WT-9001 IP65

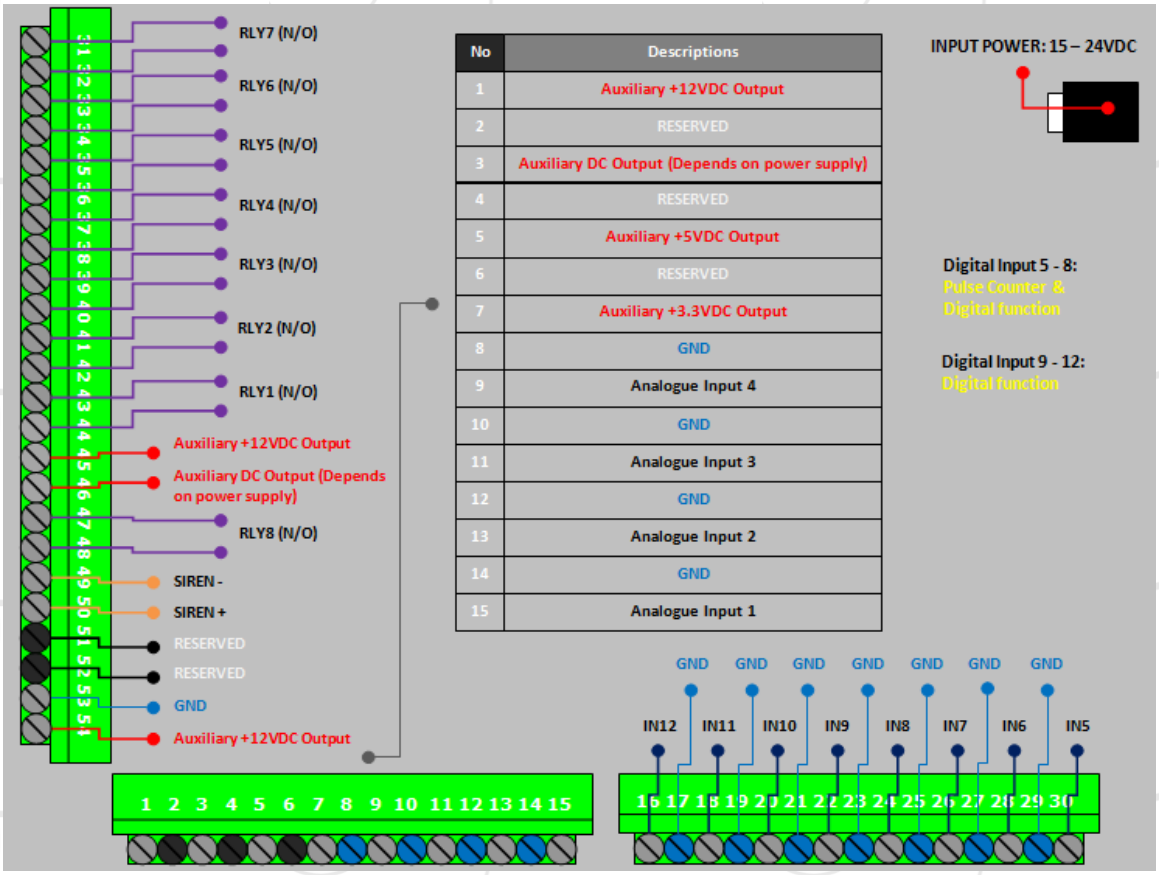
GSM Remote Monitoring And Remote Control System

User Manual
&
Setting Instructions

WITURA

WITURA CORPORATION SDN BHD

WIRING DIAGRAM DESCRIPTION



No	Descriptions
1	Auxiliary +12VDC Output
2	RESERVED
3	Auxiliary DC Output (Depends on power supply)
4	RESERVED
5	Auxiliary +5VDC Output
6	RESERVED
7	Auxiliary +3.3VDC Output
8	GND
9	Analogue Input 4
10	GND
11	Analogue Input 3
12	GND
13	Analogue Input 2
14	GND
15	Analogue Input 1

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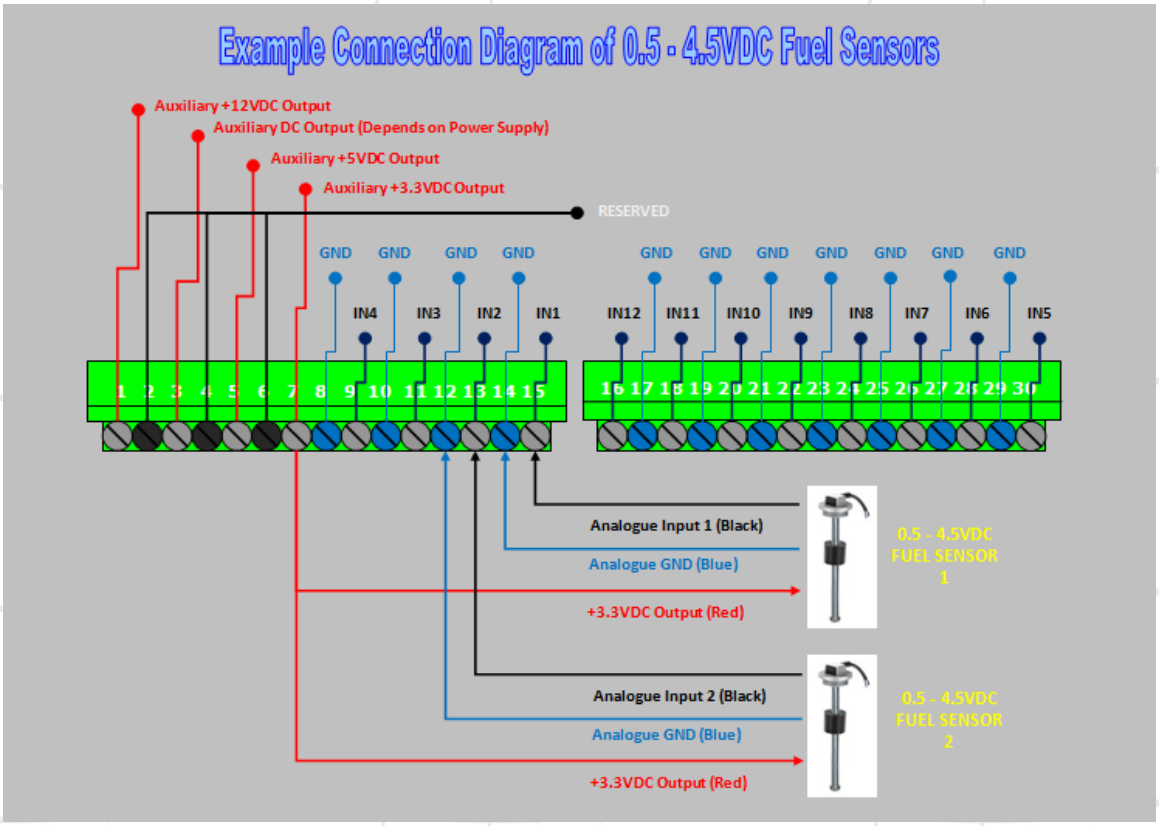
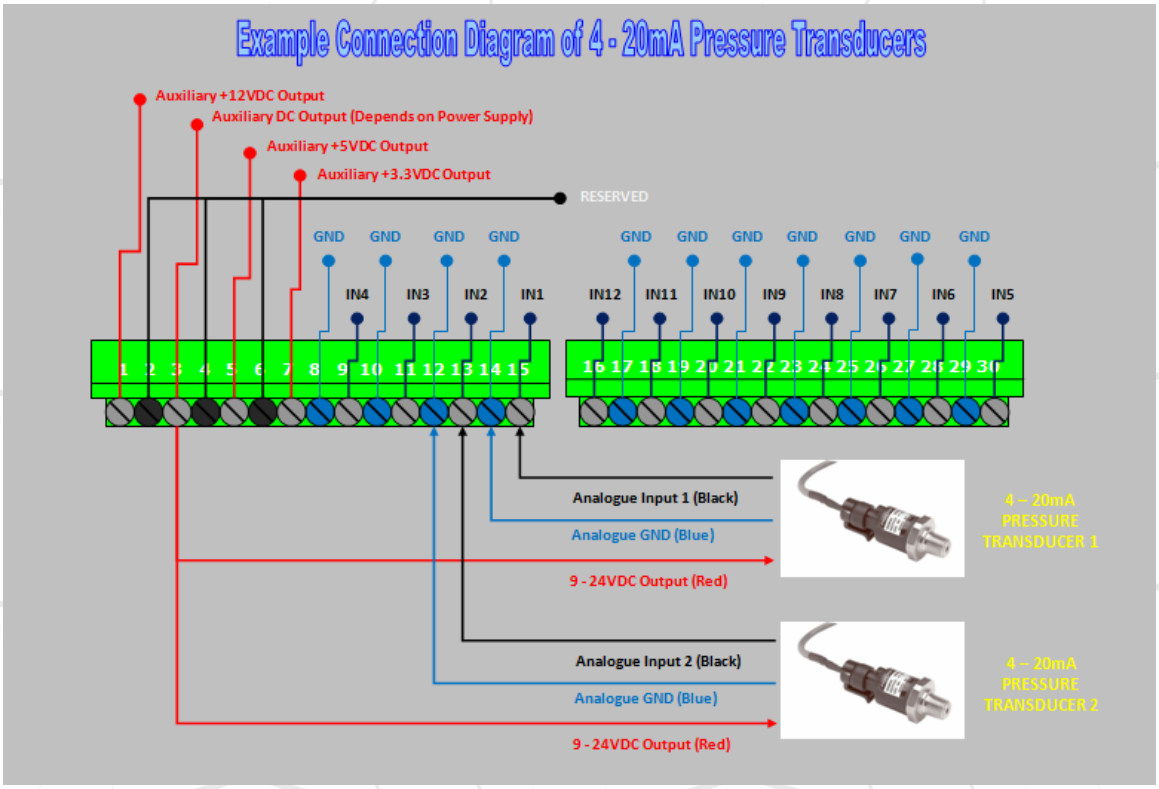
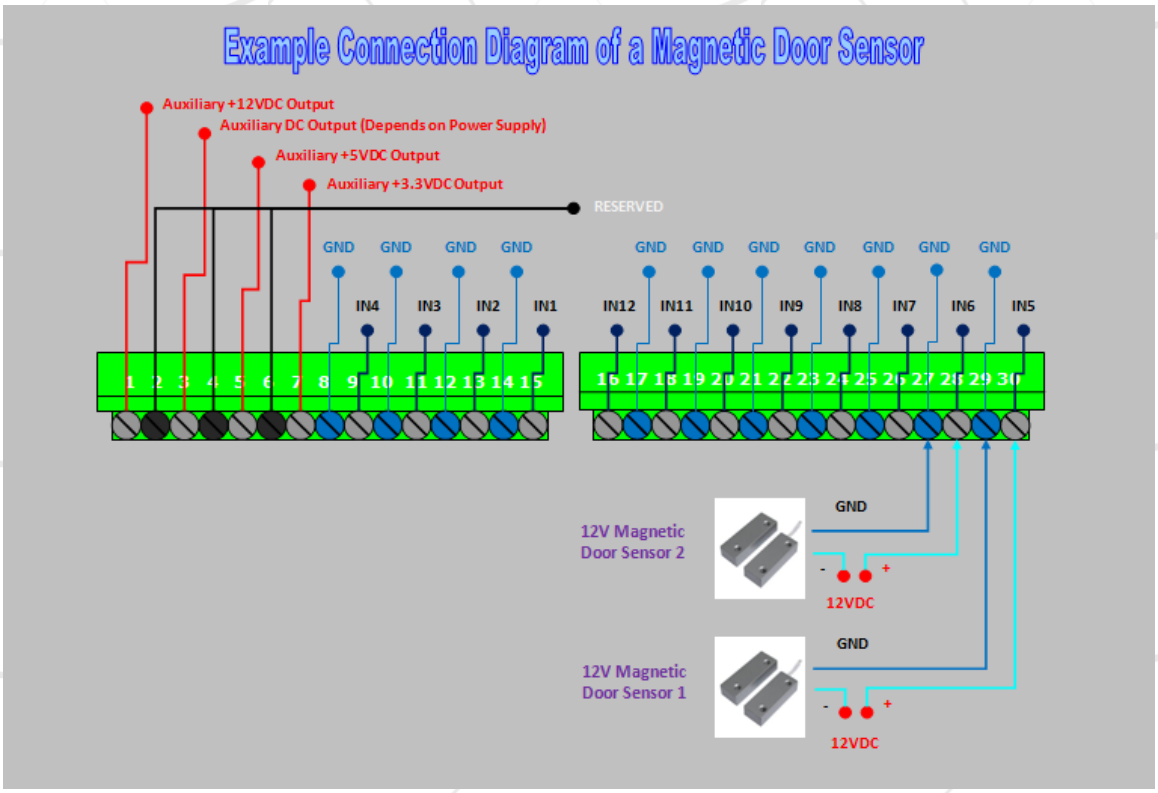
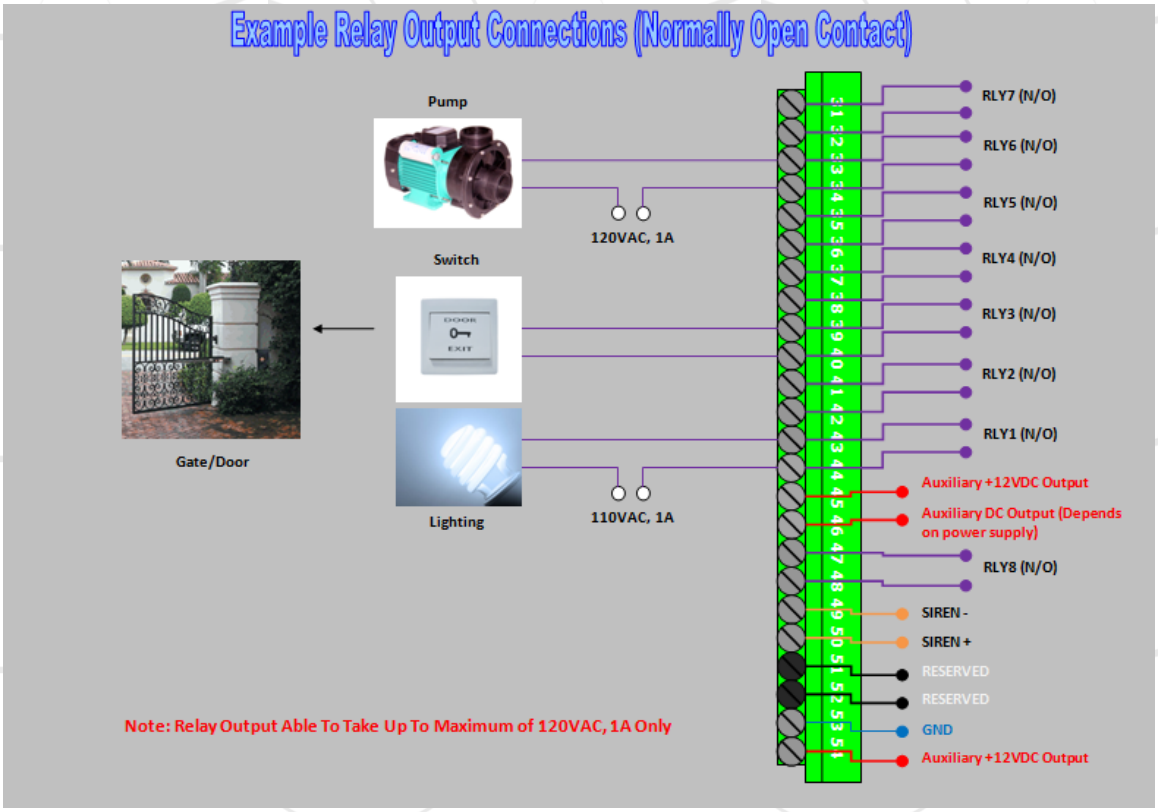
CONNECTION DETAILS









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PACKAGE CONTENTS

1) 1 pc IP65 Enclosure
2) 1 pc WT-9001 Main Board with GSM Module mounted
3) 1 pc Power Adapter
4) 1 pc Battery Backup
5) 1 pc GSM Antenna
6) 1 pc LCD Display for Assisting in Programming

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1. INTRODUCTION

The **WT9001 IP65** GSM Remote Monitoring & Remote Control System is a complete remote telemetry unit. It contains a GSM Modem and control circuitry. It is capable of controlling up to 8 Relay outputs and monitor 8 Digital inputs and 4 Analogue inputs. (Analogue input support: Detect Water Leaks, Monitor Temperatures for out-of-range conditions, Monitor Humidity for Damaging High Humidity Levels and monitor fuel levels). The **WT9001 IP65** GSM Remote Monitoring & Remote Control System is operated by the sending of SMS, GPRS and email. The GSM controller can be used as a remote telemetry system; users can directly control the output relays from a simple text message or GPRS. The controller can also be used as a remote monitoring system; the unit can automatically notify the user whenever the any inputs change state. The **WT-9001 IP65** is complete with an LCD display, back up battery and built-in Quad-Band Modem.

2. FEATURES

- Monitors up to 8 Digital inputs & 4 Analogue inputs
- 8 Remote control outputs for switching applications
- Fast and easy installation
- Low set up and running costs
- No field programming required as it can be done by SMS
- Faster response to alarms and process disturbances
- Able to work in GSM mode or GPRS mode
- Programmable 4 alarm set points for each analogue input
- Works with 0 – 5VDC or 4 – 20mA based transducer
- Accept other kind of sensors – temperature sensor, motion sensor etc.
- Reports on set point alarms and other triggers
- Real-time monitoring & controlling via monitoring software
- Reduces wasted traveling time responding to alarm events
- Provides more detailed information

3. CHARACTERISTIC

WT-9001 is a versatile SMS alert device suited for most monitoring needs. It is simple to use yet is packed with powerful functionalities to meet a wide ranging industrial and commercial and residential applications

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3.1 Standalone Operation

Housed in the weather and desk proof IP 65 enclosure complete with internal industrial modem, monitoring controller and flexible operating firmware. It is very easy to setup, install and use.

3.2 8 Digital Inputs

Most equipment today does provide some form of alerting signal to interface to monitoring devices from reporting of various malfunction or abnormalities. There are various kinds of signal that the equipment can send out, most common of which are opening or closure of one or more switch relay contact. UPS usually provide signals such as incoming power fail, battery mode, battery level low, and switchover failure. An air conditioner system may provide signals such as system on/ off, compressor over temperature, low gas pressure, etc.

Equipments to be monitored are connected to WT-9001 using these alarm signaling contacts. WT-9001 keeps a constant watch over all the contacts. Whenever any contact input changes status (either from a close to open or from an open state to close state) it is captured by WT-9001. It will then process the input according to the configuration provided by the user. The correct SMS messages will be sent to 20 mobile phone users.

WT-9001 is so fast in capturing the change of status of any signaling contacts that no event will be missed out up to 8 inputs can be monitored directly. The flexibility of WT-9001 is in allowing remote query of input status using SMS.

To change contacting mobile phone number is also very easy. Authorize personal remotely using SMS command to add, change or delete mobile phone number in WT-9001.

3.3 4 Analogue Inputs

The WT-9001 has 4 analogue inputs that can be configured to measure a 4 – 20mA signal or 0 – 5VDC signal. It will generate reports when the monitored signal reaches the programmable set points. Four programmable set points can be programmed for each analogue input. When the monitored signal crosses a set point a specified action will be performed like switching the output relay or sending an SMS report.

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3.4 8 Digital Outputs

WT-9001 is a 2 way device. Besides monitoring inputs and act upon such inputs it also allow mobile phone users to compose SMS messages to it. When WT-9001 receives any SMS, it will look its memory bank to see what it is supposed to do and action according. No action SMS are ignored.

Up to 8 relays can turned on and off by messages received from mobile phone. Creating action messages are done with the same ease as that of input monitoring

3.5 Querying Inputs And Outputs Status

Authorized groups can also query the status of an input or output. This is very useful feature to determine the present status of an input or output. The enquirer need not wait for an alarm to happen in order to receive the given I/O status.

3.6 Turning On/ Off Device Remotely

Authorized users can send a SMS command to trigger on or off the digital output. Upon receiving the command, WT-9001 will perform the instructed action. After the on or off action is done, it will send a reply to the querying mobile phone as an acknowledgement, There are 8 digital output that can be independently controlled.

3.7 Remote Editing Of Mobile Phone Numbers

WT-9001 has a feature to allow user to remotely add, change or delete any mobile phone numbers in WT-9001 memory.

Re-assigning of operation personnel, a change of mobiles phone number is also common. Rather than having to physically go to the installation site with a notebook computer, the authorized personnel can perform the change from anywhere using mobile phone. Where there are many installed sites, this feature saves time and afford.

3.8 System Check

Authorized mobile phone group can perform system check by sending a command to WT-9001. If WT-9001 is switched on or working normally, it will reply to the querying number.

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3.9 GSM Modem

Integral to the design of WT-9001 is a **GSM 850/900/1800/1900mhz** Industrial grade modem. Its capabilities and performance are highly optimized by the operating firmware. Any change in the GSM signal and receiving conditions are detected quickly and the software automatically takes care of signal errors

3.10 Reliable Performance

Besides running the necessary program to perform all the required functions, WT-9001 has diagnostic routines running alongside. Being a monitoring device, WT-9001 must have a very high operating reliability and stability. Every section of WT-9001 is monitoring each other. Should the modem fail to perform its required role, the controller will interrogate and restart the modem.

3.11 Application

For monitoring and remote control of equipments and machines that are able to provide dry contract signals. 8 digital outputs with pulse functions extend control functions. Suitable for door access control, On/Off equipment remotely, resetting of Routers, Network switches etc. Some application examples are: -

Machines, Standby Power Generator, Electrical Panels, Pumps, Uninterruptable Power Supplies, DC rectifier systems, Vending Machines, Fire Alarm Panels, Gas Monitoring Systems, ATM Machines, Security Systems, Fishery, Cold rooms, HVAC systems, Door Security, Network equipment and more.

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4. INSTALLATION INSTRUCTION

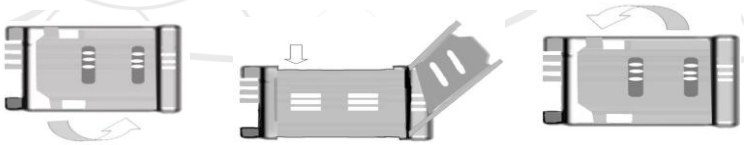
Note: **It is essential** that you read the step by step instructions fully prior to installing and programming the unit

4.1 Screw off the Front Case of WT-9001 IP65 Main Unit

4.2 Installing the Components: Antenna, LCD, Power Supply & SIM Card

Installing the SIM Card

Note: Installing the SIM Card. Please be sure the initial 4 digit PIN code of SIM card is disabled. This can be done by placing it in an unlocked Mobile phone and first checking if the SIM requested any PIN code. If this is the case the PIN code can be disabled using the security settings on the phone. *The WT-9001 identifies only 3V SIM Card*.



Proceed as follows

1. Slide back the SIM door and lift it up
2. Slide the SIM card into the SIM door making sure that the clipped corner of the SIM card lines up with the clipped corner of the SIM holder
3. Close the SIM door

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4. Slide the SIM door to lock the SIM card in place

You should install the WT-9001 in a place where there is GSM signal coming from the operator you want to use. Check it with a phone before proceeding with the installation. If you need to install the device in a place with little signal, you may consider using an external antenna that we may supply as an option to be purchased separately with 5m cable.

5. WT-9001 IP65 PROGRAMMING INSTRUCTIONS (via SMS Only)

You can program the WT-9001 via SMS commands using your phone. Any programming command sent by SMS can be in **SMALL** or **CAPITAL** letters. The fields between square brackets are parameters; do NOT enter the square brackets. When you send a command, you will receive the answer for the first time even if your GSM number is not in the administrator list. This happens because the WT-9001 recognizes any GSM number as administrator and answers to it.

Attention: *Please program the WT-9001 unit systematically begin with programming the administrator number.*

5.1 Programming the Administrator Number

The 20 administrator numbers can be programmed with a text command via SMS.

Text Command:

***TEL**[N]**#**XXXXXXXXXX

N stands for administrator number **1 – 20**

XXXXXXXXXX stands for the phone number you want to program as administrator.

Please note that it is possible to program up to a maximum of 16 digits for a phone number.

Example:

To program phone number **1111222233** as administrator into list number **1**, you would send the following SMS command to the unit.

***TEL1#1111222233**

Example of Returned Message:

TEL1=1111222233

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Note: *Programming the administrator numbers is necessary in order to operate all other functions and to receive text alerts when the relays activated.*

5.2 Access Control For Administrator

Note: It is advised that the owner should set the system to allow programming access for administrators only after programming the Administrator numbers.

Sending SMS Command: ***ANY?#1**
Only the administrators in the list will have the access control to the system, any person outside the list in this case will not have the authority to access the system and text command sent to the system will be rejected.
To allow any person gain access to the system just send SMS Command: ***ANY?#0**

Note: Only Administrator number 1 and 2 may send this SMS command

5.3 OUTPUT Settings

The WT-9001 has 8 outputs that are connected to an on-board relay which can be activated by sending an SMS command.

5.3.1 Switch On the Output Relay For a Specific Time

To activate any output relay, you can send a text command via SMS specifying the output number and the number of seconds the output should stay on to the unit. It is possible to set up to maximum of 99,999 seconds

Text Command:
***RLY**[N]**#**X

N stands for Output number **1 - 8**
X stands for the number of seconds. Range from **0** - **999999**

Example:
To turn on the output relay number 5 for 1 hour, you can send the following text message to the unit.
***RLY5#3600**

Example of Returned Message:
***RLY5=3600 OK**

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Note: Sending the following SMS Message to unit will switch off the relay
***RLY5#0**

To check the status of all the relays, you would send the following text message to the unit.
***RLY?#**

5.3.2 Switch Multiple Outputs Relays to Stay On

To activate multiple output relays to stay on, you can send a text command via SMS specifying the output number that should stay on to the unit.

Text Command:
***RLNU#**XXXXXXXX

XXXXXXXX stands for **8** digits value: ON (**1**) or OFF (**0**) for the **8** Outputs

Example:
To switch on the output relay number **5**, **6**, **7**, **8**, you can send the following text message to the unit.
***RLNU#00001111**

Sending the following SMS Message to unit would mean all the relays will be switched off.
***RLNU#00000000**

The 1 indicates the ON command and the 0 (zero) indicates the OFF command

5.3.3 Setting the Recipient of Relay Off Alert

The unit can generate text alerts to all 8 of the administrator's Mobile phone numbers when the relay has turned on or off. To set the administrator to receive this alert, you would send the following commands by SMS message to the unit.

Text Command:
***RETR#**XXXXXXXXXXXXXXXXXXXX

X stands for position for 1 - 20 administrators with function value: **0** (OFF), **1** – **9** (number of SMS alerts)

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Example:
To program the unit to generate 2 SMS to administrators 1, 2, 3, 4, 5 and 1 SMS to the rest, you would send the following SMS message to the unit.

***RETR#22221111111111111111**

Example of Returned Message:
RETR=22221111111111111111

To check the setting, you can send the following SMS command to the unit.
***RETR?#**

5.4 INPUT SETTINGS

One of the most important functions of WT-9001 is to receive alarms. In order to use this function, you must turn on the function of the inputs and tell the WT-9001 which are the recipient numbers and who should receive the alert message for the particular input.

5.4.1 Turn On the Function of Inputs

To turn on the function of input, you can send the following commands by SMS message to the unit.

Text Command:
***CTR**[N]**#**X

N stands for number **1 - 12** of Input (**Analogue Input 1 – 4, Digital Input 5 – 12**)
X stands for ON (**1**) or OFF (**0**) value

Example:
To turn on input number **1**, you can send the following text message to the unit.
***CTR1#1**

Returned Message:
#INCTR1=ON OK

To disable input 1, you would send the following SMS to the unit.
***CTR1#0**

Returned Message:
#INCTR1=OFF OK

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Note: A disabled input will not trigger an alarm or report

5.4.2 Setup the Working Mode of 4 Analogue Inputs

Input 1, 2, 3 and 4 of WT-9001 can be configured to an analogue inputs signal. When the inputs is configured as an analogue input, it can measure a 4 – 20mA input signal or 0 – 5VDC signal and will generate report when the monitored signal reaches the programmable set points. To setup the working mode of input, you can send the following command by SMS message to the unit.

Text Command:
***SWT**[N]**#**X

N stands for input number 1 - 4
X stands for Working Mode 1, 2, 3 and 4

Description:
Working Mode **1**: Function as Analogue Input (Measure 0 – 3.3VDC Signal) for voltage based transducer
Working Mode **2**: Function as Analogue Input (Measure 4 – 20mA Signal) for current based transducer
Working Mode **3**: Function as Analogue Input for temperature
Working Mode **4**: Function as Analogue Input for humidity

Example:
To configure input 1 to monitor a 4 – 20mA input signal, you would send the following SMS message to the unit.
***SWT1#2**

Note: Loop voltage of +3.3VDC, +5VDC and +12VDC output is included on-board to provide power for up to four 0 – 5VDC sensors or 4 – 20mA sensors. A maximum of +24VDC is allowed to be connected to the inputs.

5.4.3 Setting the Alarm Set Points for Analogue Input

Note: This Function Works On Analogue Input Only
There are 4 alarm set points available on each analogue input. It allows the unit to generate alarms whenever the monitored signal reaches the set point. To program the alarm set points, you can send the following command by SMS to the unit.

Text Command:
***ALP**[N][I]**#**XX,F

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N stands for input number **1** – **4**
I stands for set point number **1** – **4**
XX stands for 2 digits Percentage Threshold Alert Value for Alarm
F stands for the perform functions (Selectable) **0** – **10**

Selectable Functions (F) Description:

Function **0**:
- No Function

Function **1**:
- Activates output relay 5 to stay on

Function **2**:
- Activates output relay 6 to stay on

Function **3**:
- Activates output relay 7 to stay on

Function **4**:
- Activates output relay 8 to stay on

Function **5**:
- Sends a programmable alert message (***SDF[N]#**)

Function **6**:
- Sends a programmable alert message (***SDF[N]#**) and activates audible alarm (Depends on function ***ALM#**)

Function **7**:
- Turn off output relay 5. The unit will send SMS if the relay 5 is ON at previous state. If not it won't send SMS.

Function **8**:
- Turn off output relay 6. The unit will send SMS if the relay 6 is ON at previous state. If not it won't send SMS.

Function **9**:
- Turn off output relay 7. The unit will send SMS if the relay 7 is ON at previous state. If not it won't send SMS.

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Function **10**:

- Turn off output relay 8. The unit will send SMS if the relay 8 is ON at previous state. If not it won't send SMS.

Example:

To setup 2 alarm set points at 10% and 90% for input 1 and both set points will also trigger an alarm message; you would send the 2 following SMS command to the unit.

***ALP11#10,3**

***ALP12#90,3**

Note: The perform functions work on GSM mode only

5.4.4 Editing the Alarm Set Point Message Content

Note: This Function Works On Analogue Input & GSM Mode Only

The alarm set point message can be edited and programmed up to 50 characters long. You can change the displayed text by sending the following commands by SMS message to the unit. ***Note:*** *Only support normal abc/ABC English text, no special characters*.

Text Command:

***SDF**[N]**#**XXXXX…

N stands for Input number **1 - 4**

XXXXX… stands for the display text that you want to program. Maximum 50 characters

To check the programmed texts, you can send ***SDF?#**[N]

Example:

If you want the alert message to display "**Fuel Alert!**" for input **1** when the monitored signal reaches the set point, you would send the following SMS message to the unit.

***SDF1#Fuel Alert!**

Note: When signal reaches the set point, the system will send the programmable alert messages and also report the set point level. For example: **Fuel Alert!:10%**

5.4.5 Reset the Alarm Set Points

This function allows you to reset an input's alarm set points to factory default settings. To reset alarm set points, you can send the following command by SMS message to the unit.

Text Command:

***CLP**[N]**#**

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N stands for Input number **1 - 4**

Example:

To reset input 1 alarm set points to factory default, you would send the following SMS message to the unit.

***CLP1#**

Note: Factory Default for Alarm Set Point are 255 for all set points for all analogue inputs

5.4.6 Checking the Analogue Inputs Status

Note: This Function Works On Analogue Input Only

This function allows you to inquire the live status by an SMS. To check the level, you can send the following command by SMS message to the unit.

Text Command:

***FST?#**

Example of Returned Message:

ANIN1=15%
ANIN2=99%
ANIN3=10%
ANIN4=05%

5.4.7 Setting the Alert Message Recipients

Every input can generate text alerts to all 20 of the administrator's Mobile phone numbers and this function can be changed at any time by sending the following commands by SMS message to the unit.

Text Command:

***RER**[N]**#**XXXXXXXXXXXXXXXXXXXX

N stands for input number **1** – **12** (1 – 4 for Analogue and 5 – 12 for Digital)
X stands for position for 1 - 20 administrators with function value: **0** (OFF), **1** – **9** (number of text alerts)

Example 1:

Any alarm coming from Input 1 will generate 2 SMS to administrators 1, 2, 3 and 1 SMS to the rest, you would send the following SMS message to the unit.

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***RER1#22211111111111111111**

Example of Returned Message:
RER1=22211111111111111111 OK

Example 2:
Any alarm coming from Input 2 will generate 3 SMS to administrator 1, 2 SMS to administrator 2, 3, 4 and 5, no SMS to the rest, you would send the following SMS message to the unit.

***RER2#32222000000000000000**

Example of Returned Message:
RER2=32222000000000000000 OK

To check the setting, you can send the following SMS command to the unit.
***RER?#**

5.4.8 Editing the Input Alert Message For (When Input gets High Pulse)

The Input Alert Message can be edited and programmed up to 50 characters long. You can change the displayed text by sending the following commands by SMS message to the unit. ***Note:*** *Only support normal abc/ABC English text, no special characters*.

Text Command:
***STR**[N]**#**XXXXX…

N stands for number **5 - 12** of Input
XXXXX… stands for the display text that you want to program. Maximum 50 characters

Example:
If you want the alert message to display "**Garage Opened!**" when input **1** triggered; you would send the following SMS message to the unit.
***STR1#Garage Opened!**

To check the programmed texts, you can send ***STR?#**[N]

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5.4.9 Editing the Input Alert Message For (When Input returned to Normal)

The Input Alert Message can be edited and programmed up to 50 characters long. You can change the displayed text by sending the following commands by SMS message to the unit. ***Note:*** *Only support normal abc/ABC English text, no special characters*.

Text Command:
***STO**[N]**#**XXXXX…

N stands for number **5 - 12** of Input
XXXXX… stands for the display text that you want to program. Maximum 50 characters

Example:
If you want the alert message to display "**Garage Closed!**" when input **1** triggered; you would send the following SMS message to the unit.
***STO1#Garage Closed!**

To check the programmed texts, you can send ***STO?#**[N]

5.4.10 Setting the Counter Alert Value For Inputs

Note: Only Input 5 – 8 have pulse counter function
An alert message will be sent when the increment of alarm counter reaches the alert value (**Default: 500**). It is possible to set the alert value up to maximum value of 9999999 times. To set the counter alert value of input, you can send the following commands by SMS message to the unit.

Text Command:
***COA**[N]**#**X

N stands for number **5 - 8** of Input
X stands for the number of times. Range from 0 - 9999999

Example:
Assume that you want it to send a counter alert message each time the input 5 has triggered for 5 times, you would send the following SMS message to the unit.
***COA5#5**

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5.4.11 Setting the Feature Of Digital Input

All digital inputs can be programmed to behave differently, it can count the input active high pulses, generate an alarm message or activate relay. To program the input, you can send the following commands by SMS message to the unit.

Text Command:
***CTC**[N]**#**F

N stands for number **5 - 12** of Input. For pulse counter mode, N is input number **5 - 8**
F stands for input function **1** - **12**

Function Descriptions

Function **1**:

- Function as pulse counter

Function **2**:

- Function as pulse counter
- Activate the output relay number (***according to the input number applied***) to stay on. Eg. If pulse counter 2 at Digital Input 6 reached the alert value, relay 2 will activate.
- Generates an alert message once alarm counter reaches the alert value
- Audible alarm will sound once alarm counter reached the alert value (if the alarm function is turned on (***ALM**[N]**#1**))

Function **3**:

- Function as pulse counter
- Activate the output relay number (***according to the input number applied***) to stay on. Eg. If pulse counter 3 at Digital Input 7 reached the alert value, relay 3 will activate.
- Sends a programmable input alert message (***STR**[N]**#**) once input triggered
- Generates an alert message once alarm counter reached the alert value (in 1 SMS; message concatenated)
- Audible alarm will sound once alarm counter reached the alert value (if the alarm function is turned on (***ALM**[N]**#1**))

Function **4**:

- Function as pulse counter

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- Activate the output relay number (***according to the input number applied***) for 2 second and off. Eg. If pulse counter 4 at Digital Input 8 reached the alert value, relay 4 will activate.
- Generates an alert message once alarm counter reaches the alert value
- Audible alarm will sound once alarm counter reached the alert value (if the alarm function is turned on (***ALM**[N]**#1**))

Function **5**:

- Digital Input Mode
- Activates the output relay number (***according to which input number applied***) with functions of ***PWT**[N]**#** and ***PWK**[N]**#** (Not repeatingly, 2 times then stop afterwards)
- Generates a programmable input alert message (***STR**[N]**#**) once input triggered

* ***For more details on functions of *PWT[N]# and *PWK[N]# please refer to Miscellaneous Settings on page***

Function **6**:

- Function as pulse counter
- Activates the output relay number (***according to which input number applied***) with functions of ***PWT**[N]**#** and ***PWK**[N]**#** (Not repeatingly, 2 times then stop afterwards)
- Generates an alert message once alarm counter reaches the alert value
- Audible alarm will sound once alarm counter reached the alert value (if the alarm function is turned on (***ALM**[N]**#1**))

* ***For more details on functions of *PWT[N]# and *PWK[N]# please refer to Miscellaneous Settings on page***

Function **7**:

- Digital Input Mode
- Generates a programmable input alert message (***STR**[N]**#**) once input triggered

Function **8**:

- Digital Input Mode
- Generates a programmable input alert message (***STR**[N]**#**) once input triggered
- Generates a programmable input alert message (***STO**[N]**#**) once input returned to normal
- Audible alarm will sound when input return to normal (if the alarm function is turned on (***ALM**[N]**#1**))

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Function **9**:
- Function as pulse counter
- Switch off output relay 1

Function **10**:
- Function as pulse counter
- Switch off output relay 2

Function **11**:
- Function as pulse counter
- Switch off output relay 3

Function **12**:
- Function as pulse counter
- Switch off output relay 4

Note: *It is required to reset the Counter Alert Value (***CLA#**) each time you change the input function.*

5.4.12 Setting the Trigger Time of Alarm Input

Note: This Function Works On All Digital Inputs

The unit will report the state of all inputs when any input changes state for longer than a programmable trigger time. The trigger time of each alarm input is programmable and can be varied from a minimum of 500ms to a maximum of 999999ms. Any change that does not remain stable for the specified trigger time will be ignored. The factory default trigger time is 1 seconds.

Text Command:
***DLY**[N]**#**X

N stands for number **5 - 12** of Input
X stands for time in milliseconds. Range from 500ms – 999999ms

Example:
Assume that you want digital input 5 to report when it changes state for more than 500ms, you would send the following SMS message to the unit.
***DLY5#500**

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5.4.13 Setting the Function of Opening & Closing time for Output Relay

The system has the function to activate the relay for a specific time and then be deactivated for a specific time in a repeating process. To set the opening & closing time of the relays, you can send the following SMS command to the unit. **Note:** This function only applied in input function **5** and **6**.

Text Command for Opening time:
***PWT**[N]**#**X

N stands for Output number **1 – 8**
X stands for the number of seconds for relay to stay on. Range from 0 - 9999999

To query relay on time, you can send SMS command ***PWT?#**[N]

Text Command for Closing time:
***PWK**[N]**#**X

N stands for Output number **1 – 8**
X stands for the number of seconds for relay to stay off. Range from 0 - 9999999

To query relay off time, you can send SMS command ***PWK?#**[N]

Example:
Opening time of output 1 is set as 1 minute (***PWT1#60**) and the Closing time as 5 seconds (***PWK1#5**) and function **5** is applied on Input 1. When input 1 is triggered, output relay 1 will be activated for 1 minute and close for 5 seconds and then back on for 1 minute and close again for 5 seconds.

5.5 ALARM SETTINGS

5.5.1 Turning the Audible Siren Functions On/Off When Inputs Triggered

The system has the function to sound the connected audible siren when input triggered. This output is available on the connection PIN6 and ground on the main board. To turn On/Off this function, you can send the following SMS command to the unit.

Text Command:
***ALM**[N]**#**X

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N stands for Input number **1** – **12**
X stands for ON (**1**) or OFF (**0**) value

When ***ALM1#1** is applied, means audible alarm will sound when Input 1 triggered.
When ***ALM1#0** (**Default**) is applied, means audible alarm will not sound when Input 1 triggered.

To check the audible siren function setting, you can send ***ALM?#**[N]

5.5.2 Setting the Alarm Time For Audible Alarm (Default: 600 seconds)

The alarm siren can be set to determine how long the siren will remain active and this can be done by sending the following SMS command to the unit.

Text Command:
***ALTM#**X

X stands for the number of seconds. Range from 0-9999999

Example:
When ***ALTM#3600** is applied, means the audible alarm will sound for 1 hour when triggered

To check the Alarm time setting, you can send ***ALTM?#**

5.5.3 Power Down Alarm

The system has the function to send a text alert and also sound the audible siren in the event the main power is lost and the system is relying on battery back up.
It is also possible to activate and deactivate this function by sending the unit an SMS Message.

Text Command:
***ALAC#**X

X stands for ON (**1**) or OFF (**0**) value

When ever the ***ALAC#1** command is activated and the power down alarm is on any of the Administrators programmed to receive text alerts, will receive the following messages from the unit in the event of power down and also when power is restored.

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Power down and text alert received: **Power down**
Power restored and text alert received: **Power restored**

5.5.4 Setting the Recipient of AC Failure Alert

Whenever there is power failure, the unit can generate text alerts to all 20 of the administrator's Mobile phone numbers. To set the administrator to receive this alert, you would send the following commands by SMS message to the unit.

Text Command:
***REAC#**XXXXXXXXXXXXXXXXXXXX

X stands for position for 1 - 20 administrators with function value: **0** (OFF), **1** – **9** (number of text alerts)

Example:
To generate 2 SMS to administrators 1, 2, 3 and 1 SMS to the rest when AC failure, you would send the following SMS message to the unit.
***REAC#22211111111111111111**

Example of Returned Message:
REAC=22211111111111111111

To check the setting for AC failure alert, you can send ***REAC?#**

5.5.5 Anti-Theft Feature

The system has an anti-theft function that can used to detect the person who hijacks the WT-9001 device. It allows the owner to identify the hijacker's SIM Card number by sending a warning message to the programmed owner's number when the SIM card has been switched. To activate and also deactivate this function, you can send the following SMS command to the unit.

Text Command**:**
***ANTH#**X

X stands for ON (**1**) or OFF (**0**) value

When ***ANTH#1** is applied, means it will alert the owner by sending a warning message when the SIM Card has been changed.
When ***ANTH#0** (**Default**) is applied, means this function is turned off.

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Alert message received: **WARNING! SIM Card Has Been Changed On WT-9001**

To check the Anti-Theft setting, you can send ***ANTH?#**

5.5.6 Setting the Recipient of Anti-Theft Alert

With Anti-Theft function turned on, it can generate text alerts to all 20 of the administrator's Mobile phone numbers whenever the SIM card has changed. To set the administrator to receive this alert, you would send the following commands by SMS message to the unit.

Text Command:
***REAT#**XXXXXXXXXXXXXXXXXXXX

X stands for position for 1 - 20 administrators with function value: **0** (OFF), **1** – **9** (number of text alerts)

Example:
When SIM card has been changed, it will generate 3 SMS to administrators 1, 2, 3 and 1 SMS to the rest, you would send the following SMS message to the unit.

***REAT#33311111111111111111**

Example of Returned Message:
REAT=33311111111111111111

To check the Anti-Theft Alert setting, you can send ***REAT?#**

5.6 GPRS SETTINGS (For Monitoring Software)

To setup a communication between the WT_9001 software and the WT-9001 unit, you need a GPRS enabled SIM card installed into the WT-9001 device and configure it as the below.

5.6.1 Programming the User ID

The system requires the user ID programmed in both software and the WT-9001 unit in order to communicate with each other. To setup a user ID for the WT-9001 unit, you need to send the below command by SMS to the unit.

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Text Command:
***USID#**XXXX

XXXX stands for 4 digits numeric numbers

Example:
To program User ID **1111** into the WT-9001 device, you would send the following SMS command to the unit.
***USID#1111**

Note: *To setup a User ID for the monitoring software, please refer to the WT-9001 Server Software Guide.*

To check the programmed User ID, you can send ***USID?#**

5.6.2 APN Settings

For GPRS internet connection, you will have to configure the APN Settings needed by your network operator. Different mobile operators have different APN settings. To configure the APN, you would send the following SMS command.

Text Command:
***ANET#**XXXXX…**,**Username**,**Password

XXXXX… stands for Access Point Name. Maximum 15 characters
Username maximum 10 characters
Password maximum 15 characters

Example:
To configure the access point **Vodanet**, user name: **123** and password: **123** you can send the following text message to the unit.
***ANET#Vodanet,123,123**

Note: If there is no user name and password required for GPRS connection, you can simply send the command as the following
***ANET#Vodanet**

To check the APN settings, you can send ***ANET?#**

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5.6.3 Setup the GPRS Communication

To link the WT-9001 unit to the monitoring software, you will need to program the connection type, external IP address of the host computer and Port number created from the monitoring software into the WT-9001 unit by sending the following SMS command.

Text Command:
***GSIP#**TTT**,**XXX.XXX.XXX.XXX**,**NNNN

TTT stands connection type "**TCP**"
XXX.XXX.XXX.XXX stands for Public IP Address
NNNN stands for Local Port number created from the WT_9001 Monitoring Software

Example:
Assume that you have acquired the External IP address as **123.65.214.231**, port number **8765** and connection type: **TCP**, you would send the following SMS command to the unit.
***GSIP#TCP,123.65.214.231,8765**

To check GPRS communication settings, you can send ***GSIP?#**

5.6.4 Turn On the GPRS Connection

To activate the GPRS connection of the SIM card, you can send the following SMS command the unit. ***Default:*** *Off*

Text Command:
***GPRS#**X

X stands for ON (**1**) or OFF (**0**)

Example:
To turn on GPRS connection, you would send the following SMS command to the unit.
***GPRS#1**

Note: *It is advised that you should program all other functions before enabling the GPRS connection. When enabled, it will not send any SMS messages.*

To check GPRS connection setting, you can send ***GPRS?#**

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5.7 MISCELLANEOUS SETTINGS

5.7.1 Inquire All Programmed Administrator Numbers

To check all the administrator number in the list, simply send the following SMS command.

Text Command:
***ADM?#**

5.7.2 Inquire the Status of Inputs

To check input status, you can send the following SMS command.

Text Command:
***CTR?#**

If all inputs are disabled, the returned message would be
ANIN1=OFF#ANIN2=OFF#ANIN3=OFF#ANIN4=OFF#INDIG5=OFF#INDIG6=OFF#INDIG7=OFF#INDIG8=OFF#INDIG9=OFF#INDIG10=OFF#INDIG11=OFF#INDIG12=OFF#

If analog inputs are ON, input5 in counter mode, input6-9 in digital mode, the rest are OFF the returned message would be
ANIN1=ON#ANIN2=ON#ANIN3=ON#ANIN4=ON#INCTR5=ON#INDIG6=ON#INDIG7=ON#INDIG8=ON#INDIG9=ON#INDIG10=OFF#INDIG11=OFF#INDIG12=OFF#

5.7.3 Reading Counter Alert Value Of Inputs

It is possible read all the counter alert value of inputs by sending the following SMS command to the unit.

Send the following SMS Command:
***COA?#**

Example of Returned Message:
COA5=XXX…**#COA6=**XXX…**#COA7=**XXX…**#COA8=**XXX…

XXX… stands for the number of seconds. Range from 0 - 9999999

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5.7.4 Reading the Alarm Time Value

It is possible to read the alarm time value by sending the following SMS command to the unit.

Send the following SMS Command:
***ALT?#**

Example of Returned Message:
ALT=30 OK

Note: All 8 Digital Inputs have the same setting for siren on time (Default: 30 sec)

5.7.5 Reading the Total Increment Counter Value

To read the total increment counter value, you can send the following SMS message to the unit.

Text Command:
***COU?#**

Example of Returned Message:
INC5=x.xxx# INC6=x.xxx# INC7=x.xxx# INC8=x.xxx OK#

Note: This Function Works On Digital Input 5 – 8 only

5.7.6 Reading the Sub Increment Counter Value

To read the sub increment counter value, you can send the following SMS message to the unit.

Text Command:
***COT?#**

Example of Returned Message:
PULSE5=x#PULSE6=x#PULSE7=x#PULSE8=x#OK

Note: *If pulse reaches 1 billion values will reset automatically to zero.*

Note: This Function Works On Digital Input 5 – 8 only

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5.7.7 Reset the Total Increment Counter Value

To reset the total counter value, you can send the following SMS message to the unit.

Text Command:
***CLA**[N]**#**

N stands for Input number **5** – **8**

Example:
When ***CLA5#** is applied, means the total increment counter value will be reset for input 5

5.7.8 Sound the Audible Alarm Manually

It is possible to sound the alarm manually by sending the following SMS command to the unit, which remain active for the period of time set.

Text Command:
***ALNF#**X

X stands for ON (**1**) or OFF (**0**) value

When ***ALNF#1** is applied, means audible alarm will sound.
When ***ALNF#0** (**Default**) is applied, means audible alarm will turn off.

To check siren status, you can send ***ALNF?#**

5.7.9 Checking Signal Strength

To check the signal strength (0-31), you would send the following SMS command to the unit.

Text Command:
***CSQ?#**

5.7.10 Checking the System is Operating Correctly

It is possible to check the system is operating correctly by sending the following SMS command to the unit.

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Text Command**:**
***TEST#**

When the unit replies **TEST-OK** indicate the unit is operating correctly.
Note: If you receive no reply then unit is not working

5.7.11 Setting the Password for Reset Command

To setup a password for reset command, you can send the following SMS command to the unit.

Text Command:
***PAWO#**XXXXXX

XXXXXX stands for 6 digits password: **123456** (Default)

Example:
To change the password to **654321**, you would send the following SMS command to the unit.
***PAWO#654321**

5.7.12 Reset the WT-9001

To reset the unit, you can send the following SMS command to the unit.

Text Command:
***REST#**XXXXXX

XXXXXX stands for 6 digits password based on ***PAWO#** (Default: **123456**) and it can be changed anytime.

To reset manually via hardware, just press the tact switch button.

5.7.13 Saving Parameters

To save parameters into the EEPROM, you can send the following SMS command to the unit.

Text Command:
***SAVE2PROM#**

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5.7.14 Checking the Back-up Battery Status

To check the battery voltage and charger status, you can send the following SMS command to the unit.

Text Command:
***CHARGER?#**

5.7.15 Checking the Software and Hardware Version of WT-9001

To check the software and hardware version of WT-9001, you would send the following SMS command to the unit.

Text Command:
***EDI?#**

Example of Returned Message:
Software release time:<WT-9001>2009/6/02/01:40HW:1.8SW1.0MW3.4

5.6.16 Enable and Disable of the System

To send SMS to enable all the functions (WT-9001 prepared by work) and SMS to disable all the functions (WT-9001 is not prepared by work)

Command Enable System:
***ENABLE#**

Returned Message:
#ENABLE OK

Command Disable System:
***DISABLE#**

Returned Message:
#DISABLE OK

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5.7.17 Auto Restart System

The WT-9001 can continuously monitor the system status of its own. When there is a problem with system operation or the module is not working properly, it will restart the system automatically to avoid the unit stopped working permanently. If the system failed to respond within 15 – 30 seconds, it will restart the system.

6. TECHNICAL SPECIFICATIONS

Item	Description
Model	WT-9001
Operating Voltage	12 - 28VDC, 5W
Current Consumption	50mA idle, +60mA per active relay
No of Inputs	8 Digital & 4 Analogue Inputs
No of Outputs	8 Relay Outputs - 0.3A/125 ACV, 0.3A/48 DCV
Relay Connections	Normally Open, Normally Closed & Common Contacts
Communication Port	RS232 DB9
GSM Modem	Quad Band 850/900/ 1800/ 1900mhz
Humidity	Less Than 90% RH
Operating Temperature	-08°C to 80°C
Security Features	Password protected access and phone number checks
System Health Check	Remote health check feature via SMS
Indicators	Power, Telco Network, Signal Low, Other error
Repeat SMS of alarms	User configurable
I/O Interface	3.8mm pitch pluggable screw terminal block
Remote event log	Yes
Output pulse capability	Yes
Display	Dot-Matrix LCD with back light, 16 characters x 2 line

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WARRANTY

Witura Corporation Sdn Bhd guarantees all WT-9001 IP65 GSM Remote Monitoring And Remote Control System against defective parts and workmanship for 1-year warranty. Witura Corporation Sdn Bhd shall, at its option, repair or replace the defective equipment upon the return of such equipment to any Witura branch. This warranty applies ONLY to defects in components and workman-ship and NOT to damage due to causes beyond the control of Witura, such as incorrect voltage, lightning damage, mechanical shock, water damage, fire damage, or damage arising out of abuse and improper application of the equipment.

Note: Wherever possible, return only the PCB to Witura Service Centres. **DO NOT return the enclosure**.

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