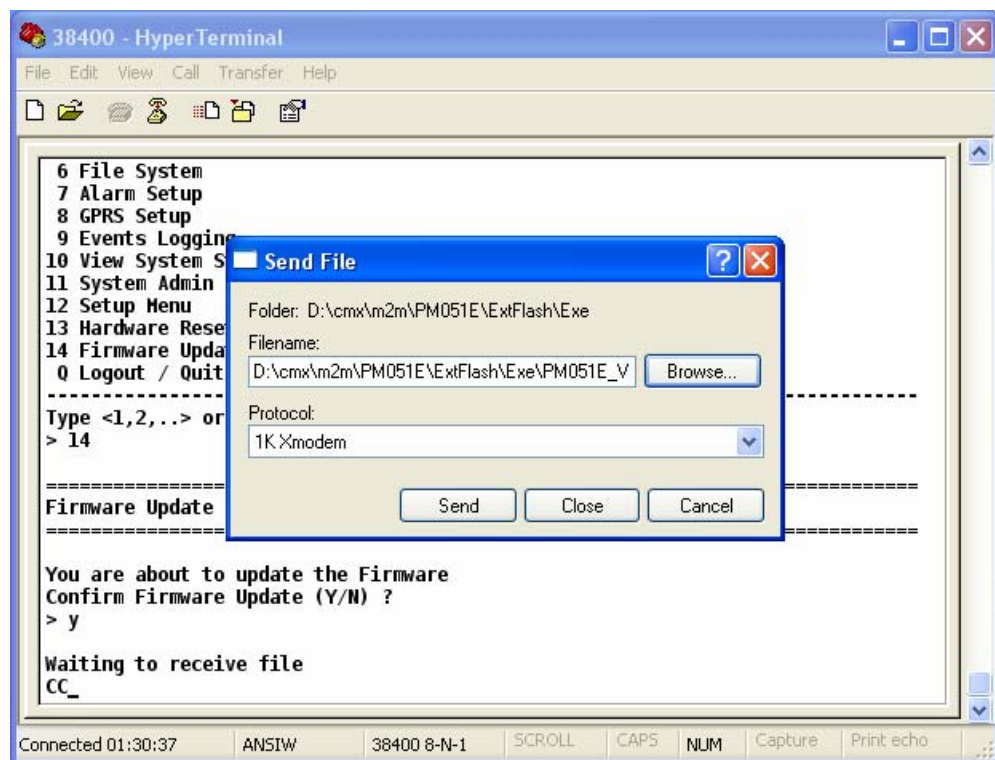
4.14 Hardware Reset

This option does a warm hardware reset that will reboot the unit without having to power cycle the RTU power DC Input.

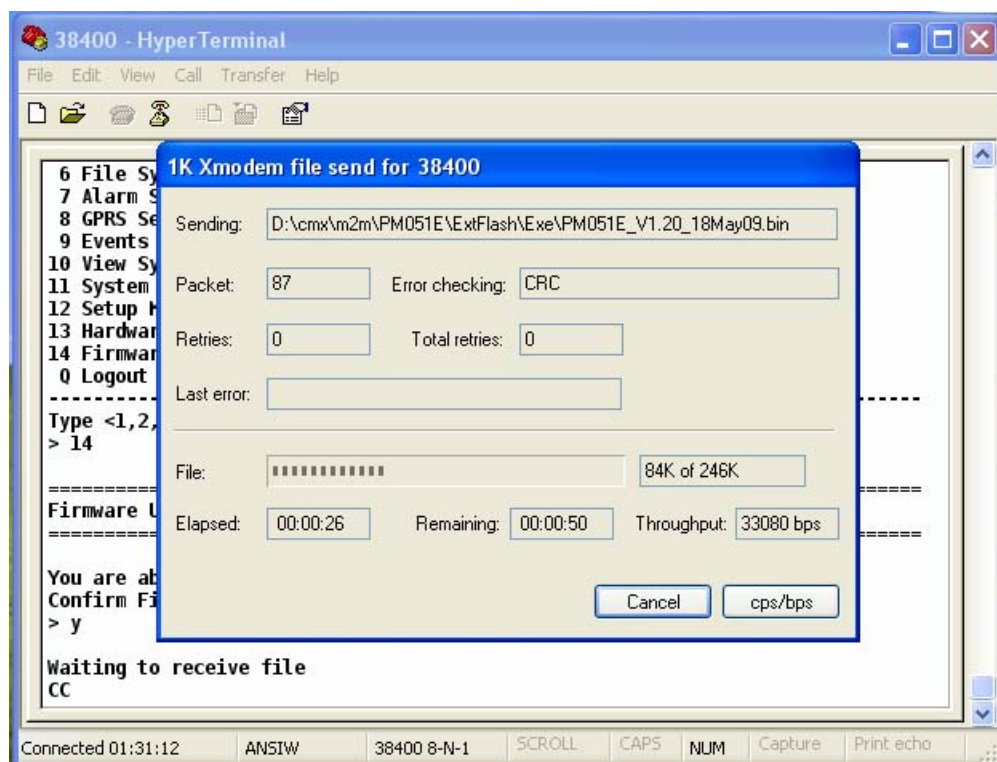


4.15 Firmware Update

In the event that the RTU firmware requires an upgrade, this option can be used to download the updated firmware file to the RTU for upgrading. This gives the prompt below.

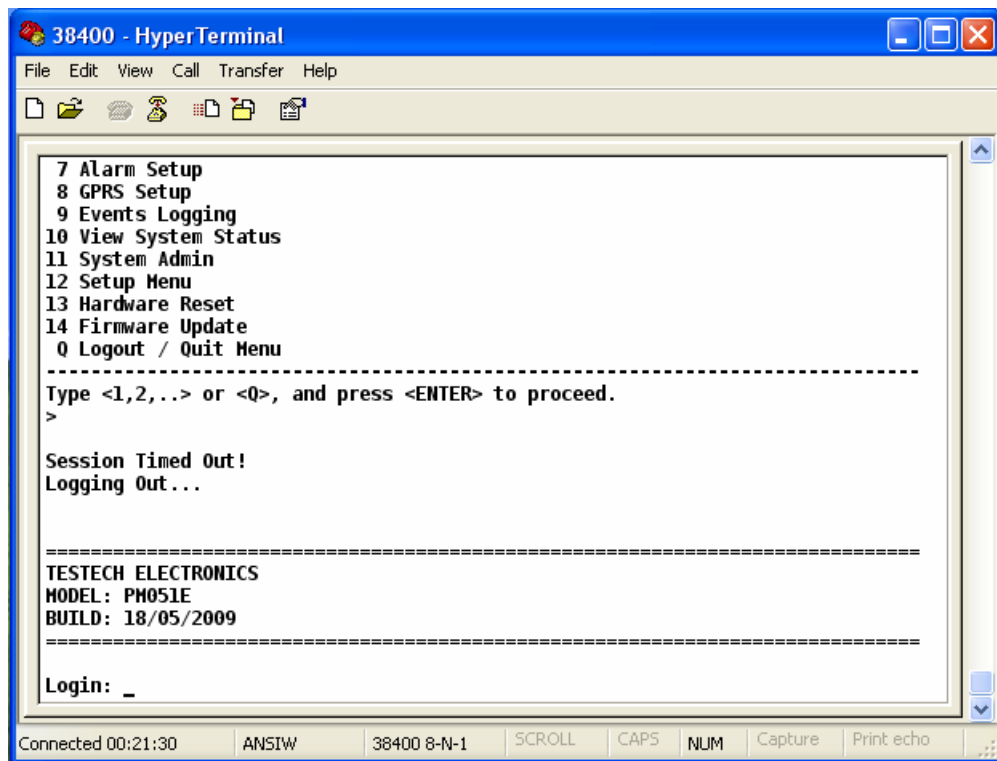


The file should be selected from the HyperTerminal as shown below and the Protocol must be 1K X-Modem as in the screen captions which follow.



4.16 Console Menu Session Timeout

The console menu session will be exited if there is no activity for a period of 10mins. This means that once the session timeouts, any changes that have been made and not saved will be lost and the system will clear login details and exit. This is done to prevent unwanted access to the system.



5 SETUP GUIDE USING KEYPAD/LCD MENU

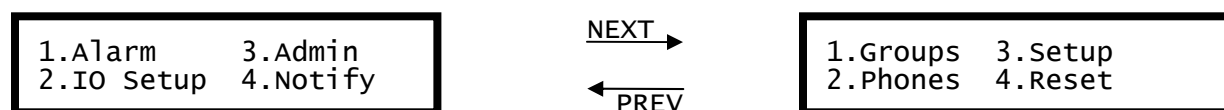
The essential setup required for the PM05x can also be done via the Keypad/LCD menu. This menu can be accessed by pressing the MENU key on the keypad. The login prompt is then displayed as follows:

Username: Password:

To exit from the login screen please press ESC. The username and password are both 'admin' as before.

Please note that these are case-sensitive and the keypad is by default in CAPS mode. To set to lower case, press the MENU/Shift key once.

Once the username and password are entered, the Main Menu (1) will be displayed. Other options are available on Main Menu (2) which can be accessed by pressing the NEXT key. Pressing the PREV key on Main Menu (2) will cause to return to Main Menu (1).



5.1 Alarm Setup

The Alarm Setup menu can be accessed by pressing 1 from Main Menu (1) and the following menu is displayed.

1.Cope	3.Normal
2.Crit	

For each alarm level, both the level value and the interval can be set. Select the alarm level and the following submenu is displayed.

1.Level
2.Interval

For example, if the Cope Level need to be set, the following prompt is shown.

Current Cope Level:
20.00mA

----->

Enter new Cope
Level:

For the data logging interval, the prompt is as follows:

Cope Level
Interval: 60sec(s)

----->

Enter new Cope Lvl
Interval:

To change the Critical and Normal alarm level settings, select the respective options and the prompts are similar.

5.2 IO Setup

The IO Setup menu can be accessed by pressing 2 from Main Menu (1) and the following menu is displayed.

1.Calibrtn 3.ADC-1
2.View ADC 4.ADC-2

5.2.1 Calibration

Option 1 Calibrtn gives the user the option to calibrate any analog input from the Keypad. Pressing 1 gives the Calibration submenu which consists of View Cal and Raw Cal.

1.View Cal
2.Raw Cal

- Pressing 1 View Cal will prompt for the analog input to view. Select one of the input using the NEXT/PREV keys and press ENTR.

```
Select Analog Input  
1: AIN# 1
```

The current raw count is then displayed as well as the calibration point 1 value. Press NEXT to view the calibration point 2 value.

```
Curr Raw Cnt: -9900  
Calibrtn Pt1: 10
```

- Pressing 2 Raw Cal will also prompt for the analog input to calibrate. Select one of the input using the NEXT/PREV keys and press ENTR.

The prompt to calibrate point 1 of the analog input is then displayed. Apply the requested percentage of input to the analog input selected and press ENTR.

```
Cal Pt1: Apply 0%  
Input and press ENTR
```

The analog input will be sampled and the calibration point value saved..

```
Calibration Pointt 1  
Updated
```

The prompt to calibrate the next point of the analog input is then displayed. Apply the requested percentage of input to the analog input selected and press ENTR.

```
Cal Pt2: Apply 100%  
Input and press ENTR
```

The analog input will be sampled and the calibration point value saved.

Calibration Point 2
Updated

At this point all calibration points have been recorded. Escape from this option for the changes in calibration to take effect.

Calibration Points
Updated

Please note that the calibration will be LOST when the unit power is turned off, unless you choose to SAVE SETUP when you exit the LCD Menu.

5.2.2 View ADC

Option 2 View ADC allows the user to view the current reading for any analog input. After pressing 2, the prompt to select the analog input is displayed. Select the desired analog input to view and press ENTR. The current reading will be displayed. Press ENTR to refresh the reading.

ENTR to Refresh
AIN#1: 04.00mA

5.2.3 ADC Setup (ADC-1 & ADC-2)

Options 3 and 4 gives access to submenus to modify the Analog Inputs attributes, as shown below.

ADC-1 1.Desc 3.Hi Val
 2.Unit 4.Lo Val

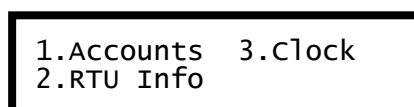
ADC-2 1.Decimal 3.Hi Lim
 2.Hyster. 4.Lo Lim

For example to change the input description, select 1 Desc and the IO items are shown one by one and when any is selected, the current description is listed and then the user is prompted to enter the new one. The other attributes can be similarly modified



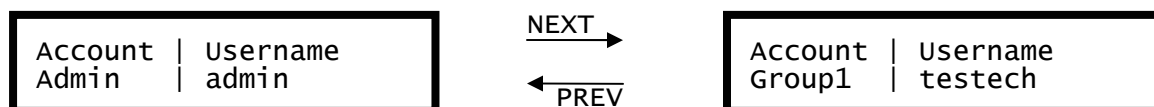
5.3 System Admin

The system administration can be accessed by pressing 1 Admin from Main Menu (1). This gives the option to change the user accounts credentials (i.e. username and password), to change the RTU Name, to change the date and time. This is as shown next.



5.3.1 Accounts

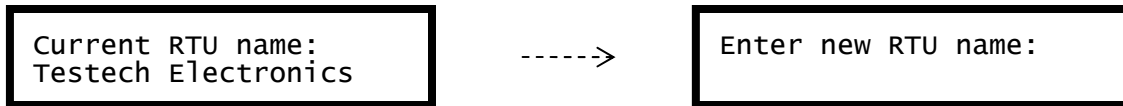
For Accounts, press 1 and the accounts are displayed one by one. To move between accounts use the NEXT and PREV keys on the keypad. This is how the menu is displayed.



Pressing ENTR at the account being displayed will show the prompt for the user to enter the current username and password for the selected account. Once these are entered and validated, the user is prompted for the new username and password.

5.3.2 RTU Info

For RTU Info, press 2 and the submenu. Press 1 and current RTU Name will be displayed for a couple of secs after which the user is prompted to enter the new desired RTU Name. Press 2 to change the RTU GSM Number.



5.3.3 Clock

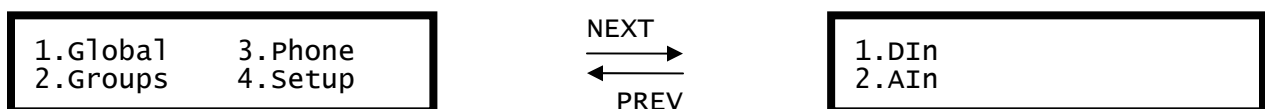
For Date and Time, press 3 and the submenu will be displayed. Press 1 or 2 to change the date or time respectively and the prompt to enter the new date/time will be displayed as follows. The date and time should be entered in the format as displayed.

Enter (DD/MM/YYYY)
 Date: __/__/____

Enter (HH:MM:SS)
 Date: __:__:__

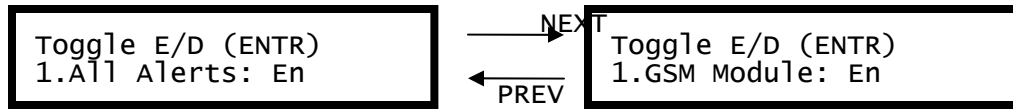
5.4 Notification

The notification menu is accessed by pressing 2 Notify from Main Menu (1) and the following menu is displayed. There are eight 6 notifications options split into two menus. Hence when pressing Notify, the user will be shown Notify Menu (1). To access Notify Menu (2), press NEXT (and PREV to go to Notify Menu (1)). These are as shown below.



5.4.1 Global

For Global, press 1 and the types of notification are displayed one by one. These are 'All Alerts' (for global status change) and 'GSM' (for GSM status change) and to move between the types press the PREV and NEXT keys. The display shows the instruction to change the status 'Toggle E/D (ENTR)' as well as the type and the status which is abbreviate as 'En' for Enable and 'Dis' for Disable.



5.4.2 Groups

For Groups, press 2 and the groups are displayed one by one. To move between groups use the PREV and NEXT keys. The display shows the instruction to change the status 'Toggle E/D (ENTR)' as well as the type and the status which is abbreviate as 'En' for Enable and 'Dis' for Disable.

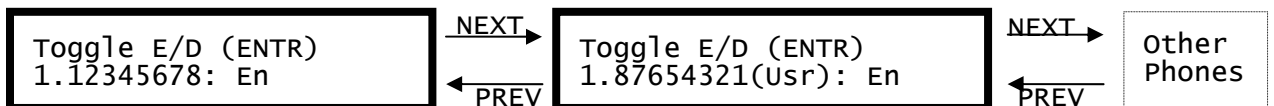


5.4.3 Phones

For Phones, press 3 and the groups are displayed first. Hence the user needs to select the group to which the desired phone belongs to. This is done by pressing ENTR at the group being displayed.



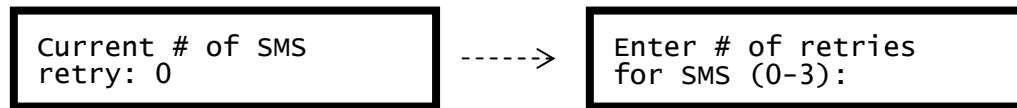
Afterwards, the phones are listed one by one and the user can move between phones by using the PREV and NEXT keys.



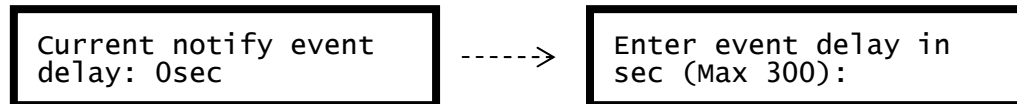
5.4.4 Setup

For Setup, press 4 and the Notify Setup menu will be displayed. This gives the option to change the number SMS Retry, the event delay and the redial time, as discussed in the console section.

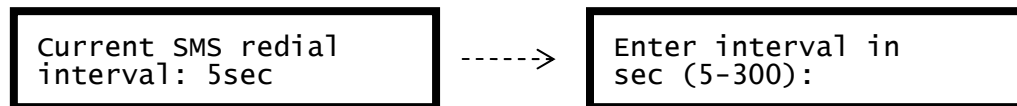
- For Retry, press 1 and the current number of SMS retry will be displayed for a couple of secs before the user is prompted for the new desired number, as follows:



- For Delay, press 2 and the current event delay will be displayed for a couple of secs before the user is prompted for the new desired delay, as follows:

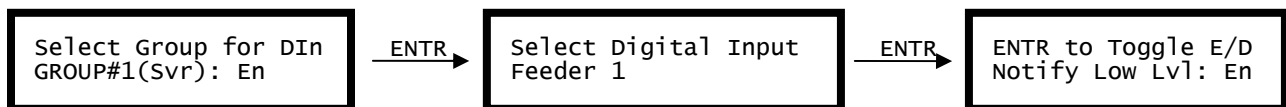


- For Redial, press 3 and the current redial interval will be displayed for a couple of secs before the user is prompted for the new desired interval, as follows:



5.4.5 DIn

For DIn, press 1 and the prompt to select the group that needs to be enabled for specific Digital Input channels is shown. Select the desired group and press ENTR. This will give the Digital Input list and again select the desired one. You will now be prompted to toggle the status of notification on low level. Press ENTR to do so. For high level, press NEXT to access it. The operation flow is as below.



5.4.6 AIn

For AIn, press 2 and the prompt to select the group that needs to be enabled for specific Analog Input channels is shown. Select the desired group and press ENTR. This will give the Analog Input list and again select the desired one. You will now be prompted to toggle the status of

notification on low level. Press ENTR to do so. For high level, press NEXT to access it. The operation flow is as below.

5.5 Groups

The groups menu is accessed by pressing 3 Groups from Main Menu (1) and the following menu is displayed.

1.View
2.Modify

5.5.1 View

For View, press 1 and the groups are displayed one by one and each group's name and mode can be seen. Use the PREV and NEXT keys to move between groups.

5.5.2 Modify

For Modify, press 2 and the groups are displayed one by one and each group's name and mode can be seen. Use the PREV and NEXT keys to move between groups. Once a group is selected, the new group name is prompted. Once this is entered, it is saved and the user is prompted to toggle the group between server and user.



5.6 Phones

The phones menu is accessed by pressing 4 Phones from Main Menu (1) and the following menu is displayed. For the phones, the user will first be prompted to select the group to which the phone belongs to. Then phones are displayed and changes can be made to phone details.

1.Add New 3.Modify
2.Delete

5.6.1 Add New

For Add New, press 1 and the system will prompt to select which group should the new phone be added too. There select the group and then the phone details will be prompted as below. Please note that if a group is full, the system will reject the group chosen and the user needs to choose another group.



5.6.2 Delete

For Delete, press 2 and the system will prompt to select the group which the phone to be deleted belongs to. After the group is selected, the phones are listed one by one and the user can select a phone for deletion by pressing ENTR at the phone. There the system will prompt for confirmation before deleting the phone details.



5.6.3 Modify

For Modify, press 3 and the system will prompt to select the group which the phone to be deleted belongs to. After the group is selected, the phones are listed one by one and the user can select a phone for modification. After a phone is selected, the user is prompted to enter the new name followed by the new number, as below.



5.7 Setup Save/Restore

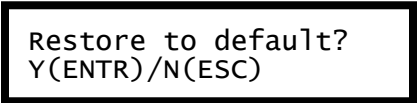
The setup menu is accessed by pressing 3 on the Main Menu and the following menu is displayed with the 'Save' and 'Restore' option.



1.Restore
2.Save

5.7.1 Restore

For Restore, press 1 and the user will be prompted to confirm whether to proceed with the restore operation, as follows. If ENTR is pressed, the restore is carried out while ESC will cause the Setup menu to be displayed again.



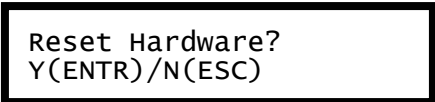
Restore to default?
Y(ENTR)/N(ESC)

5.7.2 Save

For Save, press 2 and the saving is initiated with the message 'SAVING' displayed followed by 'SAVE OK' if successful and 'SAVE FAILED' if an error occurred.

5.8 **Reset**

For reset, the system will directly display the prompt to confirm whether the system should be reset or not. If ENTR is pressed, the system will reboot while pressing ESC will cause the Main Menu to be displayed again.



Reset Hardware?
Y(ENTR)/N(ESC)

5.9 **Exiting**

To exit from the keypad menu, the user needs to press ESC from either Main Menu (1) or Main Menu (2) and a confirmation prompt will be shown. Upon confirmation by pressing ENTR, the system will prompt the user whether any changes should be saved first. Again the user needs to confirm and after this the system will clear all login details and exit. The idle is then displayed.

5.10 Keypad Menu Session Timeout

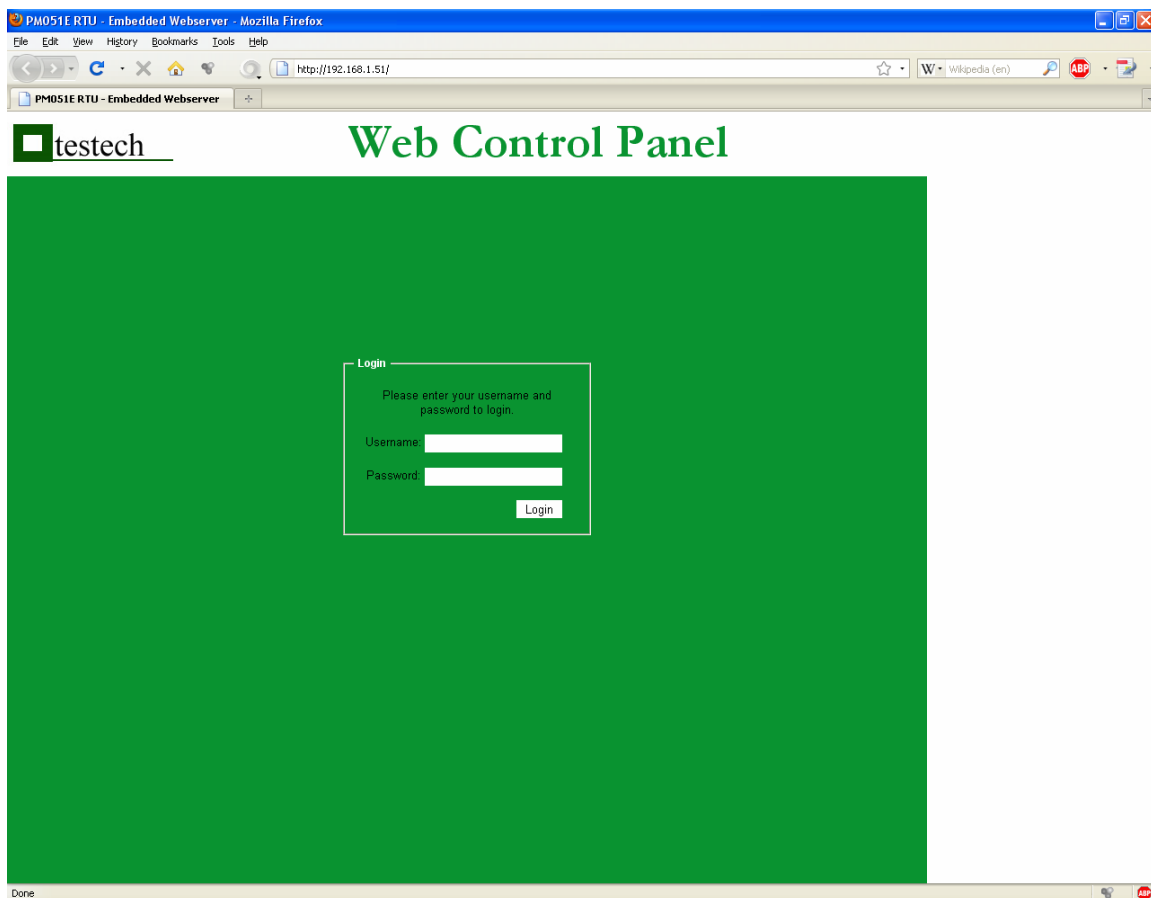
The console session will be exited if there is no activity for a period of 10mins. This means that once the session timeouts, any changes that have been made and not saved will be lost and the system will clear login details and exit. This is done to prevent unwanted access to the system.

6 SETUP GUIDE USING WEBSERVER

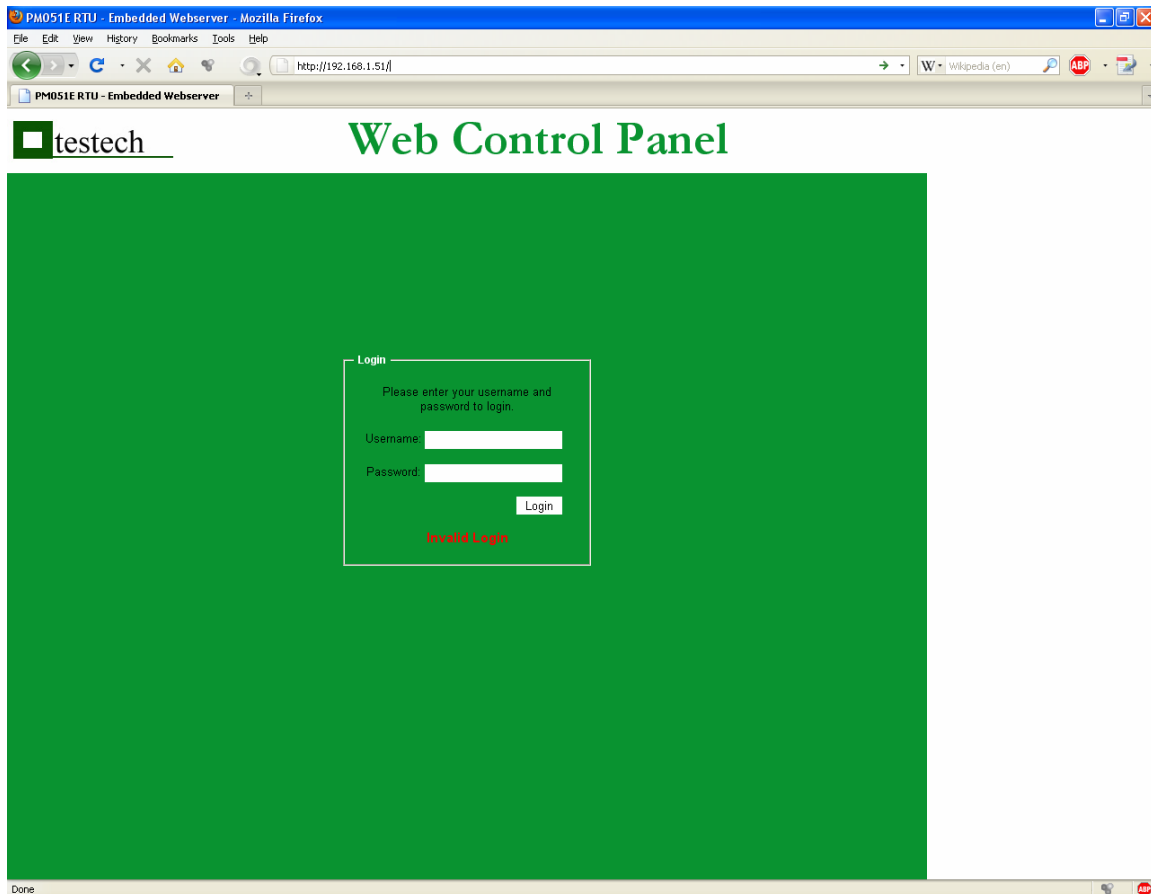
The PM05xE series also comes with an embedded web server which allows the user to setup the RTU system settings from a web browser. The RTU IP setup must be modified accordingly via the Console Menu prior to using the web server, as described in Section 4.12.10.

6.1 Login

The web server is located at the IP address assigned to the RTU. The login page can be accessed by type the IP address or the *index.html* page. Example if the RTU IP address is 192.168.1.51, the login page will be at <http://192.168.1.51> or <http://192.168.1.51/index.html>, as shown below.

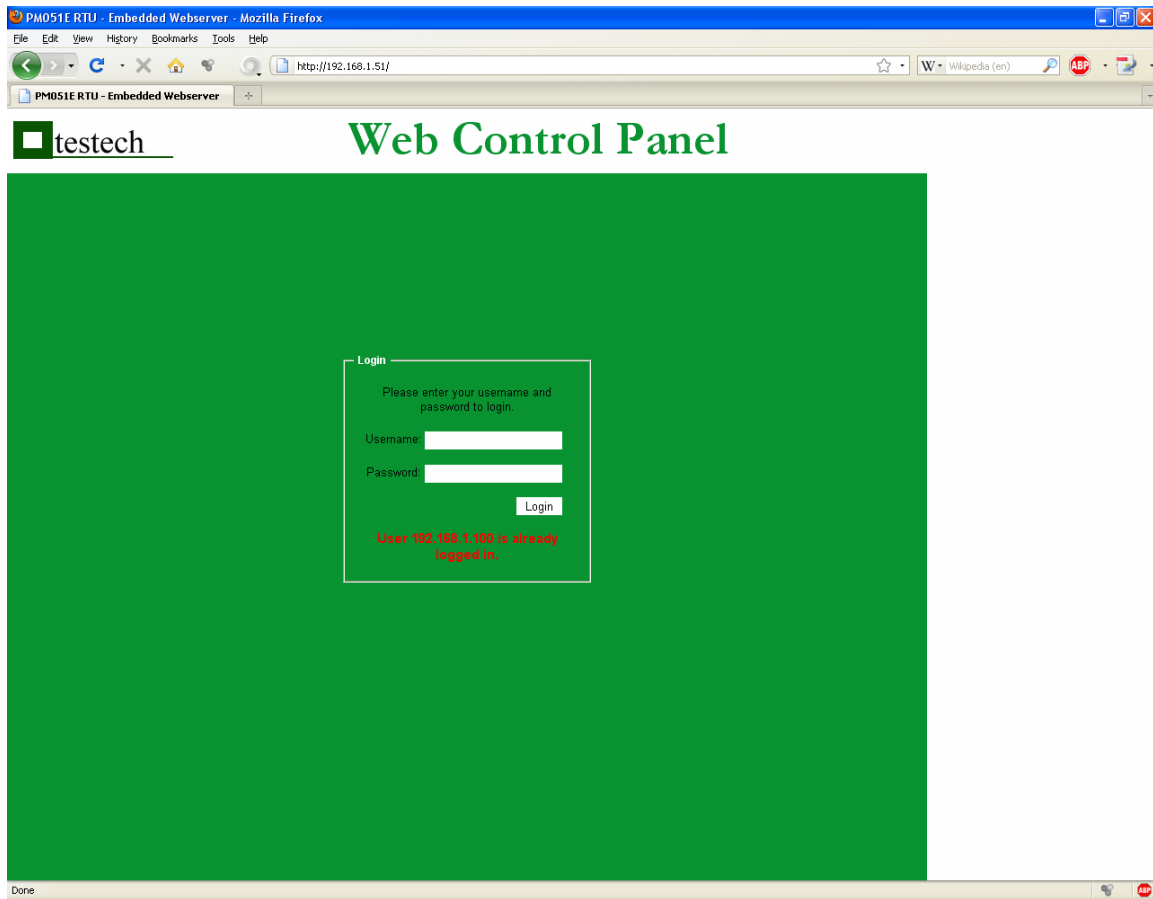


The default username is 'admin' and the default password is 'admin'. Enter the correct username and password to log in. If the username and/or password is incorrect, an error message is displayed, as below.



Note:

- (a) Only ONE user may be logged in at any one time. If a user is already logged in and another attempts to log in, a message will be displayed, noting the IP of the current user.
- (b) A user who is inactive for 10minutes will automatically be logged out by the RTU.



6.2 IO Status

Once logged in, the IO status page is displayed. This page displays the status of the Digital Inputs, Analog Inputs, Latch Inputs and Relay Outputs, depending on the RTU hardware configuration. For systems that include a Temperature and Humidity Sensor, the temperature and humidity may also be displayed on this page.

This IO status page will refresh every 60seconds to update the status of the inputs and outputs. The inputs and outputs status are displayed according to the user-configured values and will be shown in red if they meet the pre-configured alarm conditions. IO statuses that have just changed are displayed in italic, as shown in Figure 4 below.

The IO Status also allows for toggling the Relay Outputs as shown. Click on the Toggle button to turn the respective Relay on/off. The relay will physically turn on/off (and any end-point connected to it) and the status will be updated accordingly.

6.3 Menu & RTU Info

From the menu on the left, different options can be accessed to modify the RTU setup. Below this menu, information about the RTU is displayed, including the RTU name/ID, the GSM number as well as the IP configuration information.

6.4 System Status

The option 'System Status' allows to view the status of the main components of the RTU. This includes the status of the RTU power supplies. Also the GSM network registration status is displayed as well as the notification status.

testech Web Control Panel

Menu

- Inputs/Outputs Status
- System Status
- Digital Inputs Setup
- Analog Inputs Setup
- Latch Inputs Setup
- Relay Outputs Setup
- Relay Outputs Activation
- System Power Setup
- Groups Setup
- Phones/Emails Setup
- Mail Setup
- Ping Setup
- Global Notification Setup
- Digital Inputs Notification
- Analog Inputs Notification
- Latch Inputs Notification
- System Admin Setup
- Save/Reset Setup
- Logout

RTU Info

Name: PM051E
 GSM #: (not set)
 Date: 27/08/2009
 Time: 12:57:19
 IP: 192.168.1.51
 Subnet: 255.255.255.0
 Gateway: 192.168.1.1
 MAC: 00-27-03-00-00-10
 Version: V1.30

SYSTEM STATUS

System Power

#	Description	Value	Alarm	Range
1	NOT USED	0	None	0 to 0
2	DC POWER IN	12.16 V	None	-99.99 to 99.99
3	RTC BATTERY	3.061 V	None	-9.999 to 9.999

GSM Network

Network Name : SGP-M1-3GSM
 Registration Status : HOME-NETWORK
 Signal Strength : 100%

Notifications

Global Alert : enabled
 GSM Alert : enabled
 GPRS Alert : disabled
 UDP Alert : disabled
 Mail Alert : disabled

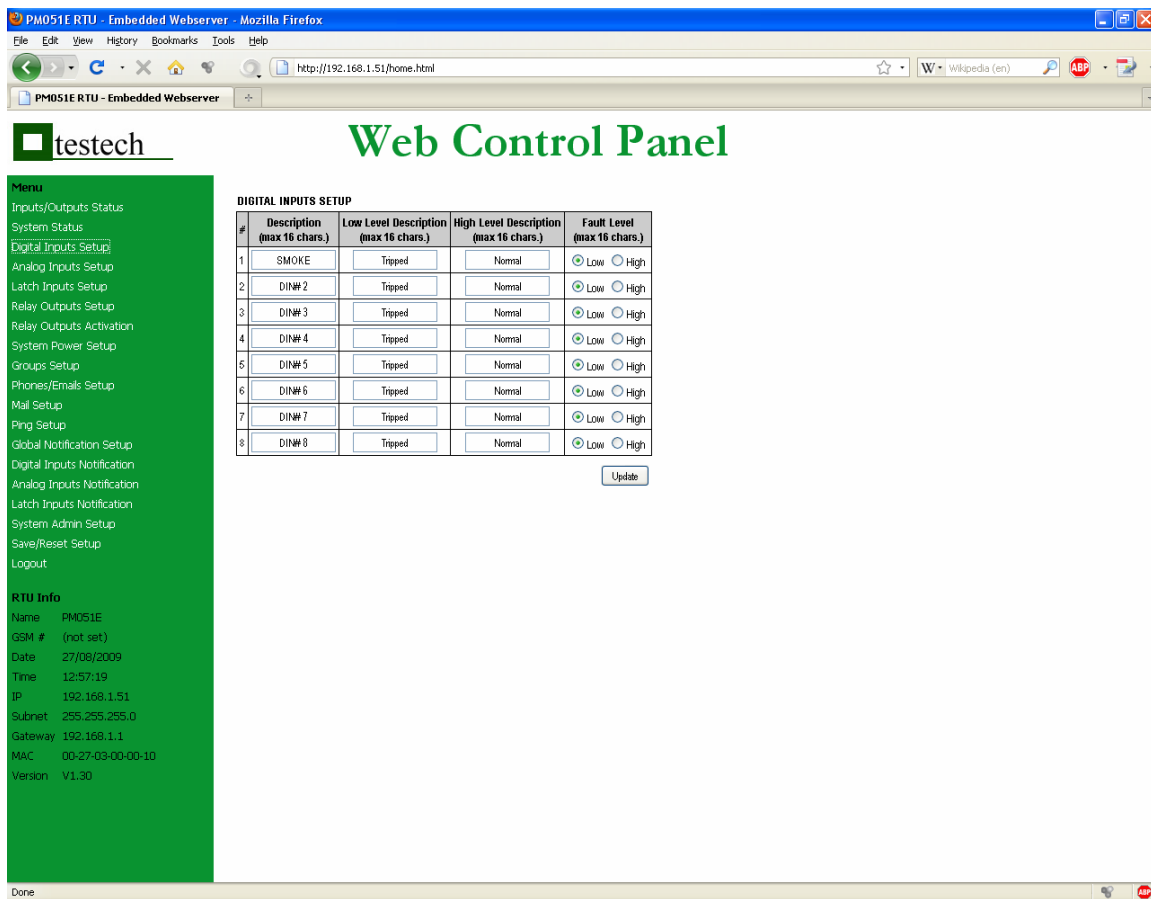
http://192.168.1.51/statsys.html

6.5 Digital Inputs Setup

The digital inputs can be configured via the 'Digital Inputs Setup' option.

For each digital input, a specific description can be set to identify the input, as well as to describe the low level state and high level state of the input.

The fault level of each input may be set too – this means that if Digital Input 1 has a low fault level and this input is currently low, this is reflected in the IO Status page when the status is displayed in red.



For the PM050 RTU model, the 16 Digital Inputs are split into two groups, inputs 1-8 and inputs 9-16.

6.6 Analog Inputs Setup

The analog inputs can be configured via the 'Analog Inputs Setup' option.

For each latch input, a specific description can be set to identify the input, as well as to describe the low level state and high level state of the input. For the latches, the high level is by default the fault/alarm level.

testech Web Control Panel

Menu
 Inputs/Outputs Status
 System Status
 Digital Inputs Setup
 Analog Inputs Setup
 Latch Inputs Setup
 Relay Outputs Setup
 Relay Outputs Activation
 System Power Setup
 Groups Setup
 Phones/Emails Setup
 Mail Setup
 Ping Setup
 Global Notification Setup
 Digital Inputs Notification
 Analog Inputs Notification
 Latch Inputs Notification
 System Admin Setup
 Save/Reset Setup
 Logout

RTU Info
 Name PM051E
 GSM # (not set)
 Date 27/08/2009
 Time 12:57:19
 IP 192.168.1.51
 Subnet 255.255.255.0
 Gateway 192.168.1.1
 MAC 00-27-03-00-00-10
 Version V1.30

ANALOG INPUTS SETUP

Attribute	Channel 1	Channel 2	Channel 3	Channel 4
Description (max 16 chars.)	TEMP	RH	AINW 3	AINW 4
Unit (max 5 chars.)	degC	%	mA	mA
Decimal Place (0 to 5)	2	2	2	2
Low Value (-99999 to 99999)	0.00	0.00	4.00	4.00
High Value (-99999 to 99999)	50.00	100.00	20.00	20.00
Low Limit (-99999 to 99999)	-99.99	-99.99	-99.99	-99.99
High Limit (-99999 to 99999)	35.00	99.99	99.99	99.99
Hysteresis (no restriction)	2.00	2.00	2.00	2.00

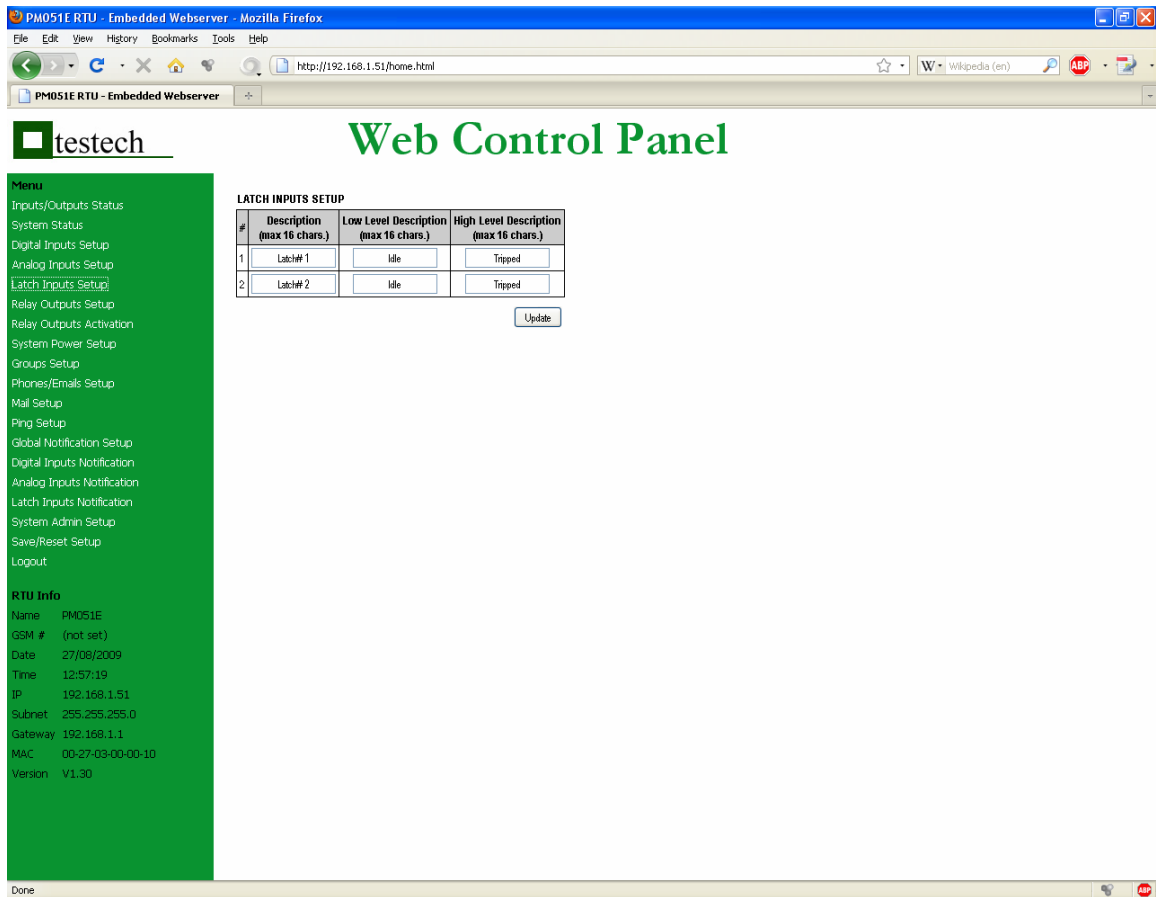
Update

Done

6.7 Latch Inputs Setup

The digital latches inputs can be configured via the 'Latch Inputs Setup' option.

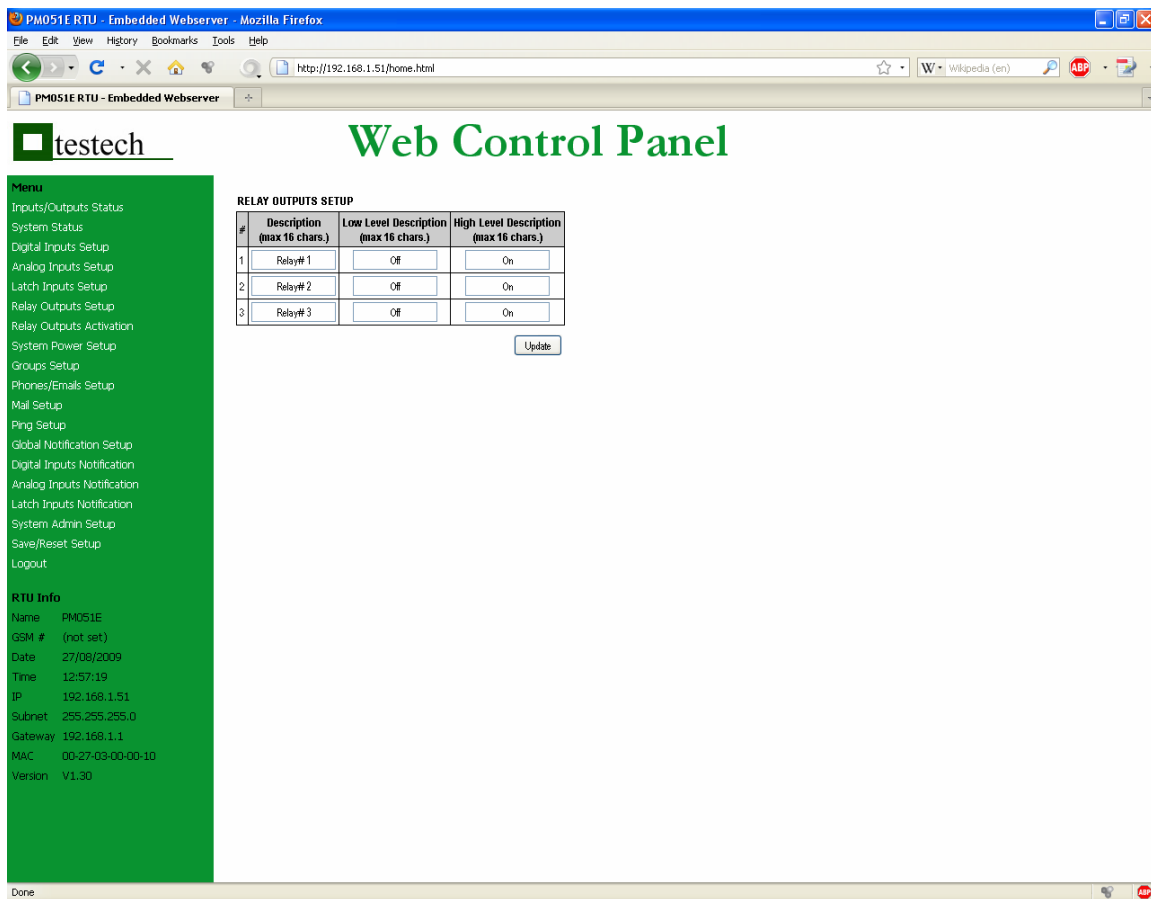
For each latch input, a specific description can be set to identify the input, as well as to describe the low level state and high level state of the input. For the latches, the high level is by default the fault/alarm level.



6.8 Relay Outputs Setup

The digital relay outputs can be configured via the 'Relay Outputs Setup' option.

For each relay output, a specific description can be set to identify the relay, as well as to describe the low level state and high level state of the output.



6.9 Relay Activation Setup

The relay outputs can be programmed to be activated based on specified input conditions via the 'Relay Activation Setup' option.

The page displays the conditions to turn each relay on or off – the example shown next displays that the Relay 1 will be turned on if either the Digital Input 1 is Low or Analog Input 1 is High. Relay 1 will also be turned off if both Digital Input 1 is High and Analog Input 1 is Normal.

RLY#	Level	Condition(s)
1	ON	DIN#1=Low OR AIN#1=High
	OFF	DIN#1=High AND AIN#1=Normal
2	ON	
	OFF	
3	ON	
	OFF	

RTU Info

Name PM051E
GSM # (not set)
Date 27/08/2009
Time 12:57:19
IP 192.168.1.51
Subnet 255.255.255.0
Gateway 192.168.1.1
MAC 00-27-03-00-00-10
Version V1.30

To setup the conditions to turn each relay on or off, select the respective link at the top of the page – example to change the conditions to turn relay 2 on, select Relay 2 ON and the page as shown below will be displayed.

The relay activation can be enabled or disabled without resetting the conditions by disabling/enabling the Activation Status.

An off delay can also be specified – this means that if a relay is turned on, if the off delay is set, say to 15seconds, then the relay will turned off after 15secs irrespective of changing input conditions. If the off delay is set to 0, no action is taken.

PM051E RTU - Embedded Webserver - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://192.168.1.51/home.html

PM051E RTU - Embedded Webserver

Web Control Panel

Menu

- Inputs/Outputs Status
- System Status
- Digital Inputs Setup
- Analog Inputs Setup
- Latch Inputs Setup
- Relay Outputs Setup
- Relay Outputs Activation
- System Power Setup
- Groups Setup
- Phones/Emails Setup
- Mail Setup
- Ping Setup
- Global Notification Setup
- Digital Inputs Notification
- Analog Inputs Notification
- Latch Inputs Notification
- System Admin Setup
- Save/Reset Setup
- Logout

RTU Info

Name: PM051E
 GSM #: (not set)
 Date: 27/08/2009
 Time: 12:57:19
 IP: 192.168.1.51
 Subnet: 255.255.255.0
 Gateway: 192.168.1.1
 MAC: 00-27-03-00-00-10
 Version: V1.30

RELAY 2 ON SETUP

Relay 1 ON Relay 1 OFF Relay 2 ON Relay 2 OFF Relay 3 ON Relay 3 OFF

Global Setup

Activation Status: ☒ Disabled ☐ Enabled
 Off Delay (0 to 300sec): secs

Digital Inputs Conditions

Condition	Channel	Status	Operator
1	DIN#1	Disabled	Don't Care
2	DIN#2	Disabled	Don't Care
3	DIN#3	Disabled	Don't Care
4	DIN#4	Disabled	Don't Care
5	DIN#5	Disabled	Don't Care
6	DIN#6	Disabled	Don't Care
7	DIN#7	Disabled	Don't Care
8	DIN#8	Disabled	Don't Care

Analog Inputs Conditions

Condition	Channel	Status	Operator
19	AIN#1	Disabled	Don't Care
20	AIN#2	Disabled	Don't Care
21	AIN#3	Disabled	Don't Care
22	AIN#4	Disabled	Don't Care

System Power Conditions

Condition	Channel	Status	Operator
27	PWR#1	Disabled	Don't Care
28	PWR#2	Disabled	Don't Care

Latch Inputs Conditions

Condition	Channel	Status	Operator
17	LAT#1	Disabled	Don't Care
18	LAT#2	Disabled	Don't Care

Turn Relay 2 ON if:

Done

Each of the digital inputs, latch inputs, analog inputs and system power conditions can be used to configure the relay activation logic. The individual input desired status can be set up from the Status drop-down options.

The operator refers to the logical conditions that should be applied to combine different inputs. Note that the operator is applied to the next input that is enabled. For example, the setup to turn Relay 1 as described above is as follows. The condition DIN#1=Low is Logically OR'ed with the condition AIN#1=High.

If the status for DIN#2 is enabled, e.g. DIN#2=High, the condition DIN#1=Low would then be Logically OR'ed with the condition DIN#2=High. And the operator of DIN#2 would then be applied to the condition AIN#1=High.

PM051E RTU - Embedded Webserver - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://192.168.1.51/home.html

PM051E RTU - Embedded Webserver

testech Web Control Panel

Menu

- Inputs/Outputs Status
- System Status
- Digital Inputs Setup
- Analog Inputs Setup
- Latch Inputs Setup
- Relay Outputs Setup
- Relay Outputs Activation
- System Power Setup
- Groups Setup
- Phones/Emails Setup
- Mail Setup
- Ping Setup
- Global Notification Setup
- Digital Inputs Notification
- Analog Inputs Notification
- Latch Inputs Notification
- System Admin Setup
- Save/Reset Setup
- Logout

RTU Info

Name: PM051E
 GSM #: (not set)
 Date: 27/08/2009
 Time: 13:32:29
 IP: 192.168.1.51
 Subnet: 255.255.255.0
 Gateway: 192.168.1.1
 MAC: 00-27-03-00-00-10
 Version: V1.30

RELAY 1 ON SETUP

Relay 1 ON Relay 1 OFF Relay 2 ON Relay 2 OFF Relay 3 ON Relay 3 OFF

Global Setup

Activation Status: ☐ Disabled ☒ Enabled
 Off Delay (0 to 300sec): secs

Digital Inputs Conditions

Condition	Channel	Status	Operator
1	DIN#1	Low	Logical OR
2	DIN#2	Disabled	Don't Care
3	DIN#3	Disabled	Don't Care
4	DIN#4	Disabled	Don't Care
5	DIN#5	Disabled	Don't Care
6	DIN#6	Disabled	Don't Care
7	DIN#7	Disabled	Don't Care
8	DIN#8	Disabled	Don't Care

Analog Inputs Conditions

Condition	Channel	Status	Operator
19	AIN#1	High	Don't Care
20	AIN#2	Disabled	Don't Care
21	AIN#3	Disabled	Don't Care
22	AIN#4	Disabled	Don't Care

System Power Conditions

Condition	Channel	Status	Operator
27	PWR#1	Disabled	Don't Care
28	PWR#2	Disabled	Don't Care

Latch Inputs Conditions

Condition	Channel	Status	Operator
17	LAT#1	Disabled	Don't Care
18	LAT#2	Disabled	Don't Care

Turn Relay 1 ON if:

DIN#1=Low OR AIN#1=High

Done

6.10 System Power Setup

The system power can be configured via the 'System Power Setup' option.

There is a primary and secondary power supply as well as a backup battery and all can be configured. Each can have a specific Description and Unit which will be used to display the status.

The range of the power must be specified, i.e. the Low Value and High Value, together with the Low Limit and High Limit. This is used to calibrate the power as well as determine when the power is in the alarm range.

testech Web Control Panel

Menu

- Inputs/Outputs Status
- System Status
- Digital Inputs Setup
- Analog Inputs Setup
- Latch Inputs Setup
- Relay Outputs Setup
- Relay Outputs Activation
- System Power Setup
- Groups Setup
- Phones/Emails Setup
- Mail Setup
- Ping Setup
- Global Notification Setup
- Digital Inputs Notification
- Analog Inputs Notification
- Latch Inputs Notification
- System Admin Setup
- Save/Reset Setup
- Logout

RTU Info

Name PM051E
 GSM # (not set)
 Date 27/08/2009
 Time 12:57:19
 IP 192.168.1.51
 Subnet 255.255.255.0
 Gateway 192.168.1.1
 MAC 00-27-03-00-00-10
 Version V1.30

SYSTEM POWER SETUP

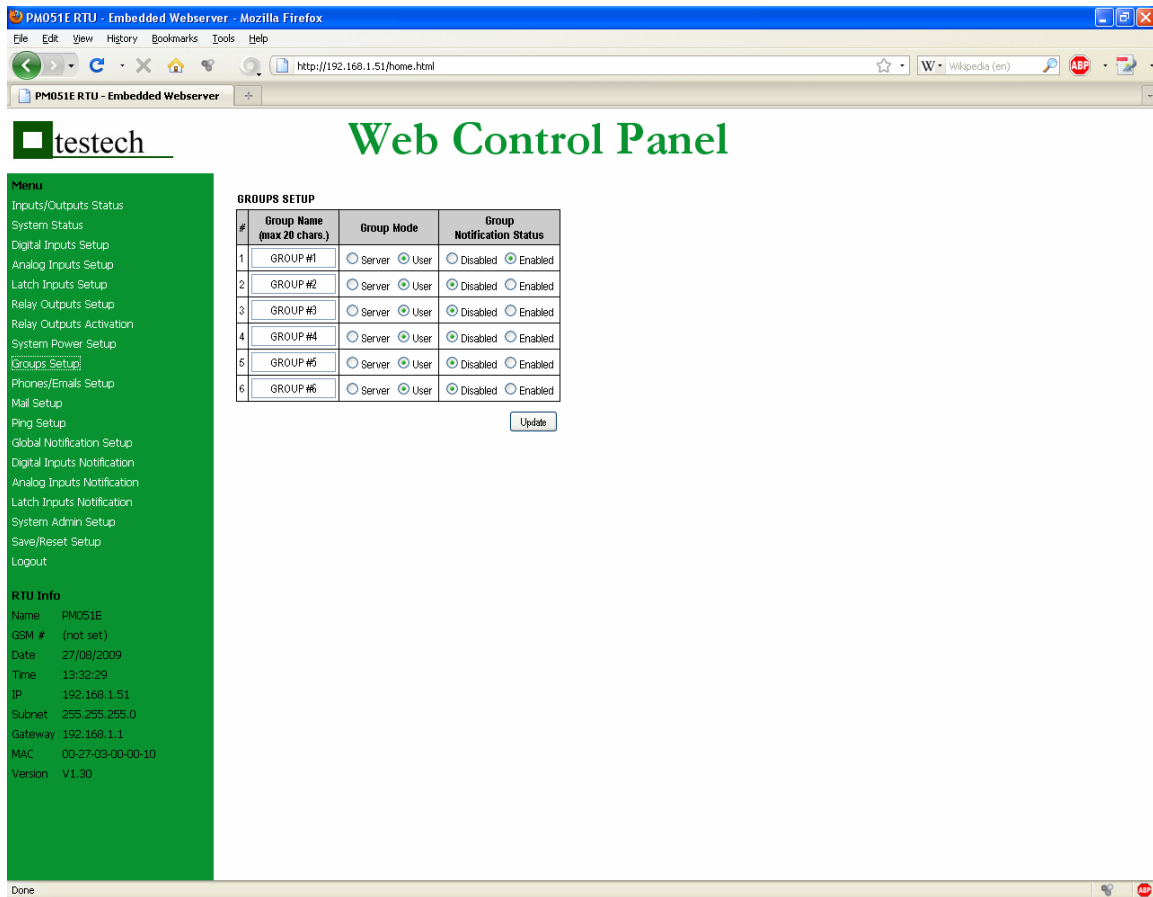
Attribute	Channel 1	Channel 2	Channel 3
Description (max 16 chars.)	NOT USED	DC POWER IN	RTC BATTERY
Unit (max 5 chars.)	V	V	V
Decimal Place (0 to 5)	0	2	3
Low Value (-99999 to 99999)	0	0.00	0.000
High Value (-99999 to 99999)	0	36.00	3.300
Low Limit (-99999 to 99999)	0	-99.99	-9.999
High Limit (-99999 to 99999)	0	99.99	9.999
Hysteresis (no restriction)	0	2.00	0.200

Update

6.11 Groups Setup

The user groups can be configured via the 'Groups Setup' option.

There are up to 6 groups and each can be assigned a specific name. The group mode is intended to be used when the RTU is used in conjunction with a remote server. Each group as a whole may have its notification enabled or disabled as required. Example, when a group is disabled, all the users in this group will not receive any notification upon an alert.



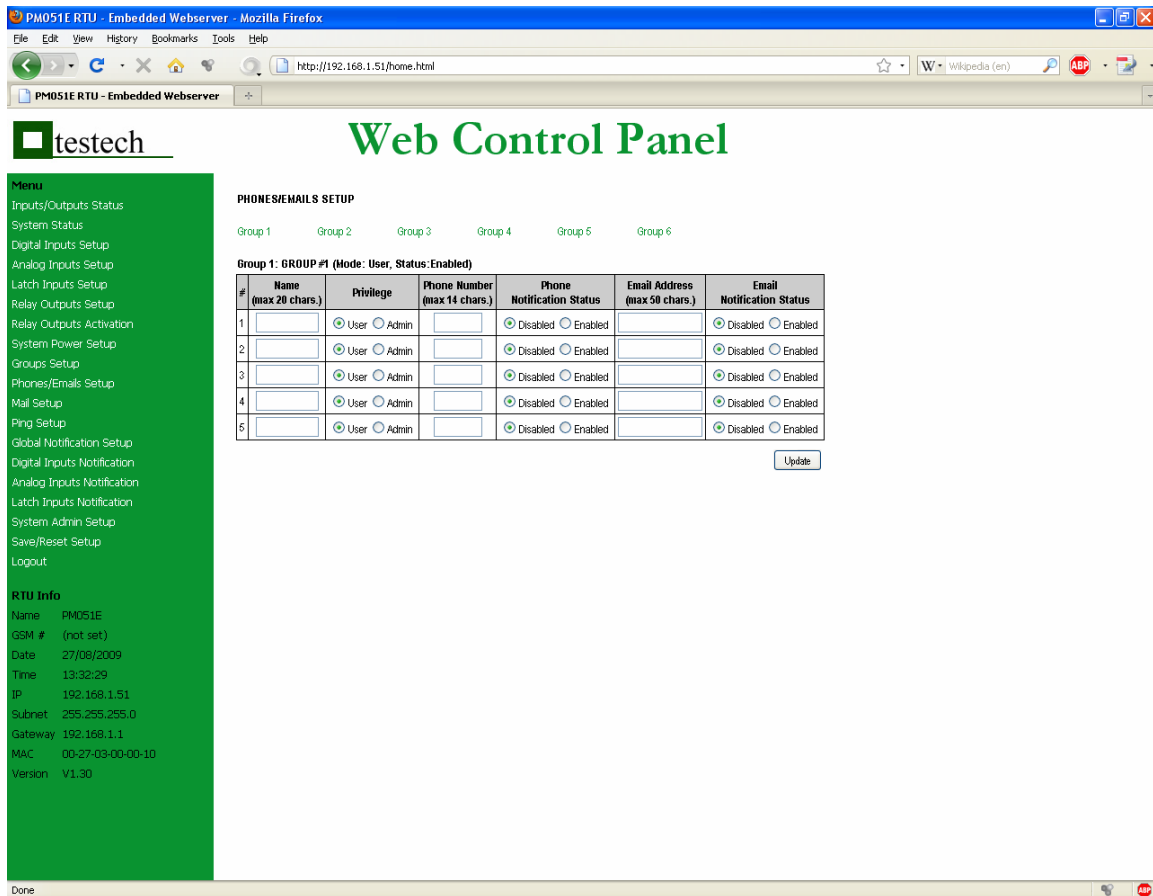
6.12 Phones/Emails Setup

The users' phones and emails can be configured via the 'Phones/Emails Setup' option.

Each group consists of 5 users and each user may assign a phone number and email address. Upon an alert being detected, the RTU will send a notification to all enabled phone numbers and email addresses.

Each user may be assigned a name as well as a privilege (simple user or administrator). The phone numbers should be at most 14 characters in length, including the '+' sign for international format. An individual user's phone number may be enabled or disabled for alert notification.

Each user may also be assigned an email address which may be at most 50 characters in length and must be of valid format. An individual user's email address may also be enabled or disabled for alert notification.

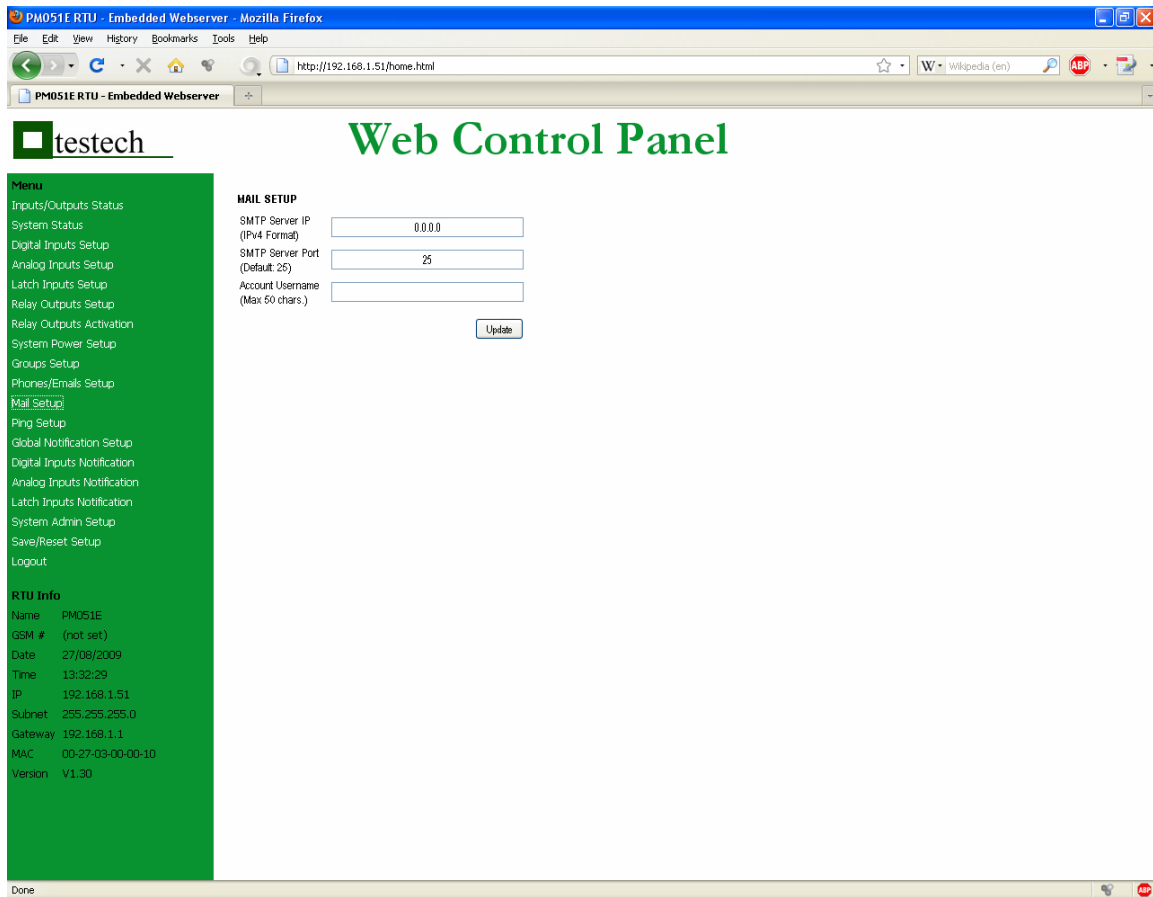


6.13 Mail Setup

The 'Mail Setup' option allows setting up the mail server that is to be used for sending email alerts.

The Simple Mail Transfer Protocol (SMTP) mail server IP address must be entered (following IPv4 dot notation format), as well as the server port, if different from the protocol default port 25.

A mail account username may be entered if available or this field may be set to represent the identity of the RTU.



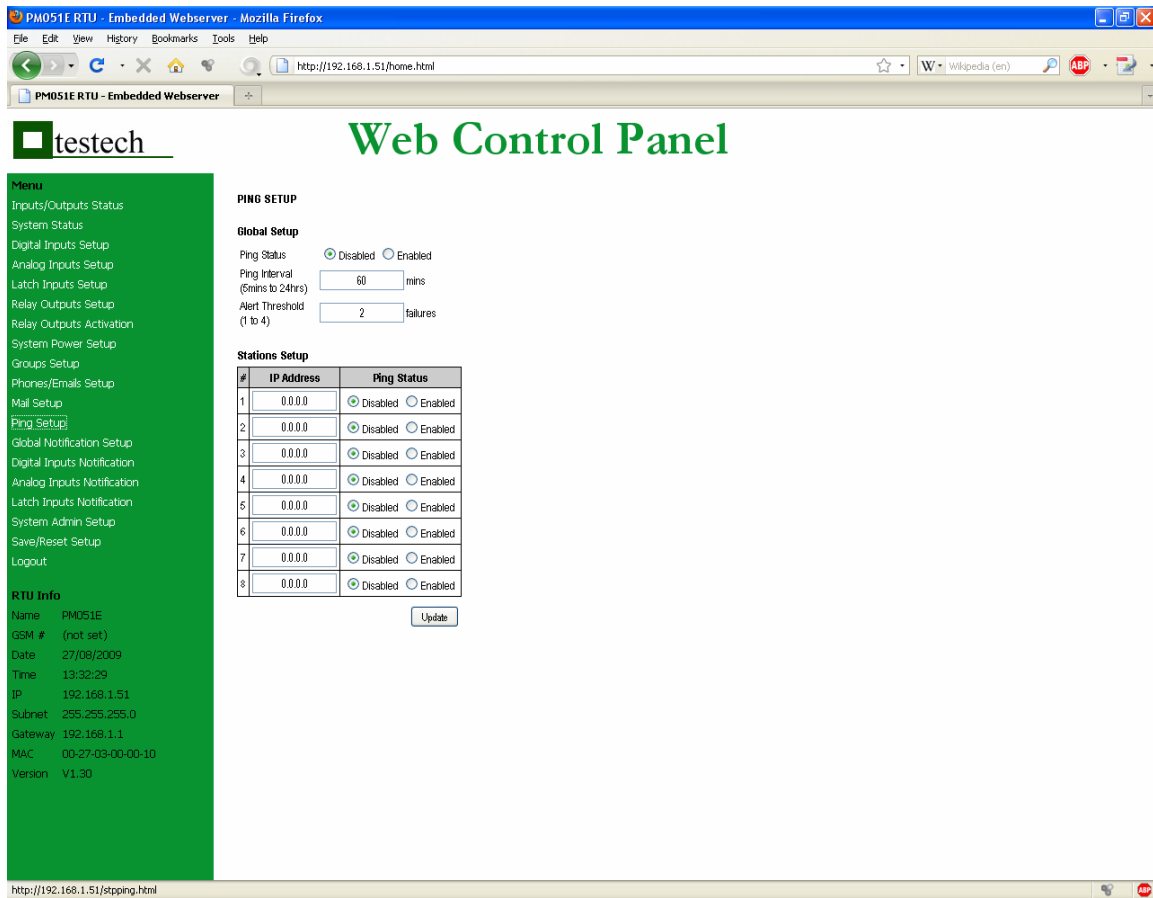
6.14 Ping Setup

The 'Ping Setup' option allows for the configuration of the Ping application that is used to monitor the online status of other units.

Each unit or station is to be identified by its IP address (IPv4 dot notation) and monitoring of a particular unit/station may be enabled or disabled, irrespective of others.

The Ping application as a whole may be disabled or enabled as desired. When enabled, monitoring is done periodically and the interval may be set, within the range of 5mins to 24hours. Each status is 'pinged' 4 times at one go.

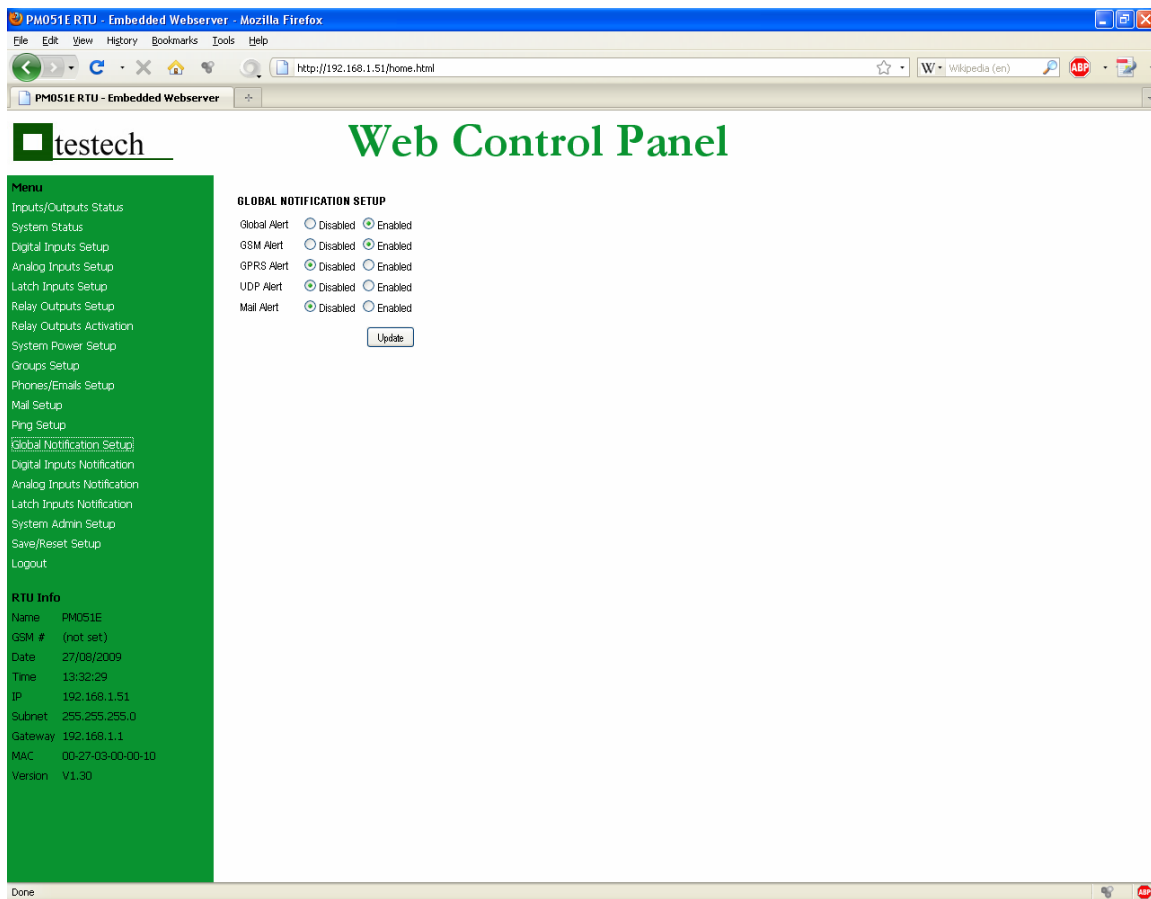
An alert may be sent if a station fails to reply to a specified number of Ping request. This is denoted by the Alert Threshold and is within the range of 1 to 4. Example: if the threshold is set to 2, then an alert will be sent if a station fails to reply to two or more ping requests



6.15 Global Notification Setup

The 'Global Notification Setup' option allows controlling the notification of alerts globally or with respect to a particular medium of alert.

For instance, ALL ALERTS may be disabled by disabling the Global Alert option. Thus even if the GSM Alert or Mail Alert is enabled, no alerts will be sent out.



6.16 Digital Inputs Notification

The 'Digital Inputs Notification' option allows for the configuration of the notification of each individual digital input.

Each digital input may be configured such that, in the event of an alert, the status of the input is notified to a specified group only. Also, a low-level alert or high-level alert may be assigned to a different group.

testech Web Control Panel

DIGITAL INPUTS NOTIFICATION

Group	Group Name	Digital Inputs Channels															
		1		2		3		4		5		6		7		8	
		Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo	Hi
1	GROUP #1	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
2	GROUP #2	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
3	GROUP #3	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
4	GROUP #4	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
5	GROUP #5	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
6	GROUP #6	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

Update

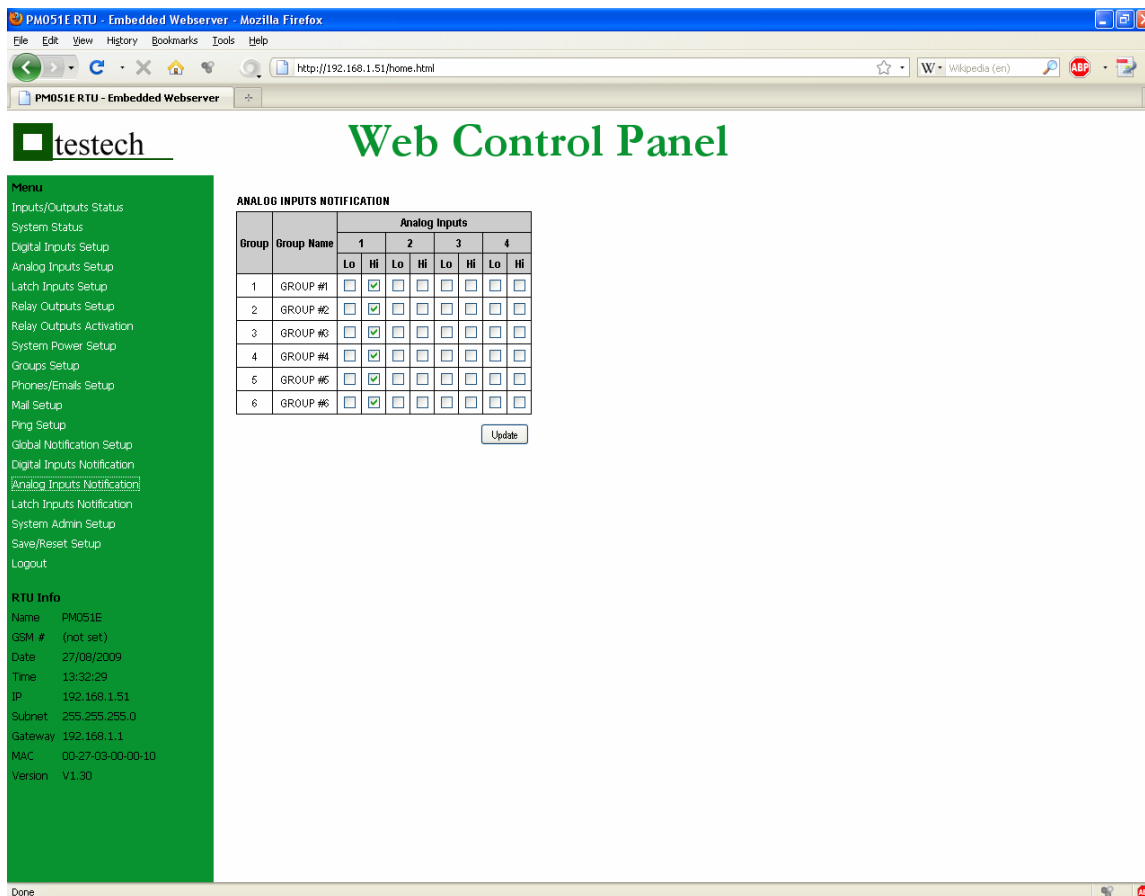
Select the checkbox (lo and/or hi) of Digital Input X for Group Y desired in order to assign Input X to Group Y. This means that in the event of a low and/or high alert for Digital Input X, only Group Y will be notified (assuming Group Y's notification is enabled and Group Y contains valid and enabled phone numbers and/or email addresses).

For the PM050 RTU model, the 16 Digital Inputs are split into two groups, inputs 1-8 and inputs 9-16.

6.17 Analog Inputs Notification

The 'Analog Inputs Notification' option allows for the configuration of the notification of each individual analog input.

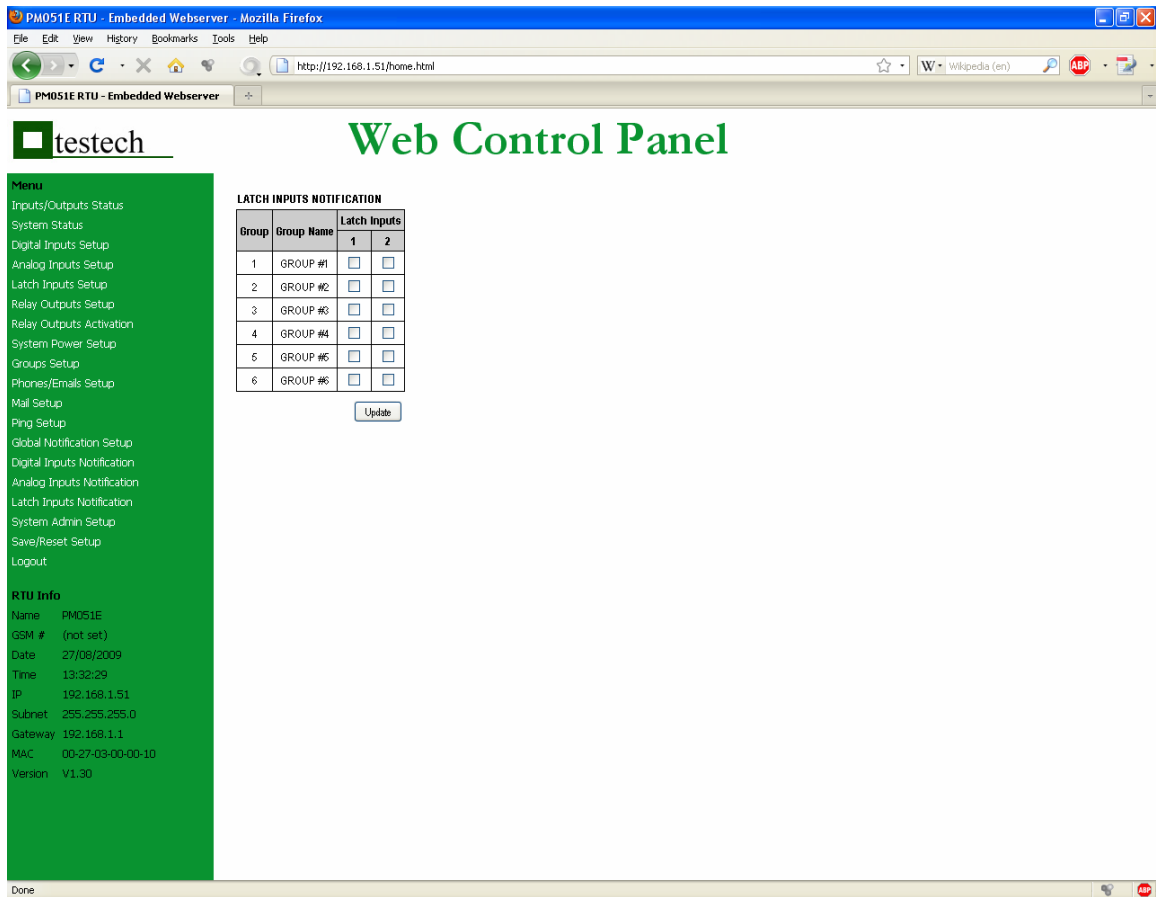
Each analog input may be configured such that, in the event of an alert, the status of the input is notified to a specified group only. Also, a low-level alert or high-level alert may be assigned to a different group.



6.18 Latch Inputs Notification

The 'Latch Inputs Notification' option allows for the configuration of the notification of each individual latch input.

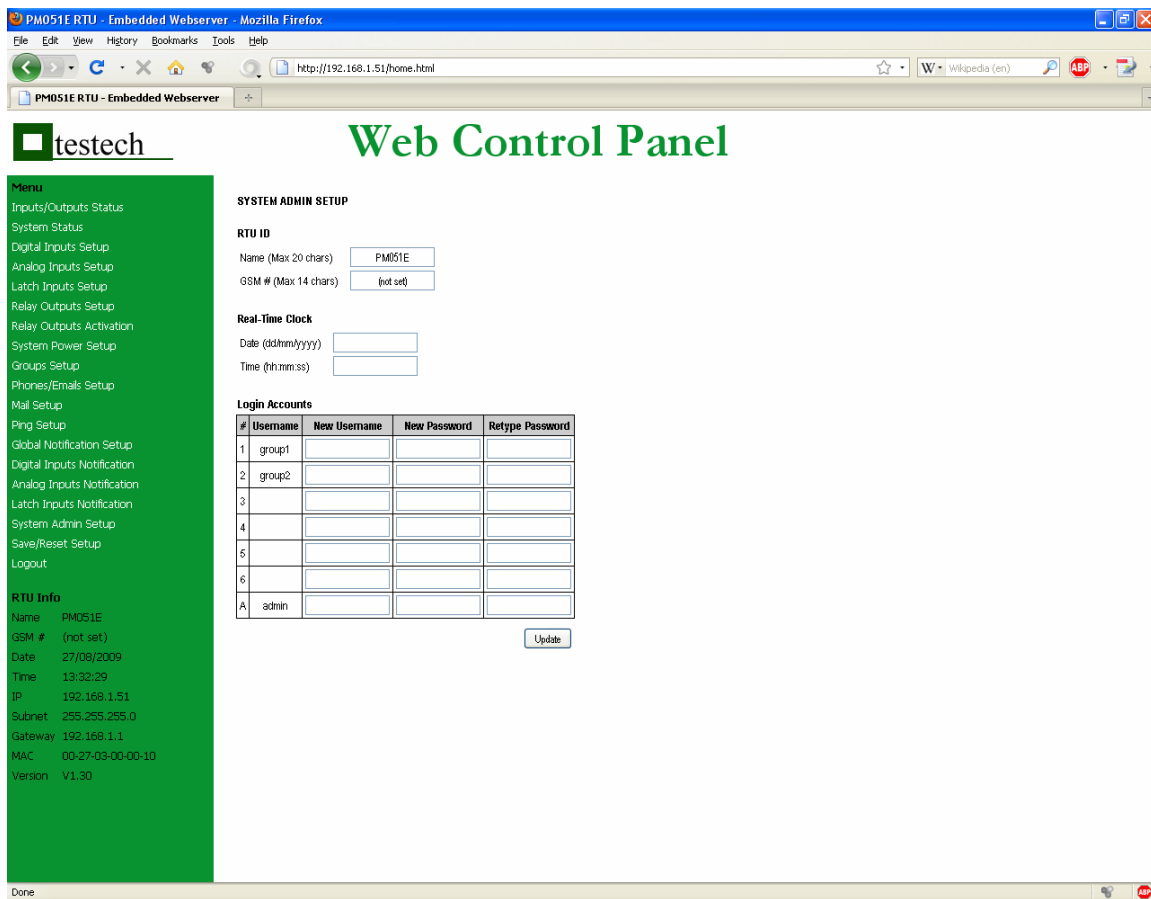
Each latch input may be configured such that, in the event of an alert, the status of the input is notified to a specified group only. For latches, alerts are sent only for high-level state only.



6.19 System Admin Setup

The 'System Admin Setup' option allows for the configuration of the main setup of the RTU such as the RTU Name/ID and GSM number as well as the Real-Time Clock.

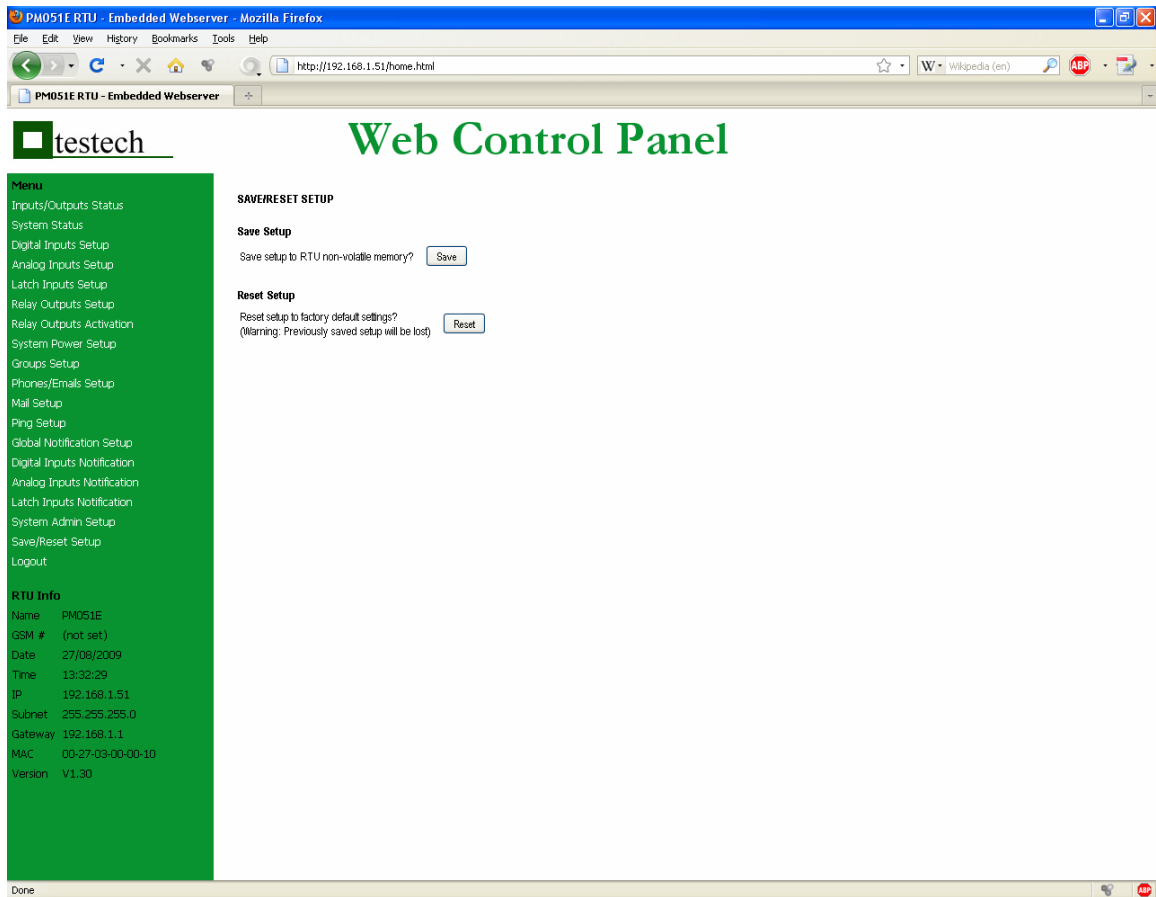
The user accounts may also be configured, that is the usernames and passwords for each of 6 simple users and 1 admin user may be configured.



6.20 Save/Reset Setup

The 'Save/Reset Setup' option allows saving any changes made to the system setup to the RTU non-volatile memory. It is important to save any changes before restarting/power-cycling the RTU as these will be lost.

The Reset option allows resetting the RTU configuration to the default factory settings. This will thus result in the loss of all previously changed and saved setup.



6.21 Logout

To logout of the web server, click on the 'Logout' option. The web server will clear the current session and return to the login page.

7 SMS COMMANDS

The PM05x series also provide the user with the option to modify the RTU system settings remotely via SMS commands. The commands supported are each described next. Please note that these are only executed for users which have their valid handphone number entered and saved in the RTU and with the required privilege as well as notification enabled for the phone. The group should be USER in this case as SERVER is not supported.

7.1 IO Query

Command	?in<delim><type><chn>,<type><chn>, .. ?ou<delim><type><chn>,<type><chn>, ..
Reply	<date time><RTU Name><IO Desc>=<status>

A command is available for each of the input and output, ?in and ?ou respectively and the reply is in the format shown above. The parameters description is as follows.

Parameter	Description
<delim>	The following delimiters can be used after the command: semi-colon (:), comma (,) or a space.
<type>	The type denotes the IO type desired, for input this includes 'a' (analog), 'd' (digital) while for output, only 'r' (relay) is supported.
<chn>	The channel index of the IO desired e.g. 1 to Max number of inputs

It is possible to obtain all IO status at one using the following <type>. In these cases, the <chn> should not be present.

ain: ALL analog inputs, including the power status

din: ALL digital inputs, including the power status

Some examples are as follows:

(1) Query analog input channel 1, digital input channel 2: ?in a1,d2

- Reply: 05/02/2009 10:12:00 <TESTECH> AIN# 1=12.17V(NORMAL),DIN# 2=TRIPPED.

(2) Query digital relay output channel 1: ?ou r1

- Reply: 05/02/2009 10:10:00 <TESTECH> RELAY #1=ON.

(3) Query all digital inputs: ?in din

- Reply: 05/02/2009 10:13:00 <TESTECH> DIN# 1=NORMAL,DIN# 2=TRIPPED.

7.2 System Query

Command	?SQ
Reply	<date time><RTU Name>SYSTEM STATUS: <network-name>,<signal strength>,<net-status>,<notifications status>,<power status>

The command used to query to system is ?sq and the reply is in the format shown above. An example the reply is as follows:

05/02/2009 10:12:00 <TESTECH> SYSTEM STATUS: SGP M1-GSM,90%,(HOME-NET),GLOBAL=ON,GSM=ON,GPRS=OFF,Pri-Volt=11.66V,Sec-Volt=00.00V,Bat-Volt=2.78V.

7.3 Reset

Command	#RS
Reply	{ NONE }

The command used to reset system is #RS and in this case there is no reply and the system will straight away reset.

7.4 RELAY ON/OFF/PULSE

Command	#RLYn<delim><ON/OFF/PULSEON/PULSEOFF><delim><PULSE_DELAY>
Reply	<date time><RTU Name><Output Desc>=<status>

The command used to set the output is #OP and the reply is as in format shown above. The parameters are described below:

Parameter	Description
-----------	-------------

<delim>	The following delimiters can be used after the command: semi-colon (:), comma (,) or a space.
<ON/OFF/PULSEON/PULSEOFF>	Setting Relay Command ON = TURN RELAY ON OFF = TURN RELAY ON PULSEON = Turn Relay ON and Then off PulseOFF = Turn Relay OFF and Then ON
< PULSE_DELAY>	The desired Pulse On Delay Duration (in sec) or Pulse OFF delay Duration (in secs)

An example is as follows:

(1) Set Relay Channel 1 ON: #RLY1=ON

- Reply: 05/02/2006 10:12:00 <TESTECH> RELAY1 TURN ON OK

(2) PULSE Relay Channel 2 OFF: #RLY2=PULSEOFF,2

Note: If Relay2 is currently ON, it will turn off for 2 sec and then back ON

If Relay2 is currently OFF, it wil turn ON, then turn off for 2sec and then back on.

- Reply: 05/02/2006 10:12:00 <TESTECH> RELAY2 PULSEOFF OK Current State = ON.

7.5 Notification Setup

Command	#<type>=<stat>
Reply	<date time><RTU Name><notification>=<status>

The command used to change the notification setup depends on the type of notification to be used and the reply is as in format shown above. The parameters are described below:

Parameter	Description
<type>	The type denotes the notification type, which includes the following: Global notification: "GLOBALALERT" or "ALERT" GSM notification : "GSMALERT" GPRS notification : "GPRSALERT"
<stat>	The desired status to set the notification to. This include '1' or 'on' to turn the notification on and '0' or 'off' to turn the notification off.

An example is as follows:

(1) Set GPRS ON: #GPRSALERT=1

- Reply: 05/02/2006 10:12:00 <TESTECH> GPRS=ON.

7.6 LCD Display of SMS Commands

When an SMS command is received, the following information will be displayed on the RTU LCD:

FROM: <phone number>
<command type>

For example, the <command type> can be “INPUT QUERY”, “SYSTEM QUERY” and so on. Thereafter when the RTU is ready to send the reply, it will display the following.

Sending new SMS...
<phone number>

SERVICE AND MAINTENANCE

For any service and maintenance please contact your local dealer and reseller for local technical support, for factory service contact at:

Testech Electronics Pte Ltd

Blk 118, #05-110, Aljunied Ave 2, Singapore 380118.

Tel: +65-67492162 Fax: +65-67494246

Email: sales@testech-elect.com URL: www.testech-elect.com/m2m/index.htm