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SAN TELEQUIP
Connecting. Converting. Leading !

Document Name: USER MANUAL for Smart Alert.
Model SA884M

INTRODUCTION

SMART ALERT (SA) is used for obtaining quick SMS alerts from field inputs. SA884M allows up to 8 Potential free inputs to be sensed. For every input, unique separate SMS is sent to multiple reporting numbers. Maximum upto 10 different persons could be notified with the alert. SA884M allows 4 potential free outputs to be controlled remotely via SMS. SA884M allows to sense 8 analog inputs of 4~20 mA signals and also can poll Modbus slave devices through RS 485 interface and send an SMS containing Modbus data and alert messages for MODBUS

FEATURES

- 24 V/1A DC power supply.
- 8 number digital potential free alarm inputs with common ground pin
- 8 analog inputs for 4~20 mA signals.
- 4 number NO/NC outputs.
- Built in GSM modem.
- Storage of total 10 reporting telephone numbers. (Each with 14 digits max)
- Modbus protocol over RS485 interface supported.
- Buzzer for audible status.
- Configuration via preformatted SMS.
- Dimensions : 37x 105 x 215 mm (Excluding connectors and antenna)

INSTALLING THE UNIT

Inserting/ Removing the SIM Card

To insert or remove the SIM Card, it is necessary to press the yellow SIM holder ejector button with sharp edged object like a pen or a needle. When this is done the SIM holder comes out a little, then pull it out and insert or remove the SIM Card. It is very important that the SIM is placed in the right direction for proper working.

Connecting External Antenna

Connect the external SMA antenna to the male antenna connector of the unit. The right Antenna should be used with the specified frequency otherwise it can affect the communication.

Power Supply – Screw type connector with +24V DC, 1A supply.

Digital Inputs –
For SA884M connect the potential free contact wires to DI1 ~ DI8 terminals of unit. The other end of contact can be connected to GND terminal provided.
Analog Inputs-

AI1 to AI8 are provided for analog inputs. The 4-20mA sensor output should be connected to AI1 to AI8 terminal and other end is to be connected to GND.

Digital Outputs-

SA884M supports 4 digital outputs with two NO-C contacts for each output. The contact rating is 230V / 15A.

So appropriate capacity load can be switched using these outputs. Whenever unit is powered off, DO status falls back to NC status and is restored to last condition upon resumption of power.

OPERATION

At power on, unit beeps twice and power LED glows steady. The unit checks for range and range LED 1 blinks while the unit gets the range. When the range is found, LEDs become steady. In good range, all 3 LEDs glow. In medium range, only 2 LEDs will glow and in low range, only 1 LED will glow.

Unit then starts scanning inputs and report alarm as and when it detects change of input state.

SA884M has 8 inputs DI1 ~ DI8 and 1 common GND terminal. The 8 potential free contacts must be connected to these inputs. The inputs are configurable as NO (Normally Open) or NC (Normally closed) in normal condition. When any input changes its state, SMS for that input is sent to the configured reporting numbers. All numbers are reported one after another. Digital inputs and analog inputs can be reported to selected reporting numbers out of 10 reporting numbers. The unit can send different SMS messages for each input and the English text is also configurable. SMS text for channel reporting is Max 120 characters

SA884M supports 8 analog inputs AI1 to AI8 with one common GND terminal. Analog inputs can be set to indicate alarm on crossing low or high levels. Two alarms can be set – Lo alarm and Hi alarm. When input to that analog channel goes below low level or goes above high level, alarm SMS corresponding to that analog input is sent to reporting numbers.

If any of the analog input gets disconnected ,then user have to Power OFF the device and again power ON for proper sensing of analog input.

If restoral message command is given to unit then unit will send messages when DI or AI input comes in normal state. The text of these messages is also reconfigurable. User can set text upto 120 characters

SA884M supports 4 digital outputs with two NO and C contacts for each output. Text for Digital output reporting is configurable and is 25 characters. Outputs are used as either latachable or pulsatable.

The status of each input channel is sent periodically to the reporting numbers.

If any modbus slave Device is connected to SA884M then, MODBUS data of the slave device is periodically sent to all the reporting Numbers .

Also status message of input channels are sent indicating channel is in alarm or in normal state. The period of reporting is also configurable from 01 ~ 24 hours. If this value is set to zero, periodic status reporting is disabled. The instantaneous status of all channels can also be obtained on demand by user, by sending a SMS to the unit.

Also user can configure maximum 10 real times at which user can get MODBUS data.

At factory shipping time, default authentication numbers are kept blank.

Configuration of unit can be done through any mobile number when authentication numbers are blank. Once finished configuration, user can enter authentication numbers. Once authentication numbers entered in the unit then any configuration change can be done using these two authenticated numbers only. These numbers can be changed at site.

When unit receives pre-formatted SMS messages, it acts per the message command. The configuration can be changed only through authenticated numbers; whereas general status read can be done through any number.

SA884M Device continuously poll MODBUS data and will send an SMS of current value of all parameters defined by MODBUS query get sent periodically to reporting numbers. Also Low and high thresholds for analog inputs on MODBUS can be configured by SMS. When analog input's current value goes below low threshold or goes above high threshold, unit will send alert SMS to reporting numbers. Total of 10 MODBUS queries can be configured and Maximum 50 parameters can be read using MODBUS.

SMS FORMATS FOR CONFIGURATION

- **To set SMS reporting numbers**

  #1231#XX#XX#XX#XX#XX#XX#XX#XX#XX#XX*

  Where, XX is dialing number. Maximum length can be 14 digits for each number.

  Unit will send acknowledgement SMS as following: (Assuming 2 numbers are configured)

  Command: ***#1231#+910123456789#+919876543210****
  Acknowledgement: ***SMS Nos:***
  +910123456789
  +919876543210

- **To set alarm messages texts for digital inputs**

  #123MX#Text*

Where Text is the text message for each of 1 ~ 8 inputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 120 characters. Default text is 'Alarm on Dig Ch X' for input X.

Unit will send acknowledgement SMS for respective commands as follows.

Set channel 1 Alarm text message:
Command: ***#123M1#Alarm on channel 1****
Acknowledgement: ***Reporting text1 for channel 1: Alarm on channel 1***

Set channel 2 Alarm text message:
Command: ***#123M2# Alarm on channel 2****
Acknowledgement: ***Reporting text1 for channel 2: Alarm on channel 2***

Set channel 3 Alarm text message:
Command: ***#123M3# Alarm on channel 3****
Acknowledgement: ***Reporting text1 for channel 3: Alarm on channel 3***

Set channel 4 Alarm text message:
Command: ***#123M4# Alarm on channel 4****
Acknowledgement: ***Reporting text1 for channel 4: Alarm on channel 4***

Set channel 5 Alarm text message:
Command: ***#123M5# Alarm on channel 5****
Acknowledgement: ***Reporting text1 for channel 5: Alarm on channel 5***

Set channel 6 Alarm text message:
Command: ***#123M6# Alarm on channel 6****
Acknowledgement: ***Reporting text1 for channel 6: Alarm on channel 6***

Set channel 7 Alarm text message:
Command: ***#123M7# Alarm on channel 7****
Acknowledgement: ***Reporting text1 for channel 7: Alarm on channel 7***

Set channel 8 Alarm text message:
Command: ***#123M8# Alarm on channel 8****
Acknowledgement: ***Reporting text1 for channel 8: Alarm on channel 8***

- **To set restoral message texts for digital inputs**

#123BX#Text*

Where Text is the text message for each of 1 ~ 8 inputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS text. Maximum text length can be 120 characters. Default text is 'Digital Channel X is Normal' for input X.

Note: Restoral messages are sent only when 1 is set through #1233#1* command.

Unit will send acknowledgement SMS for respective commands as follows.

Set channel 1 Alarm text message:
Command: ***#123B1#Channel 1 is Normal****
Acknowledgement: ***Reporting text2 for channel 1: Channel 1 is Normal***

Set channel 2 Alarm text message:
Command: ***#123B2# Channel 2 is Normal ****
Acknowledgement: ***Reporting text2 for channel 2: Channel 2 is Normal***

Set channel 3 Alarm text message:
Command: ***#123B3# Channel 3 is Normal ****
Acknowledgement: ***Reporting text2 for channel 3: Channel 3 is Normal***

Set channel 4 Alarm text message:
Command: ***#123B4#Channel 4 is Normal ****
Acknowledgement: ***Reporting text2 for channel 4: Channel 4 is Normal***

Set channel 5 Alarm text message:
Command: ***#123B5#Channel 5 is Normal ****
Acknowledgement: ***Reporting text2 for channel 5: Channel 5 is Normal***

Set channel 6 Alarm text message:
Command: ***#123B6#Channel 6 is Normal ****
Acknowledgement: ***Reporting text2 for channel 6: Channel 6 is Normal***

Set channel 7 Alarm text message:
Command: ***#123B7#Channel 7 is Normal ****

Acknowledgement: ***Reporting text2 for channel 7: Channel 7 is Normal***

Set channel 8 Alarm text message:
Command: ***#123B8#Channel 8 is Normal ****
Acknowledgement: ***Reporting text2 for channel 8: Channel 8 is Normal***

- **To set alarm message text for analog channels**

#123PX#Text*

Where Text is the text message for analog inputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 120 characters. Default text is 'Alarm on Analog X' for input X.

Unit will send acknowledgement SMS for respective commands as follows.

Set analog channel 1 Alarm text message:
Command : **#123P1#Alarm on Analog 1***
Acknowledgment: ***Reporting text for Analog 1: Alarm on Analog 1***

Set analog channel 2 Alarm text message:
Command : **#123P2#Alarm on Analog 2***
Acknowledgment: ***Reporting text for Analog 2: Alarm on Analog 2***

Set analog channel 3 Alarm text message:
Command : **#123P3#Alarm on Analog 3***
Acknowledgment: ***Reporting text for Analog 3: Alarm on Analog 3***

Set analog channel 4 Alarm text message:
Command : **#123P4#Alarm on Analog 4***
Acknowledgment: ***Reporting text for Analog 4: Alarm on Analog 4***

Set analog channel 5 Alarm text message:
Command : **#123P5#Alarm on Analog 5***
Acknowledgment: ***Reporting text for Analog 5: Alarm on Analog 5***

Set analog channel 6 Alarm text message:
Command : **#123P6#Alarm on Analog 6***
Acknowledgment: ***Reporting text for Analog 6:***

Alarm on Analog 6

Set analog channel 7 Alarm text message:
Command : **#123P7#Alarm on Analog 7***
Acknowledgment: ***Reporting text for Analog 7:***
Alarm on Analog 7

Set analog channel 8 Alarm text message:
Command : **#123P8#Alarm on Analog 8***
Acknowledgment: ***Reporting text for Analog 8:***
Alarm on Analog 8

- **To set restoral SMS text for analog channel**

#123NX#Text*

Where Text is the text message for each of 1 ~ 8 inputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 120 characters. Default text is 'Analog channel X is NORMAL' for input X.

Unit will send acknowledgement SMS for respective commands as follows.

Set analog channel 1 Alarm text message:
Command : **#123N1# *Analog channel 1 is NORMAL ****
Acknowledgment: ***Reporting text for Analog 1:***
Analog channel 1 is NORMAL

Set analog channel 2 Alarm text message:
Command : **#123N2# *Analog channel 2 is NORMAL****
Acknowledgment: ***Reporting text for Analog 2:***
Analog channel 2 is NORMAL

Set analog channel 3 Alarm text message:
Command : **#123N3# *Analog channel 3 is NORMAL****
Acknowledgment: ***Reporting text for Analog 3:***
Analog channel 3 is NORMAL

Set analog channel 4 Alarm text message:
Command : **#123N4# *Analog channel 4 is NORMAL****
Acknowledgment: ***Reporting text for Analog 4:***
Analog channel 4 is NORMAL

Set analog channel 5 Alarm text message:
Command : **#123N5# *Analog channel 5 is NORMAL****
Acknowledgment: ***Reporting text for Analog 5:***
Analog channel 5 is NORMAL

Set analog channel 6 Alarm text message:
Command : ***#123N6# Analog channel 6 is NORMAL****
Acknowledgment: ***Reporting text for Analog 6:***
Analog channel 6 is NORMAL

Set analog channel 7 Alarm text message:
Command : ***#123N7# Analog channel 7 is NORMAL****
Acknowledgment: ***Reporting text for Analog 7:***
Analog channel 7 is NORMAL

Set analog channel 8 Alarm text message:
Command : ***#123N8# Analog channel 8 is NORMAL****
Acknowledgment: ***Reporting text for Analog 8:***
Analog channel 8 is NORMAL

- **To set configurable text to be added with periodic reporting SMS**

#123M9#Text*

Where Text is the text message which will be the part of periodic reporting SMS and will specify device information such as serial number, location etc configured by user. Please note that '#' and '*' should not be part of the text. Maximum text length can be of 20 characters. Default text for reporting text would be "Device Id: 0123456"

Unit will send acknowledgement SMS as following:

Command: ***#123M9#Device ID: 0123456****
Acknowledgement: ***Reporting text for Device:***
Device ID: 0123456

- **To set NO / NC status of inputs**

#1234#XXXXXXXX#AA#BB#CC#DD#EE#FF#GG#HH *

Where X = 0 means NO, 1 means NC and AA, BB, CC, DD,EE,FF,GG & HH are delays in seconds which can be set for input channels 1~8 respectively. Delays can take value from 00 to 99 seconds.

If unit is configured as NO, there will be alarm SMS if change of state is detected for specified delay period for particular channel.
For NO configuration, SMS format is:

Command: ***#1234#00000000#90#90#90#90#90#90#90#90****
Acknowledgement: ***Configuration of input channels is:***

00000000
Delays set to
90
90
90
90
90
90
90
90

- **To enable/disable restoral messages for inputs**

  #123S#X*

  Where

  X = 0 means only alert messages are sent for input channels.
  (Configured through #123MX#Text* commands).

  X=1 means alert messages and restoral messages both are sent for input channels.
  (Configured through #123MX#Text* and #123BX#Text* commands).

  Command: ***#123S#1****
  Acknowledgement: **Inputs are BISTATE**

- **To set analog input Reporting Unit**

  #123UX#Text*

  Where Text is the Reporting units for channels 1 ~ 8 inputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 8 characters. Default reporting unit is '%' for all inputs.
  e.g.
  To set unit as DegC for channel 1, send SMS as

  Command: ***#123U1#DegC****
  Acknowledgement: **Reporting unit for analog 1:**
  DegC

  To set unit as Pascal for channel 2, send SMS as
  Command: ***#123U2#Pascal****
  Acknowledgement: **Reporting unit for analog 2:**

Pascal

To set unit as Pascal for channel 3, send SMS as
Command: ***#123U3#Pascal****
Acknowledgement: **Reporting unit for analog 3: Pascal**

To set unit as Pascal for channel 4, send SMS as
Command: ***#123U4#Pascal****
Acknowledgement: **Reporting unit for analog 4: Pascal**

To set unit as Pascal for channel 5, send SMS as
Command: ***#123U5#Pascal****
Acknowledgement: **Reporting unit for analog 5: Pascal**

To set unit as Pascal for channel 6, send SMS as
Command: ***#123U6#Pascal****
Acknowledgement: **Reporting unit for analog 6: Pascal**

To set unit as Pascal for channel 7, send SMS as
Command: ***#123U7#Pascal****
Acknowledgement: **Reporting unit for analog 7: Pascal**

To set unit as Pascal for channel 8, send SMS as
Command: ***#123U8#Pascal****
Acknowledgement: **Reporting unit for analog 8: Pascal**

- **To set analog inputs full range values**

#1239 #Low Value1,High Value1#Low Value2,High Value2#Low Value3,High Value3#Low Value4,High Value4#Low Value5,High Value5#Low Value6,High Value6#Low Value7,High Value7#Low Value8,High Value8*

This command will set full range values corresponding to 4-20mA output of the sensor.

Using actual values:

When actual values are known corresponding to 4-20mA, then set full scale actual values. e.g. Temperature sensor output is 0-70 deg corresponding to 4-20mA,then set command as

Command: ***#1239#0,70#0,70#0,70#0,70#0,70#0,70#0,70#0,70*****

Acknowledgement : **Analog Input Format Is**
A1 = 0,70
A2 = 0,70
A3 = 0,70
A4 = 0,70
A5 = 0,70
A6 = 0,70
A7 = 0,70
A8 = 0,70

- **To set analog input levels**

#1236#Low_level1,High_level1#Low_level2,High_level2#Low_level3,High_level3 #Low_level4,High_level4#Low_level5,High_level5#Low_level6,High_level6#Low_ level7,High_ level7#Low_ level8,High_ level8*

Analog channel 1 to channel 2 high and low Thresholds can be set using below SMS command. If analog channel value goes below/above set levels, then unit will send alert SMS.Min and Max allowed values are 0.0 and 9999.9 resp.

Command:
#1236#20.0,50.0#20.0,50.0#20.0,50.0#20.0,50.0#20.0,50.0#20.0,50.0#20.0,50 .0#20.0,50.0*

Acknowledgement : ***Analog levels are set to :***
A1 = 20.0,50.0
A2= 20.0,50.0
A3=20.0,50.0
A4 =20.0,50.0
A5=20.0,50.0
A6=20.0,50.0
A7 =20.0,50.0
A8 =20.0,50.0

Note: Resolution of 1 bit after decimal point is necessary.Means Please do not set the value as 1235 only.Set it as 123.5 instead.Whichever analog input is unused then set thresholds as 0.0,0.0.
Also if in run time when any of analog inputs get opened then user have to Power off the unit,then connect that analog input and again power ON the unit.

- **To select reporting numbers for Digital inputs reporting**

#1232#XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX# XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX #XXXXXXXXXX *

Where X is the Reporting number's index (which we set using #1231#....* command), and it takes values from 0 to 9 and A(A means 10th reporting number.)
By default all numbers are reported for every input channel. If user wants to select the reporting numbers to which input alarm SMS reporting to be done then this command is used.

E.g-#1232#145#36789#A#169A#123#1A#9A#1234* will send DI1 alarm messages to first ,forth and fifth reporting number,DI2 alarm messages get reported to Third, sixth, seventh, eighth, ninth reporting numbers,DI3 get reported to only tenth reporting number and DI4 get reported to first, sixth and Ninth and tenth reporting numbers, DI5 gets reported to first second and third reporting numbers and DI6 gets reported to first and tenth reporting numbers.DI7 gets reported to 9th and tenthreporting numbers and DI8 gets reported to first,second,third and forth reporting number.

Unit will send acknowledgement SMS as described below:

Command: #1232#145#36789#A#169A#123#1A#9A#1234*
Acknowledgement: ***Nos. Selected :***
D1:145
D2:36789
D3:A
D4:169A
D5:123
D6:1A
D7:9A
D8:1234

- **To select SMS reporting numbers for analog inputs reporting**

#1233#XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX#
XXXXXXXXXX#XXXXXXXXXX#XXXXXXXXXX #XXXXXXXXXX *

Where X is the Reporting number's index (which we set using #1231#....* command), and it takes values from 0 to 9 and A(A means 10th reporting number.)
By default all numbers are reported for every input channel. If user wants to select the reporting numbers to which input alarm voice reporting to be done then this command is used.

E.g-#1233#145#36789#A#169A#123#1A#9A#1234* will send AI1 alarm messages to first ,forth and fifth reporting number,AI2 alarm messages get reported to Third,sixth, seventh, eighth, ninth reporting numbers,AI3 get reported to only tenth reporting number and AI4 get reported to first, sixth and Ninth and tenth reporting numbers, AI5 gets reported to first second and third reporting numbers and AI6 gets reported to first and tenth reporting numbers.AI7 gets reported to 9th and tenth reporting numbers and AI8 gets reported to first, second,third and forth reporting number.

Unit will send acknowledgement SMS as described below:

Command: ***#1233#145#*****36789#A#169A#123#1A*****#9A#1234****

Acknowledgement:

Nos. Selected :
A1:145
A2:36789
A3:A
A4:169A
A5:123
A6:1A
A7:9A
A8:1234

- **To set periodic status reporting time**

#123HXX*

XX in the above format represents hours which can take values from 01 to 24.

The status of input channels is sent periodically to reporting numbers .

e.g. #123H01* will set periodic reporting time to 1 hour. So, when this time is set through SMS, unit will send status message after every one hour.Default Periodic hours are set to 01.

Unit will send acknowledgement SMS as described below:

Command: ***#123H01****
Acknowledgement: ***Periodic Reporting hours are set to: 01***

Note: #123H00* will disable the periodic status reporting.

- **To set output status**

#1235#XY*

Where X means output number and X means NO/NC status.
X = 1 means output 1 and X = 2 means output 2 and so on upto output number 4.
Y = 0 means NO and Y = 1 means NC.

When common (C) terminal is connected to NO, LED corresponding to that output is ON, otherwise OFF. E.g. If C1 connected to NO1, then O1 LED will be ON.

Unit will send acknowledgement SMS as following:

Command*:* ***#1235#10****
Acknowledgement: ***Output 1 connected to NO1***

Command: ***#1235#21****
Acknowledgement: ***Output 2 connected to NC2***

Command: ***#1235#30****
Acknowledgement: ***Output 3 connected to NO3***

Command: ***#1235#41****
Acknowledgement: ***Output 4 connected to NC4***

- **To set SMS text for each DO channel for NO contact**

#123OX#Text*

Where Text is the text message for each of 1 ~ 4 Digital outputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 25 characters. Default text is 'Output 1 connected to NO1' for input X.

Unit will send acknowledgement SMS for respective commands as follows.

Set DO1 text for NO contact:
Command: ***#123O1#TAMPER1 is OPEN****
Acknowledgement: ***Reporting text for NO O/P 1: TAMPER1 is OPEN***

Set DO2 text for NO contact:
Command: ***#123O2# TAMPER2 is OPEN ****
Acknowledgement: ***Reporting text for NO O/P 2: TAMPER2 is OPEN***

Set DO3 text for NO contact:
Command: ***#123O3# TAMPER3 is OPEN ****
Acknowledgement: ***Reporting text for NO O/P 3: TAMPER3 is OPEN***

Set DO4 text for NO contact:
Command: ***#123O4# TAMPER4 is OPEN ****
Acknowledgement: ***Reporting text for NO O/P 4: TAMPER4 is OPEN***

- **To set SMS text for each DO channel for NC contact**

#123CX#Text*

Where Text is the text message for each of 1 ~ 4 Digital outputs respectively and X is channel number. Please note characters '#' and '*' should not be part of SMS alert text. Maximum text length can be 25 characters. Default text is 'Output 1 connected to NC1' for input X.

Unit will send acknowledgement SMS for respective commands as follows.

Set DO1 text for NC contact:
Command: ***#123C1#TAMPER1 is CLOSE****
Acknowledgement: ***Reporting text for NC O/P 1: TAMPER1 is CLOSE***

Set DO2 text for NC contact:
Command: ***#123C2# TAMPER2 is CLOSE ****
Acknowledgement: ***Reporting text for NC O/P 2: TAMPER2 is CLOSE***

Set DO3 text for NC contact:
Command: ***#123C3# TAMPER3 is CLOSE ****
Acknowledgement: ***Reporting text for NC O/P 3: TAMPER3 is CLOSE***

Set DO4 text for NC contact:
Command: ***#123C4# TAMPER4 is CLOSE ****
Acknowledgement: ***Reporting text for NC O/P 4: TAMPER4 is CLOSE***

- **To set time for auto-restoral of Output**

Each output can be restored to NC after setting time period through following SMS format.

#1237#XAA#XAA#XAA#XAA *

Where, X = S (seconds) / M (Minutes) / H (hours).
A = Any digit between 0 – 9.

e.g. #1237#S60#S30#S05#S40 * will configure output 1 to be connected to NO1 for 60 Seconds, output 2 to be connected to NO2 for 30 Seconds, Output 3 to be connected to NO3 for 5 seconds and so on.

Each reporting number will receive SMS after output is restored automatically.

Note: Output 2 is configured to be ON for 30 Seconds. But user can restore the output to NC by sending SMS as #1235#X1* before 30 seconds are over. SMS override is allowed. Where X = 1,2,3,4 i.e. output number.

Unit will send acknowledgement SMS as following:

Command:	***#1237#S60#S30#S05#S40****
Acknowledgement:	***OP1 ON for 60 Sec***
	OP2 ON for 30 Sec
	OP3 ON for 05 Sec
	OP4 ON for 40 Sec

- **To set MODBUS query frame**

To set Query1 to Query5
#123Q1#XX,YY,ZZ,AA *

To set Query6 to Query10
#123Q2#XX,YY,ZZ,AA *

Where, XX = Device ID
YY= Function code,
ZZ = Start address
AA = Length of the query.

User have to set queries sequentially only.

E.g. #123Q1#01,03,100,20#02,04,145,10* will configure Query 1 and 2 where 01 is device ID, 03 is function code,100 is the start address and 20 will be the length for Query 1 and 02 is device ID, 04 is function code,145 is the start address and 10 will be the length for Query 2.

Command:	***#***123Q1#01,03,100,20#02,04,145,10*
Acknowledgement:	***Queries:***
	01: 01,03,100,20
	02:02,04,145,10

Note: If user want to store more than 5 queries then only use comand#123Q2#.....*

- **To set MODBUS Polling Time**

#123QT#S02*

This command will set modbus scan time to 02 Seconds.

By defaulty the modbus scan time will be 05 seconds User can change it using above command.

Command: ***#123QT#S02****
Acknowledgement: ***Polling Time 02 Seconds***

Note:Polling time can be in Minutes / Hours.

- **To set No of MODBUS Inputs**

#123IP#05*

This command will set number of MODBUS Inputs(Parameters) to 5

Command: ***#123IP#05****
Acknowledgement: ***No of Inputs on MODBUS:05***

- **To Delete all MODBUS Queries**

#123DEL*

This command will delete all the queries stored in the unit.User can add new queries then.

Command: ***#123DEL****
Acknowledgement: ***MODBUS Queries Cleared***

- **To set MODBUS Format for all MODBUS parameters.**

#123W# XXXXXXXXXXXX *

Where X will be 'I' or 'F or 'S'.
I-Integer
F-Float
S-Swapped Float
This command will set format for MODBUS parameters to be scanned. It is mandatory to set format for all the parameters that are to be scanned using MODBUS query.

Command: ***#123W#IIIIFFFFIIFF****
Acknowledgement: ***MODBUS FORMAT IS:***
IIIIFFFFIIFF

Note:No of 'X' present in command = MODBUS parameters

- **To set Function codes for all Modbus parameters**

#123K#XX*

Where X is the fumction code which can be '1'/'2'/'3'/'4'.

Command: ***#123K#1111111111****
Acknowledgement: ***MODBUS FORMAT IS:***
IIIIFFFFIIFF

Note:No of 'X' present in command = MODBUS parameters

- **To set MODBUS Threshold for MODBUS alert SMSs(Function code 03/04)**

#123TH1#20.0,80.0#10.3,78.9#12.7,90.9#25.3,40.5#15.0,67.8*

The above command will set MODBUS thresholds for 5 analog inputs on MODBUS.

Command: ***#123TH1#20.0,80.0#10.3,78.9#12.7,90.9#25.3,40.5#15.0,67.8****
Acknowledgement: **20.0, 80.0**
10.3, 78.9
12.7, 90.9
25.3, 40.5
15.0, 67.8

Note: 1digit after decimal point is necessary.Do not enter the thresholds as 20,80 etc.
Maximum 50 parameters can be processed.
For 11 to 20 parameters use #123TH2#....*command.
For 21 to 30 parameters use #123TH3#....*command.
For 31 to 40 parameters use #123TH4#....*command.
For 41 to 50 parameters use #123TH5#....*command.

- **To set Text to report MODBUS alert SMSs**

For Low to High modbus SMSs

#123ZHXX#Text*

Where XX is the analog Input(Parameter) number on MODBUS

Command: ***#123ZH01#Temperature sensor****
Acknowledgement: **Reporting Text: Temperature sensor**

For High to low Modbus SMSs

#123ZLXX#Text*

Where XX is the analog Input(Parameter) number on MODBUS

Command:	***#123ZL01#Temperature sensor****
Acknowledgement:	**Reporting Text: Temperature sensor**

Text can be 30 characters long Max. Please note characters '#' and '*' should not be part of SMS alert text.
Max value of XX is 50.

- **To Select Low to High/High to low messages from SAMV unit**

#123S#0X*

Where X is L/H/B .
When it is L-Unit will send the low alert messages
When it is H-Unit will send High alerts messages
When it is B-Unit will send both high and low alert messages

Command:	***#123S#0H****
Acknowledgement:	**DI / AI are SINGLE STATE MODBUS MSGs HIGH**

Note:AI/DI not applicable for SAMV unit

- **To set Date and Time**

#123DT#DD/MM/YY#hh:mm:ss*

Wher,DD-Date,MM-Month and YY-Year.hh-Hours,mm-Minutes and ss-Seconds
Unit supports 24 Hour clock format.

E.g #123DT#11/02/2016#15:51:45* will configure date as 11/02/2016 and Time as 15:51:45.

Unit will send acknowledgement SMS as following:

Command:	***#123DT#11/02/2016#15:51:45****
Acknowledgement:	***Date – 11/02/2016***
	Time – *15:51:45*

- **To set serial parameters of RS485 port**

#123Y#AA,BB,CC,DD*

Where,AA is the baud rate for RS485 port. AA takes values as 1200,2400,4800,9600,19200,38400,57600 and 115200.
BB is the No of data bits which should be 8.
CC is the Parity bit,which takes values N-None,E-Even and O-Odd
DD is the stop bit,which takes values 1 or 2

E.g-#123Y#19200,8,O,2* will configure baud rate of RS485 as 19200, Data bits 8,Parity-odd and Stop bits-2
While dispatching the unit the default settings are 9600,8,N,1

Unit will send acknowledgement SMS as following:

Command:	***#123Y#9600,8,N,1****
Acknowledgement:	***Serial Parameters are-***
	Baud Rate-*9600*
	Data Bits-*8*
	Parity-*NONE*
	Stop Bits-*1*

Note:New settings will take effect when Unit restarts.

- **To set authentication numbers**

#123A#XX#XX*

Where, XX is authentication number. Maximum length can be 14 digits for each number.

E.g. #123A#+910123456789#+919876543210* will configure +919871045611 as first authentication number and +919871045501 as second authentication number.

Unit will send acknowledgement SMS as following:

Command:	***#123A#+910123456789#+919876543210****
Acknowledgement:	***Authentication numbers are:***
	+910123456789
	+919876543210

NOTE: Authentication numbers must be stored along with country code.
Maximum of 2 authentication numbers can be stored.If authentication numbers are blank then Unit can be configured using any mobile number.

SMS FORMATS TO READ CONFIGURATION

For reading the configuration, SMS can be sent from any number. i.e. it is not necessary that it should be authentication number only. The SMS formats are mentioned below.

- **To read authentication numbers**

  When unit receives this SMS, it will reply with an SMS as follows:

  Command: ***#123RA****
  Acknowledgement: ***Authentication numbers are:***
  +910123456789
  +919876543210

- **To read the currently configured SMS reporting numbers**

  When unit receives this SMS, it will reply with an SMS as follows: (Assuming only 02 SMS reporting numbers are configured.)

  Command: ***#123R1****
  Acknowledgement: ***SMS Nos:***
  +910123456789
  +919876543210

- **To read Date and Time**

  Command: ***#123RDT****
  Acknowledgement: ***Date – 11/02/2016***
  Time – ***17:53:23***

- **To read Serial parameters of RS485**

  Command: ***#123RY****
  Acknowledgement: ***BAUD RATE IS 19200***

- **To read configured SMS text for analog and digital channels and Read Device Text**

  Digital Input Alert text-

  Read Digital channel 1 Alarm text message:
  Command: ***#123RM1****
  Acknowledgement: ***Reporting text1 for channel 1:***

Alarm on channel 1

Read Digital channel 2 Alarm text message:
Command: ***#123RM2****
Acknowledgement: ***Reporting text1 for channel 2: Alarm on channel 2***

Read Digital channel 3 Alarm text message:
Command: ***#123RM3****
Acknowledgement: ***Reporting text1 for channel 3: Alarm on channel 3***

Read Digital channel 4 Alarm text message:
Command: ***#123RM4****
Acknowledgement: ***Reporting text1 for channel 4: Alarm on channel 4***

Read Digital channel 5 Alarm text message:
Command: ***#123RM5****
Acknowledgement: ***Reporting text1 for channel 5: Alarm on channel 5***

Read Digital channel 6 Alarm text message:
Command: ***#123RM6****
Acknowledgement: ***Reporting text1 for channel 6: Alarm on channel 6***

Read Digital channel 7 Alarm text message:
Command: ***#123RM7****
Acknowledgement: ***Reporting text1 for channel 7: Alarm on channel 7***

Read Digital channel 8 Alarm text message:
Command: ***#123RM8****
Acknowledgement: ***Reporting text1 for channel 8: Alarm on channel 8***

Digital Input Restoral text-

Read Digital channel1 Restoral message text:
Command: ***#123RB1****
Acknowledgement: ***Reporting text2 for channel 1: Channel 1 is Normal***

Read Digital channel2 Restoral message text:
Command: ***#123RB2****
Acknowledgement: ***Reporting text2 for channel 2: Channel 2 is Normal***

Read Digital channel 3 Restoral message text:
Command: ***#123RB3****
Acknowledgement: ***Reporting text2 for channel 3: Channel 3 is Normal***

Read Digital channel 4 Restoral message text:
Command: ***#123RB4****
Acknowledgement: ***Reporting text2 for channel 4: Channel 4 is Normal***

Read Digital channel 5 Restoral message text:
Command: ***#123RB5****
Acknowledgement: ***Reporting text2 for channel 5: Channel 5 is Normal***

Read Digital channel 6 Restoral message text:
Command: ***#123RB6****
Acknowledgement: ***Reporting text2 for channel 6: Channel 6 is Normal***

Read Digital channel 7 Restoral message text:
Command: ***#123RB7****
Acknowledgement: ***Reporting text2 for channel 7: Channel 7 is Normal***

Read Digital channel 8 Restoral message text:
Command: ***#123RB8****
Acknowledgement: ***Reporting text2 for channel 8: Channel 8 is Normal***

Analog Input Alert text-

Read alert reporting text for analog channel 1:
Command : **#123RP1***
Acknowledgment: ***Reporting text for Analog 1: Alarm on Analog 1***

Read reporting text for analog channel 2:
Command : **#123RP2***
Acknowledgment: ***Reporting text for Analog 2: Alarm on Analog 2***

Read reporting text for analog channel 3:
Command : **#123RP3***
Acknowledgment: ***Reporting text for Analog 3: Alarm on Analog 3***

Read reporting text for analog channel 4:
Command : **#123RP4***
Acknowledgment: ***Reporting text for Analog 4:***
Alarm on Analog 4

Read reporting text for analog channel 5:
Command : **#123RP5***
Acknowledgment: ***Reporting text for Analog 5:***
Alarm on Analog 5

Read reporting text for analog channel 6:
Command : **#123RP6***
Acknowledgment: ***Reporting text for Analog 6:***
Alarm on Analog 6

Read reporting text for analog channel 7:
Command : **#123RP7***
Acknowledgment: ***Reporting text for Analog 7:***
Alarm on Analog 7

Read reporting text for analog channel 8:
Command : **#123RP8***
Acknowledgment: ***Reporting text for Analog 8:***
Alarm on Analog 8

Analog Input Restoral text-

Read Analog channel 1 restoral message text
Command : **#123RN1***
Acknowledgment: ***Reporting text for Analog 1:***
Analog 1 is Normal

Read Analog channel 2 restoral message text
Command : **#123RN2***
Acknowledgment: ***Reporting text for Analog 2:***
Analog 2 is Normal

Read Analog channel 3 restoral message text
Command : **#123RN3***
Acknowledgment: ***Reporting text for Analog 3:***
Analog 3 is Normal

Read Analog channel 4 restoral message text
Command : **#123RN4***
Acknowledgment: ***Reporting text for Analog 4:***
Analog 4 is Normal

Read Analog channel 5 restoral message text
Command : **#123RN5***
Acknowledgment: ***Reporting text for Analog 5:***
Analog 5 is Normal

Read Analog channel 6 restoral message text
Command : **#123RN6***
Acknowledgment: ***Reporting text for Analog 6:***
Analog 6 is Normal

Read Analog channel 7 restoral message text
Command : **#123RN7***
Acknowledgment: ***Reporting text for Analog 7:***
Analog 7 is Normal

Read Analog channel 8 restoral message text
Command : **#123RN8***
Acknowledgment: ***Reporting text for Analog 8:***
Analog 8 is Normal

Device ID text-

Read Device Information text message:
Command: ***#123RM9****
Acknowledgement: ***Reporting text for Device:***
Device ID: 0123456

- **To read current NO / NC status of inputs**

Command: ***#123R4****
Acknowledgement: ***Configuration of input channels is:***
00000000
Delays set to
00
00
00
00
00
00
00
00

- **To read Bistate status of inputs**

Command: ***#123RS****

Acknowledgement: **Inputs are BISTATE**

- **To read Analog Input reporting unit**

Read Analog channel 1 reporting unit
Command : **#123RU1***
Acknowledgement: **Reporting unit for analog 1 : degc**

Read Analog channel 2 reporting unit
Command : **#123RU2***
Acknowledgement: **Reporting unit for analog 2 : Degc**

Read Analog channel 3 reporting unit
Command : **#123RU3***
Acknowledgement: **Reporting unit for analog 3 : Degc**

Read Analog channel 4 reporting unit
Command : **#123RU4***
Acknowledgement: **Reporting unit for analog 4 : Degc**

Read Analog channel 5 reporting unit
Command : **#123RU5***
Acknowledgement: **Reporting unit for analog 5 : Degc**

Read Analog channel 6 reporting unit
Command : **#123RU6***
Acknowledgement: **Reporting unit for analog 6 : Degc**

Read Analog channel 7 reporting unit
Command : **#123RU7***
Acknowledgement: **Reporting unit for analog 7 : Degc**

Read Analog channel 8 reporting unit
Command : **#123RU8***
Acknowledgement: **Reporting unit for analog 8 : Degc**

- **To read analog input format**

Command : **#123R9***
Acknowledgement : **Analog Input Format Is**
A1 = 0,70
A2 = 0,70
A3 = 0,70
A4 = 0,70
A5 = 0,70
A6 = 0,70
A7 = 0,70
A8 = 0,70

- **To read analog input levels**

Command: ***#123R6****
Acknowledgement : ***Analog levels are set to :***
A1 = 20.0,50.0
A2= 20.0,50.0
A3=20.0,50.0
A4 =20.0,50.0
A5=20.0,50.0
A6=20.0,50.0
A7 =20.0,50.0
A8 =20.0,50.0

- **To read Reporting numbers selected for Digital Inputs reporting**

Command: ***#123R2****
Acknowledgement: ***Nos. Selected :***
D1:145
D2:36789
D3:A
D4:169A
D5:123
D6:1A
D7:9A
D8:1234

- **To read SMS Reporting numbers selected for analog Inputs reporting**

Command: ***#123R3****
Acknowledgement: ***Nos. Selected :***
A1:145
A2:36789
A3:A
A4:169A

A5:123
A6:1A
A7:9A
A8:1234

- **To read current status of outputs**

Command: **#123R5***
Acknowledgement: ***Output 1 connected to NO1***
Output 2 connected to NC2
Output 3 connected to NO3
Output 4 connected to NC4

- **To read auto-restoral output timeout**

Command: **#123R7***
Acknowledgement: ***OP1 ON for 60 Sec***
OP2 ON for 30 Sec
OP3 ON for 05 Sec
OP4 ON for 40 Sec

- **To read SMS text for DO connected to NO contact**

Command: **#123RO1***
Acknowledgement: ***TAMPER1 is OPEN***

Command: **#123RO2***
Acknowledgement: ***TAMPER2 is OPEN***

Command: **#123RO3***
Acknowledgement: ***TAMPER3 is OPEN***

Command: **#123RO4***
Acknowledgement: ***TAMPER4 is OPEN***

- **To read SMS text for DO connected to NC contact**

Command: **#123RC1***
Acknowledgement: ***TAMPER1 is CLOSE***

Command: **#123RC2***
Acknowledgement: ***TAMPER2 is CLOSE***

Command: **#123RC3***

Acknowledgement: ***TAMPER3 is CLOSE***

Command: **#123RC4***
Acknowledgement: ***TAMPER4 is CLOSE***

- **To read periodic status reporting hours**

Command: ***#123RH****
Acknowledgement: ***Periodic Reporting hours are set to: 01***

- **To read current status of inputs**

Read Digital Input status-

Command: ***#123XD****
Acknowledgement:
CH1 NO (ALT)
CH2 NO (NRM)
CH3 NO (NRM)
CH4 NO (NRM)
CH5 NO (NRM)
CH6 NO (NRM)
CH7 NO (NRM)
CH8 NO (NRM)
Device ID: 0123456

This message tells all input channls are configured as NO. Channel 2, 3 , 4,5,6,7 and 8 inputs are in their normal state and Digital input 1 in Alert state. Also the message configured by user using #123M9* command will be added towards the end of periodic reporting to indicate device ID / location / Serial Number.

Read Analog Input status-

Command: ***#123XA****
Acknowledgement:
A1-00.0 % OPN
A2-23.6 degc NRM
A3-46.5 degc ALT
A4-00.0 % OPN
A5-00.0 % OPN
A6-00.0 % OPN
A7-00.0 % OPN
A8-00.0 % OPN

This message tells that Analog inputs 1,4,5.6,7 and 8 are open.Analog input 2 is normal and analog input 3 is in alert state

- **To read MODBUS Query set**

  If only 2 Queries are set then,

  Command: ***#123RQ1****
  Acknowledgement: ***Queries:***
  01: 01,03,100,20
  02:02,04,145,10

  Command: ***#123RQ2****
  Acknowledgement: ***Queries:***

- **To read MODBUS Polling Time**

  Command: **#123RQT***
  Acknowledgement: ***Polling Time 02 Seconds***

- **To read MODBUS Format**

  Command: **#123RW***
  Acknowledgement: ***MODBUS FORMAT IS:***
  IIIIFFFFIIFF

- **To read function codes**

  Command: **#123RK***
  Acknowledgement: ***Function Codes are:***
  11111111

- **To read MODBUS Thresholds**

  Command: **#123RTH1***
  Acknowledgement: **20.0, 80.0**
  10.3, 78.9
  12.7, 90.9
  25.3, 40.5
  15.0, 67.8

- **To read No of MODBUS Inputs(Parameters)**

  Command: **#123RIP***
  Acknowledgement: ***No of Inputs on MODBUS:05***

- **To read MODBUS Alert SMS Text**

Command: **#123RZH01***
Acknowledgement: **Reporting Text: Temperature sensor hi**

Command: **#123RZL01***
Acknowledgement: **Reporting Text: Temperature sensor Low**

- **To Read Low to High/High to low messages setting for SAMV unit**

#123RS#0B*

Command: **#123S#0H***
Acknowledgement: **DI / AI are SINGLE STATE MODBUS MSGs HIGH**

Note:AI/DI not applicable for SAMV unit

LED INDICATIONS

LED NAME	Meaning
Power	ON - Unit is powered on.
RTU-TX	Unit is transmitting MODBUS Query
RTU-RX	Unit received response from MODBUS slave device
Analog Input LED(AI1)	ON - Analog Input reporting is going ON. OFF – Analog Input reporting is stopped.
Digital Input LED(DI1)	ON - Digital Input reporting is going ON. OFF – Digital Input reporting is stopped.
RANGE	Indicates unit range.
	1 LED ON - Low rage.
	2 LEDs ON - Medium range.
	3 LEDs ON - Good range.

CONNECTOR DETAILS

- **3 Pin Howder connector for Power.**

CONNECTOR NAME	DETAILS
+12V Dc (+)	Positive Supply-IN
Supply GND(-)	Supply GND
E	Earth

- **2 Pin Howder connector for Exernal power**

CONNECTOR NAME	DETAILS
+12VDC Out	+12VDC supply-OUT
G1	Supply GND

- **3 Pin Howder connector for RS485**

CONNECTOR NAME	DETAILS
D+	RS 485 D+
D-	RS485 D-
GND	GND

- **9 Pin Howder connector for analog Inputs**

CONNECTOR NAME	DETAILS
AI1	Analog Input channel 1
AI2	Analog Input channel 2
AI3	Analog Input channel 3
AI4	Analog Input channel 4
G	Common GND terminal
AI5	Analog Input channel 5
AI6	Analog Input channel 6
AI7	Analog Input channel 7
AI8	Analog Input channel 8

- **9 Pin Howder connector for Digital inputs**

CONNECTOR NAME	DETAILS
DI1	Digital Input Channel 1
DI2	Digital Input Channel 2
DI3	Digital Input Channel 3
DI4	Digital Input Channel 4
G	Common GND terminal
DI5	Digital Input Channel 5

DI6	Digital Input Channel 6
DI7	Digital Input Channel 7
DI8	Digital Input Channel 8

- **2 Pin Howder connector for output 1 connection**

CONNECTOR NAME	DETAILS
C1	Common 1
NO1	NO for output 1

- **2 Pin Howder connector for output 2 connection**

CONNECTOR NAME	DETAILS
C2	Common 2
NO2	NO for output 2

- **2 Pin Howder connector for output 3 connection**

CONNECTOR NAME	DETAILS
C3	Common 3
NO3	NO for output 3

- **2 Pin Howder connector for output 4 connection**

CONNECTOR NAME	DETAILS
C4	Common 4
NO4	NO for output 4