skypatrol™

**AT Command Doc :**
**TT8740AN001**

# Skypatrol Evolution
# AT Command Set Reference

Release 1.09A



evolution SERIES

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| Date | Rev | Author | Description |
|---|---|---|---|
| **JANUARY 24, 2008** | **DRAFT** | R. Sanchez<br>J. Blanco | Draft |
| **MARCH 20, 2008** | **DRAFT** | R. Sanchez<br>J. Blanco<br>C. Moreno | Draft |
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## Table of Contents

# 1 Introduction

## *1.1 Document Scope*

This documentation pertains to the AT Command Set to be used in conjunction with the SkyPatrol Evolution series units.

## *1.2 Platform Reference and Use*

The SkyPatrol Evolution series unit will be referred to using various terms, to include: MS (Mobile Station), TA (Terminal Adapter), DCE (Data Communication Equipment), or ME (Mobile Equipment).

The SkyPatrol Evolution series unit can be controlled via the use of a DTE (Data Terminal Equipment) platform by issuing the AT commands via a serial interface.

## *1.3 Command Syntax*

The attention or "AT" prefix is required prior to entering any command. All commands require a carriage return or <CR> following the entry of the desired command. All command responses are encapsulated by a carriage return and line feed or <CR><LF>. The ASCII display of these characters is suppressed with only the modem response being presented.

The following examples demonstrate the potential usage of AT commands presented:

| Type | Example | Description |
|---|---|---|
| Command Format Query | AT$GXXX=? | When entered will return the command format and value ranges. |
| Command Read | AT$GXXX? | When entered will return the current valu assigned to the command. |
| Command Write | AT$GXXX=<value>,<value>,… | When entered will set the command to specified value(s). |
| Command Execution | AT$GXXX | When entered will execute the specified command. |

## 1.4 Revision History

| Date | Rev | Author | Description |
|---|---|---|---|
| 2/5/03 | Draft | C. Patel | Initial Draft. |
| 4/29/03 | 1.00 | C. Patel | Initial Release. |
| 6/06/03 | 1.01 | C. Patel | Modified and update description of all the commands.<br>Added $EVENT command. |
| 6/10/03 | 1.02 | C. Patel | Update $EVENT command: Parm1 and Parm2 definitio for "Output Flash Event" |
| 6/13/03 | 1.03 | M.Glover | Added AT$NETMON command reference |
| 11/11/03 | 1.04 | C. Patel | Added AT$GPSODOM command. Updated AT$PWRSAV, AT$GEOFNC, and AT$EVENT commands. |
| 08/22/05 | 1.05 | D. ONeil | Added $MSGLOGEN, $MSGLOGRD, $MSGSND |
| 11/15/05 | 1.06 | D. ONeil | Corrected $MSLOGEN command |
| 2/12/07 | 1.07 | D. ONeil | Edited Input and Output tables in $EVENT<br>Added $RTCALRM<br>Added $IGNDBNC |
| 11/16/07 | 1.08 | D. ONeil | Added $GFDBNC<br>Added Input Event 65<br>Edited Output Event 45<br>Added Output Events 54 – 58<br>Added $HBRST<br>Added $USRVAL<br>Added $GPSOSI<br>Added Input Event 71<br>Added Bit 24 to Parm2 value table<br>Added $IODBNC<br>Added Event 72<br>Added $EVDELR, $GFDEL<br>Added output event 59<br>Added input events 66-69 (timers 5-8)<br>Edited input event 71<br>Added output event 60<br>Edited Bit 6 |
| 01/24/08 | 1.09 | D. ONeil | Added $GPSQUAL<br>Added $MSGLOGDMP |

# 2 AT Commands

## 2.1 Automatic PIC Reset

| | |
|---|---|
| **$HBRST** | **Automatic PIC Reset** |
| **Command Function** | This command allows the user to program the reset interval. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query** | AT$HBRST=? |
| **Response** | $HBRST:(0,4-168)<br>OK |
| **Write Format** | AT$HBRST=**<hours>**<br><cr> |
| **Response** | OK |
| **Read Format** | AT$HBRST? |
| **Response** | $HBRST:**<hours>**<br>OK |
| **Execution Format** | N/A |
| **Response** | N/A |
| **Parameter Values** | |
| **<hours>** | **0** = Off<br><br>**4-168** = Number of hours until we stop providing heartbeat pulse to PIC |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |

## 2.2 Delete a Range of Event Groups

| | |
|---|---|
| **$EVDELR** | **Delete a Range of Event Groups** |
| **Command Function** | This command deletes a range of event groups. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$EVDELR=?<br>$EVDELR: (0-99),(0-99)<br>OK |
| **Write Format Response** | AT$EVDELR=<start>,<stop><br>OK |
| **Read Format Response** | N/A<br>N/A |
| **Execution Format Response** | N/A<br>N/A |
| **Parameter Values** | |
| **<start>** | First group index in range to be deleted |
| **<stop>** | Last group index in range to be deleted. |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | This feature is available in software version 0.7.8 pkg 43, and later. |

## 2.3 Delete a Range of Geo-Fences

| | |
|---|---|
| **$GFDEL** | **Delete a Range of Geo-Fences** |
| **Command Function** | This command deletes a range of geo-fences. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GFDEL=?<br>$GFDEL: (1-25),(1-25)<br>OK |
| **Write Format Response** | AT$GFDEL=<start>,<stop><br>OK |
| **Read Format Response** | N/A<br>N/A |
| **Execution Format Response** | N/A<br>N/A |
| **Parameter Values** | |
| **<start>** | First geo-fence index in range to be deleted |
| **<stop>** | Last geo-fence index in range to be deleted. |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | This feature is available in software version 0.7.8 pkg 43, and later. |

## 2.4 EVENT

| | |
|---|---|
| **$EVENT** | **User Defined Input/Output** |
| **Command Function** | This command allows the user to customize the modem's input and output capabilities. Any combination of input events can be monitored to trigger any combination of output events. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$EVENT=?<br>$EVENT: (0-99),(0-3),(0-255),(-2147483647 - 2147483647),(-2147483647 - 2147483647) |
| **Write Format Response** | AT$EVENT=<**event group**>,<**event type**>,<**event category**>,<**parm1**>,<**parm2**><br>OK |
| **Read Format Response** | AT$EVENT?<br>$EVENT: |

| evgp | evtyp | evcat | p1 | p2 |
|---|---|---|---|---|
| 1A | 0 | 27 | 1 | 1 |
| 1B | 3 | 22 | 0 | 0 |
| 2A | 0 | 27 | 0 | 0 |
| 2B | 3 | 14 | 0 | 0 |
| 3A | 0 | 9 | 2 | 4 |
| 3B | 3 | 37 | 1 | 0 |
| 4A | 0 | 9 | 5 | 5 |
| 4B | 3 | 21 | 0 | 0 |
| 5A | 0 | 9 | 0 | 0 |
| 5B | 3 | 13 | 0 | 0 |
| 6A | 0 | 9 | 1 | 1 |
| 6B | 3 | 21 | 0 | 0 |

| | |
|---|---|
| **Execution Format Response** | N/A |

## 2.4 $EVENT User Defined Input/Output (continued)

### Parameter Values

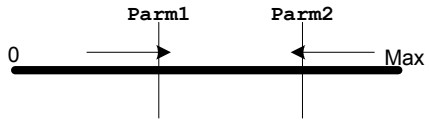
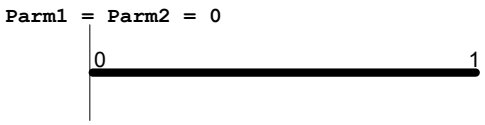
**<event group>**

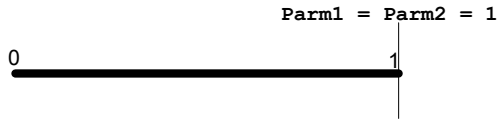
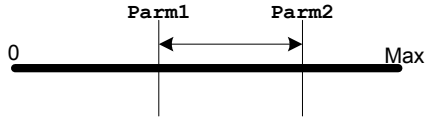
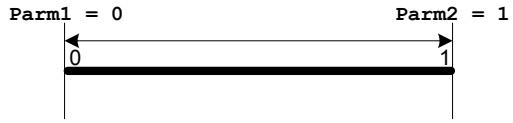
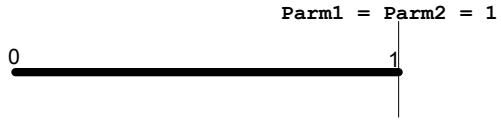
This parameter defines the group number of a group of events and the order they are executed. Events are grouped together to control execution sequence. A group number has to have at least one input event and one output event. Multiple input events within a group number would be treated as a logical **AND** condition. Multiple output events within a group number would be executed individually in a sequential manner.

Valid values for group number are: 1 thru 99.

**<event type>**

This parameter defines the type of event: Input or Output. An Input event can be defined as: Transition, Occurrence, or Input. The output event is executed when input event conditions are met.

| Value | Type of event | Description |
|---|---|---|
| 0 | *Transition Trigger* | A transition Trigger is defined as an input condition, defined by **<event category>**, whose value was previously **<parm1>** or less is now greater than **<parm1>** and less than **<parm2>** **or** was greater or equal to **<parm2>** is now less than **<parm2>** but greater than **<parm1>**.<br>The output event would be executed when an input **<event category>** requirements are satisfied or transition to the value set by **<parm1>** and **<parm2>** when they are equal. **<parm1>** should be the min value and **<parm2>** should be the max value.<br>Example 1:<br>  <br>**Figure 1.** An output event will be executed when the value of an input event exceeds **<Parm1>** (previously it was **<Parm1**> or less) or decreases to a value less than **<Parm2>** (previously it was <**Parm2>** or greater).<br>Example 2:<br>  <br>**Figure 2.** An output event will be executed when the value of an input event is 0 (previously it was |

| | | |
|---|---|---|
| | | anything else but 0) and **<Parm1>** along with **<Parm2>** is set to 0.<br>Example 3:<br>  <br>**Figure 3.** An output event will be executed when the value of an input event is 1 (previously it was anything else but 1) and **<Parm1>** along with **<Parm2>** is set to 1. |
| 1 | ***Occurrence Trigger*** | An Occurrence Trigger is defined as an input condition, defined by **<event category>**, whose current value is greater than or equal to **<parm1>** and less than or equal to **<parm2>**.<br>The output event would be executed when an input **<event category>** requirements are satisfied or transition to the value set by **<parm1>** and **<parm2>** when they are equal. **<parm1>** should be the min value and **<parm2>** should be the max value<br>Example 4:<br>  <br>**Figure 4.** An output event will be executed when the current value of an input event is between **<Parm1>** and **<Parm2>** including boundary conditions.<br>Example 5:<br>  <br>**Figure 5.** An output event will be executed when the value of the input event changes from 0 to 1 or vice-versa.<br>Example 6:<br>  <br>**Figure 6.** An output event will be executed when the value of the input event is 1 and **<Parm1>** along with **<Parm2>** is set to 1. |
| 2 | ***Input Trigger*** | An Input Trigger is defined as an input condition, defined by **<event category>**, that should be used as a logical **AND** condition to another input |

| | | |
|---|---|---|
| | | condition defined as Transition Trigger or an Occurrence Trigger. An Output event is not triggered when Input Trigger condition is valid.<br>The input event, defined as Input Trigger, is valid when within the event range defined by **<parm1>** and **<parm2>** or when **<parm1>** and **<parm2>** are equal. |
| 3 | ***Output*** | An Output event is executed when all input event conditions (defined as Transition Trigger, Occurrence Trigger, or Input Trigger) for that particular **<event group>** are met. |

**<event category>**

This parameter defines the actual Input or Output Event number and their valid range for **<parm1>** and **<parm2>**.

The below table defines the values for **<event category>**, **<parm1>** and **<parm2>** parameter for input events defined as a ***Transition Trigger***, ***Occurrence Trigger***, or ***Input Trigger***.

| event category | Parm1 | Parm2 | Description |
|---|---|---|---|
| 0 | 0 or 1 | 0 or 1 | GPIO1 – General purpose Input/Output #1<br>0 = Low<br>1 = High |
| 1 | 0 or 1 | 0 or 1 | GPIO2 – General purpose Input/Output #2 |
| 2 | 0 or 1 | 0 or 1 | GPIO3 – General purpose Input/Output #3 |
| 3 | 0 or 1 | 0 or 1 | GPIO4 – General purpose Input/Output #4<br>0 = Main battery disconnected<br>1 =Main battery connected |
| 4 | 0 or 1 | 0 or 1 | GPIO5 – General purpose Input/Output #5<br>Controls the RESET line of the GPS receiver.<br>0 = Turn OFF the GPS receiver.<br>1 = Turn ON the GPS receiver. |
| 5 | 0 or 1 | 0 or 1 | GPIO6 – General purpose Input/Output #6 |
| 6 | 0 or 1 | 0 or 1 | GPIO7 – General purpose Input/Output #7 |
| 7 | 0 or 1 | 0 or 1 | GPIO8 – General purpose Input/Output #8 |
| 8 | 1 | 1 | Modem power up indication |
| 9 | 0 to 5 | 0 to 5 | Modem GSM registration (see AT+CREG command description for GSM registration status information) |
| 10 | 0 to 8 | 0 to 8 | Modem GPRS registration (see AT%CGREG command description for GPRS registration status information) |
| 11 | 0 or 1 | 0 or 1 | Receipt of IP address.<br>0 = No IP address<br>1 = Valid IP address obtained |
| 12 | 1 | 1 | Timer 1 (set by AT$EVTIM1) |
| 13 | 1 | 1 | Timer 2 (set by AT$EVTIM2) |
| 14 | 1 | 1 | Timer 3 (set by AT$EVTIM3) |
| 15 | 1 | 1 | Timer 4 (set by AT$EVTIM4) |
| 16 | 0 to 1000000 | 1000000 | GPS Distance (unit of measurement is: meters) |

| | | | |
|---|---|---|---|
| 17 | 0 to 250 | 250 | Maximum Velocity (unit of measurement is: Knots) |
| 18 | 0 to 1760 | 1760 | **Analog/Digital 1 |
| 19 | 0 to 1760 | 1760 | **Analog/Digital 2 |
| 20 | | | Reserved |
| 21 | 0 or 1 | 0 or 1 | Geo Fence #1. See AT$GEOFNC command for details on setting a circular geo-fence<br>0 = Leaving Geofence area<br>1 = Entering Geofence area |
| 22 | 0 or 1 | 0 or 1 | Geo Fence #2 |
| 23 | 0 or 1 | 0 or 1 | Geo Fence #3 |
| 24 | 0 or 1 | 0 or 1 | Geo Fence #4 |
| 25 | 0 or 1 | 0 or 1 | Geo Fence #5 |
| 26 | 0 or 1 | 0 or 1 | MT Power Save Event<br>0 = Exit Power Save Mode<br>1 = Enter Power Save Mode |
| 27 | 0 or 1 | 0 or 1 | GPS Status<br>0 = Invalid GPS data<br>1 = Valid GPS data |
| 28 | 1 | 1 | **RTC Alarm Input |
| 29 | 0 to 1000000 | 1000000 | Invalid GPS data for a period of time (unit of measurement is: seconds). Will execute at twice the value of Param1. |
| 30 | 0 to 1000000 | 1000000 | Unit staying Idle in one place (unit of measurement is: seconds). Will execute at twice the value of Param1. |
| 31 | 0 or 1 | 0 or 1 | Geo Fence #6. See AT$GEOFNC command for details on setting a circular geo-fence<br>0 = Leaving Geofence area<br>1 = Entering Geofence area |
| 32 | 0 or 1 | 0 or 1 | Geo Fence #7 |
| 33 | 0 or 1 | 0 or 1 | Geo Fence #8 |
| 34 | 0 or 1 | 0 or 1 | Geo Fence #9 |
| 35 | 0 or 1 | 0 or 1 | Geo Fence #10 |
| 36 | 0 or 1 | 0 or 1 | Geo Fence #11 |
| 37 | 0 or 1 | 0 or 1 | Geo Fence #12 |
| 38 | 0 or 1 | 0 or 1 | Geo Fence #13 |
| 39 | 0 or 1 | 0 or 1 | Geo Fence #14 |
| 40 | 0 or 1 | 0 or 1 | Geo Fence #15 |
| 41 | 0 or 1 | 0 or 1 | Geo Fence #16 |
| 42 | 0 or 1 | 0 or 1 | Geo Fence #17 |
| 43 | 0 or 1 | 0 or 1 | Geo Fence #18 |
| 44 | 0 or 1 | 0 or 1 | Geo Fence #19 |
| 45 | 0 or 1 | 0 or 1 | Geo Fence #20 |
| 46 | 0 or 1 | 0 or 1 | Geo Fence #21 |
| 47 | 0 or 1 | 0 or 1 | Geo Fence #22 |
| 48 | 0 or 1 | 0 or 1 | Geo Fence #23 |
| 49 | 0 or 1 | 0 or 1 | Geo Fence #24 |
| 50 | 0 or 1 | 0 or 1 | Geo Fence #25 |
| 51 | 0 | 0 | **Input Event Counter. This event will occur when a counter reaches the maximum number of a selected Input event count. |

| | | | |
|---|---|---|---|
| 52 | 0 or 1 | 0 or 1 | New SMS indication.<br>0 = SMS message read from SIM<br>1 = New SMS message received |
| 53 | 0 to -1 | 0 to –1 | Current Input Event Counter count that can be used as an AND condition with other input events |
| 54 | 0 or 1 | 0 or 1 | Has the user programmed any geo-fence? Normally this can be found by sending AT$GEOFNC? command and verifying it manually based on the response sent by the device<br>0 = geo-fence does not exists<br>1 = at least one geo fence was created |
| 55 | N/A | N/A | Reserved |
| 56 | N/A | N/A | Reserved |
| 57 | N/A | N/A | Reserved |
| 58 | N/A | N/A | Reserved |
| 59 | 0-100 | 0-100 | Battery level as a percentage |
| 60 | 0 – 9999 | 0 – 9999 | Number of Unsent Messages ($msglogrd count) |
| 61 | 0 – 100 | 0 – 100 | Memory full percentage ($msglogrd) |
| 62 | | | |
| 63 | | | |
| 64 | | | |
| 65 | 1 to 5 | 1 to 5 | Receipt of Incoming Call with Call Identifier matching one the numbers configured via the **$EVCID** command. <Parm1> and <Parm2> correspond to range **$EVCID** entries which will generate the input event. |
| 66 | 1 | 1 | Timer 5 (set by AT$EVTIM5) |
| 67 | 1 | 1 | Timer 6 (set by AT$EVTIM6) |
| 68 | 1 | 1 | Timer 7 (set by AT$EVTIM7) |
| 69 | 1 | 1 | Timer 8 (set by AT$EVTIM8) |
| 70 | N/A | N/A | Reserved |
| 71 | 0-3 | 0-3 | GPS Antenna Status<br>0 = unknown<br>1 = good<br>2 = open<br>3 = short |
| 72 | 0-1 | 0-1 | 0 = A GPS overspeed interval has ended<br>1 = A GPS overspeed interval has begun |

The below table defines the values for **<event category>**, **<parm1>** and **<parm2>** parameter for output events defined as ***Output***.

| event category | Parm1 | Parm2 | Description |
|---|---|---|---|
| 0 | 0 | 0 | Changes GPIO #1 to Input (from Output) |
| 1 | 0 | 0 | Changes GPIO #2 to Input (from Output) |
| 2 | 0 | 0 | Changes GPIO #3 to Input (from Output) |
| 3 | 0 | 0 | Changes GPIO #4 to Input (from Output) |
| 4 | 0 | 0 | Changes GPIO #5 to Input (from Output) |
| 5 | 0 | 0 | Changes GPIO #6 to Input (from Output) |
| 6 | 0 | 0 | Changes GPIO #7 to Input (from Output) |
| 7 | 0 | 0 | Changes GPIO #8 to Input (from Output) |
| 8 | 0 | 0 | Set GPIO #1 configured as Output to Low (0) |
| 9 | 0 | 0 | Set GPIO #2 configured as Output to Low (0) |

| | | | |
|---|---|---|---|
| 10 | 0 | 0 | Set GPIO #3 configured as Output to Low (0) |
| 11 | 0 | 0 | Set GPIO #4 configured as Output to Low (0) |
| 12 | 0 | 0 | Set GPIO #5 configured as Output to Low (0) |
| 13 | 0 | 0 | Set GPIO #6 configured as Output to Low (0) |
| 14 | 0 | 0 | Set GPIO #7 configured as Output to Low (0) |
| 15 | 0 | 0 | Set GPIO #8 configured as Output to Low (0) |
| 16 | 0 | 0 | Set GPIO #1 configured as Output to High (1) |
| 17 | 0 | 0 | Set GPIO #2 configured as Output to High (1) |
| 18 | 0 | 0 | Set GPIO #3 configured as Output to High (1) |
| 19 | 0 | 0 | Set GPIO #4 configured as Output to High (1) |
| 20 | 0 | 0 | Set GPIO #5 configured as Output to High (1) |
| 21 | 0 | 0 | Set GPIO #6 configured as Output to High (1) |
| 22 | 0 | 0 | Set GPIO #7 configured as Output to High (1) |
| 23 | 0 | 0 | Set GPIO #8 configured as Output to High (1) |
| 24 | 0 | 0 | Toggle GPIO #1 configured as Output |
| 25 | 0 | 0 | Toggle GPIO #2 configured as Output |
| 26 | 0 | 0 | Toggle GPIO #3 configured as Output |
| 27 | 0 | 0 | Toggle GPIO #4 configured as Output |
| 28 | 0 | 0 | Toggle GPIO #5 configured as Output |
| 29 | 0 | 0 | Toggle GPIO #6 configured as Output |
| 30 | 0 | 0 | Toggle GPIO #7 configured as Output |
| 31 | 0 | 0 | Toggle GPIO #8 configured as Output |
| 32 | See GPIO Flash Table below | | Flash GPIO #1 configured as Output |
| 33 | | | Flash GPIO #2 configured as Output |
| 34 | | | Flash GPIO #3 configured as Output |
| 35 | | | Flash GPIO #4 configured as Output |
| 36 | | | Flash GPIO #5 configured as Output |
| 37 | | | Flash GPIO #6 configured as Output |
| 38 | | | Flash GPIO #7 configured as Output |
| 39 | | | Flash GPIO #8 configured as Output |
| 40 | 0 to –1 | See **Bit-Field Table** below | Generate and transmit one UDP Message to first IP address listed in **`$FRIEND`** command and port number listed in **`$UDPAPI`** command based on **`Parm1`** and **`Parm2`** values |
| 41 | | | Generate and transmit a UDP message with Acknowledge. This message is controlled by **`$ACKTM`** command for number of retries sent. This message has to be acknowledged to avoid sending of retries. |
| 42 | | | Generate and transmit one UDP Message to all IP address listed in **`$FRIEND`** command and port number listed in **`$UDPAPI`** command based on **`Parm1`** and **`Parm2`** values |
| 43 | 1 – 4 | 0 | Resets the timer (Timer #1 – Timer #4) specified by **`Parm1`** to the time (in seconds) specified by **`Parm2`**. **`Parm2`**, when set to 0, resets the timer to the time last set by **`$EVTIMx`** command. A value other than 0 would set the timer to expire at the new specified interval. A timer can only be disabled by setting **`$EVTIMx`** command to 0. |
| 44 | 1 – 15 | 0 | Execute AT command stored at index number of the **`$STOATEV`** command. **`Parm1`** identifies the index number. |

| | | | |
|---|---|---|---|
| 45 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to All SMS destination addresses configured via **$SMSDA** command. (For select **$SMSDA** entries, see event categories 54-58) |
| 46 | N/A | N/A | Reserved |
| 47 | 0 | 0 to –1 | Input Event Counter |
| 48 | 0 | 0 to –1 | Input Event Counter reset to value stated by parm2 |
| 49 | 1 – 25 | 0 - 1000000 | Set geo-fence specified by parm1 to current latitude & longitude with radius specified by parm2 |
| 50 | 0 – 57 | 0 to –1 | Emulate AT$EVTEST command via event engine. **`Parm1`** is the input event number while **`Parm2`** is the value to emulate for the input event |
| 51 | 0<br>8640000 | 0<br>262800 | Enter Power Save Mode. Parm1 indicates time to stay "ON" in seconds – max. 100 days. Parm2 indicate time to stay "OFF" in minutes – max. 6 months.<br>Note: RTC must be backup battery voltage and power control pin has to be configured according on the hardware for this feature work |
| 52 | 0 to –1 | See **Bit-Field Table** below | Generate and transmit one TCP/IP Message to IP address & port number listed by **`$FRIEND`** command based on **`Parm1`** and **`Parm2`** values |
| 53 | 0 – 99 | 0 – 16 | Sets periodic RTC alarm in minutes, hours, days, months, or years. Parm1 indicates the frequency with which to generate the message. Parm2 indicates the unit with which to generate the message. For example:<br>Parm1 Parm2 Result<br>1 1 RTC Alarm occurs every minute<br>1 2 RTC Alarm occurs every hour<br>1 4 RTC Alarm occurs every day<br>1 8 RTC Alarm occurs every month |
| 54 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to the first indexed SMS destination address configured via **$SMSDA** command |
| 55 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to the second indexed SMS destination address configured via **$SMSDA** command |
| 56 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to the third indexed SMS destination address configured via **$SMSDA** command |
| 57 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to the fourth indexed SMS destination address configured via **$SMSDA** command |

| | | | |
|---|---|---|---|
| 58 | 0-2147483647 | See **Bit-Field Table** below | Sends data over SMS to the fifth indexed SMS destination address configured via **$SMSDA** command |
| 59 | 0 | 0 | Turns off the modem. (Not to be confused with sleeping where RTC continues to function. This command shuts down all modem functions.) |
| 60 | 0 - -1 | See **Bit-Field Table** below | Generate and transmit message to main serial port based on Parm1 and Parm2 values. |

### GPIO Flash Table

| **Parm1** | **Parm2** |
|---|---|
| Bits 16 – 31 determine the low signal state while bits 0 – 15 determine the high signal state. A value of 0 for bits 16 – 31 indicates the GPIO will remain in low signal state for the same amount of time as the high signal state (50% duty cycle). The high or low states are measured in multiples of ¼ seconds. The toggle count is set by **Parm2** | The flashing GPIO event will cause the GPIO output state to toggle at time 0 to the opposite state prior to starting the GPIO output flash event processing. This counts as toggle #1. An even number of toggle count will force a final state which is the same as the initial state. An odd number of toggle count will force the final state to be opposite of the initial GPIO output condition. 0 = toggle forever. |

### Bit-Field Table

**Parm2** value is obtained as a result of selecting individual bit-fields from the table below.

| **Parm2** | |
|---|---|
| Bit 0: | 1 = send all data generated as a result of this table in Binary format<br>0 = send all data generated as a result of this table in ASCII format |
| Bit 1: | 1 = add **parm1** data to UDP message (4 – bytes in Binary format, 11 – bytes of data in ASCII format)<br>0 = do not add **parm1** data to outbound UDP message |
| Bit 2: | 1 = add **$MDMID** value (22 – bytes of ASCII data – irrespective of Bit– 0 setting)<br>0 = do not add **$MDMID** value |
| Bit 3: | 1 = add **$IOCFG** and **$IOGPA** (GPIO direction and data) in ASCII-HEX format (2 – bytes in Binary format, 6 – bytes in ASCII format)<br>0 = do not add GPIO direction and data value. |
| Bit 4: | 1 = add **$IOADC1** value (2 – bytes in binary format, 5 – bytes in ASCII format<br>0 = do not add A/D 1 value. |

| | |
|---|---|
| Bit 5: | 1 = add **`$IOADC2`** value (2 – bytes in binary format, 5 – bytes in ASCII format<br>0 = do not add A/D 2 value. |
| Bit 6: | 1 =Message is stored in non-volatile memory until it can be sent, regardless of network status.<br>0 = Code checks network status before storing message in non-volatile memory. If it appears that the message can be sent out immediately (network status is clear and message queue has few or no messages pending), the message is stored in the non-volatile message queue until it can be sent. Otherwise, the message is deleted. |
| Bit 7: | 1 = add input **`<event category>`** number (1 – byte in binary format, 3 – bytes in ASCII format)<br>0 = do not add input **`<event category>`** number |
| Bit 8: | 1 = add GPS data (3 – bytes of **Date** information in Binary format **or** up to 80 – bytes of **$GPGGA** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 9: | 1 = add GPS data (1 – bytes of **Status** information in Binary format **or** up to 80 – bytes of **$GPGLL** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 10: | 1 = add GPS data (3 – bytes of **Latitude** information in Binary format **or** up to 80 – bytes of **$GPGSA** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 11: | 1 = add GPS data (4 – bytes of **Longitude** information in Binary format **or** up to two 80 – bytes of **$GPGSV** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 12: | 1 = add GPS data (2 – bytes of **Velocity** information in Binary format **or** up to 80 – bytes of **$GPRMC** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 13: | 1 = add GPS data (2 – bytes of **Heading** information in Binary format **or** up to 80 – bytes of **$GPVTG** NMEA message if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 14: | 1 = add GPS data (3 – bytes of **Time** information in Binary format **or** 0 bytes if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 15: | 1 = add GPS data (3 – bytes of **Altitude** information in Binary format **or** 0 bytes if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 16: | 1 = add GPS data (1 – byte of **Number Of Satellites In View** information in Binary format **or** 0 bytes if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bit 17: | 1 = disables send of OTA messages when MTG is in Low Power Mode<br>0 = sends OTA messages when MTG is in Low Power Mode |
| Bit 18: | 1 = send this OTA message via SMS when GPRS services is not available<br>0 = send this OTA message via GPRS only |

| |
|---|
| Bit 19: 1 = send Last Valid GPS data if current data is invalid<br>0 = send current GPS data – valid or invalid |
| Bits 20: 1 = add Odometer reading (4 – bytes of **Odometer** information in Binary format **or** 11 – bytes if Bit-0 is set to 0)<br>0 = do not add this particular field of GPS data |
| Bits 21: 1 = add RTC time (6 – bytes of **RTC** time in Binary format **or** 13 – bytes if Bit-0 is set to 0)<br>0 = do not add RTC time with GPS data |
| Bits 22: 1 = Replace/append modem ID field with 10-byte modem ID (including one leading and one ending space character) if bit-0 is set to 0. Replace/append it with 8-bytes long modem ID value if bit-0 is set to 1 (no leading or ending space characters in binary mode.)<br>(NOTE: bit-22 setting overrides bit-2 setting)<br>0 = Sent the modem ID as defined by Bit-2<br>Note: The ID will appear right justified. |
| Bits 23: Battery level as a percentage.<br>1 = add the battery level to the message format<br>0= do not add the battery level to the message format<br>(NOTE: This bit-field sends 3 bytes (ASCII) when Bit-0 is set to 0 o 1 byte when Bit-0 is set to 1) |
| Bit 24: 1 = add GPS over speed data (6 – bytes of **Odometer** information in Binary format **or** 18 – bytes if Bit-0 is set to 0). Binary format: xxyyzz: xx is speed specified by AT$GPSOSI, yy is the maximum speed incurred during the interval, zz is the duration in seconds of the interval: ASCII format: "xxxxx,yyyyy,zzzzz": fields are five bytes long, comma delimited and MSBs of each field are zero padded.<br>0 = do not add this particular field of GPS data<br>Note: yyyyy should be interpreted as yyyy.y knots. |
| Bits 25 – 31:TBD |

**Notes** A maximum of 150 events (input and output) are supported.

**Reference**

**Standard Scope** Optional

**Implementation Scope** Full

**Notes** A maximum of 150 events (input and output) are.

## 2.5 Event Query

| $EVNTRY | EVENT QUERY |
|---|---|
| **Command Function** | This command queries how many events have been used and how many are left. |
| **Command Functional Group** | |
| **Command Format Query** | AT$EVNTRY? |
| **Response** | $EVNTRY: <used>,<left><br>OK |
| **Write Format** | N/A |
| **Response** | N/A |
| **Read Format** | N/A |
| **Response** | N/A |
| **Execution Format** | N/A |
| **Response** | N/A |
| **Parameter Values** | |
| **<used>** | Number of events that have been used |
| **<left>** | Number of events available for new entries |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | |

## 2.6 Event Counter

| | |
|---|---|
| **$EVTIMQRY** | **Event Counter** |
| **Command Function** | This command shows the current count for the event counter indicated by the argument. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$EVTIMQRY=?<br>$EVTIMQRY: (1-8)<br>OK |
| **Write Format Response** | AT$EVTIMQRY=<timer_index><br>$EVTIMQRY:<timer_index>=<count><br>OK |
| **Read Format Response** | AT$EVTIMQRY?<br>ERROR |
| **Execution Format Response** | AT$EVTIMQRY=8<br>$EVTIMQRY: 8=0.000<br>OK |
| **Parameter Values** | N/A |
| **Reference** | ITU-T Ref. V.25ter Chapter 6.3.8 |
| **Standard Scope** | Mandatory |
| **Implementation Scope** | Full |
| **Notes** | |

## 2.7 Geo-Fencing

| | |
|---|---|
| **$GEOFNC** | **Geo fencing a circular area** |
| **Command Function** | This command allows a user to send a GPS message when the device moves in or out of a geographical area. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GEOFNC=?<br>$GEOFNC: (1 – 25),(0 - 100000),(-90 - +90),(-180 - +180)<br>OK |
| **Write Format Response** | AT$GEOFNC=<***fenceNum***>,<***radius***>, <***latitude***>,<***longitude***><br>OK |
| **Read Format Response** | AT$GEOFNC?<br>$GEOFNC: <***fenceNum***>,<***radius***>,<***latitude***>,<***longitude***><br>OK |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| <***fenceNum***> | Defines the fence number |
| <***radius***> | Defines radius of the circle from given Latitude and Longitude coordinates |
| <***latitude***> | Defines the latitude for the center point of a circle |
| <***longitude***> | Defines the longitude for the center point of a circle |
| **Reference** | N/A |
| **Standard Scope** | Optional |

## 2.7 $GEOFNC — Geo fencing a circular area (continued)

**Implementation Scope**

Full

**Notes**

An AT$EVENT command has to be set to send a GPS message to the remote host when entering or exiting the fenced area. See the MT-G Users Manual for example.

## 2.8 Geofence Debounce

| | |
|---|---|
| **$GFDBNC** | **Set geofence debounce count** |
| **Command Function** | This command allows the user to set the # of consecutive geofence positions required to trigger an 'inside geofence' or 'outside geofence' event. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GFDBNC=?<br>$GFDBNC:(0-250, 0-250)<br>OK |
| **Write Format** | AT$GFDBNC=**<out_cnt>,<br><in_cnt>** |
| **Response** | OK |
| **Read Format Response** | AT$GFDBNC?<br>$GFDBNC: <out_cnt>, <in_cnt><br>OK |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| **<out_cnt>** | consecutive GPS position reports outside a geofence required to trigger '0' condition for geofence input event (see $EVENT) |
| **<in_cnt>** | consecutive GPS position reports inside a geofence required to trigger '1' condition for geofence input event (see $EVENT) |
| **Reference** | N/A |
| **Standard Scope** | Optional |

## 2.8 $GFDBNC — Set geofence debounce count (continued)

| | |
|---|---|
| **Implementation Scope** | Full |
| **Notes** | The GPS reporting interval varies depending on the product. For the MTGL, the updates are sent once a second so the $GFDBNC counts correspond to seconds. For the MT-uL, the updates are sent once every two seconds. |

## 2.9 GPS Local Subscription

| | |
|---|---|
| **$GPSLCL** | **Configure sending of GPS message to the Serial Port** |
| **Command Function** | This command allows the user to configure sending of GPS data on the 9-pin serial port labeled “Serial” on the SkyPatrol Evolution series device |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GPSLCL=?<br>$GPSLCL: (0 – 4)<br>OK |
| **Write Format Response** | AT$GPSLCL=<***option***><br>OK |
| **Read Format Response** | AT$GPSLCL?<br>$GPSLCL: <***option***><br>OK |
| **Execution Format Response** | N/A |

| | |
|---|---|
| **2.9 $GPSLCL** | **Configure sending of GPS message to the Serial Port (continued)** |
| **Parameter Values** | |
| <***option***> | **0** – Disable sending of GPS data to the local serial port when the device is in AT command mode (***Default***)<br>**1** – Enable sending of GPS NMEA ASCII data to the local serial port when the device is in AT command mode<br>**2** – Enable sending of GPS NMEA ASCII data to the local serial port. This option has to be sent by the user in DUN mode. Data sent as a result of this option will always contain a UDP/IP header. Data will be sent to the IP address and port number set by $UDPAPI command. This option has no effect on the operation of the modem when entered via the AT command mode.<br>**3** – Enable sending of GPS TAIP ASCII data to the local serial port when the device is in AT command mode<br>**4** – Enable sending of GPS TAIP ASCII data to the local serial port. This option has to be sent by the user in DUN mode. Data sent as a result of this option will always contain a UDP/IP header. Data will be sent to the IP address and port number set by $UDPAPI command. This option has no effect on the operation of the modem when entered via the AT command mode. |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | N/A |

## 2.10 GPS Odometer

| | |
|---|---|
| **$GPSODOM** | **GPS Odometer History** |
| **Command Function** | This command allows the user to read the hourly Odometer history for four days – starting with the current day. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GPSODOM=?<br>$GPSODOM: (0-3)<br>OK |
| **Write Format Response** | N/A |
| **Read Format Response** | AT$ GPSODOM=<**day** ><br>$ GPSODOM: <**day** ><br><date (DDMMYY – **GMT**)><br><Hour 0 (Hundreds of meters traveled between **Midnight** and **1 AM**><br><Hour 1 (Hundreds of meters traveled between **010000** and **015959**><br><Hour 2 (Hundreds of meters traveled between **020000** and **025959**><br><Hour 3 (Hundreds of meters traveled between **030000** and **035959**><br><Hour 4 (Hundreds of meters traveled between **040000** and **045959**><br><Hour 5 (Hundreds of meters traveled between **050000** and **055959**><br><Hour 6 (Hundreds of meters traveled between **060000** and **065959**><br><Hour 7 (Hundreds of meters traveled between **070000** and **075959**><br><Hour 8 (Hundreds of meters traveled between **080000** and **085959**><br><Hour 9 (Hundreds of meters traveled between **090000** and **095959**><br><Hour 10 (Hundreds of meters traveled between **100000** and **105959**> |

## 2.10 $GPSODOM

**GPS Odometer History (continued)**

<Hour 11 (Hundreds of meters traveled between **110000** and **115959**>
<Hour 12 (Hundreds of meters traveled between **120000** and **125959**>
<Hour 13 (Hundreds of meters traveled between **130000** and **135959**>
<Hour 14 (Hundreds of meters traveled between **140000** and **145959**>
<Hour 15 (Hundreds of meters traveled between **150000** and **155959**>
<Hour 16 (Hundreds of meters traveled between **160000** and **165959**>
<Hour 17 (Hundreds of meters traveled between **170000** and **175959**>
<Hour 18 (Hundreds of meters traveled between **180000** and **185959**>
<Hour 19 (Hundreds of meters traveled between **190000** and **195959**>
<Hour 20 (Hundreds of meters traveled between **200000** and **205959**>
<Hour 21 (Hundreds of meters traveled between **210000** and **215959**>
<Hour 22 (Hundreds of meters traveled between **220000** and **225959**>
<Hour 23 (Hundreds of meters traveled between **230000** and **235959**>

| | |
|---|---|
| **Execution Format** | N/A |
| **Response** | N/A |
| **Parameter Values** | |
| **<day >** | 0 = today<br>1 = yesterday (1 day ago)<br>2 = 2 days ago<br>3 = 3 days ago |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |

## 2.10 $GPSODOM

## GPS Odometer History (continued)

**Notes**

Distance traveled within an hour is only saved on top of every hour and during an Ignition off (if configured). Distance for the current hour is not saved in the event of a power cycle.

Hour displayed is in Greenwich Mean Time (GMT) zone.

## 2.11 GPS Overspeed Interval

| | |
|---|---|
| **$GPSOSI** | **Set and Query the GPS overspeed interval** |
| **Command Function** | This command allows the user to define the criteria for a GPS overspeed event. A GPS overspeed event occurs when a minimum speed is maintained for a specific duration of time. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GPSOSI=?<br>$GPSOSI: (0 – 65535),(0-65535)<br>OK |
| **Write Format Response** | AT$GPSOSI=(0-65535),(0-65535)<br>OK |
| **Read Format Response** | AT$GPSOSI?<br>$GPSOSI: <***speed***>, <***interval***>, <***status***>, <***max_speed***>, <***duration***><br>OK |
| **Execution Format Response** | AT$GPSOSI<br>ERROR |
| **Parameter Values** | |
| <***speed***> | Speed, in nautical miles/hr, that must be met and/or exceeded to trigger the GPS overspeed event. |
| <***interval***> | Number of consecutive seconds for which <speed> must be maintained to trigger the GPS overspeed event. |
| <***status***> | If 1, then <max_speed> and <duration> represent a GPS overspeed interval that is currently active. If 0, they represent the previous GPS overspeed interval. |

## 2.11 $GPSOSI — GPS Overspeed Interval (continued)

| | |
|---|---|
| <***max_speed***> | The highest speed that was attained in the current or previous GPS overspeed interval. |
| <***duration***> | Number of consecutive seconds that the speed was at or above <speed>. |
| **Notes** | If <speed> is set to zero, the GPS overspeed event is disabled.<br><br>This feature is available in software version 0.7.8 pkg 43, and later. |

## 2.12 GPS Quality Filters

| $GPSQUAL | GPS QUALITY FILTERS |
|---|---|
| **Command Function** | This command allows the user to set/query the filter values used to determine when to interpret GPS data as valid. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GPSQUAL=?<br>$GPSQUAL:(0-1), (0-255)<br>OK |
| **Write Format level>"** | AT$GPSQUAL=**"<fix type>,<HDOP** |
| **Response** | OK |
| **Read Format Response** | AT$GPSQUAL?<br>$GPSQUAL:**<fix type>,<HDOP level>** |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| **<fix type>** | 0 (default) = consider GPS data valid if $GPGSA fix is either 2D GPS fix (2) or (3D) Differential GPS fix (3).<br><br>1 = consider GPS data valid only if $GPGSA fix is (3D) Differential GPS fix (3). |
| **<HDOP level>** | 0 (default) = do not use HDOP value from $GPGSA sentence when determining whether GPS is valid<br><br>1-255 = consider GPS data valid only if HDOP value from $GPGSA sentence is less than or equal to indicated this HDOP limit. |

## 2.12 $GPSQUAL — GPS Quality Filters (continued)

| | |
|---|---|
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | |

## 2.13 GPS Read

| | |
|---|---|
| **$GPSRD** | **Read current GPS ASCII data** |
| **Command Function** | This command allows a user to read current NMEA format GPS data. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$GPSRD=?<br>$GPSRD: [(0-3F),(0-63)], (0-1)<br>OK |
| **Write Format Response** | N/A<br>N/A |
| **Read Format** | AT$GPSRD=<***nmeaMsgs***>,<***decimal***><br>"$GPG……." |
| **Response** | OK |
| **Execution Format Response** | N/A<br>N/A |
| **Parameter Values** | The output NMEA sentence depends on whether the <***nmeaMsgs***> parameter is entered in Hex or Decimal format. By default, the <***decimal***> parameter is not required and <***nmeaMsgs***> parameter has to be entered as HEX value without the preceding "0x" characters as outlined in Hex Format table below. |
| <***nmeaMsgs***> | This field is the sum of the type of NMEA messages desired. A user has the following message options to select from. Maximum value for <***nmeaMsgs***> in this case would be 3F in Hex format or 63 in decimal format. |

## 2.13 $GPSRD

**Read current GPS ASCII data (continued)**

**Hex Format**

| User Selectable | Type of NMEA Message |
|---|---|
| 0x01 | GGA |
| 0x02 | GLL |
| 0x04 | GSA |
| 0x08 | GSV |
| 0x10 | RMC |
| 0x20 | VTG |

**Decimal Format**

| User Selectable | Type of NMEA Message |
|---|---|
| 1 | GGA |
| 2 | GLL |
| 4 | GSA |
| 8 | GSV |
| 16 | RMC |
| 32 | VTG |

<***decimal***>

1 = <***nmeaMsg***> value has to be sum of User Selectable values from decimal table format
0 = select values out of hex table format

**Reference**

N/A

**Standard Scope**

Optional

**Implementation Scope**

Full

**Notes**

N/A

## 2.14 Ignition Debounce

| | |
|---|---|
| **$IGNDBNC** | **Debounce Ignition hardware line for the specified amount of time** |
| **Command Function** | This command allows a user to set ignition debounce time. The ignition line has to be valid for the specified amount before the event: GPIO-8 in the event engine will be triggered |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$IGNDBNC=?<br>$IGNDBNC: (0–4),<br>OK |
| **Write Format Response** | AT$IGNDBNC=<***debounceTimeout***> |
| **Read Format Response** | AT$IGNDBNC?<br>$IGNDBNC: 0<br>OK |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| <***debounceTimeout***> | 0 – 4 seconds. This field specifies the debounce timeout value. |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | If the ignition remains ON for less than or equal to $IGNDBNC, the device will reset. |

## 2.15 I/O Debounce

| | |
|---|---|
| **$IODBNC** | **Debounce specified GPIO for the specified amount of time** |
| **Command Function** | This command allows a user to set and query GPIO debounce time. The GPIO must be unchanged for the specified number of seconds before the input event will be triggered. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$IODBNC=?<br>$IODBNC: (1-8),(0-60)<br>OK |
| **Write Format Response** | AT$IODBNC=<***gpio_number***>, <***debounce_timeout***><br>OK |
| **Read Format Response** | AT$IODBNC?<br>$IODBNC: <***gpio1***>, <***gpio2***>, <***gpio3***>, <***gpio4***>, <***gpio5***>, <***gpio6***>, <***gpio7***>, <***gpio8***><br>OK |
| **Execution Format Response** | AT$IODBNC<br>ERROR |
| **Parameter Values** | |
| <***gpio_number***> | Number of GPIO whose debounce timeout is being set. |
| <***debounce_timeout***> | Number of consecutive seconds <gpio_number> must remain unchanged before its input event will be triggered. |
| <***gpio1***> | Debounce timeout for GPIO1. |
| <***gpio2***> | Debounce timeout for GPIO2. |

## 2.16 $IODBNC — I/O Debounce (continued)

| | |
|---|---|
| <*gpio3*> | Debounce timeout for GPIO3. |
| <*gpio4*> | Debounce timeout for GPIO4. |
| <*gpio5*> | Debounce timeout for GPIO5. |
| <*gpio6*> | Debounce timeout for GPIO6. |
| <*gpio7*> | Debounce timeout for GPIO7. |
| <*gpio8*> | Debounce timeout for GPIO8. |

**Notes**

If <debounce_timeout> is set to zero, <gpio_number> will not be debounced.

$IGNDBNC is effected by this command. Changes made to GPIO8 will be seen via $IGNDBNC? Writes made by $IGNDBNC will be seen by $IODBNC?

This feature is available in software version 0.7.8 pkg 43, and later.

## 2.16 Message Log Clear

| | |
|---|---|
| **$MSGLOGCL** | **Message Log Clear** |
| **Command Function** | The $MSGLOGCL command erases the log file. |
| **Command Functional Group** | |
| **Command Format Query** | N/A |
| **Response** | N/A |
| **Write Format** | N/A |
| **Response** | N/A |
| **Read Format** | N/A |
| **Response** | N/A |
| **Execution Format** | AT$MSGLOGCL |
| **Response** | OK |
| **Parameter Values** | None |
| **Reference Standard Scope** | |
| **Implementation Scope** | |
| **Notes** | |

## 2.17 Message Log Dump

| | |
|---|---|
| **$MSGLOGDMP** | **Dump Unsent Messages to Serial Port** |
| **Command Function** | This command allows the user to dump the contents of the unsent messages to the serial port. This command is non-destructive in that it does not actually remove the messages from the queue. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$MSGLOGDMP=?<br>$MSGLOGDMP:(0-3,(0-1)<br>OK |
| **Write Format** | AT$MSGLOGDMP=**<queue>,<format>, <bytes_per_line>** |
| **Response** | …<br>OK |
| **Read Format Response** | N/A |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| **<queue>** | 0 = event data that was configured to be sent to a remote server via GPRS only<br>1 = event data that was configured to be sent to a remote server via GPRS primarily but also use SMS as backup method if GPRS is not available<br>2 = event data that was configured to be sent to a remote server via SMS only<br>3 = event data that was configured to be sent to a remote server via TCPAPI only |

## 2.18 Message Log Enable

| | |
|---|---|
| **$MSGLOGEN** | **Message Log Enable** |
| **Command Function** | The $MSGLOGEN command has been created to enable or disable saving GPS data generated via the event engine in modem's memory |
| **Command Functional Group** | |
| **Command Format Query Response** | AT$MSGLOGEN=?<br>$MSGLOGEN: (0-1)<br>OK |
| **Write Format Response** | AT$MSLOGEN=<**setting**><br>OK |
| **Read Format Response** | AT$MSGLOGEN?<br>$MSGLOGEN: **<setting>** |
| **Execution Format Response** | |
| **Parameter Values** | |
| **<setting>** = | **0 – 1** (possible valid values)<br><br>**0** = Disable message logging (default). Event data is sent to the remote server upon occurrence.<br><br>**1** = Enable message logging. Event data has to be read via AT$MSGLOGEN command or when AT$MSGLOGEN=0 is sent. |
| **Reference Standard Scope** | |
| **Implementation Scope** | |

## 2.19 $MSGLOGEN

## Message Log Enable (continued)

**Notes**

If AT$MSGLOGEN command was enabled and any unsent messages exist in memory, then the unsent data will be sent to the remote server when data logging is disabled.

## 2.19 Message Log Read Data

| | |
|---|---|
| **$MSGLOGRD** | **Message Log Read Data** |
| **Command Function** | The $MSGLOGRD command has been created to read data from memory. |
| **Command Functional Group** | |
| **Command Format Query Response** | AT$MSGLOGRD=?<br>$MSGLOGRD: (0-2),(0-x),(0-y)<br>OK |
| **Write Format Response** | N/A<br>N/A |
| **Read Format Response** | N/A<br>N/A |
| **Execution Format Response** | AT$MSGLOGRD?<br>$MSGLOGRD: **<queue>,<number of messages>,<starting index>**<br>OK |
| **Parameter Values** | |
| **<queue> =** | **0 – 2 (possible valid values).**<br><br>0 = event data that was configured to be sent to a remote server via GPRS only<br>1 = event data that was configured to be sent to a remote server via GPRS primarily but also use SMS as backup method if GPRS is not available<br>2 = event data that was configured to be sent to a remote server via SMS only |

## 2.20 $MSGLOGRD — Message Log Read Data (continued)

**<number of messages> =**

x
x = total number of messages one desires to read from the memory. A user can choose to read 1 message in which case x = 1 or read all messages in which case x = 65535.

**<starting index> =**

y
y = starting index number of messages that are stored in the memory.

**NOTE:** y cannot be greater than maximum number of stored messages.

**Reference**
**Standard Scope**

**Implementation Scope**

**Notes**

AT$MSGLOGRD? command returns 8 values. The first two values correspond to data stored for the GPRS queue. The next two values correspond to data stored for SMS AS BACKUP queue, and the last two values correspond to data stored for SMS queue

- Each value is comma (,) delimited.
- The first value of any queue represents “Total Number of Unread Messages”. This value can be used as the <number of messages> field while reading messages
- The second value of any queue represents: “Total Number of Messages Stored for that Queue”. Subtract the “Total Number of Unread Messages” from the “Total Number of Messages Stored for that Queue” and use that as the <starting

## 2.20 $MSGLOGRD

**Message Log Read Data (continued)**

index> of where to read data from in the memory.

## 2.20 Message Send

| | |
|---|---|
| **$MSGSND** | **Message Send** |
| **Command Function** | The $MSGSND command has been created to allow sending of data from one mode to another. |
| **Command Functional Group** | |
| **Command Format Query Response** | AT$MSGSND=?<br>$MSGSND: (0-3),(“ASCII DATA”)<br>OK |
| **Write Format Response** | N/A<br>N/A |
| **Read Format Response** | N/A<br>N/A |
| **Execution Format Response** | AT$MSGSND=**<destination>,<”data”>**<br>OK |
| **Parameter Values** | |
| **<destination> =** | 0 – 3 (possible Valid Values)<br>0 = <”data”> is sent out the serial port<br>1 = <”data”> is sent to all SMS addresses listed in AT$SMSDA command.<br>2 = <”data”> is sent via GPRS to first IP address, configured as server, in AT$FRIEND command and port number defined by AT$UDPAPI command<br>3 = <”data”> is sent via GPRS to IP address and Port number listed in the AT$PADDST command |
| **<”data”> =** | a maximum of 50 bytes ASCII characters |

## 2.21 $MSGSND — Message Send (continued)

| | |
|---|---|
| **Reference** | |
| **Standard Scope** | |
| **Implementation Scope** | |
| **Notes** | AT$MSGSND command can be sent to the MTG via SMS, UDP-API, or serial port |

## 2.21 Odometer

| | |
|---|---|
| **$ODOMETER** | **MT Trip Odometer** |
| **Command Function** | The $ODOMETER command records how far the vehicle has traveled in one trip. The user can reset the odometer at the beginning of a new trip. |
| **Command Functional Group** | |
| **Command Format Query**<br>**Response** | AT$ODOMETER=?<br>$ODOMETER: (0-4000000000) |
| **Write Format** | AT$ODOMETER=1234 (where 1234 is distance in meters) |
| **Response** | OK |
| **Read Format**<br>**Response** | AT$ODOMETER?<br>$ODOMETER xxxx (xxxx=distance traveled in meters) |
| **Execution Format Response** | |
| **Parameter Values** | |
| **Reference Standard Scope** | |
| **Implementation Scope** | |

## 2.22 $ODOMETER

**Odometer (continued)**

**Notes**

The user shall be able to set a seed value for the Virtual Odometer (including a value of 0 but not higher than the maximum value of 4000000000)

The AT&F command shall not reset the seed value to 0.

The Virtual Odometer reading would be a 4-byte value starting from 0 to 4000000000 (maximum of approximately 2500000 miles before it rolls over to 0)

The unit for Virtual Odometer shall be in METERS.

The Virtual Odometer history shall be updated every second

The Virtual Odometer history shall be saved once a minute in modem's memory. This value shall be retained through an internal or external reset and can be read upon the next power up or during run time mode. The delta distance traveled between the minute marks could be lost due to an unexpected external or non-modem originated reset. However, the total distance traveled till the prior minute would still be preserved.

## 2.22 Power Save

| | |
|---|---|
| **$PWRSAV** | **Enable power save mode** |
| **Command Function** | This command allows a user to put the device in low power mode when DTR or Ignition line drops. The Ignition line has to be connected per the user manual for this feature to work properly. A user has the capability of getting a notification when the device entering low power mode or returns to normal operating mode. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$PWRSAV=?<br>$PWRSAV: (0 – 1),(0 – 1),(0 – 65535),(0 – 1)<br>OK |
| **Write Format Response** | AT$PWRSAV=<***dtr***>,<***ign***>,<***timeout***>, <***reg***><br>OK |
| **Read Format Response** | AT$PWRSAV?<br>$PWRSAV: <***dtr***>,<***ign***>,<***timeout***>, <***reg***><br>OK |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| <***dtr***> | 0 – disable the DTR feature<br>1 – enter low power mode after DTR signal went low and timeout has expired |
| <***ign***> | 0 – disable the Ignition feature<br>1 – enter low power mode after Ignition signal went low and timeout has expired |
| <***timeout***> | 0 – 65535 seconds. Timeout value after which the unit will enter low power mode. Unit will work in normal mode |

## 2.23 $PWRSAV — Enable power save mode (continued)

| | |
|---|---|
| | until the timeout has expired. |
| <***reg***> | 0 – remain registered with GSM/GPRS network during low power mode<br><br>1 – reset modem when entering normal power mode |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | An AT$EVENT command has to be set to send a GPS message to the remote host when entering or exiting power save mode.<br><br>If ***<dtr>*** AND ***<ign>*** parameters are set to 1, then both DTR and Ignition must be low for ***<timeout>*** seconds before the unit will enter low power mode.<br><br>The white cable is the ignition line. |

## 2.23 Real Time Clock Alarm

| | |
|---|---|
| **$RTCALRM** | **Real Time Clock Alarm Settings** |
| **Command Function** | This command handles the setting and querying of the RTC alarm registers. When the alarm feature has been enabled the $EVENT engine will be invoked upon the going off. If the $RTCWAKE call is invoked following the alarm feature setup the modem will power back up automatically upon the alarm going off. The actions of these two features are mutually exclusive of each other, so one or the other will occur but not both. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | AT$RTCALRM=?<br>$RTCALRM: (0..99), (1..12), (1..31), (0..23), (0..59), (0..59), (0..43200)<br>OK |
| **Write Format Response** | AT$RTCALRM= **<rtc_year>, <rtc_month>, <rtc_day>, <rtc_hour>, <rtc_min>, <rtc_sec>, <rtc_alarmTimeinMinutes>**<br>OK |
| **Read Format Response** | AT$RTCALRM?<br>$RTCALRM: **<rtc_enabled>, <rtc_year>, <rtc_month>, <rtc_day>, <rtc_hour>, <rtc_min>, <rtc_sec>, < rtc_alarmTimeinMinutes >"**<br>OK |
| **Execution Format Response** | N/A<br>N/A |

| 2.24 $RTCALRM | Real Time Clock Alarm (continued) |
|---|---|
| **Parameter Values** | Parameters are positional dependent, any parameter may be omitted with the use of the **comma (',')** as a place holder on command line. If a parameter is omitted then the current value in the hardware is used. |
| **< rtc_enabled >** | Indicates if alarm is enabled or not. 1->Enabled, 0->Disabled |
| **< rtc_year >** | The year on which the alarm is being set to trigger on. The RTC supports years 2000-2099. The data is entered as a two digit value 0..99. |
| **<rtc_month>** | The month on which the alarm is being set to trigger on. Values range from 1..12. |
| **<rtc_day>** | The day on which the alarm is being set to trigger on. Values range from 1..31. |
| **<rtc_hour>** | The hour on which the alarm is being set to trigger on. Values range from 0..24 for 24-Hour mode settings.<br>**NOTE:** only 24-Hour mode currently supported. |
| **<rtc_min>** | The minute on which the alarm is being set to trigger on. Values range from 0..59. |
| **<rtc_sec>** | The second on which the alarm is being set to trigger on. Values range from 0..59. |
| **<rtc_alarmTimeinMinutes>** | Periodic Alarm time in minutes. RTC Alarm will be reset at a period specified by this parameter |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |

## 2.24 $RTCALRM — Real Time Clock Alarm (continued)

**Notes**

This command is used to set the Alarm time for the RTC. Currently all time is based on 24-Hour time format. The alarm may be cleared using the command AT$RTCCLRA. This call in conjunction with the use of either the $EVENT engine or the $RTCWAKE command the user has a rich feature set of driving other events or waking the system up at a pre-determined time in the future. No checks are made for alarm time not being later than current time.

**Examples**

Following sets and alarm for 2003, October, 13th at 17:00 Hours

at$rtcalrm=3,10,13,17,0,0

**OK**

Following queries the alarm for current time, and shows that the alarm being; Enabled, for 2003, October 13th at 17:00 hours.

at$rtcalrm?

**$RTCALRM: 01, 03, 10, 13, 17, 00, 00, 0**

**OK**

Following call unsets alarm followed by displaying alarm time information.

at$rtcclra

**OK**

at$rtcalrm?

$RTCALRM: 00, 03, 10, 13, 17, 00, 00, 0

**OK**

## 2.24 Remote TAIP

| | |
|---|---|
| **$GPSRTP** | **Enable remote TAIP messaging** |
| **Command Function** | This command enables the user to select the OTA transmission method of TAIP data |
| **Command Functional Group** | **SkyPatrol Specific** |
| **Command Format Query Response** | AT$GPSRTP=?<br>$GPSRTP: (0 – 3)<br>OK |
| **Write Format Response** | AT$GPSRTP=<***remoteTAIP***><br>OK |
| **Read Format Response** | AT$GPSRTP?<br>$GPSRTP: <***remoreTAIP***><br>OK |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| <***remoteTAIP***> | 0 – disable sending of TAIP data OTA<br>1,2 – Send TAIP data OTA via UDP to the first IP address listed in $FRIEND command<br>3 – Send TAIP data OTA via UDP to the first IP address in $FRIEND list only |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | N/A |

## 2.25 TAIP

| | |
|---|---|
| **$TAIP** | **Enable the user to send TAIP data to the GPS receiver** |
| **Command Function** | This command enables the user to send TAIP data string to the GPS receiver itself |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query Response** | N/A |
| **Write Format Response** | AT$TAIP=“>TAIP_command<”<br>OK |
| **Read Format Response** | N/A |
| **Execution Format Response** | N/A |
| **Parameter Values** | |
| **>TAIP_Command<** | See the TAIP reference manual for a list of supported TAIP commands. |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |
| **Notes** | N/A |

## 2.26 Script Version

| | |
|---|---|
| **$USRVAL** | Script Version |
| **Command Function** | Allows the user to record an ASCII HEX number for event script versioning. |
| **Command Functional Group** | SkyPatrol Specific |
| **Command Format Query**<br>**Response** | AT$USRVAL=?<br>OK |
| **Write Format** | AT$USRVAL=<hex value><br><cr> |
| **Response** | OK |
| **Read Format**<br>**Response** | AT$USRVAL?<br>$USRVAL:(hex value)<br>OK |
| **Execution Format**<br>**Response** | N/A<br>N/A |
| **Parameter Values** | |
| **<hexval>** | (0-FFFFFFFF) |
| **Reference** | N/A |
| **Standard Scope** | Optional |
| **Implementation Scope** | Full |

# Appendix A – Default AT Values

| | |
|---|---|
| **$GPSLCL MESSAGE** | **CONFIGURE SENDING OF LOCAL GPS** |
| Default Value: | 0 |
| Default Value Meaning: | feature disabled |

| | |
|---|---|
| **$GEOFNC** | **Geo fencing a circle area** |
| Default Value: | 1,0,0,0<br>2,0,0,0<br>3,0,0,0<br>4,0,0,0<br>5,0,0,0<br>6,0,0,0<br>7,0,0,0<br>8,0,0,0<br>9,0,0,0<br>10,0,0,0<br>11,0,0,0<br>12,0,0,0<br>13,0,0,0<br>14,0,0,0<br>15,0,0,0<br>16,0,0,0<br>17,0,0,0<br>18,0,0,0<br>19,0,0,0<br>20,0,0,0<br>21,0,0,0<br>22,0,0,0<br>23,0,0,0<br>24,0,0,0<br>25,0,0,0 |
| Default Value Meaning: | feature disabled |

| | |
|---|---|
| **$GPSRD** | **Read current GPS data** |
| Default Value: | none |
| Default Value Meaning: | n/a |

| | |
|---|---|
| **$PWRSAV** | **Enable power save mode** |
| Default Value: | 0,0,0 |
| Default Value Meaning: | feature disabled |

| | |
|---|---|
| **$GPSRTP** | **Enable remote TAIP messaging** |
| Default Value: | 0 |
| Default Value Meaning: | feature disabled |
| **$TAIP** | **Enable the user to send TAIP data to the GPS receiver** |
| Default Value: | none |
| Default Value Meaning: | n/a |
| **$EVENT** | **User Defined Input/Output** |
| Default Value: | Events 1 – 6 are configured. Event group 1 and 2 are associated with User LED 2 and GPS fix. Event group 3 – 6 are associated with User LED 1 and registration status |
| Default Value Meaning: | User LED 1 indicates registration status. User LED 2 indicates GPS fix status |
| **$NETMON** | **Network Monitor** |
| Default Value: | 0,0 |
| Default Value Meaning: | feature disabled |
| **$GPSODOM** | **GPS Odometer** |
| Default Value: | 0 |
| Default Value Meaning: | no distance traveled. |