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## Telematic Service

# Bulletin

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### LotMan Moto – ST7200 Device Decodification

Ver 1.8.1

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## Revision History

Revision	Date	Author	Notes
1.3	11/6/2013	Juan M Blanco	Appended Message Type 6: Enable OR Disable Starter message. Appended Message Type 7: Enable OR Disable Late Payment Buzzer message. Appended Message Type 8: We need to tell apart the different causes of a “Wake on Motion” message. Previously part of Type 1 messages.
1.4	11/8/2013	Juan M Blanco	Removed Locate Response from Locate Command section. Put note, “Reference Message Type 5.” Corrected Locate response message in section “Message Type 5.”
1.5	11/11/2013	Juan M Blanco	Appended Message Type 9: We need to tell apart the code 6021 that is generated when the device does a Timer Wakeup every 240 hours. This will make reports clearer for our customers.
1.6	12/4/2013	Juan M Blanco	Clarified Status Code information for Message Type 2.
1.7	12/12/2013	Humberto Hernandez	To setup a device Geofence is mandatory to use maximum 5 digit after the decimal place.
1.8	12/23/2013	Renato Motta	Added command description and decode information for Rectangular Geofences.

## Message Type Formatting

The LotMan Moto device will report everything in UDP, and will receive commands via UDP as well. Below is the list of possible Status codes received by the device. The decodification will depend on the Status Code <EV#> reported by the device. Below is a summary of the Status Codes, and which message type they represent:

Message Type	Status Code	Meaning	Ignition Status
Type 1	4001	Wired Ignition ON - Periodic Reporting	ON
	4002	Wired Ignition OFF - Periodic Reporting	OFF
Type 1	4003	Virtual Ignition ON - Periodic Reporting	ON
Type 1	4004	Virtual Ignition OFF - Periodic Reporting	OFF
Type 1	4005	Main Battery Disconnect – Periodic Reporting	Use Last Known
Type 1	6001	Direction Change	?
Type 1	6002	Speed Threshold	?
Type 1	6005	Mileage Threshold	?
Type 1	6008	Main Battery Threshold	?
Type 1	6009	Main Battery Disconnect	Use Last Known
Type 1	6010	Main Battery Reconnect	Use Last Known
Type 1	6011	Wired Ignition ON	ON
Type 1	6012	Wired Ignition OFF	OFF
Type 1	6013	Virtual Ignition ON	ON
Type 1	6014	Virtual Ignition OFF	OFF
Type 1	6016	Idle Threshold	ON
Type 1	6017	Towing Started	OFF
Type 1	6018	Towing Stopped	OFF
Type 1	6019	Input 2 High	?
Type 1	6020	Input 2 Low	?
Type 1	6021	Power Shutdown Pending	?
Type 1	6022	Power Shutdown Canceled	?
Type 1	6030	Movement Started	?
Type 1	6031	Movement Stopped	?
Type 1	6032	Parked Time Threshold	?
Type 2	6004+<XY>	Geofence Crossing	Use last known
Type 3	4006	Heartbeat	Use last known
Type 3	6015	Power Up/Reset	Use last known
Type 4	4050	Diagnostic Data	?
Type 5	7001	Locate Now	?
Type 6	7005+<OT>	Enable OR Disable Starter Output	Use <IG> Parameter
Type 7	3011+<BZ>	Enable OR Disable Late Payment Buzzer	Use last known
Type 8	6026+<PM>	Wake on Motion	Use last known
Type 9	6021+<PM>	Power Shutdown Pending	Use last known

Below is a description of the various message types, and how to decode their contents. The message will all be comma delimited.

## Type 1 Messages

Status Code	Meaning
4001	Wired Ignition ON - Periodic Reporting
4002	Wired Ignition OFF - Periodic Reporting
4003	Virtual Ignition ON - Periodic Reporting
4004	Virtual Ignition OFF - Periodic Reporting
4005	Main Battery Disconnect – Periodic Reporting
6001	Direction Change
6002	Speed Threshold
6005	Mileage Threshold
6008	Main Battery Threshold
6009	Main Battery Disconnect
6010	Main Battery Reconnect
6011	Wired Ignition ON
6012	Wired Ignition OFF
6013	Virtual Ignition ON
6014	Virtual Ignition OFF
6016	Idle Threshold
6017	Towing Started
6018	Towing Stopped
6019	Input 2 High
6020	Input 2 Low
6022	Power Shutdown Canceled
6030	Movement Started
6031	Movement Stopped
6032	Parked Time Threshold

These messages will come in the comma-delimited format indicated below. Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.

*All periodic reporting and alert messages are TCP/UDP based. Syntax:*

**\$\$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<BB>,<PM> [,<SEQ>]##**

Example:

**\$\$354660046140722,6001,2013/01/22,15:36:18,25.80907,-80.32531,7.1,19,165.2,11,0.8,11.1,17,1,1,3,9,2##**

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	<b>354660046140722</b>	Callsign - Unit ID. The IMEI number
2	<EV#>	<b>6001</b>	Status Code - Event ID
3	<D>	<b>2013/01/22</b>	UTC Date of trigger (YYYY/MM/DD)
4	<T>	<b>15:36:18</b>	UTC Time of trigger (HH:MM:SS)
5	<LT>	<b>25.80907</b>	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	<b>-80.32531</b>	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	<b>7.1</b>	Altitude in meters
8	<SP>	<b>19</b>	Speed in MPH
9	<HD>	<b>165.2</b>	Heading in degrees
10	<SV>	<b>11</b>	Number of Satellites

11	<HP>	<b>0.8</b>	HDOP
12	<BV>	<b>11.1</b>	External Battery Voltage
13	<CQ>	<b>17</b>	GSM Signal Strength
14	<MI>	<b>1</b>	Miles driven since last reset or power cycle.
15	<GS>	<b>1</b>	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
16	<BB>	<b>3.9</b>	Internal Battery Voltage
17	<PM>	<b>2</b>	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense 4 – Internal Wake-up 5 – Input 1
18	<SEQ>	BLANK	BLANK
	##	##	End string

## Type 2 Messages

Status Code	Meaning
6004+<XY>	Geofence Crossing

This message will come in the comma-delimited format indicated below. Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.

### Status Code:

The Status Code to use will be a combination of 6004+<XY> to indicate which geofence was violated, and if it was “Going in” or “Going out” of the geofence. Our web applications only use up to 5 Device-Based Geofences. Below is a table with a meaning of this code:

Message Code	<XY>	New Status Code	Meaning
6004	01	600401	Going OUT Geofence 0
6004	02	600402	Going IN Geofence 0
6004	11	600411	Going OUT Geofence 1
6004	12	600412	Going IN Geofence 1
6004	21	600421	Going OUT Geofence 2
6004	22	600422	Going IN Geofence 2
6004	31	600431	Going OUT Geofence 3
6004	32	600432	Going IN Geofence 3
6004	41	600441	Going OUT Geofence 4
6004	42	600442	Going IN Geofence 4

### Syntax:

\$\$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<BB>,<PM>,<XY>[,<SEQ>]##

### Example:

\$\$354660046140722,6004,2013/01/24,16:08:54,25.80224,-80.33307,2.5,13,115.7,10,0.9,0.0,19,0,1,3.7,2,02##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<EV#>	6004	Status Code - Event ID
3	<D>	2013/01/24	UTC Date of trigger (YYYY/MM/DD)
4	<T>	16:08:54	UTC Time of trigger (HH:MM:SS)
5	<LT>	25.80224	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	,-80.33307	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	2.5	Altitude in meters
8	<SP>	13	Speed in MPH
9	<HD>	115.7	Heading in degrees
10	<SV>	10	Number of Satellites
11	<HP>	0.9	HDOP
12	<BV>	0.0	External Battery Voltage
13	<CQ>	19	GSM Signal Strength
14	<MI>	0	Miles driven since last reset or power cycle.
15	<GS>	1	GPS Status:

			0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
16	<BB>	3.7	Internal Battery Voltage
17	<PM>	2	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense 4 – Internal Wake-up 5 – Input 1
18	<XY>	02	<b>Geofence Information:</b>  X=Geofence ID number (0 – 9) Y=1 outside geofence Y=2 inside geofence  01 -> Geofence ID = 0 Geofence is outside
19	<SEQ>	BLANK	BLANK
	##	##	End string



## Type 3 Messages

Status Code	Meaning
4006	Heartbeat
6015	Power Up/Reset

These messages will come in the comma-delimited format indicated below. Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.

### Syntax:

\$\$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<BB>,<PM>,<FW>,<PF>[,<SEQ>]##

Example:

\$\$354660046140722,4006,2013/01/24,13:03:37,25.80886,-  
80.18591,8.4,1,0.0,3,2.5,13.8,25,0,0,3.9,2,S4x1-1119B2,Unknown##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	<b>354660046140722</b>	Callsign - Unit ID. The IMEI number.
2	<EV#>	<b>4006</b>	Status Code - Event ID
3	<D>	<b>2013/01/24</b>	UTC Date of trigger (YYYY/MM/DD)
4	<T>	<b>13:03:37</b>	UTC Time of trigger (HH:MM:SS)
5	<LT>	<b>25.80886</b>	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	<b>-80.18591</b>	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	<b>8.4</b>	Altitude in meters
8	<SP>	<b>1</b>	Speed in MPH
9	<HD>	<b>0.0</b>	Heading in degrees
10	<SV>	<b>3</b>	Number of Satellites
11	<HP>	<b>2.5</b>	HDOP
12	<BV>	<b>13.8</b>	External Battery Voltage
13	<CQ>	<b>25</b>	GSM Signal Strength
14	<MI>	<b>0</b>	Miles driven since last reset or power cycle.
15	<GS>	<b>0</b>	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
16	<BB>	<b>3.9</b>	Internal Battery Voltage
17	<PM>	<b>2</b>	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense 4 – Internal Wake-up 5 – Input 1
18	<FW>	<b>S4x1-1119B2</b>	Firmware Version
19	<PF>	<b>Unknown</b>	Profile Name
20	<SEQ>	<b>BLANK</b>	BLANK
	##	##	End string

## Type 4 Messages

Status Code	Meaning
4050	Diagnostic Data

**This message is not mandatory. We will use this to diagnose the device internally, but we don't need to show this information on the system. We do need to update the device's IP and Port address when the message arrives.**

This message will come in the format indicated below. **Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.**

### Syntax:

```
$$<UID>,4050,<GSM>,<GPR>,<PDP>,<HD>,<HO>,<PU>,<R>,<%GPS>,<%GPSQ>,<%GSM>,<%GPR>,<%PDP>,<LV>,<HV>,<CX>,<DBO>,<ABI>,<DBI>,<SO>,<SI>,<SS>##
```

### Example:

```
$$354660046140722,4050,5,5,1,26.1,34.1,9,0,17,23,0,0,1,60000,0,15,55765,0,0,1,1,0##
```

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	<b>354660046140722</b>	Callsign - Unit ID. The IMEI number.
2	<EV#>	<b>4050</b>	Status Code - Event ID
3	<GSM>	<b>5</b>	GSM Registration State: 0 – Not Registered 1 – Home 2 – Search 3 – Denied 4 – Unknown 5 – Roaming
4	<GPR>	<b>5</b>	GPRS Registration State: 0 – Not Registered 1 – Home 2 – Search 3 – Denied 4 – Unknown 5 – Roaming
5	<PDP>	<b>1</b>	GPRS PDP State 0 – Deactivated 1 – Activated
6	<HD>	<b>26.1</b>	Hours Disconnected
7	<HO>	<b>34.1</b>	Hours ON
8	<PU>	<b>9</b>	Power Up Counter
9	<R>	<b>0</b>	Reset Counter
10	<%GPS>	<b>17</b>	Percent Lost GPS
11	<%GPSQ>	<b>23</b>	Percent Lost GPS based on 5 Satellites
12	<%GSM>	<b>0</b>	Percent Lost GSM
13	<%GPR>	<b>0</b>	Percent Lost GPRS
14	<%PDP>	<b>1</b>	Percent Lost PDP

15	<LV>	<b>60000</b>	Low Voltage Counter (# of sec < 9 Volts)
16	<HV>	<b>0</b>	High Voltage Counter (# of sec > 16 Volts)
17	<CX>	<b>15</b>	Context Activation Counter
18	<DBO>	<b>55765</b>	Data Bytes Out
19	<ABI>	<b>0</b>	ACK Bytes In
20	<DBI>	<b>0</b>	DOTA Bytes In
21	<SO>	<b>1</b>	SMS Msg Out Counter
22	<SI>	<b>1</b>	SMS Msg In Counter
23	<SS>	<b>0</b>	SMS Spam Msg In Counter
	##	##	End string

## Type 5 Messages

Status Code	Meaning
7001	Locate

This message will come in the format indicated below. **Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.**

### Syntax:

\$\$<UID>,7001,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<GS>,<OT>,<CQ>,<MI>,<IG>,<BB>,<PM>[,<SEQ>]##

Example:

\$\$354660046140722,7001,2013/01/24,17:36:36,25.80189,-80.33208,11.6,0,0.0,9,1.0,10.9,1,1,16,0,0,3.9,2##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	7001	7001	The Locate Now code
3	<D>	2013/01/24	UTC Date of trigger (YYYY/MM/DD)
4	<T>	17:36:36	UTC Time of trigger (HH:MM:SS)
5	<LT>	25.80189	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	-80.33208	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	11.6	Altitude in meters
8	<SP>	0	Speed in MPH
9	<HD>	0.0	Heading in degrees
10	<SV>	9	Number of Satellites
11	<HP>	1.0	HDOP
12	<BV>	10.9	External Battery Voltage
13	<GS>	1	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
14	<OT>	1	Output State: 0 – Short circuit with GSM override enabled 1 – Open circuit 2 – Short circuit
15	<CQ>	16	GSM Signal Strength
16	<MI>	0	Miles driven since last reset or power cycle.
17	<IG>	0	Ignition Status: 0 – OFF 1 - ON
18	<BB>	3.9	Internal Battery Voltage
19	<PM>	2	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense

			4 – Internal Wake-up 5 – Input 1
20	<SEQ>	BLANK	BLANK
	##		End string

## Type 6 Messages

Status Code	Meaning
7005+<OT>	Disable OR Enable Starter Output

This message will come in the format indicated below. **Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.**

### Status Code:

**We need to tell apart the response to a Starter Enable, and Starter Disable command. We can do this by combining the Status Code 7005 + <OT>. <OT> is parameter from Message Type 6 (as shown below).**

Message Code	<OT> Code	New Status Code	Meaning
7005	0	70050	Starter Disable
7005	1	70051	Starter Enable
7005	2	70052	Starter Disable

All periodic reporting and alert messages are TCP/UDP based. **Syntax:**

\$\$<UID>,7005,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<GS>,<OT>,<CQ>,<MI>,<IG>,<BB>,<PM>[,<SEQ>]###

Example:

\$\$354660046140268,7005,2013/11/05,23:24:42,25.80220,-80.33220,5.0,0,0,0,7,1.4,12.1,1,0,10,0,0,4,0,2##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140268	Callsign - Unit ID. The IMEI number
2	<EV#>	7005	Status Code - Event ID
3	<D>	2013/11/05	UTC Date of trigger (YYYY/MM/DD)
4	<T>	23:24:42	UTC Time of trigger (HH:MM:SS)
5	<LT>	25.80220	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	-80.33220	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	5.0	Altitude in meters
8	<SP>	0	Speed in MPH
9	<HD>	0.0	Heading in degrees
10	<SV>	7	Number of Satellites
11	<HP>	1.4	HDOP
12	<BV>	12.1	External Battery Voltage
13	<GS>	1	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
14	<OT>	0	Output State: 0 – Short circuit with GSM override enabled 1 – Open circuit 2 – Short circuit
15	<CQ>	10	GSM Signal Strength

16	<MI>	0	Miles driven since last reset or power cycle.
17	<IG>	0	Ignition Status: 0 – OFF 1 – ON
18	<BB>	4.2	Back-up battery voltage - Nominal Voltage: 3.7 V - Max Voltage: 4.2 V
19	<PM>	2	Last Power-up/Reset mode: 1- SW Reset 2- DC Power Up 3- Motion Sense 4- Interval Wakeup Ignition (Input 1)
20	<SEQ>	BLANK	Sequence Number
21	##	##	End string

## Type 7 Messages

Status Code	Meaning
3011+<BZ>	Disable OR Enable Late Payment

These messages will come in the comma-delimited format indicated below. This message is unique in that it's not a GPS message, but rather is a change of parameter response message. It does not include any GPS information.

### Status Code:

We need to tell apart the response to a Enable Late Payment or Disable Late Payment command. We can do this by combining the Status Code 3011+<BZ>. <BUZ> is parameter from Message Type 7 (as shown below).

Message Code	<BZ> Code	New Status Code	Meaning
3011	0	30110	Late Payment Reminder OFF
3011	1	30111	Late Payment Reminder ON
3011	2	30112	Late Payment Reminder ON

All periodic reporting and alert messages are TCP/UDP based. **Syntax:** \$\$<UID>,3011,<BZ>##

Example:

\$\$354660046140268,3011,0##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140268	Callsign - Unit ID. The IMEI number
2	<EV#>	3011	Status Code - Event ID
3	<BZ>	0	Buzzer State (if equipped in device): 0 = Buzzer OFF 1 = Buzzer Pattern 1 (slow beeps for 10 sec) 2 = Buzzer Pattern 2 (fast beeps for 10 sec)
4	##	##	End string



## Type 8 Messages

Status Code	Meaning
6026	Wake on Motion

This message will come in the format indicated below. **Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.**

Status Code:

We need to tell apart the different reasons for a Wake on Motion could happen to create the correct Status Code on our system. We can do this by combining the Status Code 6026+<PM>. <PM> is the parameter from the Message Type 8 (as shown below).

Message Code	<BZ> Code	New Status Code	Statude Name	Meaning
6026	1	60261	Wake on Ignition	Device woke up due to a Software Reset from a command sent to the device
6026	2	60262	Wake on Power	Device woke up due to applied DC power
6026	3	60263	Wake on Motion	Device woke up due to Motion detection
6026	4	60264	Periodic Report	Device woke up due to an Internal Wake-up timer
6026	5	60265	Wake on Ignition	Device woke up due to the Ignition being applied

All periodic reporting and alert messages are TCP/UDP based. **Syntax:**

\$\$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<BB>,<PM> [,<SEQ>]##

Example:

\$\$354660046140268,6026,2013/11/07,18:30:03,25.80217,-80.33227,5.1,0,0,0,10,0.8,12.2,8,0,0,4.2,3##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140268	Callsign - Unit ID. The IMEI number
2	<EV#>	6026	Status Code - Event ID
3	<D>	2013/11/07	UTC Date of trigger (YYYY/MM/DD)
4	<T>	18:30:03	UTC Time of trigger (HH:MM:SS)
5	<LT>	25.80217	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	-80.33227	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	5.1	Altitude in meters
8	<SP>	0	Speed in MPH
9	<HD>	0.0	Heading in degrees
10	<SV>	10	Number of Satellites
11	<HP>	0.8	HDOP

12	<BV>	<b>12.2</b>	External Battery Voltage
13	<CQ>	8	GSM Signal Strength
14	<MI>	0	Miles driven since last reset or power cycle.
15	<GS>	0	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
16	<BB>	4.2	Internal Battery Voltage
17	<PM>	3	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense 4 – Internal Wake-up 5 – Input 1
18	<SEQ>	BLANK	BLANK
	##	##	End string

## Type 9 Messages

Status Code	Meaning
6021	Power Shutdown Pending

This message will come in the format indicated below. **Please note that <SEQ> is the sequence number that will be used if acknowledge is enabled. In this case, messages will be sent without an Acknowledge, and the <SEQ> in the indicated format should be ignored.**

Status Code:

We need to tell apart the different reasons for a Wake on Motion could happen to create the correct Status Code on our system. We can do this by combining the Status Code 6021+<PM>. <PM> is the parameter from the Message Type 9 (as shown below).

<u>Message Code</u>	<u>&lt;BZ&gt; Code</u>	<u>New Status Code</u>	<u>Status Name</u>	<u>Meaning</u>
6021	1	60211	Entering Sleep Mode	Device last woke up due to a Software Reset from a command sent to the device
6021	2	60212	Entering Sleep Mode	Device last woke up due to applied DC power
6021	3	60213	Entering Sleep Mode	Device last woke up due to Motion detection
6021	4	60214	Periodic Report	Device last woke up due to an Internal Wake-up timer
6021	5	60215	Entering Sleep Mode	Device last woke up due to the Ignition being applied

All periodic reporting and alert messages are TCP/UDP based. **Syntax:**

\$\$<UID>,<EV#>,<D>,<T>,<LT>,<LN>,<AL>,<SP>,<HD>,<SV>,<HP>,<BV>,<CQ>,<MI>,<GS>,<BB>,<PM> [,<SEQ>]##

Example:

\$\$354660046140268,6021,2013/11/07,19:14:27,25.80227,-80.33230,-24.1,0,0.0,9,0.8,12.3,8,0,1,4.1,4##

	Parameter	Value	Meaning
	\$\$	\$\$	Start string
1	<UID>	354660046140268	Callsign - Unit ID. The IMEI number
2	<EV#>	6021	Status Code - Event ID
3	<D>	2013/11/07	UTC Date of trigger (YYYY/MM/DD)
4	<T>	19:14:27	UTC Time of trigger (HH:MM:SS)
5	<LT>	25.80227	Latitude in degrees. Floating Point with 5 digits after decimal
6	<LN>	-80.33230	Longitude in degrees. Floating Point with 5 digits after decimal
7	<AL>	-24.1	Altitude in meters
8	<SP>	0	Speed in MPH

9	<HD>	<b>0.0</b>	Heading in degrees
10	<SV>	<b>9</b>	Number of Satellites
11	<HP>	<b>0.8</b>	HDOP
12	<BV>	<b>12.3</b>	External Battery Voltage
13	<CQ>	<b>8</b>	GSM Signal Strength
14	<MI>	<b>0</b>	Miles driven since last reset or power cycle.
15	<GS>	<b>1</b>	GPS Status: 0 – no lock 1 – locked 2 – no comm. 3 – GPS OFF (power save mode)
16	<BB>	<b>4.1</b>	Internal Battery Voltage
17	<PM>	<b>4</b>	Last Power-up/Reset mode 1 – S/W Reset 2 – DC Power-Up 3 – Motion Sense 4 – Internal Wake-up 5 – Input 1
18	<SEQ>	BLANK	BLANK
	##	##	End string

# User Commands

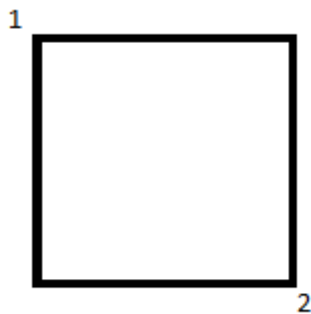
## Creating a Device-Based Geofence

### Rectangular Geofence:

#### Out-Going Command

The below command will be sent by UDP, and will be used to setup a rectangular geofence in the device. Whenever the device is powered up, or does a reset, it will resend the geofence message status of being inside or outside a geofence.

The device will accept 2 vertices for the rectangular Geofence. One is the up left corner of the rectangle and the other is the bottom right corner of the rectangle.



Notable restrictions:

- 10 geofences max including 5003 fences
- Coordinates with 5-digit decimal degrees resolution max

Below is the command to send the rectangular geofence to the device by UDP.

```
+XT:<UID>,5001,<ID>,<M>,<TLLAT>,<TLLON>,<BRLAT>,<BRLON>##
```

Example:

```
+XT:354660046140722,5001,0,3,25.8026,-80.3331,25.8034,-80.3320##
```

	Parameters	Value	Meaning
	\$\$	\$\$	Start of String
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<5001>	5001	This code indicates that the device will receive coordinates to configure a Rectangular geofence
3	<ID>	0	This is the unique ID for the geofence. It can have a value from 0 – 9.
4	<M>	3	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence 2-report when the device enters the geofence 3-report when the device enters or exits

			a geofence
5	<TLLAT>	25.8026	Latitude coordinates (5-digit decimal degrees) for top left corner of geofence
6	<TLLON>	-80.3331	Longitude coordinates (5-digit decimal degrees) for top left corner of geofence
7	<BRLAT>	25.8034	Latitude coordinates (5-digit decimal degrees) for bottom right corner of geofence
8	<BRLON>	-80.3320	Longitude coordinates (5-digit decimal degrees) for bottom right corner of geofence
	##	##	End of String

## Response

After receiving the command, the device will respond with the following format:

\$\$<UID>,<5001>,<ID>,<M>,<TLLAT>,<TLLON>,<TRLAT>,<TRLON>,<BRLAT>,<BRLON>,<BLLAT>,<BLLON>##

### Note:

- The response includes only 3-digit decimal degree resolution

Example:

\$\$354660046140722,5001,0,3,25.802,-80.333,25.803,-80.332,25.803,-80.330,25.801,-80.329##

	Parameters	Value	Meaning
	\$\$	\$\$	Start of String
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<5001>	5001	This code indicates that the device will receive coordinates to configure a Rectangular geofence
3	<ID>	0	This is the unique ID for the geofence. It can have a value from 0 – 9.
4	<M>	3	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence 2-report when the device enters the geofence 3-report when the device enters or exits a geofence
5	<TLLAT>	25.802	Latitude coordinates (5-digit decimal degrees) for top left corner of geofence
6	<TLLON>	-80.333	Longitude coordinates (5-digit decimal degrees) for top left corner of geofence
7	<TRLAT>	25.803	Latitude coordinates (5-digit decimal degrees) for top right corner of geofence
8	<TRLON>	-80.332	Longitude coordinates (5-digit decimal degrees) for top right corner of geofence
9	<BRLAT>	25.803	Latitude coordinates (5-digit decimal degrees) for bottom right corner of geofence

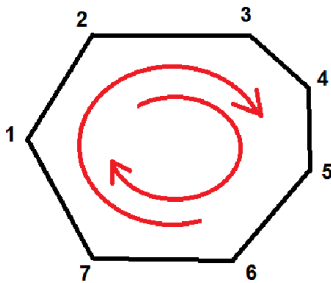
10	<BRLON>	-80.330	Longitude coordinates (5-digit decimal degrees) for bottom right corner of geofence
11	<BLLAT>	25.801	Latitude coordinates (5-digit decimal degrees) for bottom left corner of geofence
12	<BRLON>	-80.329	Longitude coordinates (5-digit decimal degrees) for bottom left corner of geofence
	##	##	End of String

## Polygonal Geofence:

### Out-Going Command

The below command will be sent by UDP, and will be used to setup a polygonal geofence in the device. Whenever the device is powered up, or does a reset, it will resend the geofence message status of being inside or outside a geofence.

The device will accept from 3 to 7 vertices for the polygonal geofence. The points are transmitted to the device in clockwise or counterclockwise fashion, as shown below:



Notable restrictions:

- 10 geofences max including 5001 fences
- Enter 3 to 6 geofence coordinates with 5-digit decimal degrees resolution max
- Enter 7 geofence coordinates with 4-digit decimal degrees resolution max

Below is the command to send the polygon geofence to the device by UDP.

+XT:<UID>,<5003>,<ID>,<M>,<LT1>,<LN1>,<LT2>,<LN2>,<LTn>,<LNn>##

Example:

+XT:354660046140722,5003,0,3,25.8026,-80.3331,25.8034,-80.3320,25.8033,-80.3304,25.8017,-80.3292,25.8009,-80.3304,25.8008,-80.3320,25.8017,-80.3331##

	Parameters	Value	Meaning
	\$\$	\$\$	Start of String
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<5003>	5003	This code indicates that the device will receive coordinates to configure a Polygonal geofence
3	<ID>	0	This is the unique ID for the geofence.

			It can have a value from 0 – 9.
4	<M>	3	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence 2-report when the device enters the geofence 3-report when the device enters or exits a geofence
5	<LT1 >	25.8026	Latitude1
6	<LN1>	-80.3331	Longitude1
7	<LT2 >	25.8034	Latitude2
8	<LN2>	-80.3320	Longitude2
9	<LT3 >	25.8033	Latitude3
10	<LN3>	-80.3304	Longitude3
11	<LT4 >	25.8017	Latitude4
12	<LN4>	-80.3292	Longitude4
13	<LT5 >	25.8009	Latitude5
14	<LN5>	-80.3304	Longitude5
15	<LT6 >	25.8008	Latitude6
16	<LN6>	-80.3320	Longitude6
17	<LT7 >	25.8017	Latitude7
18	<LN7>	-80.3331	Longitude7
	##	##	End of String

## Note

To setup a device Geofence is mandatory to use maximum 5 digit after the decimal place for geofences with up to 6 coordinates and 4 digit after the decimal place for geofences with 7 coordinates.

## Response

After receiving the command, the device will respond with the following format:

\$\$<UID>,<5003>,<ID>,<M>,<LT1>,<LN1>,<LT2>,<LN2>,<LT3>,<LN3>,<LT4>,<LN4>,<LT5>,<LN5>,<LT6>,<LN6>,<LT7>,<LN7>##

### Note:

- The response includes only 4-digit decimal degree resolution

Example:

\$\$354660046140722,5003,0,3,25.8026,-80.3331,25.8034,-80.3320,25.8033,-80.3304,25.8017,-80.3292,25.8009,-80.3304,25.8008,-80.3320,25.8017,-80.3331##

	Parameters	Value	Meaning
	\$\$	\$\$	Start of String
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<5003>	5003	This code indicates that the device will receive coordinates to configure a Polygonal geofence
3	<ID>	0	This is the unique ID for the geofence. It can have a value from 0 – 9.



4	<M>	3	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence 2-report when the device enters the geofence 3-report when the device enters or exits a geofence
5	<LT1 >	25.8026	Latitude1
6	<LN1>	-80.3331	Longitude1
7	<LT2 >	25.8034	Latitude2
8	<LN2>	-80.3320	Longitude2
9	<LT3 >	25.8033	Latitude3
10	<LN3>	-80.3304	Longitude3
11	<LT4 >	25.8017	Latitude4
12	<LN4>	-80.3292	Longitude4
13	<LT5 >	25.8009	Latitude5
14	<LN5>	-80.3304	Longitude5
15	<LT6 >	25.8008	Latitude6
16	<LN6>	-80.3320	Longitude6
17	<LT7 >	25.8017	Latitude7
18	<LN7>	-80.3331	Longitude7
	##	##	End of String

## Deleting Device-Based Geofence

### Out-Going Command

To delete a geofence, we need to send the geofence command with the **Mode <M> = 0**. Below are two ways of doing it. The

**\$\$<UID>,<5003>,<ID>,<M>,<LT1>,<LN1>,<LT2>,...,<LTn>,<LNn>##**

Example:

+XT:354660046140722,5003,0,0,25.8026,-80.3331,25.8034,-80.3320,25.8033,-80.3304,25.8017,-80.3292,25.8009,-80.3304,25.8008,-80.3320,25.8017,-80.3331##

**OR**

+XT:354660046140722,5003,0,0,,,,,,,,,,,,,##

**Note:** The empty spaces mean that those values are not over-written

	Parameters	Value	Meaning
1	<UID>	<b>354660046140722</b>	Callsign - Unit ID. The IMEI number.
2	<5003>	<b>5003</b>	This code indicates that the device will receive coordinates to configure a square geofence
3	<ID>	<b>0</b>	This is the unique ID for the geofence. It can have a value from 0 – 9.
4	<M>	<b>0</b>	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence

			2-report when the device enters the geofence 3-report when the device enters or exits a geofence
5	<LT1>	25.8026	Latitude1
6	<LN1>	-80.3331	Longitude1
7	<LT2>	25.8034	Latitude2
8	<LN2>	-80.3320	Longitude2
9	<LT3>	25.8033	Latitude3
10	<LN3>	-80.3304	Longitude3
11	<LT4>	25.8017	Latitude4
12	<LN4>	-80.3292	Longitude4
13	<LT5>	25.8009	Latitude5
14	<LN5>	-80.3304	Longitude5
15	<LT6>	25.8008	Latitude6
16	<LN6>	-80.3320	Longitude6
17	<LT7>	25.8017	Latitude7
18	<LN7>	-80.3331	Longitude7
	##	##	End of String

## Response

After receiving the command, the device will respond with the following format:

**\$\$<UID>,<5003>,<ID>,<M>,<LT1>,<LN1>,<LT2>,<LTn>,<LNn>##**

Example:

\$\$354660046140722,5003,0,0,25.8026,-80.3331,25.8034,-80.3320,25.8033,-80.3304,25.8017,-80.3292,25.8009,-80.3304,25.8008,-80.3320,25.8017,-80.3331##

	Parameters	Value	Meaning
	\$\$	\$\$	Start of String
1	<UID>	354660046140722	Callsign - Unit ID. The IMEI number.
2	<5003>	5003	This code indicates that the device will receive coordinates to configure a square geofence
3	<ID>	0	This is the unique ID for the geofence. It can have a value from 0 – 9.
4	<M>	0	This indicates the mode of the geofence. 0-disabling the geofence 1-report when the device leaves the geofence 2-report when the device enters the geofence 3-report when the device enters or exits a geofence
5	<LT1>	25.8026	Latitude1
6	<LN1>	-80.3331	Longitude1
7	<LT1>	25.8034	Latitude2
8	<LN1>	-80.3320	Longitude2
9	<LT1>	25.8033	Latitude3
10	<LN1>	-80.3304	Longitude3

11	<LT1>	<b>25.8017</b>	Latitude4
12	<LN1>	<b>-80.3292</b>	Longitude4
13	<LT1>	<b>25.8009</b>	Latitude5
14	<LN1>	<b>-80.3304</b>	Longitude5
15	<LT1>	<b>25.8008</b>	Latitude6
16	<LN1>	<b>-80.3320</b>	Longitude6
17	<LT1>	<b>25.8017</b>	Latitude7
18	<LN1>	<b>-80.3331</b>	Longitude7
	<b>##</b>	<b>##</b>	End of String

## Locate Now

### Out-Going Command

To do a Locate, we need to send the device the following command:

```
+XT:<UID>,<7001>,<X>,##
```

Example:

```
+XT:354660046140722,7001,1##
```

	Parameters	Value	Meaning
1	<UID>	351934046811407	Callsign - Unit ID. The IMEI number.
2	<7001>	7001	This code indicates that the device will receive a locate command
3	<X>	1	1 - send response by UDP/TCP 2 - send response by SMS
	##	##	This indicates the end of the command

### Response

[Refer to Message Type 5.](#)

## ***Enable and Disable Starter Commands***

### **Out-Going Command**

To do a Disable or Enable Starter, we need to send the device the following command:

```
+XT:<UID>,7005,<OUT>,<X>##
```

Example:

```
+XT:354660046701416,7005,0,1##
```

	<b>Parameters</b>	<b>Value</b>	<b>Meaning</b>
1	<UID>	354660046701416	Callsign - Unit ID. The IMEI number.
2	<7005>	7005	This code indicates that the device will receive a Disable or Enable Starter command
3	<OUT>	0	Indicates how Starter will be disabled: 0 – Short with GSM coverage ( <b>Starter Disable</b> ) 1 – Open ( <b>Starter Enable</b> ) 2 – Short (doesn't matter GSM coverage) ( <b>Starter Disable</b> )
4	<X>	1	Response method: 1 – Will respond via UDP/TCP 2 – Will respond via SMS
	##	##	This indicates the end of the command

### **Response**

*Refer to Message Type 6.*

## ***Enable and Disable Late Payment Reminder Commands***

### **Out-Going Command**

To do a Enable or Disable Late Payment Reminder, we need to send the device the following command:

+XT:<UID>,3011,<BUZ>##

Example:

+XT:354660046701416,3011,2##

	<b>Parameters</b>	<b>Value</b>	<b>Meaning</b>
1	<UID>	354660046701416	Callsign - Unit ID. The IMEI number.
2	<3011>	3011	This code indicates that the device will receive a Disable or Enable Late Payment Reminder command
3	<BUZ>	0	0 – Buzzer OFF - Disable Late Payment Reminder 1 – Buzzer Pattern 1 (slow beeps for 10 sec) – Enable Late Payment Reminder 2 – Buzzer Pattern 2 (fast beeps for 10 sec) – Disable Late Payment Reminder
	##	##	This indicates the end of the command

### **Response**

*Refer to Message Type 7.*

## Error Message

The error message from any UDP command will appear as follows:

\$\$351934046811407,<EV#>,XT\_ERROR##

<EV#> is the event number of the message that was sent to the device.

# GPS Interpretation

HDOP vs. No. of Satellites vs. GPS Status

Parameter	Good Values	Bad Values
HDOP	>0 – 4	0 and >4
No. of Satellites	>= 4	<4
GPS Status	1	0,2 and 3

The messages only contain one time reference, and that is the UTC Date and Time that the message was triggered. To manage these types of messages, below is a table showing when to take the UTC date/time or the server time. Also shown is when we should take the Lat/Long reported by the device, or use the last known server position

Parameters				
<u>GPS Status</u>	<u>No. of Satellites</u>	<u>HDOP</u>	<u>Time (if != 0000/00/00 00:00:00)</u>	<u>Lat/Long</u>
1	Good Values	Good Values	From Device	From Device
	Good Values	Bad Values	From Device	Last Server Position
	Bad Values	Good Values	From Device	Last Server Position
	Bad Values	Bad Values	From Device	Last Server Position
0,2,3	Good Values	Good Values	Use Server Time	From Device
	Good Values	Bad Values	Use Server Time	Last Server Position
	Bad Values	Good Values	Use Server Time	Last Server Position
	Bad Values	Bad Values	Use Server Time	Last Server Position

## Caution!

The above table assumes that the UTC Date and Time are not 0000/00/00 00:00:00. In this case, we have no choice but to use the server date and time.

If the Lat/Long is 00.00000, then we have no choice but to use the last known server position, if this is available.