

# CAREU UCAN · CAREU Ugo Protocol Document

Version: 1.10  
Date: Apr.30, 2014  
Status: Release



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## Table Of Contents

I.	Introduction to CAREU U Series Protocol .....	5
II.	Version History .....	6
III.	Scope of the Document .....	8
IV.	Documents Conventions .....	9
A.	AT Command Request/Response .....	10
B.	Request and Response Transitions .....	10
C.	Message Format .....	11
1.	AT Command Request Message Format .....	11
2.	AT Command Response Message Format .....	11
3.	Asynchronous Position Message Format .....	12
4.	Acknowledgement .....	14
5.	I/O Status Table .....	15
6.	Vehicle Status Table .....	15
7.	Heartbeat Message .....	16
8.	OBd Report Data Format .....	17
9.	Event Reserve Table .....	19
V.	AT Commands .....	20
A.	System Communication Configurations .....	20
1.	To Define Unit ID to Device .....	20
	AT\$MODID Modem ID .....	20
2.	The SIMCARD Related Setting .....	21
	AT\$PIN Set SIM PIN code .....	21
	AT\$APN Access point name configuration .....	22
3.	To Define SMS Operation Priority .....	23
	AT\$SMSDST SMS destination address .....	23
	AT\$SMSLST List of SMS numbers .....	24
	AT\$SMSCFG SMS report format configure .....	25
4.	To Setup a GPRS communication .....	26
	AT\$GPRSEN GPRS connection enable .....	26
	AT\$HOSTS Host IP addresses used for GPRS communications .....	27
	AT\$IPTYPE GPRS TCP/UDP packet type selection .....	29
	AT\$GSMJDC GSM Jamming Detection Control .....	30
5.	The Configuration of Data Format, and Data Sending Algorithm .....	31
	AT\$FORMAT Message format setting .....	31
	AT\$HB Heartbeat settings .....	32
	AT\$RETRY Retry settings for communications with host server .....	33
	AT\$NETCFG Roaming Network configuration .....	34
B.	System Operation Related Configurations .....	35
1.	The Related Settings of System Operation .....	35
	AT\$FILTER GPS data filtering settings .....	35
	AT\$ODO GPS odometer read and setting .....	36
	AT\$URL Custom URL string for SMS GP3 .....	37
2.	The Special commands for System Maintains .....	38
	AT\$GPSPT GPS pass-through .....	38



AT\$REBOOT	Reboot device .....	39
AT\$RESET	Reset device .....	39
AT\$MSGQCL	Message queue clear .....	40
AT\$SAVE	Save user parameters .....	41
<b>3. The Commands for Querying System Status .....</b>		<b>42</b>
AT\$DNS	Query the DNS IP address(es) .....	42
AT\$MSGQ	Message queue read .....	42
AT\$VEXT	External or main power voltage read .....	43
AT\$CV	Calibrate Voltage .....	43
AT\$VBAT	Battery voltage read .....	44
AT\$BBCTRL	Backup battery ON/OFF control .....	45
AT\$VERSION	Get the firmware version of the unit. ....	46
AT\$QUST	Query communication status .....	46
AT\$IMEI	Read device IMEI number .....	47
AT\$IP	Device IP query .....	47
<b>4. Power Management Setting .....</b>		<b>48</b>
AT\$PWRM	Power management settings .....	48
<b>5. To Get Position and Setup Device for Regular Tracking .....</b>		<b>50</b>
AT\$GETPDS	Get position and device status .....	50
GP<n>	Short command for get current position .....	52
AT\$PDSR	Position and device status reporting settings .....	53
AT\$LPRC	Low Power Report Configuration .....	55
<b>C. The Basic Alert Operation .....</b>		<b>56</b>
<b>1. The Way to Detect Input/ACC Condition .....</b>		<b>56</b>
AT\$IGN	Ignition alert settings .....	56
AT\$IGNEN	Ignition alert enable .....	57
<b>2. The Way Detect Engine ON/OFF Condition .....</b>		<b>58</b>
AT\$EGN	Engine alert setting .....	58
AT\$EGNEN	Engine alert enable .....	59
<b>3. The Way to Detect Over-Speeding Condition .....</b>		<b>60</b>
AT\$SPEED	High speed alert setting .....	60
AT\$SPEEDEN	High speed alert enable .....	61
<b>4. The Way to Setup Prohibit Zone Area Detection .....</b>		<b>63</b>
AT\$GF	Geo-fence alert settings .....	63
AT\$GFEN	Geo-fence alert enable .....	65
<b>5. The Way to Setup Power Operation Status Detection .....</b>		<b>67</b>
AT\$POWER	Power status alert setting .....	67
AT\$POWEREN	Power alert enable .....	68
<b>6. The Way to Detect GPS Signal Healthy and Connector status .....</b>		<b>70</b>
AT\$GPSMON	GPS monitor .....	70
AT\$GPSALEN	GPS alert enable .....	71
<b>7. The Way Setup Motion Detecting Condition .....</b>		<b>72</b>
AT\$MOTDET	Motion detection settings .....	72
AT\$MOTEN	Motion detected alert enable .....	73
<b>8. The Command to Detect Impact in Vehicle .....</b>		<b>74</b>
AT\$IMPDET	Impact detection settings .....	74
AT\$IMPEN	Impact detected alert enable .....	75
<b>9. The Way to Setup Vehicle Idling Status and Time .....</b>		<b>77</b>
AT\$IDLE	Configure idle alerts .....	77
AT\$IDLEEN	Idle alert/report enable .....	78
<b>10. The Way to Setup Speed Acceleration and Deceleration Alert .....</b>		<b>79</b>



Released Date: Apr. 30, 2014

AT\$HAD	Harsh Acceleration and Deceleration setting	79
AT\$HADEN	Harsh Acceleration and Deceleration report enable	80
AT\$HAC	Harsh Cornering setting	81
<b>11. OBD Mode Control and Report Configuration</b>		<b>82</b>
AT\$OBDMODE	OBD Mode Control (For UCAN)	82
AT\$OBDS	Display OBD II bus scanning status	82
AT\$OBDRPT	OBD Report Control (For UCAN)	83
<b>12. OBD Alerts</b>		<b>85</b>
AT\$OBDALRT	OBD Alert Control (For UCAN)	85
AT\$OBDDTC	DTC Alert (For UCAN)	86
AT\$OBGDTC	Get DTC Code (For UCAN)	87
AT\$OBDRPM	Engine Over-Revving Alert (For UCAN)	88
AT\$OBDECT	Engine Over Heated Alert (For UCAN)	89
AT\$OBPDLD	Acceleration Pedal Over Stepping Alert (For UCAN)	90
<b>13. The Extra Application Commands</b>		<b>91</b>
AT\$REPORT	User defined report configuration	91
AT\$GFSP	Geo-fence speed alert setting	94
AT\$COMM	Communication parameters configuration	95
AT\$FTP	FTP firmware download command	96
AT\$FILE	Firmware file uploading command	97
AT\$RFOUT	RF Output Control	98
AT\$RELAYID	Relay ID Set and Clear	99
<b>VI. Appendices</b>		<b>100</b>
A.	Message ID Description	100
B.	CME Errors Description	102
C.	CMS Errors Description	103
D.	LED Indications	105
1.	GPS LED Status Table	105
2.	GSM LED Status Table	105
<b>VII. About Systems &amp; Technology Corporation</b>		<b>106</b>



## **I. Introduction to CAREU U Series Protocol**

This document describes the protocol of the CAREU U Series devices. The S&T proprietary messaging protocol is used for all communications between the base and the device. This protocol incorporates error checking, message sequencing with full acknowledgement of received messages on request. The base station sends messages to the device and waits for an acknowledgement message from the device to indicate the status of the request. So this guide covers all protocol information you need to design and set up AVL applications incorporating the CAREU U Series devices.

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## II. Version History

Date	Version	What's new	Firmware Version Required	Hardware Version Required
2012/06/14	0.1	Created	v0.4_r23	0.4 (ES)
2012/07/12	0.2	Correct AT command statement Format fix Add AT\$SAVE Command	v0.4_r23	0.4 (ES)
2012/08/20	0.3	Add AT\$CV Command	v0.5_r26	0.4(ES)
2012/09/10	0.3	Correct AT command statement Fix AT\$IPTYPE Command Fix AT\$BBCTRL Command Fix AT\$ODO Command Fix AT\$GETPDS Command Fix AT\$RESET Command Fix AT\$VBAT Command Fix AT\$PWRM Command	v0.5_r28	0.4(ES)
2012/9/12	1.0	Add AT\$OBDS Command Release	v1.0_r00	A
2012/12/12	1.1	Format fix Fix OBD Report format Fix AT\$ODO Definition Fix AT\$HOSTS NOTE Fix AT\$MSGQ Example Fix AT\$LPRC Definition Fix AT\$POWEREN Misprint Fix AT\$OBDETC Example Fix AT\$OBDPDL Misprint Add AT\$GFSP Command Add Report ID 180 (Misprint) Fix About LED Status Table display mode	v1.0_r02	A
2013/01/11	1.2	Add Deliver HB option to <Force connection>	v1.0_r03	A
2013/03/01	1.3	Modify <OBD odometer> range of AT\$ODO Modify <Mode> description of AT\$PDSR		
		Add <alert> to AT\$OBDRPT	v1.0_r04	
		Add AT\$HAD and AT\$HADEN	v1.0_r04	
		Add AT\$REPORT and AT\$SMSCFG	v1.0_r05	
2013/04/30	1.4	Correct parameter range of PWRM Add Geo-fence speed alert report ID		
2013/08/09	1.5	Add configuration file support to AT\$FILE Add <duration> to AT\$SPEED	v1.0_r06 v1.1_r07	
2013/10/18	1.6	Modify <Destination> description of AT\$PDSR		
2013/12/17	1.7	Modify parameters of AT\$RESET Add AT\$GSMJDC	v1.1_r08 v1.1_r11	
		Modify example of AT\$PDSR		
2014/02/21	1.8	Add AT\$HAC Add AT\$RFOUT and AT\$RELAYID	v1.2_r02 v1.2_r05	
2014/04/03	1.9	Add <Speed Source> to AT\$HAD Add time or distance mode to AT\$PDSR	v1.2_r08 v1.2_r09	



2014/04/30	1.10	Add message ID of HAC		

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### **III. Scope of the Document**

This document presents the AT Command Set for the CAREU UCAN and UGO devices.

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## IV. Documents Conventions

Convention	Description
< >	AT Request/Response Parameters are shown within the less than and greater than symbols.
[ ]	Optional parameters are shown between brackets. If optional parameters are not present, default values are used.
{ }	Represents a group of parameters defined elsewhere.
''	Arguments omitted by consecutive comments are equivalent to a parameter not being specified, indicating that the default value be used.



### A. AT Command Request/Response

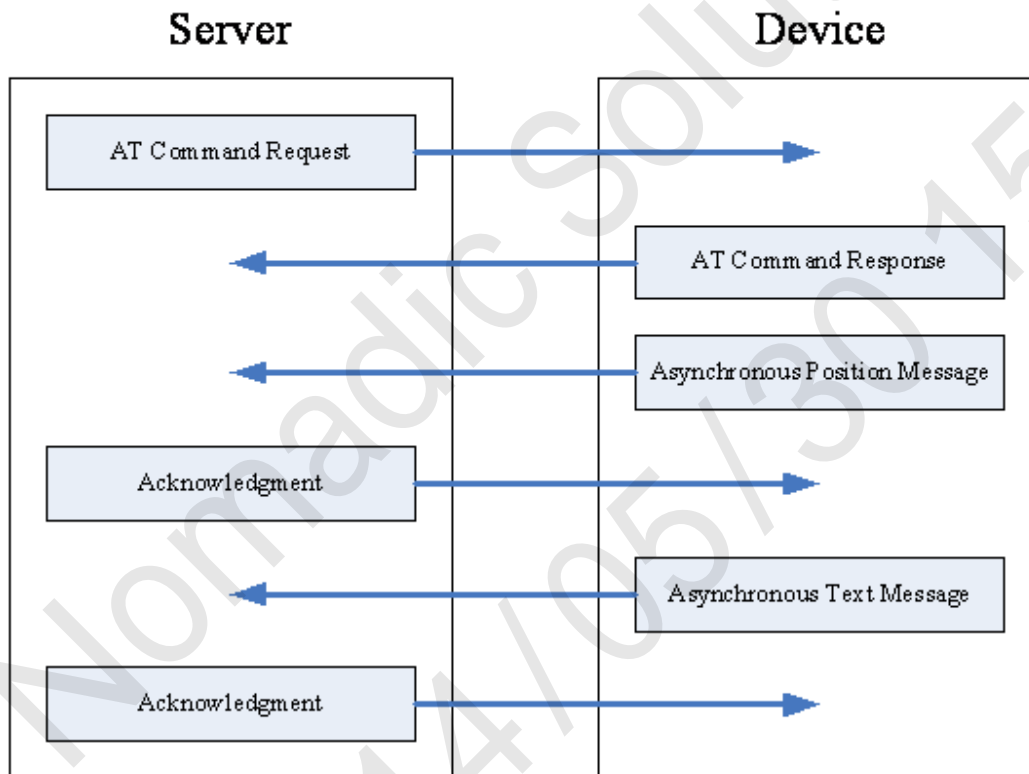
Each AT Command sent to the device shall be followed by a device response that may simply be the text "OK : command", "ERROR : command", or other response as specified in this requirements document.

### B. Request and Response Transitions

Each AT command request send by the server to the device, there shall have a response from the device to the server. See the next section for the detailed message format.

Each Asynchronous message sent by the device to the host server via GPRS shall be followed by an acknowledgement as defined in the Message type section if use binary message format.

Each Asynchronous message sent by the device the SMS destination shall not be followed by an acknowledgement.





### C. Message Format

The request and response message format are different according to the AT\$FORMAT command setting. The AT\$FORMAT command can specify ASCII or Binary format for all messages. Please note that all binary message formats are described as Big-endian.

#### 1. AT Command Request Message Format

ASCII Format

Send AT command data directly without any other information.

Binary Format

Byte	Name	Size	Type	Description
0	Transaction ID	2	Unsigned Integer	16-bit transaction ID
2	Message Encoding	1	Unsigned Integer	0x01 – AT Command
3	Message Type	1	Unsigned Integer	0x00 – Request
4	Data Length	2	Unsigned Integer	Message data length
6	Message Data	Variable	Character String	AT Command Data

#### 2. AT Command Response Message Format

ASCII Format

Response AT Response Data directly without any other information.

Binary Format

Byte	Name	Size	Type	Description
0	Transaction ID	2	Unsigned Integer	16-bit transaction ID
2	Message Encoding	1	Unsigned Integer	0x01 – AT Command
3	Message Type	1	Unsigned Integer	0x01 – Response 0x04 – Error Response
4	Data Length	2	Unsigned Integer	Message data length
6	Message Data	Variable	Character String	AT Response Data



### 3. Asynchronous Position Message Format

ASCII Format

<Modem\_ID>, <GPS\_DateTime>, <Longitude>, <Latitude>, <Speed>, <Direction>, <Altitude>, <Satellites>, <Message ID>, <Input Status>, <Output Status>, <Analog Input1>, <Analog Input2>, <RTC\_DateTime>, <Mileage>

Parameter	Format	Description
<Modem_ID>		Modem ID (See <a href="#">AT\$MODID</a> command)
<GPS DateTime>	YYYYMMDDhhmmss	The latest valid GPS date and time YYYY : Year position was received. MM : Month position was received. DD : Day position was received. Hh : Hour position was received. Mm : Minute position was received. Ss : Second position was received.
<Longitude>		Longitude in decimal degrees
<Latitude>		Latitude in decimal degrees
<Speed>		Speed in decimal kilometer per hour
<Direction>		Direction in decimal degrees
<Altitude>		Altitude in meters
<Satellites>		Number of Satellites
<Message ID>		See <a href="#">Message ID Table</a>
<Input Status>		Decimal value of Input Status (See <a href="#">I/O Status Table</a> Bit0..Bit7)
<Output Status>		Decimal value of Output Status (See <a href="#">I/O Status Table</a> Bit8..Bit15)
<Analog Input1>		Main Power voltage
<Analog Input2>		Backup Battery voltage
<RTC DateTime>	YYYYMMDDhhmmss	The RTC (Real Time Clock) date and time YYYY : Year position was received. MM : Month position was received. DD : Day position was received. Hh : Hour position was received. Mm : Minute position was received. Ss : Second position was received.
<Mileage>		Mileage accumulation



Binary Format

Byte	Name	Size	Type	Description
0	Transaction ID	2	Unsigned Integer	16-bit transaction ID
2	Message Encoding	1	Unsigned Integer	0x00 – Binary Position Data
3	Message Type	1	Unsigned Integer	0x02 – Asynchronous
4	Modem ID	8	Unsigned Integer	Modem ID or IMEI (64Bits)
12	Message ID	2	Unsigned Integer	See <a href="#">Message ID Table</a>
14	Data Length	2	Unsigned Integer	16-bit data length
16	GPS Hour	1	Unsigned Integer	0 to 23
17	GPS Minute	1	Unsigned Integer	0 to 59
18	GPS Seconds	1	Unsigned Integer	0 to 59
19	GPS Year	1	Unsigned Integer	0 to 99
20	GPS Month	1	Unsigned Integer	1 to 12
21	GPS Day	1	Unsigned Integer	1 to 31
22	Latitude	4	Signed Integer	0.00001 degree units
26	Longitude	4	Signed Integer	0.00001 degree units
30	Altitude	3	Signed Integer	Meters
33	Speed	2	Unsigned Integer	0.1 meters per second units
35	Direction	2	Unsigned Integer	0.1 degree units
37	Odometer	4	Unsigned Integer	Meters (See <a href="#">AT\$ODO</a> command)
41	HDOP	1	Unsigned Integer	0.1 units
42	Satellites	1	Unsigned Integer	Number of Satellites Used
43	I/O Status	2	Unsigned Integer	See <a href="#">I/O Status Table</a>
45	Vehicle Status	1	Bit Mask	See <a href="#">Vehicle Status Table</a>
46	Main Power voltage	2	Unsigned Integer	0.001 voltage units
48	Backup Battery voltage	2	Unsigned Integer	0.001 voltage units
50	RTC Hour	1	Unsigned Integer	0 to 23
51	RTC Minute	1	Unsigned Integer	0 to 59
52	RTC Seconds	1	Unsigned Integer	0 to 59
53	RTC Year	1	Unsigned Integer	0 to 99
54	RTC Month	1	Unsigned Integer	1 to 12
55	RTC Day	1	Unsigned Integer	1 to 31
56	Pos Sending Hour	1	Unsigned Integer	0 to 23
57	Pos Sending Minute	1	Unsigned Integer	0 to 59
58	Pos Sending Seconds	1	Unsigned Integer	0 to 59
59	Pos Sending Year	1	Unsigned Integer	0 to 99
60	Pos Sending Month	1	Unsigned Integer	1 to 12
61	Pos Sending Day	1	Unsigned Integer	1 to 31



#### 4. Acknowledgement

The acknowledge message for Binary format.

Byte	Name	Size	Type	Description
0	Transaction ID	2	Unsigned Integer	16-bit transaction ID
2	Message Encoding	1	Unsigned Integer	0x00 – Binary Data
3	Message Type	1	Unsigned Integer	0x03 – Acknowledge
4	Status Code	2	Unsigned Integer	0x0000 – Success 0x0001 – Error

The acknowledge message for ASCII format only used for Heartbeat.

Byte	Name	Size	Type	Description
0	Header1	1	Unsigned Integer	0xFA
1	Header2	1	Unsigned Integer	0xF8
2	Sequence ID	2	Unsigned Integer	0 to 65535
4	Modem ID	4	Unsigned Integer	See <a href="#">AT\$MODID</a> command



5. I/O Status Table

ASCII Format

Input Status

Bit	Description
0	Ignition Status

Binary Format

Bit	Description
0	Ignition Status

6. Vehicle Status Table

Binary Format

Bit	I/O Description
0	Engine
1	Motion

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## 7. Heartbeat Message

ASCII Format

Byte	Name	Size	Type	Description
0	Header1	1	Unsigned Integer	0xFA
1	Header2	1	Unsigned Integer	0xF8
2	Sequence ID	2	Unsigned Integer	0 to 65535
4	Modem ID	4	Unsigned Integer	See <a href="#">AT\$MODID</a> command

Binary Format

Byte	Name	Size	Type	Description
0	Transaction ID	2	Unsigned Integer	16-bit transaction ID
2	Message Encoding	1	Unsigned Integer	0x00 – Binary Position Data
3	Message Type	1	Unsigned Integer	0x02 – Asynchronous
4	Modem ID	8	Unsigned Integer	Modem ID or IMEI (64Bits)
12	Message ID	2	Unsigned Integer	0xAB (Heartbeat Message ID)
14	Data Length	2	Unsigned Integer	16-bit data length (6)
16	RTC Hour	1	Unsigned Integer	0 to 23
17	RTC Minute	1	Unsigned Integer	0 to 59
18	RTC Seconds	1	Unsigned Integer	0 to 59
19	RTC Year	1	Unsigned Integer	0 to 99
20	RTC Month	1	Unsigned Integer	1 to 12
21	RTC Day	1	Unsigned Integer	1 to 31



### 8. OBD Report Data Format

The OBD report data is appended to the S&T Asynchronous Position Message.

For ASCII format, every byte is converted into two hexadecimal ASCII characters, e.g. 0A to represent hex value of 0x0A, and data fields are separated by comma (,).

Format

Group 0: SAE J1979		Report ID: 300		
	Description	Bytes	Units	Formula
1	Malfunction Indicator Lamp (MIL) status	1	n/a	Bit 7: 0-off, 1-on Bit 6~0: number of DTCs
2	Calculated engine load value	1	%	= value * 100 / 255 Range: 0 ~ 100
3	Engine coolant temperature	1	°C	= value - 40 Range: -40 ~ 215
4	Fuel pressure	1	kPa	= value * 3 Range: 0~ 765
5	Intake manifold absolute pressure	1	kPa	= value Range: 0 ~ 255
6	Engine RPM	2	rpm	= value / 4 Range: 0 ~ 16383
7	Vehicle speed	1	km/h	= value Range: 0 ~ 255
8	Intake air temperature	1	°C	= value - 40 Range: -40 ~ 215
9	MAF air flow rate	2	g/sec	= value / 100 Range: 0 ~ 655.35
10	Throttle position	1	%	= value * 100 / 255 Range: 0 ~ 100
11	Run time since engine start	2	sec	= value Range: 0 ~ 65535
12	Distance traveled with MIL on	2	km	= value Range: 0 ~ 65535
13	Fuel level input	1	%	= value * 100 / 255 Range: 0 ~ 100
14	Barometric pressure	1	kPa	= value Range: 0 ~ 255
15	Control module voltage	2	volt	= value / 1000 Range: 0 ~ 65.535
16	Ambient air temperature	1	°C	= value - 40 Range: -40 ~ 215
17	Accelerator pedal position	1	%	= value * 100 / 255 Range: 0 ~ 100



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18	Total fuel used	2	Liter	= value * 0.1 Range: 0 ~ 6553.5
19	OBD odometer (Trip)	2	km	= value Range: 0 ~ 65535
20	Reserved	1*2	n/a	n/a
	<b>Total Length</b>	<b>28</b>		

Note:

1. The vehicle manufacturers may not provide all of the OBD data listed above. Please consult your vehicle manufacturers for more information.
2. "Total fuel used" is only supported on gasoline/petrol engines.



9. Event Reserve Table

Byte		Size	Event Description	Command
62	Main / Ext Voltage	2	External Voltage in millivolts	AT\$EGN
62	GeoFence Index	1	1 to 50	AT\$GF
62	Duration	2	Duration vehicle was idle mode in seconds.	AT\$IDLE
62	Maximum Speed	2	0.1 meters per second units	AT\$SPEED
64	Average Speed	2	0.1 meters per second units	
66	Duration	2	Duration device exceeded speed threshold in seconds.	
62	Main/Ext Voltage	2	External Voltage in millivolts	AT\$POWER
64	Battery Voltage	2	Battery Voltage in millivolts	
62	X-G Force	1		AT\$IMPDET
63	Y-G Force	1		
64	Z-G Force	1		
62	OBD data	28	OBD II reading	AT\$OBDRPT



## V. AT Commands

The following shows all S&T proprietary AT command for CAREU U Series devices. Please note that all changed parameters won't be saved into the non-volatile memory until issue SAVE command.

### A. System Communication Configurations

#### 1. To Define Unit ID to Device

AT\$MODID	Modem ID
<b>Description</b>	This command sets the Modem ID of the device. If the Modem ID is not set, the default Modem ID is IMEI number.
<b>Syntax</b>	<b>Write Command:</b> AT\$MODID=<Modem ID> <b>Read Command:</b> AT\$MODID?
<b>Parameters</b>	<Modem ID>  Up to 20 digit modem ID. This number must be resolvable to a 64 bit unsigned integer. Note: for ASCII format, the maximum value allowed for MODID is 4294967295 (Decimal value) since ASCII heart beat Modem ID only allows 4 bytes.
<b>Return Value</b>	<b>Write Command:</b> OK : MODID <b>Read Command:</b> OK : MODID \$MODID=<Modem ID> <b>Error Response:</b> ERROR : MODID
<b>Example</b>	AT\$MODID=1010000001 OK : MODID AT\$MODID? OK : MODID \$MODID=1010000001
<b>Note</b>	



2. The SIMCARD Related Setting

AT\$PIN Set SIM PIN code	
<b>Description</b>	This command is used to set PIN code for the SIM card. When the device start to register to the cellular network, the device will send this PIN code to unlock the SIM card and start to register to the cellular network.
<b>Syntax</b>	<b>Write</b> Command: AT\$PIN=<PIN Code> <b>Read</b> Command: AT\$PIN?
<b>Parameters</b>	<PIN Code>      PIN code for the SIM Card. (Max 7 characters)
<b>Return Value</b>	<b>Write</b> Command: OK : PIN <b>Read</b> Command: OK : PIN \$PIN=<PIN Code> <b>Error</b> Response: ERROR : PIN
<b>Example</b>	AT\$PIN=0000 OK : PIN
<b>Note</b>	



AT\$APN Access point name configuration	
<b>Description</b>	This command is used to set or query the device for its APN (Access Point Name) and authorization information for GPRS connection. The information is provided by GPRS service operator.
<b>Syntax</b>	<b>Write Command:</b> AT\$APN=<APN>,<User Name>,<Password> <b>Read Command:</b> AT\$APN?
<b>Parameters</b>	<APN>                      Access Point Name (Max 35 characters)
	<User Name>              GPRS login user name (Max 30 characters)
	<Password>                GPRS login password (Max 30 characters)
<b>Return Value</b>	<b>Write Command:</b> OK : APN <b>Read Command:</b> \$APN=<APN>,<User Name>,<Password> OK : APN <b>Error Response:</b> ERROR : APN
<b>Example</b>	AT\$APN=gprs.internet.com,user,pass OK : APN  AT\$APN? OK : APN \$APN=gprs.internet.com,user,pass
<b>Note</b>	



3. To Define SMS Operation Priority

AT\$SMSDST SMS destination address	
<b>Description</b>	This command specifies the SMS Destination Address that shall be used to send alert data from the device via SMS.
<b>Syntax</b>	<b>Write Command:</b> AT\$SMSDST=<Address> <b>Read Command:</b> AT\$SMSDST?
<b>Parameters</b>	<Address> Phone number or SMS short code (Max 20 characters)
<b>Return Value</b>	<b>Write Command:</b> OK : SMSDST <b>Read Command:</b> OK : SMSDST \$SMSDST=<Address> <b>Error Response:</b> ERROR : SMSDST
<b>Example</b>	AT\$SMSDST=+886123456789 OK : SMSDST  AT\$SMSDST? OK : SMSDST \$SMSDST=+886123456789
<b>Note</b>	1. SMSDST is set usually as the service center number. SMSDST number is the administrator number that device sends all SMS to confirm that a command sent to the unit via SMS was accepted by the unit, and the number the unit sends the data when tracking via SMS.





AT\$SMSLST List of SMS numbers	
<b>Description</b>	This command is used to set or query up to 10 SMS addresses for sending commands to the device. The devices only accept SMS command which coming from the phone numbers in this list. If this list is not set, the device will accept all incoming SMS command from any phone number.
<b>Syntax</b>	<b>Write Command:</b> AT\$SMSLST=<Index>,<Address>,<Response En> <b>Read Command:</b> AT\$SMSLST?
<b>Parameters</b>	<Index>                      Index of SMS Address (1 to 10)
	<Address>                    Phone Number or SMS short code (Max 20 characters)
	<Response En>              0 – Response to SMSDST 1 – Response to SMSLST
<b>Return Value</b>	<b>Write Command:</b> OK : SMSLST <b>Read Command:</b> OK : SMSLST \$SMSLST=<Index>,<Address>,<Response En> <b>Error Response:</b> ERROR : SMSLST
<b>Example</b>	AT\$SMSLST=1,+886123456789,0 OK : SMSLST AT\$SMSLST? OK : SMSLST \$SMSLST=1,+886123456789,0
<b>Note</b>	



AT\$SMSCFG SMS report format configure																				
<b>Description</b>	This command is used to set user defined report format for SMLSST.																			
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$SMSCFG=&lt;Text SMS Format&gt;,&lt;Google Map Link Format&gt;, &lt;Wap Push Format&gt;,&lt;Reserved&gt;,&lt;Standard Asynchronous Position Message Format&gt;</p> <p><b>Read Command:</b>            AT\$ SMSCFG?</p>																			
<b>Parameters</b>	<table border="1"> <tr> <td>&lt;Text SMS Format&gt;</td> <td>Please enable the phone number index in selected report format.</td> </tr> <tr> <td>&lt;Google Map Link Format&gt;</td> <td>This is a 2-byte value for phone number bits.</td> </tr> <tr> <td>&lt;Wap Push Format&gt;</td> <td>Bit0 – Reserved</td> </tr> <tr> <td>&lt;Reserved&gt;</td> <td>Bit1 – Reserved</td> </tr> <tr> <td rowspan="7">&lt;Standard Asynchronous Position Message Format&gt;</td> <td>Bit2 – Reserved</td> </tr> <tr> <td>Bit3 – Reserved</td> </tr> <tr> <td>Bit4 – Reserved</td> </tr> <tr> <td>Bit5 – Reserved</td> </tr> <tr> <td>Bit6 – Reserved</td> </tr> <tr> <td>Bit7 – Reserved</td> </tr> <tr> <td>Bit8 – Index 1 of SMLSST list phone number.</td> </tr> <tr> <td>Bit9 – Index 2 of SMLSST list phone number.</td> </tr> <tr> <td>Bit10 – Index 3 of SMLSST list phone number.</td> </tr> <tr> <td>Bit11 – Index 4 of SMLSST list phone number.</td> </tr> </table>	<Text SMS Format>	Please enable the phone number index in selected report format.	<Google Map Link Format>	This is a 2-byte value for phone number bits.	<Wap Push Format>	Bit0 – Reserved	<Reserved>	Bit1 – Reserved	<Standard Asynchronous Position Message Format>	Bit2 – Reserved	Bit3 – Reserved	Bit4 – Reserved	Bit5 – Reserved	Bit6 – Reserved	Bit7 – Reserved	Bit8 – Index 1 of SMLSST list phone number.	Bit9 – Index 2 of SMLSST list phone number.	Bit10 – Index 3 of SMLSST list phone number.	Bit11 – Index 4 of SMLSST list phone number.
<Text SMS Format>	Please enable the phone number index in selected report format.																			
<Google Map Link Format>	This is a 2-byte value for phone number bits.																			
<Wap Push Format>	Bit0 – Reserved																			
<Reserved>	Bit1 – Reserved																			
<Standard Asynchronous Position Message Format>	Bit2 – Reserved																			
	Bit3 – Reserved																			
	Bit4 – Reserved																			
	Bit5 – Reserved																			
	Bit6 – Reserved																			
	Bit7 – Reserved																			
	Bit8 – Index 1 of SMLSST list phone number.																			
Bit9 – Index 2 of SMLSST list phone number.																				
Bit10 – Index 3 of SMLSST list phone number.																				
Bit11 – Index 4 of SMLSST list phone number.																				
<b>Return Value</b>	<p><b>Write Command:</b>            OK : SMSCFG</p> <p><b>Read Command:</b>            OK : SMSCFG            \$SMSCFG=&lt;Text SMS Format&gt;,&lt;Google Map Link Format&gt;, &lt;Wap Push Format&gt;,&lt;Reserved&gt;,&lt;Standard Asynchronous Position Message Format&gt;</p> <p><b>Error Response:</b>            ERROR : SMSCFG</p>																			
<b>Example</b>	<pre>AT\$SMSCFG=256,512,1024,0,2048 OK : SMSCFG  AT\$SMSCFG? OK : SMSCFG \$SMSCFG=256,512,1024,0,2048</pre>																			
<b>Note</b>																				



4. To Setup a GPRS communication

AT\$GPRSEN GPRS connection enable	
<b>Description</b>	This command determines whether or not to use GPRS or SMS when transmitting asynchronous alert messages. If GPRSEN is set to 0, then only SMS will be used. If GPRSEN is set to 1, then only GPRS will be used.
<b>Syntax</b>	<b>Write Command:</b> AT\$GPRSEN=<Option> <b>Read Command:</b> AT\$GPRSEN?
<b>Parameters</b>	<Option> 0 – SMS 1 – GPRS
	<GPRS_TX_SEQ> GPRS data report sequence 0 – New tracking and alert will be first priority to report 1 – First in first out
<b>Return Value</b>	<b>Write Command:</b> OK : GPRSEN <b>Read Command:</b> OK : GPRSEN \$GPRSEN=<Option> <b>Error Response:</b> ERROR : GPRSEN
<b>Example</b>	AT\$GPRSEN=1,0 OK : GPRSEN  AT\$GPRSEN? OK : GPRSEN \$GPRSEN=1,0
<b>Note</b>	



AT\$HOSTS Host IP addresses used for GPRS communications		
<b>Description</b>	Up to 10 host IP addresses may be defined for TCP/UDP connection. The server host with the lowest index number is of the highest priority for establishing a TCP/UDP connection. The host connection will be changed to the next host index when GPRS fail to send messages after each retry. (Refer to <a href="#">AT\$RETRY</a> command)	
<b>Syntax</b>	<b>Write Command:</b> AT\$HOSTS=<Index>,<FQDN>,<Host Address>,<Port> <b>Read Command:</b> AT\$HOSTS?	
<b>Parameters</b>	<Index>	Index of Host in List (1~10)
	<FQDN>	Specify if the Host Address is in IP or FQDN format 0 – Specify IP address as the Host Address 1 – Specify FQDN (e.q. systech.com.tw) as the Host Address
	<Host Address>	IP address or FQDN of the host (Max 29 characters)
	<Port>	TCP/UDP port (0 ~65535)
<b>Return Value</b>	<b>Write Command:</b> OK : HOSTS <b>Read Command:</b> \$HOSTS=1,<FQDN>,<Host Address>,<Port> . . \$HOSTS=10,<FQDN>,<Host Address>,<Port> OK : HOSTS <b>Error Response:</b> ERROR : HOSTS	



<b>Example</b>	AT\$HOSTS=1,0,123.45.67.89,5000 OK : HOSTS  AT\$HOSTS? OK : HOSTS \$HOSTS=1,0,123.45.67.89,5000 \$HOSTS=2,1,systech.com.tw,6000 \$HOSTS=3,0.0.0.0,0 \$HOSTS=4,0.0.0.0,0 \$HOSTS=5,0.0.0.0,0 \$HOSTS=6,0.0.0.0,0 \$HOSTS=7,0.0.0.0,0 \$HOSTS=8,0.0.0.0,0 \$HOSTS=9,0.0.0.0,0 \$HOSTS=10,0.0.0.0,0 HC=2
<b>Note</b>	

Nomadic Solutions  
2014/05/30 15:51



AT\$IPTYPE GPRS TCP/UDP packet type selection	
<b>Description</b>	This command specifies the GPRS IP type used for host communication.
<b>Syntax</b>	<b>Write Command:</b> AT\$IPTYPE=<Type> <b>Read Command:</b> AT\$IPTYPE?
<b>Parameters</b>	<Type>                      0 – (reserved) *1 1 – TCP
<b>Return Value</b>	<b>Write Command:</b> OK : IPTYPE <b>Read Command:</b> OK : IPTYPE \$IPTYPE=<Type> <b>Error Response:</b> ERROR : IPTYPE
<b>Example</b>	AT\$IPTYPE=1 OK : IPTYPE  AT\$IPTYPE? OK : IPTYPE \$IPTYPE=1
<b>Note</b>	Please reboot device after change IPTYPE.

\*1 The device does not support UDP connection at this moment, [Please contact S&T for further information.](#)



AT\$GSMJDC GSM Jamming Detection Control		
<b>Description</b>	This command is used to set/query GSM jamming detection control configuration.	
<b>Syntax</b>	<b>Write Command:</b> AT\$GSMJDC=<Enable>,<Min numbers of carriers>,<Rxlev threshold>,<Action>,<Reserved>,<Duration>,<Reserved>	
<b>Parameters</b>	<Enable>	0 – Disable 1 – Enable
	<Min numbers of carriers>	Numbers of minimum disturbing carriers (1 – 255)
	<Rxlev threshold>	Power level threshold (3 – 63)
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Reserved>	Reserved
	<Duration>	Duration in seconds that must have elapsed after GSM jamming detected (0 – 65535)
	<Reserved>	Reserved
<b>Return Value</b>	<b>Write Command:</b> OK : GSMJDC <b>Read Command:</b> OK : GSMJDC \$GSMJDC=<Enable>,<Min numbers of carriers>,<Rxlev threshold>,<Action>,<Reserved>,<Duration>,<Reserved> <b>Error Response:</b> ERROR : GSMJDC	
<b>Example</b>	AT\$GSMJDC=1,10,20,3,0,10,0 OK : GSMJDC	
<b>Note</b>		



5. The Configuration of Data Format, and Data Sending Algorithm

AT\$FORMAT Message format setting	
<b>Description</b>	This command is used to set all communication message formats. Please refer to for detailed ASCII and Binary message format
<b>Syntax</b>	<b>Write Command:</b> AT\$FORMAT=<Format> <b>Read Command:</b> AT\$FORMAT?
<b>Parameters</b>	<Format>      0 – ASCII format (IntelliTrac X Series format) 1 – Binary format
<b>Return Value</b>	<b>Write Command:</b> OK : FORMAT <b>Read Command:</b> OK : FORMAT \$FORMAT=<Format> <b>Error Response:</b> ERROR : FORMAT
<b>Example</b>	AT\$FORMAT=0 OK : FORMAT  AT\$FORMAT? OK : FORMAT \$FORMAT=0
<b>Note</b>	





AT\$HB Heartbeat settings	
<b>Description</b>	This command is used to enable/disable Heartbeat message to help maintain the GPRS session between the device and the server. The heart message format is different according to the <a href="#">AT\$FORMAT</a> command setting. Please refer to <a href="#">Heartbeat Message Format</a> for detailed message format.
<b>Syntax</b>	<b>Write Command:</b> AT\$HB=<Period>,<Reserved> <b>Read Command:</b> AT\$HB?
<b>Parameters</b>	<Period>  Time Period in seconds between Heartbeats transmits. Setting the Period to 0 disables the Heartbeat. First heartbeat will be sent when the time after the last communications from the device exceeds the specified period of time. 0 - Disable (1 – 65535)
	<Reserved>
<b>Return Value</b>	<b>Write Command:</b> OK : HB <b>Read Command:</b> OK : HB \$HB=<Period>,<Reserved> <b>Error Response:</b> ERROR : HB
<b>Example</b>	AT\$HB=60,0 OK : HB AT\$HB? OK : HB \$HB=60,0
<b>Note</b>	First message sent to server is always the heart beat (HB) message. Server must ACK (acknowledge) heart beat message back to U series for unit to start send tracking data. Even when setting AT\$HB=0,0 U series will send first message as heart beat and server must ACK to this heart beat message, just to let U series know that it is sending data to the correct server. Heart Beat setting will affect AT\$PWRM command, please be noted. Heart Beat message serves as a first handshake to let U series know that it is communicating with the correct server; it is also used to keep session alive with server.



AT\$RETRY    Retry settings for communications with host server	
<b>Description</b>	This command defines the number of retries and time between each retry when sending a message to a Host Server. The device shall wait for the appropriate acknowledgement/response from the host after sending a message.
<b>Syntax</b>	<b>Write Command:</b> AT\$RETRY=<Max Retries>,<Retry Interval> <b>Read Command:</b> AT\$RETRY?
<b>Parameters</b>	<Max Retries>      Maximum number of retries for each server. (1~255)
	<Retry Interval>      Time in seconds between each retry. (1~255)
<b>Return Value</b>	<b>Write Command:</b> OK : RETRY <b>Read Command:</b> OK : RETRY \$RETRY=<Max Retries>,<Retry Interval> <b>Error Response:</b> ERROR : RETRY
<b>Example</b>	AT\$RETRY=2,30 OK : RETRY  AT\$RETRY? OK : RETRY \$RETRY=2,30
<b>Note</b>	



AT\$NETCFG Roaming Network configuration	
<b>Description</b>	This command is used to set/query specific property of the communication network.
<b>Syntax</b>	<b>Write Command:</b> AT\$NETCFG=<Roaming Allowed>,<SMS/GPRS Auto switch>,<Reduce Tracking> <b>Read Command:</b> AT\$NETCFG?
<b>Parameters</b>	<Roaming Allowed> 0 – All communication allowed under roaming mode 1 – Only SMS allowed under roaming mode 2 – Only GPRS allowed under roaming mode 3 – No communication allowed under roaming mode
	<SMS/GPRS Auto switch> 0 – Disable auto switch 1 – Auto switch between SMS and GPRS reporting when GPRS network is available or not.
	<Reduce Tracking> 0 - Disable 1 ~ 255 – Time multiplier When roaming, the real time tracking report will follow the time interval of PDSR times <Reduce Tracking>.
<b>Return Value</b>	<b>Write Command:</b> OK : NETCFG <b>Read Command:</b> OK : NETCFG \$NETCFG=<Roaming Allowed>,<SMS/GPRS Auto switch>,<Reduce Tracking> <b>Error Response:</b> ERROR : NETCFG
<b>Example</b>	AT\$NETCFG=1,1,10 OK : NETCFG
<b>Note</b>	



## B. System Operation Related Configurations

### 1. The Related Settings of System Operation

AT\$FILTER      GPS data filtering settings		
<b>Description</b>	This command is used to minimize erroneous GPS points and events. The AT\$FILTER command does not filter out “event” notifications that do not depend on GPS data such as ignition on/off alerts. If at the time of the event there is no GPS data available, then the event will send the Invalid GPS encoding format (zero for all values).	
<b>Syntax</b>	<b>Write Command:</b> AT\$FILTER=<Min Satellites>,<Max Speed>,<Reserved>,<Reserved> <b>Read Command:</b> AT\$FILTER?	
<b>Parameters</b>	<Min Satellites>	Minimum number of satellites required for a valid GPS position. If the satellite count for a position fix is less than this threshold, the GPS point is considered invalid. (1~255)
	<Max Speed>	Maximum speed (in 0.1 meters/second units) expected. Any speed received that is greater than this threshold is invalidated. [ (Kilometer per Hour) / 0.36] (1~65535)
	<Reserved>	
	<Reserved>	
<b>Return Value</b>	<b>Write Command:</b> OK : FILTER <b>Read Command:</b> OK : FILTER \$FILTER=<Min Satellites>,<Max Speed>,<Reserved>,<Reserved> <b>Error Response:</b> ERROR : FILTER	
<b>Example</b>	AT\$FILTER=4,450,0,0 OK : FILTER	
<b>Note</b>		



AT\$ODO GPS odometer read and setting		
<b>Description</b>	This command is used to set or query odometer value. The GPS odometer is only calculate and accumulate when IGN status is ON.	
<b>Syntax</b>	<b>Write Command:</b> AT\$ODO=[<Odometer Value>,<IGN Reset>, <EGN Reset>] <b>Read Command:</b> AT\$ODO?	
<b>Parameters</b>	<Odometer Value>	Odometer value in meters. (Default – No change in odometer value) (0~21474836487)
	<IGN Reset>	0 – Disable 1 – Enable reset of odometer when ignition status transitions from off to on. (Default - 0)
	<EGN Reset>	0 – Disable 1 – Enable reset of odometer when engine status transitions from off to on. (Default - 0)
	<OBD odometer>	Calculated OBD odometer in meters. (0~21474836487)
	<OBD fuel used>	Calculated fuel consumption in liters.
<b>Return Value</b>	<b>Write Command:</b> OK : ODO <b>Read Command:</b> OK : ODO \$ODO=<Odometer Value>,<IGN Reset>, <EGN Reset>,<OBD odometer>,<OBD fuel used> <b>Error Response:</b> ERROR : ODO	
<b>Example</b>	AT\$ODO=0,1,1,0,0 OK : ODO  AT\$ODO? OK : ODO \$ODO=1235,1,1,1235,1.008	
<b>Note</b>	<i>The &lt; Odometer Value&gt; is calculated by using GPS positioning. The odometer accuracy will be affected by different GPS positioning environment.</i>	



AT\$URL Custom URL string for SMS GP3	
<b>Description</b>	This command is used for responding the GP3 command.
<b>Syntax</b>	<b>Write</b> Command: AT\$URL=<String> <b>Read</b> Command: AT\$URL?
<b>Parameters</b>	<String>  The string will be the heading string followed by "ModemID, GPSTime, Longitude, Latitude, SatelliteNumbers, MsgID, Speed, Main power voltage" without quotes. (Max 50 characters)
<b>Example</b>	AT\$URL=http://www.st-fleetweb.com/pt/?q= OK:URL  Example returning string: http://www.st-fleetweb.com/pt/?q=1100000001,20110223093149,121.64546,25.06 236, 04,0,0,12074



2. The Special commands for System Maintains

AT\$GPSPT GPS pass-through																			
<b>Description</b>	This command is used to enable/disable GPS NMEA strings output.																		
<b>Syntax</b>	<b>Write Command:</b> AT\$GPSPT=<NMEA>,<Duration> <b>Read Command:</b> AT\$GPSPT?																		
<b>Parameters</b>	<NMEA>  Bit mask used to determine what NMEA commands are sent through the serial port. Setting NMEA to 0 exits the Pass-through mode. <table border="1" data-bbox="810 792 1203 1133"> <thead> <tr> <th>Bit</th> <th>NMEA Message</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>GLL</td> </tr> <tr> <td>1</td> <td>GGA</td> </tr> <tr> <td>2</td> <td>GSA</td> </tr> <tr> <td>3</td> <td>GSV</td> </tr> <tr> <td>4</td> <td>VTG</td> </tr> <tr> <td>5</td> <td>RMC</td> </tr> <tr> <td>6</td> <td>Reserved</td> </tr> <tr> <td>7</td> <td>Reserved</td> </tr> </tbody> </table>	Bit	NMEA Message	0	GLL	1	GGA	2	GSA	3	GSV	4	VTG	5	RMC	6	Reserved	7	Reserved
	Bit	NMEA Message																	
0	GLL																		
1	GGA																		
2	GSA																		
3	GSV																		
4	VTG																		
5	RMC																		
6	Reserved																		
7	Reserved																		
	Duration Time in seconds between NMEA samples (1~255)																		
<b>Return Value</b>	<b>Write Command:</b> OK : GPSPT <b>Read Command:</b> OK : GPSPT \$GPSPT=<NMEA>,<Duration> <b>Error Response:</b> ERROR : GPSPT																		
<b>Example</b>	AT\$GPSPT=127,1 OK : GPSPT																		
<b>Note</b>																			



<b>AT\$REBOOT Reboot device</b>	
<b>Description</b>	This command is use to restart the device. The device will be reboot after receiving the AT\$REBOOT command for 2 seconds to allow time to acknowledge the request. The parameter settings will not be erased after this reboot.
<b>Syntax</b>	<b>Write Command:</b> AT\$REBOOT
<b>Parameters</b>	None
<b>Return Value</b>	<b>Write Command:</b> OK : REBOOT <b>Error Response:</b> ERROR : REBOOT
<b>Example</b>	AT\$REBOOT OK : REBOOT
<b>Note</b>	

<b>AT\$RESET Reset device</b>	
<b>Description</b>	This command is use to reset all parameters to manufactory default settings.
<b>Syntax</b>	<b>Write Command:</b> AT\$RESET=<Option>
<b>Parameters</b>	<Option> 0 – Reset all parameters to manufactory default and clear all data queue then reboot system 1 – Reset all parameters to manufactory default without clear all data queue and then reboot system 2 – Reset all parameters to manufactory default without clear all data queue 3 – Reset all parameters to configuration file then reboot system
<b>Return Value</b>	<b>Write Command:</b> OK : RESET <b>Error Response:</b> ERROR : RESET
<b>Example</b>	AT\$RESET=0 OK : RESET
<b>Note</b>	Device will be restarted after finishing the command,





<b>AT\$MSGQCL Message queue clear</b>	
<b>Description</b>	This command is used to clear all messages in buffer.
<b>Syntax</b>	<b>Write Command:</b> AT\$MSGQCL=<Mode>
<b>Parameters</b>	<Mode> 0 – Clear Report and SMS messages. 1 – Clear Report messages only. 2 – Clear SMS messages only.
<b>Return Value</b>	<b>Write Command:</b> OK : MSGQCL <b>Error Response:</b> ERROR : MSGQCL
<b>Example</b>	Clear All messages AT\$MSGQCL OK : MSGQCL  AT\$MSGQCL=0 OK : MSGQCL  Clear Report messages only AT\$MSGQCL=1 OK : MSGQCL  Clear SMS messages only AT\$MSGQCL=2 OK : MSGQCL
<b>Note</b>	



AT\$SAVE Save user parameters	
Description	This command is used to save user parameters to flash.
Syntax	Write Command: AT\$SAVE
Parameters	None
Return Value	Write Command: OK : SAVE Error Response:
Example	
Note	<i>Please note that all changed parameters won't be saved into the non-volatile memory until this command is issued.</i>

Nomadic Solutions  
2014/05/30 15:51



3. The Commands for Querying System Status

AT\$DNS Query the DNS IP address(es)	
<b>Description</b>	This command is used to query the DNS address(es) when using FQDN as the Host Address.
<b>Syntax</b>	<b>Read Command:</b> AT\$DNS?
<b>Parameters</b>	<Primary DNS IP>      The IP address for primary DNS
	<Secondary DNS IP>      The IP address for secondary DNS
<b>Return Value</b>	<b>Read Command:</b> OK : DNS \$DNS=<Primary DNS IP>,<Secondary DNS IP> <b>Error Response:</b> ERROR : DNS
<b>Example</b>	

AT\$MSGQ Message queue read	
<b>Description</b>	This command is used to query the number of current message buffer.
<b>Syntax</b>	<b>Read Command:</b> AT\$MSGQ?
<b>Parameters</b>	<Reserved>      Reserved for further use
	<Number of Messages>      Number of messages pending in the message queue.
<b>Return Value</b>	<b>Read Command:</b> OK : MSGQ \$MSGQ=<Reserved>,<Number of Messages> <b>Error Response:</b> ERROR : MSGQ
<b>Example</b>	AT\$MSGQ?  OK:MSGQ .. \$MSGQ=0,0; for SMS \$MSGQ=0,0; for GPRS OK:MSGQ
<b>Note</b>	



AT\$VEXT External or main power voltage read	
<b>Description</b>	This command is used to read current external power voltage.
<b>Syntax</b>	<b>Read Command:</b> AT\$VEXT?
<b>Parameters</b>	<External Voltage> External voltage reading in millivolts
<b>Return Value</b>	<b>Read Command:</b> OK : VEXT \$VEXT=<External Voltage> <b>Error Response:</b> ERROR : VEXT
<b>Example</b>	AT\$VEXT? \$VEXT=12995 OK : VEXT
<b>Note</b>	

AT\$CV Calibrate Voltage	
<b>Description</b>	To calibrate the external analog line or main power voltage reading
<b>Syntax</b>	<b>Write Command:</b> AT\$CV=<Voltage Line>,<Measured Voltage> <b>Read Command:</b> AT\$CV?
<b>Parameters</b>	<Voltage Line> The voltage line to be calibrated. (Only 0, the main power line, is available for UCAN/UGO) <Measured Voltage> Measured voltage reading in millivolts
<b>Return Value</b>	<b>Write Command:</b> OK:CV <b>Read Command:</b> OK : CV \$CV=<Line>,<Voltage> <b>Error Response:</b> ERROR : CV
<b>Example</b>	Calibrate main power voltage to the measured value of 11.99V AT\$CV=0,11990 OK : CV
<b>Note</b>	



AT\$VBAT Battery voltage read	
<b>Description</b>	This command is used to read current internal backup battery voltage.
<b>Syntax</b>	<b>Read Command:</b> AT\$VBAT?
<b>Parameters</b>	<Battery Voltage>   Battery voltage reading in millivolts
<b>Return Value</b>	<b>Read Command:</b> OK : VBAT \$VBAT=<Battery Voltage> <b>Error Response:</b> ERROR : VBAT
<b>Example</b>	AT\$VBAT? OK : VBAT \$VBAT=4152
<b>Note</b>	Must confirm the version installed battery, Otherwise it would not support the related functions



AT\$BBCTRL Backup battery ON/OFF control	
<b>Description</b>	This command is used to turn ON/OFF the internal backup battery.
<b>Syntax</b>	<b>Write</b> Command: AT\$BBCTRL=<Battery Control> <b>Read</b> Command: AT\$BBCTRL?
<b>Parameters</b>	<Battery Control> 0 – Turn OFF backup battery 1 – Turn ON backup battery (Default - 0)
<b>Return Value</b>	<b>Write</b> Command: OK : BBCTRL <b>Read</b> Command: OK : BBCTRL \$BBCTRL=<Battery Control> <b>Error</b> Response: ERROR : BBCTRL
<b>Example</b>	AT\$BBCTRL=1 OK : BBCTRL  AT\$BBCTRL? OK : BBCTRL \$BBCTRL=1
<b>Note</b>	Must confirm the version installed battery, Otherwise it would not support the related functions



<b>AT\$VERSION Get the firmware version of the unit.</b>	
<b>Description</b>	Execute this command to query firmware version of the unit.
<b>Syntax</b>	<b>Read Command:</b> AT\$VERSION
<b>Parameters</b>	None
<b>Return Value</b>	\$VERSION=<FW Version>,<HW Version>,<GSM Version>,<GSM FW Version>,<Model Name>
<b>Example</b>	AT\$VERSION \$OK : VERSION \$VERSION=v0.5r31,v0.5,G100,07.60.02,UCAN

<b>AT\$QUST Query communication status</b>	
<b>Description</b>	Execute this command to query GSM/GPRS connection status.
<b>Syntax</b>	<b>Read Command:</b> AT\$QUST
<b>Parameters</b>	None
<b>Return Value</b>	<b>Read Command:</b> \$QUST=<GSM Network Operator Name>,<CSQ>,<GPRS connection state>,<Network Registration> GPRS connection state:        1 → Connected 0 → Disconnected Network Registration state : 0 → Not registered. 1 → Registered. 2 → Not registered,but searching a new operator to register 3 → Registration denied. 4 → Unknown. 5 → Registered,roaming
<b>Example</b>	AT\$QUST \$OK : QUST \$QUST="TW Mobile",28,1,1



AT\$IMEI Read device IMEI number	
<b>Description</b>	Execute this command to read the IMEI (International Mobile station Equipment Identity) of the unit.
<b>Syntax</b>	<b>Read Command:</b> AT\$IMEI
<b>Parameters</b>	None
<b>Return Value</b>	<b>Read Command:</b> \$IMEI=<IMEI>
<b>Example</b>	AT\$IMEI OK : IMEI \$IMEI=355117003358879

AT\$IP Device IP query	
<b>Description</b>	This command is used to query the device for its local IP address assigned by the cell tower. This IP address is valid when GPRS connection is established.
<b>Syntax</b>	<b>Read Command:</b> AT\$IP?
<b>Parameters</b>	<Local IP>   IP Address assigned to the device.
<b>Return Value</b>	<b>Read Command:</b> OK : IP \$IP=<Local IP>
<b>Example</b>	AT\$IP? OK : IP \$IP=10.2.16.250





4. Power Management Setting

AT\$PWRM Power management settings		
<b>Description</b>	This command is used to set/query power management settings.	
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$PWRM=&lt;Ignition Inactive Duration&gt;,&lt;No Motion Duration&gt;,&lt;No Comm Duration&gt;[,            &lt;Low Wake Duration&gt;,&lt;Low On Duration&gt;,&lt;Low Transition Duration&gt;,&lt;VLow Wake Duration&gt;,&lt;VLow On Duration&gt;]</p> <p><b>Read Command:</b>            AT\$PWRM?</p>	
<b>Parameters</b>	<Ignition Inactive Duration>	Duration in minutes that must have elapsed after Ignition off, prior to transitioning to low power. 0 - Disable (3~255)
	<No Motion Duration>	Duration in minutes that must have elapsed after no motion is detected prior to transitioning to low power. 0 - Disable (1~255)
	<No Comm Duration>	Duration in minutes that must have elapsed after no communication is detected prior to transitioning to low power. 0 - Disable (1~255)
	<Low Wake Duration>	Duration in minutes for waking up when in low power mode. (1~65535)
	<Low On Duration>	Duration in minutes that device goes to full power when waking up in low power mode. (Default is 0 indicating always in Low On or Idle mode when in Low Power Mode) (1~255)
	<Low Transition Duration>	Duration in minutes that must elapse to transition from low power to very low power mode. (Default is 0 indicating no transition to very Low Power Mode) (1~65535)
	<VLow Wake Duration>	Duration in hours for waking up when in very low power mode. (1~255)
	<VLow On Duration>	Duration in minutes that device goes to full power when waking up in very low power mode.



	(1~255)
<b>Return Value</b>	<b>Write Command:</b> OK : PWRM <b>Read Command:</b> OK : PWRM \$PWRM=<Ignition Inactive Duration>,<No Motion Duration>,<No Comm Duration>, <Low Wake Duration>,<Low On Duration> ,<Low Transition Duration>, <VLow Wake Duration>,<VLow On Duration> <b>Error Response:</b> ERROR : PWRM
<b>Example</b>	AT\$PWRM=3,3,1,3,3,6,3,3 OK : PWRM
<b>Notes</b>	Please set AT\$MOTDET command if you want to additionally wake up unit by motion when it enters LOW or VLOW power saving modes.



5. To Get Position and Setup Device for Regular Tracking

AT\$GETPDS Get position and device status		
<b>Description</b>	This command is used to get current position or history log data.	
<b>Syntax</b>	<b>Write Command:</b> AT\$GETPDS= <Duration>[,<Year>,<Month>,<Day>,<Hour>,<Minute>]	
<b>Parameters</b>	<Duration>	Duration in minutes of points to retrieve. If no date and time is specified, points retrieved should be for the last duration of time. If time and date is specified, then the duration beginning at the specified date and time should be retrieved. 0 – Stop report queue from Log data queue. (1 to 10000)
	<Year>	Year at which to retrieve position and device status. (0 to 99)
	< Month>	Month at which to retrieve position and device status. (1 to12)
	< Day>	Day at which to retrieve position and device status. (1 to 31)
	< Hour>	Hour at which to retrieve position and device status. (0 to 23)
	<Minute>	Minute at which to retrieve position and device status. (0 to 59)
<b>Return Value</b>	<b>Write Command:</b> <a href="#">Asynchronous Position Message</a> <b>Error Response:</b> ERROR : GETPDS	
<b>Example</b>	Get position data. No equal symbol. AT\$GETPDS OK : GETPDS 101000001,20100304075605,121.64547,25.06200,0,0,61,7,2,1,0,0.054,0.000,20100304075606,0  AT\$GETPDS=5 OK : GETPDS 101000001,20100304075545,121.64547,25.06200,0,0,61,7,2,1,0,0.046,0.000,20100304075546,0	



Released Date: Apr. 30, 2014

	<pre>101000001,20100304075555,121.64547,25.06200,0,0,61,7,2,1,0,0.046,0.000,2010 0304075556,0 ..... 101000001,20100304075605,121.64547,25.06200,0,0,61,7,2,1,0,0.054,0.000,2010 0304075606,0 OK : GETPDS Data  Stop report queue from Log data queue. AT\$GETPDS=0 OK : GETPDS</pre>
Note	

Nomadic Solutions  
2014/05/30 15:51



GP<n> Short command for get current position	
<b>Description</b>	This command is used for get current position by using SMS. It is easy to command by using cellular phone.
<b>Syntax</b>	<b>Write</b> Command: GP<n>
<b>Parameters</b>	<n>  1 – Text SMS Format 2 – Google Map Link Format 3 – Wap Push Format (Returning format is defined by AT\$URL) 4 – Garmin™ Peer to peer Format (not ready yet) 5-8 – Reserved for further use 9 – Standard Asynchronous Position Message Format
<b>Example</b>	
<b>Note</b>	



AT\$PDSR Position and device status reporting settings	
<b>Description</b>	Position and data shall be reported when the device is moving. Reporting shall be based upon satisfying a minimum time requirement and minimum distance requirement
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$PDSR=&lt;Mode&gt;,&lt;Min. Time&gt;,&lt;Min. Distance&gt;,&lt;Heading Change&gt;,            [&lt;Destination&gt;,&lt;Schedule&gt;,&lt;Delay&gt;,&lt;Time Multiplier&gt;,&lt;IgnoreGPS&gt;]</p> <p><b>Read Command:</b>            AT\$PDSR?</p>
<b>Parameters</b>	<Mode> <ul style="list-style-type: none"> <li>0 – Disable</li> <li>Bit 0(2<sup>0</sup> = 1) – Time Mode</li> <li>Bit 1(2<sup>1</sup> = 2) – Distance Mode</li> <li>Bit 2(2<sup>2</sup> = 4) – Ignition ON Mode</li> <li>Bit 3(2<sup>3</sup> = 8) – Heading change Mode</li> <li>Bit 4(2<sup>4</sup> = 16) – Time or Distance Mode</li> </ul> <p>You can set two or more conditions like 5(1+4) for ignition on and time conditions.            Bit 4 can't be set with Bit0 or Bit 1 simultaneously.</p>
	<Min. Time> <p>Minimum Time in seconds that must elapse before reporting next position. (1 – 65535)</p>
	<Min. Distance> <p>Minimum Distance in meters that must be traveled before reporting next position. (25 – 50000)</p>
	<Heading Change> <p>Minimum heading in degree that be changed before reporting next position. (5 – 180)</p>
	<Destination> <ul style="list-style-type: none"> <li>Bit 0 – Log to Data Queue</li> <li>Bit 1 – Transmit GPRS</li> <li>Bit 2 – Reserved</li> <li>Bit 3 – Transmit SMS</li> </ul>
	< Reserve > <p></p>
	<Delay> <p>Reserve for future used.</p>
	<Time Multiplier> <p>1 – The PDSR Log and GPRS messages will be sent according to the &lt;Min. Time&gt; setting.            n – The PDSR Log messages will be performed according to the &lt;Min. Time&gt; setting, the PDSR GPRS messages will be sent according to &lt;Min. Time&gt; times n.            (2 – 65535)</p>
<IgnoreGPS> <ul style="list-style-type: none"> <li>0 – Continuously tracking regardless of GPS signal.</li> <li>1 – Ignore no GPS signal tracking report.</li> </ul>	



<b>Return Value</b>	<b>Write Command:</b> OK : PDSR <b>Read Command:</b> OK : PDSR \$PDSR=<Mode>,<Min. Time>,<Min. Distance>,<Heading Change>,<Destination>,< Reserve >,<Delay>,<Time Multiplier>,<IgnoreGPS> <b>Error Response:</b> ERROR : PDSR
<b>Example</b>	Tracking every 30 seconds through GPRS AT\$PDSR=1,30,1000,30,2,0,0,1,0 OK : PDSR Tracking every 60 seconds through GPRS and Logging every 15 seconds AT\$PDSR=1,15,1000,30,3,0,0,4,0 OK : PDSR
<b>Note</b>	If <Mode> is 3 and both <Min. Time> and <Min. Distance> parameters are set, the position and data are only reported if both the minimum amount of time has elapsed and the minimum distance has been traveled.



AT\$LPRC Low Power Report Configuration		
<b>Description</b>	This command is used to set/query low power report send enable. The Setting is enable, Send message id 193, 194 and 201 report to server when going into low, very-low wake up and low wake up.	
<b>Syntax</b>	<b>Write Command:</b> AT\$ LPRC =< Enable >,<Action>[,< Reserve >,<Force Connection>] <b>Read Command:</b> AT\$ LPRC?	
<b>Parameters</b>	<Enable>	0 – Disable Bit 0 – Send 193 (going into low) report to server. Bit 1 – Send 194 (very low wake up) report to server. Bit 2 – Send 201 (low wake up ) report to server. Bit 3 – Send 202 (going into vlow) report to server.
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >	
	<Force Connection>	0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : LPRC <b>Read Command:</b> OK : LPRC \$ LPRC =< Enable >,<Action>,<Schedule>,<Force Connection> <b>Error Response:</b> ERROR : LPRC	
<b>Example</b>	AT\$ LPRC =3,3,0,0 OK : LPRC  AT\$LPRC? OK : LPRC \$LPRC =3,3,0,0	
<b>Note</b>		





### C. The Basic Alert Operation

#### 1. The Way to Detect Input/ACC Condition

AT\$IGN Ignition alert settings	
<b>Description</b>	This command is used to query ignition alert settings.
<b>Syntax</b>	<b>Read Command:</b> AT\$IGN?
<b>Parameters</b>	<reserved> reserved
	<Status> Current ignition status 0 – Ignition Off 1 – Ignition On
<b>Return Value</b>	<b>Read Command:</b> OK : IGN \$IGN=<Debounce Time>,<Status> <b>Error Response:</b> ERROR : IGN
<b>Example</b>	AT\$IGN? OK : IGN \$IGN=0,1
<b>Note</b>	UCAN Only



AT\$IGNEN Ignition alert enable		
<b>Description</b>	This command is used to set or query ignition alert enable.	
<b>Syntax</b>	<b>Write</b> Command: AT\$IGNEN=<Option>,<Action>[,<Schedule>,<Force Connection>] <b>Read</b> Command: AT\$IGNEN?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Schedule>	Reserve for future used.
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write</b> Command: OK : IGNEN <b>Read</b> Command: OK : IGNEN \$IGNEN=<Option>,<Action>,<Schedule>,<Force Connection> <b>Error</b> Response: ERROR : IGNEN	
<b>Example</b>	AT\$IGNEN=1,2,0,0 OK : IGNEN	
<b>Note</b>	Support AT\$OBDMODE=1 set. Reference OBD RPM information, Send report ID : 11 UCAN Only	



2. The Way Detect Engine ON/OFF Condition

AT\$EGN Engine alert setting	
<b>Description</b>	Set or query engine on-off alert. For U-GO this is the only way to detect engine status.
<b>Syntax</b>	<p><b>Write</b> Command: AT\$EGN=&lt;engine on voltage&gt;,&lt;on duration&gt;,&lt;engine off voltage&gt;,&lt;off duration&gt;</p> <p><b>Read</b> Command: AT\$EGN?</p>
<b>Parameters</b>	<engine on voltage> In millivolts. Engine is on if main power voltage is higher than this setting. (1~30000)
	<on duration> In seconds. The above on voltage must be maintained for this period of time to be accepted as engine on. (1~255)
	<engine off voltage> In millivolts. Engine is off if main power voltage falls below this setting. (1~30000)
	<off duration> In seconds. The above off voltage must be maintained for this period of time to be accepted as engine off. (1~255)
	<status> 0: engine off 1: engine on
<b>Return Value</b>	<p><b>Write</b> Command: OK:EGN</p> <p><b>Read</b> Command: OK:EGN \$EGN=&lt;engine on voltage&gt;,&lt;on duration&gt;,&lt;engine off voltage&gt;,&lt;off duration&gt;,&lt;status&gt;</p> <p><b>Error</b> Response: ERROR : EGN</p>
<b>Example</b>	Set engine on at 13.7 volts or higher, 12.5 volts or lower for engine off, and each must hold on for a period of 10 seconds. AT\$EGN=13700,10,12500,10 OK:EGN
<b>Note</b>	For UCAN to use this command, please set AT\$OBDMODE=0



AT\$EGNEN Engine alert enable															
<b>Description</b>	This command is used to set or query engine alert enable.														
<b>Syntax</b>	<b>Write Command:</b> AT\$EGNEN=<Option>,<Action>[,< Reserve >,<Force Connection>] <b>Read Command:</b> AT\$EGNEN?														
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable													
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.													
	< Reserve >														
	<Force Connection>	0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)													
<b>Return Value</b>	<b>Write Command:</b> OK : EGNEN <b>Read Command:</b> OK : EGNEN \$EGNEN=<Option>,<Action>,<Schedule>,<Force Connection> <b>Error Response:</b> ERROR : EGNEN														
<b>Example</b>	AT\$EGNEN=1,2,0,0 OK : EGNEN														
<b>Note</b>	Engine Alert Format: <a href="#">Asynchronous Position Message</a> + <Ext Voltage> <b>ASCII Format:</b> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Ext Voltage</td> <td>#####</td> <td>External Voltage in millivolts</td> </tr> </tbody> </table> <b>Binary Format:</b> <table border="1"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Ext Voltage</td> <td>2</td> <td>Unsigned Integer</td> <td>External Voltage in millivolts</td> </tr> </tbody> </table> Set AT\$OBDMODE=0 ,Support report ID : 161	Parameter	Format	Description	Ext Voltage	#####	External Voltage in millivolts	Name	Size	Type	Description	Ext Voltage	2	Unsigned Integer	External Voltage in millivolts
Parameter	Format	Description													
Ext Voltage	#####	External Voltage in millivolts													
Name	Size	Type	Description												
Ext Voltage	2	Unsigned Integer	External Voltage in millivolts												



3. The Way to Detect Over-Speeding Condition

AT\$SPEED High speed alert setting	
<b>Description</b>	Set, query speeding alert setting.
<b>Syntax</b>	<b>Write Command:</b> AT\$SPEED=<set threshold>,<clear threshold>,<Duration> <b>Read Command:</b> AT\$SPEED?
<b>Parameters</b>	<set threshold> In 0.1 meter/sec. Alert is triggered if speed is over the set threshold. (1~65535)
	<clear threshold> In 0.1 meter/sec. Alert is cleared if speed falls below the clear threshold. (1~65535)
	<Duration> Duration in seconds at which either of the speeds thresholds must be met prior to changing the high speed status. (0~255)
<b>Return Value</b>	<b>Write Command:</b> OK:SPEED <b>Read Command:</b> OK:SPEED \$SPEED=<set threshold>,<clear Threshold>,<Duration> <b>Error Response:</b> ERROR : SPEED
<b>Example</b>	Set at 105 km/hr and clear at 100 km/hr. AT\$SPEED=292,277,1 OK:SPEED
<b>Note</b>	



AT\$SPEEDEN High speed alert enable	
<b>Description</b>	This command is used to enable/disable speeding alert and speeding report.
<b>Syntax</b>	<b>Write Command:</b> AT\$SPEEDEN=<Option>,<Action>[,< Reserve >,<Force Connection>] <b>Read Command:</b> AT\$SPEEDEN?
<b>Parameters</b>	<Option> 0 – Disable 1 – Enable
	<Action> 1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >
	<Force Connection> 0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : SPEEDEN <b>Read Command:</b> OK : SPEEDEN \$SPEEDEN=<Option>,<Action>,< Reserve >,<Force Connection> <b>Error Response:</b> ERROR : SPEEDEN



<b>Note</b>	Speeding Report Format: <a href="#">Asynchronous Position Message</a> + <Maximum_Speed> + <Average_Speed> + <Duration>															
	<b>ASCII Format:</b>															
	<table border="1"><thead><tr><th>Parameter</th><th>Format</th><th>Description</th></tr></thead><tbody><tr><td>Maximum Speed</td><td>#####</td><td>Meters per second units</td></tr><tr><td>Average Speed</td><td>#####</td><td>Meters per second units</td></tr><tr><td>Duration</td><td>#####</td><td>Duration device exceeded speed threshold in seconds.</td></tr></tbody></table>	Parameter	Format	Description	Maximum Speed	#####	Meters per second units	Average Speed	#####	Meters per second units	Duration	#####	Duration device exceeded speed threshold in seconds.			
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	Maximum Speed	#####	Meters per second units													
Average Speed	#####	Meters per second units														
Duration	#####	Duration device exceeded speed threshold in seconds.														
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Maximum Speed	2	Unsigned Integer	0.1 meters per second units													
Average Speed	2	Unsigned Integer	0.1 meters per second units													
Duration	2	Unsigned Integer	Duration device exceeded speed threshold in seconds.													



4. The Way to Setup Prohibit Zone Area Detection

AT\$GF Geo-fence alert settings													
<b>Description</b>	This command is used to set/query GeoFence settings.												
<b>Syntax</b>	<p><b>Write Command:</b></p> <p>1. Config. geofence:            AT\$GF=&lt;Group number&gt;,-1,&lt;Type&gt;,&lt;Delay&gt;,&lt;Minimum Movement&gt;[,...]            a. Circle: AT\$GF=&lt;Group number&gt;,-1,1,&lt;Delay&gt;,&lt;Minimum Movement&gt;,&lt;Entry Radius&gt;,&lt;Exit Radius&gt;            b. Polygon: AT\$GF=&lt;Group number&gt;,-1,2,&lt;Delay&gt;,&lt;Minimum Movement&gt;,&lt;Vertex Amount&gt;</p> <p>2. Set position:            AT\$GF=&lt;Group number&gt;[,&lt;Vertex Number&gt;],&lt;Latitude&gt;,&lt;Longitude&gt;            a. Circle: AT\$GF=&lt;Group number&gt;,&lt;Latitude&gt;,&lt;Longitude&gt;            b. Polygon: AT\$GF=&lt;Group number&gt;,&lt;Vertex Number&gt;,&lt;Latitude&gt;,&lt;Longitude&gt;</p> <p>3. Reset parameter:            AT\$GF=-1</p> <p>4. Save parameter:            AT\$GF=-2</p> <p><b>Read Command:</b>            AT\$GF? Reads all GeoFence Settings            AT\$GF?&lt;Group number&gt; Reads selected GeoFence Setting</p>												
<b>Parameters</b>	<table border="1"> <tr> <td>&lt;Group number&gt;</td> <td>Index of GeoFence.</td> </tr> <tr> <td>&lt;Type&gt;</td> <td>Type of GeoFence: 1 – Circle 2 – Polygon</td> </tr> <tr> <td>&lt;Delay&gt;</td> <td>Qualifying delay in seconds. Duration of time that must elapse after transitioning state before accepting the new state. (0-63)</td> </tr> <tr> <td>&lt;Minimum Movement&gt;</td> <td>Qualifying distance in meters. Distance that a device must move before accepting the new location as being a valid location. (0-63)</td> </tr> <tr> <td>&lt;Vertex Amount&gt;</td> <td>Vertex number for polygon 3 – Triangle 4 – Rectangle or polygon 5 – Polygon</td> </tr> <tr> <td>&lt;Latitude&gt;</td> <td>Latitude of Circular GeoFence center or Polygon</td> </tr> </table>	<Group number>	Index of GeoFence.	<Type>	Type of GeoFence: 1 – Circle 2 – Polygon	<Delay>	Qualifying delay in seconds. Duration of time that must elapse after transitioning state before accepting the new state. (0-63)	<Minimum Movement>	Qualifying distance in meters. Distance that a device must move before accepting the new location as being a valid location. (0-63)	<Vertex Amount>	Vertex number for polygon 3 – Triangle 4 – Rectangle or polygon 5 – Polygon	<Latitude>	Latitude of Circular GeoFence center or Polygon
<Group number>	Index of GeoFence.												
<Type>	Type of GeoFence: 1 – Circle 2 – Polygon												
<Delay>	Qualifying delay in seconds. Duration of time that must elapse after transitioning state before accepting the new state. (0-63)												
<Minimum Movement>	Qualifying distance in meters. Distance that a device must move before accepting the new location as being a valid location. (0-63)												
<Vertex Amount>	Vertex number for polygon 3 – Triangle 4 – Rectangle or polygon 5 – Polygon												
<Latitude>	Latitude of Circular GeoFence center or Polygon												





		vertex (-90 ~ +90)
	<Longitude>	Longitude of Circular GeoFence center or Polygon vertex (-180 ~ +180)
	<Entry Radius>	Radius of circle in meters used to detect entry of the device into the GeoFence. (0~65535)
	<Exit Radius>	Radius of circle in meters used to detect exit of the device from the GeoFence. (0~65535)
<b>Return Value</b>	<p><b>Write Command:</b> OK : GF</p> <p><b>Read Command:</b> OK : GF</p> <p>a. Circle: AT\$GF=&lt;Group number&gt;,-1,1,&lt;Delay&gt;,&lt;Minimum Movement&gt;,&lt;Entry Radius&gt;,&lt;Exit Radius&gt;</p> <p>b. Polygon: AT\$GF=&lt;Group number&gt;,-1,2,&lt;Delay&gt;,&lt;Minimum Movement&gt;,&lt;Vertex Amount&gt;</p> <p><b>Error Response:</b> ERROR : GF</p>	
<b>Example</b>		
<b>Note</b>		



AT\$GFEN Geo-fence alert enable		
<b>Description</b>	This command is used to set/query GeoFence enable settings.	
<b>Syntax</b>	<p><b>Write Command:</b> AT\$GFEN=&lt;Index&gt;,&lt;Option&gt;,&lt;Action&gt;[,&lt;Reserve&gt;,&lt;Force Connection&gt;]</p> <p><b>Read Command:</b> AT\$GFEN?                      Reads all GeoFence Alert Enable Settings</p>	
<b>Parameters</b>	<Index>	Index of GeoFence. Range is 1 to 50.
	<Option>	0 – Disable 1 – Entry and Exit 2 – Entry Only 3 – Exit Only
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >	
	<Force Connection>	0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<p><b>Write Command:</b> OK : GFEN</p> <p><b>Read Command:</b> OK : GFEN \$GFEN=1,&lt; Option &gt;,&lt;Action&gt;,&lt; Reserve &gt;,&lt;Force Connection&gt; \$GFEN=2,&lt; Option &gt;,&lt;Action&gt;,&lt; Reserve &gt;,&lt;Force Connection&gt; ... \$GFEN=n,&lt; Option &gt;,&lt;Action&gt;,&lt; Reserve &gt;,&lt;Force Connection&gt;</p> <p><b>Error Response:</b> ERROR : GFEN</p>	



Note	Geo Fence Report Format: <a href="#">Asynchronous Position Message</a> + <GeoFence Index>		
	ASCII Format:		
	<b>Parameter</b>	<b>Format</b>	<b>Description</b>
	GeoFence Index	##	1 to 50
	Binary Format:		
<b>Name</b>	<b>Size</b>	<b>Type</b>	<b>Description</b>
GeoFence Index	1	Unsigned Integer	1 to 50

Nomadic Solutions  
2014/05/30 15:51



5. The Way to Setup Power Operation Status Detection

AT\$POWER Power status alert setting	
<b>Description</b>	Set or query main power low, lost, and battery low alert.
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$POWER=&lt;main power low voltage&gt;,&lt;main power low duration&gt;,&lt;main power lost voltage&gt;,&lt;main power lost duration&gt;,&lt;battery low voltage&gt;,&lt;battery low duration&gt;</p> <p><b>Read Command:</b>            AT\$POWER?</p>
<b>Parameters</b>	<main power low voltage> In millivolts. If main power voltage falls below this voltage, power low alert is triggered. (1~65535)
	<main power low duration> In seconds. The main power voltage must remain low for at least this period of time for alert to be triggered. (1~255)
	<main power lost voltage> In millivolts. If main power voltage falls below this voltage, power lost alert is triggered. (1~65535)
	<main power lost duration> In seconds. If the power is lost for greater than this period of time, the power lost alert is triggered. (1~255)
	<battery low voltage> In millivolts. If battery power voltage falls below this voltage, battery low alert is triggered. (1~65535)
	<battery low duration> In seconds. The battery voltage must remain low for at least this period of time for alert to be triggered. (1~255)
<b>Return Value</b>	<p><b>Write Command:</b>            OK:POWER</p> <p><b>Read Command:</b>            OK:POWER            \$POWER=&lt;main power low voltage&gt;,&lt;main power low duration&gt;,&lt;main power lost voltage&gt;,&lt;main power lost duration&gt;,&lt;battery low voltage&gt;,&lt;battery low duration&gt;</p> <p><b>Error Response:</b>            ERROR : POWER</p>
<b>Example</b>	Set power low alert at lower than 11 volts for 5 seconds, power lost alert at lower than 8.5 volts for 5 seconds and battery low at lower than 3.7 volts for 5 seconds. AT\$POWER=11000,5,8500,5,3700,5 OK:POWER



AT\$POWEREN Power alert enable	
<b>Description</b>	This command is used to enable/disable the power status alerts.
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$POWEREN=&lt;Option&gt;,&lt;Power On Enable&gt;,&lt;Action&gt;[,&lt;Schedule&gt;,&lt;Force Connection&gt;]</p> <p><b>Read Command:</b>            AT\$POWEREN?</p>
<b>Parameters</b>	<Option> 0 – Disable 1 – Enable
	<Power On Enable> 0 – Do not Send Power On Alert 1 – Send Power On Alert (Default is 0)
	<Action> 1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >
	<Force Connection> 0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<p><b>Write Command:</b>            OK : POWEREN</p> <p><b>Read Command:</b>            OK : POWEREN            \$POWEREN=&lt;Option&gt;,&lt;Power On Enable&gt;,&lt;Action&gt;,&lt; Reserve &gt;,&lt;Force Connection&gt;</p> <p><b>Error Response:</b>            ERROR : POWEREN</p>
<b>Example</b>	AT\$POWEREN=1,1,2,0,0 OK : POWEREN
<b>Note</b>	Power Status Report Format: <a href="#">Asynchronous Position Message</a> + <Main/Ext Voltage>,<Battery Voltage>



ASCII Format:			
Parameter	Format	Description	
<Main/Ext Voltage>	#####	Main or External voltage in millivolts	
<Battery Voltage>	####	Internal Battery Voltage	
Binary Format:			
Name	Size	Type	Description
Main/Ext Voltage	2	Unsigned Integer	External Voltage in millivolts
Battery Voltage	2	Unsigned Integer	Battery Voltage in millivolts

Nomadic Solutions  
2014/05/30 15:51



6. The Way to Detect GPS Signal Healthy and Connector status

AT\$GPSMON GPS monitor	
<b>Description</b>	This command is used to monitor GPS receiver status. The GPS will be restarted if GPS acquisition timeout.
<b>Syntax</b>	<b>Write Command:</b> AT\$GPSMON=<GPS Timeout> <b>Read Command:</b> AT\$GPSMON?
<b>Parameters</b>	<GPS Timeout> Time period in minutes that must elapse with no GPS lock indicating a GPS failure. (1~255)
<b>Return Value</b>	<b>Write Command:</b> OK : GPSMON <b>Read Command:</b> OK : GPSMON AT\$GPSMON=<GPS Timeout> <b>Error Response:</b> ERROR : GPSMON
<b>Example</b>	AT\$GPSMON=10 OK : GPSMON
<b>Note</b>	



AT\$GPSALEN GPS alert enable		
<b>Description</b>	This command is used to enable/disable GPS timeout alert.	
<b>Syntax</b>	<b>Write Command:</b> AT\$GPSALEN=<Option>,<Action>[,<Schedule>,<Force Connection>] <b>Read Command:</b> AT\$GPSALEN?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >	
	<Force Connection>	0 – Disable Bit 0 – Reserved Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : GPSALEN <b>Read Command:</b> OK : GPSALEN \$GPSALEN=<Option>,<Action>,< Reserve >,<Force Connection> <b>Error Response:</b> ERROR : GPSALEN	
<b>Example</b>	AT\$GPSALEN=1,2,0,0 OK : GPSALEN	
<b>Note</b>		





7. The Way Setup Motion Detecting Condition

AT\$MOTDET Motion detection settings	
<b>Description</b>	This command is used to set/query motion threshold settings. Motion is described as normal movement of a device as determined by a G sensor.
<b>Syntax</b>	<b>Write</b> Command: AT\$MOTDET=<Motion Detection Threshold Setting> <b>Read</b> Command: AT\$MOTDET?
<b>Parameters</b>	<Motion Detection Threshold Setting>      The g-force threshold setting that must be exceeded in order to be considered in motion. (0-15G)
<b>Return Value</b>	<b>Write</b> Command: OK : MOTDET <b>Read</b> Command: OK : MOTDET \$MOTDET=<Motion Detection Threshold Setting> <b>Error</b> Response: ERROR : MOTDET
<b>Example</b>	AT\$MOTDET=4.123 OK : MOTDET
<b>Note</b>	AT\$MOTEN will be affected by the AT\$MOTDET settings



AT\$MOTEN      Motion detected alert enable		
<b>Description</b>	This command is used to enable/disable motion detect alert.	
<b>Syntax</b>	<b>Write Command:</b> AT\$MOTEN=<Option>,<Action>[,<Schedule>,<Force Connection>] <b>Read Command:</b> AT\$MOTEN?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >	
	<Force Connection>	0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : MOTEN <b>Read Command:</b> OK : MOTEN \$MOTEN=<Option>,<Action>,< Reserve >,<Force Connection> <b>Error Response:</b> ERROR : MOTEN	
<b>Example</b>	AT\$MOTEN=1,2,0,0 OK : MOTEN	
<b>Note</b>		



8. The Command to Detect Impact in Vehicle

AT\$IMPDET Impact detection settings					
<b>Description</b>	This command is used to set/query impact threshold settings. Impact is described as an abrupt change in velocity as might be experienced during a wreck.				
<b>Syntax</b>	<b>Write</b> Command: AT\$IMPDET=<Impact Detection Threshold Setting>,<Reserved> <b>Read</b> Command: AT\$IMPDET?				
<b>Parameters</b>	<table border="1"> <tr> <td>&lt;Impact Detection Threshold Setting&gt;</td> <td>The g-force threshold setting that must be exceeded in order to be considered an impact. (1-16G)</td> </tr> <tr> <td>&lt;Reserved&gt;</td> <td></td> </tr> </table>	<Impact Detection Threshold Setting>	The g-force threshold setting that must be exceeded in order to be considered an impact. (1-16G)	<Reserved>	
<Impact Detection Threshold Setting>	The g-force threshold setting that must be exceeded in order to be considered an impact. (1-16G)				
<Reserved>					
<b>Return Value</b>	<b>Write</b> Command: OK : IMPDET <b>Read</b> Command: OK : IMPDET \$IMPDET=<Impact Detection Threshold Setting>,<Reserved> <b>Error</b> Response: ERROR : IMPDET				
<b>Example</b>	AT\$IMPDET=15 OK : IMPDET				
<b>Note</b>	The device used 3-Axis G-Force sensor to detect vehicle motion and impacts. The X , Y and Z axes definition will be affected by device installation location.				



AT\$IMPEN      Impact detected alert enable		
<b>Description</b>	This command is used to enable/disable impact detect alert.	
<b>Syntax</b>	<b>Write Command:</b> AT\$IMPEN=<Option>,<Action>[,<Schedule>,<Force Connection>] <b>Read Command:</b> AT\$IMPEN?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Reserved>	
	<Force Connection>	0 – Disable Bit 0 –Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : IMPEN <b>Read Command:</b> OK : IMPEN \$IMPEN=<Option>,<Action>,<Schedule>,<Force Connection> <b>Error Response:</b> ERROR : IMPEN	
<b>Example</b>	AT\$IMPEN=1,2,0,0 OK : IMPEN	



<b>Note</b>	Impact Alert Report Format: <a href="#">Asynchronous Position Message</a> + <X-Axis Value>,<Y-Axis Value>,<Z-Axis Value>															
	<b>ASCII Format:</b>															
	<table border="1"><thead><tr><th>Parameter</th><th>Format</th><th>Description</th></tr></thead><tbody><tr><td>&lt;X- Axis Value&gt;</td><td>(-)###</td><td>-16 to 16</td></tr><tr><td>&lt;Y- Axis Value&gt;</td><td>(-)###</td><td>-16 to 16</td></tr><tr><td>&lt;Z- Axis Value&gt;</td><td>(-)###</td><td>-16 to 16</td></tr></tbody></table>	Parameter	Format	Description	<X- Axis Value>	(-)###	-16 to 16	<Y- Axis Value>	(-)###	-16 to 16	<Z- Axis Value>	(-)###	-16 to 16			
	Parameter	Format	Description													
	<X- Axis Value>	(-)###	-16 to 16													
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	<Z- Axis Value>	(-)###	-16 to 16													
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<table border="1"><thead><tr><th>Name</th><th>Size</th><th>Type</th><th>Description</th></tr></thead><tbody><tr><td>X- Axis Value</td><td>1</td><td>Signed Byte</td><td>-16 to 16</td></tr><tr><td>Y- Axis Value</td><td>1</td><td>Signed Byte</td><td>-16 to 16</td></tr><tr><td>Z- Axis Value</td><td>1</td><td>Signed Byte</td><td>-16 to 16</td></tr></tbody></table>	Name	Size	Type	Description	X- Axis Value	1	Signed Byte	-16 to 16	Y- Axis Value	1	Signed Byte	-16 to 16	Z- Axis Value	1	Signed Byte	-16 to 16
Name	Size	Type	Description													
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Y- Axis Value	1	Signed Byte	-16 to 16													
Z- Axis Value	1	Signed Byte	-16 to 16													

Nomadic Solutions  
2014/05/30 15:51



9. The Way to Setup Vehicle Idling Status and Time

AT\$IDLE Configure idle alerts		
<b>Description</b>	This command is used to set/query vehicle idle condition. The IDLE state is triggered when a device has not moved at least a certain distance in a specified amount of time while the engine is determined to be "on". The idle alert message (see below) is sent as soon as the idle state is triggered. The idle report is sent once the idle state has ended.	
<b>Syntax</b>	<b>Write Command:</b> AT\$IDLE=<Minimum Distance>,<Maximum Time>,<Engine Status Detection Method>] <b>Read Command:</b> AT\$IDLE?	
<b>Parameters</b>	<Minimum Distance>	The distance in meters that must be travelled in the specified time in order to NOT trigger the idle alert. (1~65535) No Default
	<Maximum Time>	The time in minutes that a device has to travel at least the specified distance in meters in order to NOT trigger the idle alert. (1~255) No Default
	<Engine Status Detection Method>	Method to use to determine if the engine is running: 0 – Either or both Engine and Ignition Status. (In this case, either the engine or ignition status being "on" is sufficient to consider the engine to be on. However, both statuses must be "off" to consider the engine off.) 1 – Engine Status only 2 – Ignition Status only 3 – Engine & Ignition Status "on" (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : IDLE <b>Read Command:</b> OK : IDLE \$IDLE=<Minimum Distance>,<Maximum Time>,<Engine Status Detection Method>, <b>Error Response:</b> ERROR : IDLE	



AT\$IDLEEN Idle alert/report enable															
<b>Description</b>	This command is used to enable/disable vehicle idle alert.														
<b>Syntax</b>	<b>Write Command:</b> AT\$IDLEEN=<Option>,<Action>[,< Reserve >,<Force Connection>] <b>Read Command:</b> AT\$IDLEEN?														
<b>Parameters</b>	<Option> <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>0 – Disable</td> </tr> <tr> <td>1 – Enable</td> </tr> </table>	0 – Disable	1 – Enable												
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	1 – Enable														
	<Action> <table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval.</td> </tr> <tr> <td>2 – Polling When the alert condition is true, send the latest GPS position to the remote base station.</td> </tr> <tr> <td>3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.</td> </tr> </table>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval.	2 – Polling When the alert condition is true, send the latest GPS position to the remote base station.	3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.											
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< Reserve >															
<Force Connection>	<table border="1" style="display: inline-table; vertical-align: top;"> <tr> <td>0 – Disable</td> </tr> <tr> <td>Bit 0 –Deliver HB before report (Only ASCII mode)</td> </tr> <tr> <td>Bit 1 – Send SMS Report</td> </tr> <tr> <td>Bit 2 – Send Serial Report (Default is 0)</td> </tr> </table>	0 – Disable	Bit 0 –Deliver HB before report (Only ASCII mode)	Bit 1 – Send SMS Report	Bit 2 – Send Serial Report (Default is 0)										
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Bit 1 – Send SMS Report															
Bit 2 – Send Serial Report (Default is 0)															
<b>Return Value</b>	<b>Write Command:</b> OK : IDLEEN <b>Read Command:</b> OK : IDLEEN \$IDLEEN=<Option>,<Action>,< Reserve >,<Force Connection> <b>Error Response:</b> ERROR : IDLEEN														
<b>Example</b>															
<b>Note</b>	Idle Alert Report Format: <a href="#">Asynchronous Position Message</a> + <Idle Duration> <b>ASCII Format:</b> <table border="1" style="display: inline-table; vertical-align: top;"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>&lt;Idle Duration&gt;</td> <td>#####</td> <td>Duration vehicle was idle in seconds</td> </tr> </tbody> </table> <b>Binary Format:</b> <table border="1" style="display: inline-table; vertical-align: top;"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>&lt;Idle Duration&gt;</td> <td>2</td> <td>Unsigned Byte</td> <td>Duration vehicle was idle in seconds</td> </tr> </tbody> </table>	Parameter	Format	Description	<Idle Duration>	#####	Duration vehicle was idle in seconds	Name	Size	Type	Description	<Idle Duration>	2	Unsigned Byte	Duration vehicle was idle in seconds
Parameter	Format	Description													
<Idle Duration>	#####	Duration vehicle was idle in seconds													
Name	Size	Type	Description												
<Idle Duration>	2	Unsigned Byte	Duration vehicle was idle in seconds												



10. The Way to Setup Speed Acceleration and Deceleration Alert

AT\$HAD Harsh Acceleration and Deceleration setting		
<b>Description</b>	This command is used to set/query Harsh Acceleration and Deceleration setting.	
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$HAD=&lt;Max acceleration&gt;,&lt;Max deceleration&gt;,&lt;Max deceleration 2&gt;,&lt;Acceleration Time&gt;,&lt;Deceleration Time&gt;,&lt;Deceleration Time 2&gt;,&lt;Speed Source&gt;</p> <p><b>Read Command:</b>            AT\$HAD?</p>	
<b>Parameters</b>	<Max acceleration>	Max acceleration. 0.1 meters per second. (1~65535) [ (Kilometer per Hour) / 0.36]
	<Max deceleration>	Max deceleration. 0.1 meters per second. (1~65535) [ (Kilometer per Hour) / 0.36]
	<Max deceleration 2>	Max deceleration. 0.1 meters per second. (1~65535) [ (Kilometer per Hour) / 0.36]
	< Acceleration Time>	In seconds. Alert is triggered if acceleration is over the Max acceleration for this period of time. (1~9)
	< Deceleration Time>	In seconds. Alert is triggered if deceleration is over the Max deceleration for this period of time. (1~9)
	< Deceleration Time 2>	In seconds. Alert is triggered if deceleration is over the Max deceleration 2 for this period of time. (1~9)
	<Speed Source>	0 – GPS 2 – OBD VSS
<b>Return Value</b>	<p><b>Write Command:</b>            OK : HAD</p> <p><b>Read Command:</b>            OK : HAD</p> <p>\$HAD =&lt;Max acceleration&gt;,&lt;Max deceleration&gt;,&lt;Max deceleration 2&gt;,&lt;Acceleration Time&gt;,&lt;Deceleration Time&gt;,&lt;Deceleration Time 2&gt;,&lt;Speed Source&gt;</p> <p><b>Error Response:</b>            ERROR : HAD</p>	
<b>Example</b>	AT\$HAD=32,35,13,3,2,1,0 OK : HAD	
<b>Note</b>		





AT\$HADEN Harsh Acceleration and Deceleration report enable		
<b>Description</b>	This command is used to enable/disable HAD alert.	
<b>Syntax</b>	<b>Write Command:</b> AT\$HADEN=<Option>,<Action>[,< Reserve >,<Force Connection>],<Option> <b>Read Command:</b> AT\$HADEN?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Reserve>	
	<Force Connection>	0 – Disable Bit 0 – Reserved Bit 1 – Send SMS Report (Default is 0)
	<Option>	Bit 0 – Harsh acceleration start report ( 206 ) enable. Bit 1 – Harsh acceleration stop report ( 207 ) enable. Bit 2 – Harsh deceleration start report ( 208 ) enable. Bit 3 – Harsh deceleration stop report ( 209 ) enable. Bit 4 – Harsh deceleration start report ( 199 ) enable. Bit 5 – Harsh deceleration stop report ( 200 ) enable.
<b>Return Value</b>	<b>Write Command:</b> OK : HADEN <b>Read Command:</b> OK : HADEN \$HADEN=<Option>,<Action>,<Reserve>,<Force Connection>,<Option> <b>Error Response:</b> ERROR : HADEN	
<b>Example</b>	AT\$HADEN=1,3,0,0,63 OK : HADEN	
<b>Note</b>	Report ID 206 Accelerating Report ID 207 Stop Acceleration Report ID 208 Decelerating Report ID 209 Stop Deceleration Report ID 199 Decelerating 2 Report ID 200 Stop Deceleration 2	



AT\$HAC Harsh Cornering setting	
<b>Description</b>	This command is used to set/query Harsh Cornering setting.
<b>Syntax</b>	<b>Write Command:</b> AT\$HAC=<Enable>,<Action>,<Heading Change>,<Duration>,<Speed> <b>Read Command:</b> AT\$HAC?
<b>Parameters</b>	<Enable> 0 – Disable 1 – Enable HAC start report 2 – Enable HAC stop report 3 – Enable HAC start and stop report
	<Action> 1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	<Heading change> Minimum heading in degree that be changed. (5 ~ 180)
	<Duration> In seconds. Alert is triggered if heading change is over for this period of time. (1 ~ 9)
	<Speed> In 0.1 meter/sec. Alert is triggered if speed is over the set threshold. (70 ~ 65535)
<b>Return Value</b>	<b>Write Command:</b> OK : HAC <b>Read Command:</b> OK : HAC \$HAC=<Enable>,<Action>,<Heading change>,<Duration>,<Speed> <b>Error Response:</b> ERROR : HAC
<b>Example</b>	Detect heading change 35 degree per seconds and speed over 29.88km/h AT\$HAC=3,3,35,1,83 OK : HAC
<b>Note</b>	



11. OBD Mode Control and Report Configuration

AT\$OBDMODE		OBD Mode Control (For UCAN)	
<b>Description</b>	To select the ECU protocol.		
<b>Syntax</b>	<b>Write Command:</b> AT\$OBDMODE=<OBD Mode> <b>Read Command:</b> AT\$OBDMODE?		
<b>Parameters</b>	<Mode>	0 – disable (Voltage mode, Reference set <a href="#">AT\$EGN</a> ) 1 – SAE J1979 2 – (reserved) 3 – (reserved)	
<b>Return Value</b>	<b>Write Command:</b> OK : OBDMODE <b>Read Command:</b> \$OBDMODE=<mode> OK : OBDMODE <b>Error Response:</b> ERROR : OBDMODE		
<b>Example</b>	Set protocol to SAE J1979 AT\$OBDMODE=1 OK : OBDMODE		
<b>Note</b>			

AT\$OBDS		Display OBD II bus scanning status	
<b>Description</b>	Showing the OBD II protocol and PID's status		
<b>Syntax</b>	<b>Read Command:</b> AT\$OBDS?		
<b>Parameters</b>	None		
<b>Return Value</b>	\$OBDS=<OBD Protocol>,<PID supported>		
<b>Example</b>	AT\$OBDS? \$OK : OBDS \$OBDS=06,06fde7		



AT\$OBDRPT OBD Report Control (For UCAN)	
<b>Description</b>	To configure how the device reports OBD related data.
<b>Syntax</b>	<b>Write Command:</b> AT\$OBDRPT=<group>,<enable>,<interval>,<alert> <b>Read Command:</b> AT\$OBDRPT?
<b>Parameters</b>	<group> 0: SAE J1979, report ID=300 1-8: (reserved), report ID=301~308 9-15: (reserved), report ID=309~315
	<enable> 0: disable 1: time mode 2: distance mode 3: time + distance mode 4: heading change mode 5: time + heading change mode 6: distance + heading change mode 7: time + distance + heading change mode
	<interval> 5 ~ 65535 seconds
	<alert> Group0 report accompany with specified alert including acc, high speed, GF, high speed in GF, impact, idle, harsh acceleration/deceleration alert. 0: disable 1: enable
<b>Return Value</b>	<b>Write Command:</b> OK : OBDRPT <b>Read Command:</b> \$OBDRPT=<group>,<enable>,<interval>,<alert> ..... <group>,<enable>,<interval>,<alert> OK : OBDRPT <b>Error Response:</b> ERROR : OBDRPT
<b>Example</b>	Enable Report Group 0 (SAE J1979) to send latest data every 60 seconds. AT\$OBDRPT=0,1,60,0 OK : OBDRPT Enable Report Group 0 with alert.



	AT\$OBDRPT=0,0,60,1 OK : OBDRPT
<b>Note</b>	<p>1. This command use the following parameters from AT\$PDSR for position reporting: &lt;Destination&gt;,&lt;Min. Distance&gt;,&lt;heading Change&gt; Please set related parameters in AT\$PDSR for for your requirements.</p> <p>2. Sending OBD report through SMS is not supported due to the length limit of SMS.</p>

Nomadic Solutions  
2014/05/30 15:51



12. OBD Alerts

AT\$OBDALRT      OBD Alert Control (For UCAN)		
<b>Description</b>	To enable or disable OBD related alerts and select report channels.	
<b>Syntax</b>	<b>Write Command:</b> AT\$OBDALRT=<Option>,<Action>[,<Schedule>,<Force Connection>] <b>Read Command:</b> AT\$ OBDALRT?	
<b>Parameters</b>	<Option>	0 – Disable 1 – Enable
	<Action>	1 – Logging When the alert condition is true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When the alert condition is true, send the latest GPS position to the remote base station. 3 – Logging + polling When the alert condition is true, log the most recent GPS position to non-volatile flash memory and send the latest GPS position to the remote base station.
	< Reserve >	
	<Force Connection>	0 – Disable Bit 0 – Reserved Bit 1 – Send SMS Report Bit 2 – Send Serial Report (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : OBDALRT <b>Read Command:</b> OK : OBDALRT \$ OBDALRT =<Option>,<Action>,< Reserve >,<Force Connection> <b>Error Response:</b> ERROR : OBDALRT	
<b>Example</b>	AT\$ OBDALRT =1,2,0,0 OK : OBDALRT	
<b>Note</b>		



AT\$OBDDTC DTC Alert (For UCAN)																											
<b>Description</b>	To enable or disalbe DTC alert.																										
<b>Syntax</b>	<b>Write Command:</b> AT\$OBDDTC=<Interval> <b>Read Command:</b> AT\$ OBDDTC?																										
<b>Parameters</b>	<Interval>      Alert sending interval in hours.																										
<b>Return Value</b>	<b>Write Command:</b> OK : OBDDTC <b>Read Command:</b> OK : OBDDTC \$ OBDDTC =<Interval> <b>Error Response:</b> ERROR : OBDDTC																										
<b>Example</b>	Send DTC alert every two hours if MIL is lid. AT\$ OBDDTC =2 OK : OBDDTC																										
<b>Note</b>	Message ID: 320 Alert Format: <a href="#">Asynchronous Position Message</a> + <number of DTC> + <DTC>.... <b>ASCII Format:</b> <table border="1" data-bbox="528 1133 1375 1211"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Number of DTC</td> <td>##</td> <td>0 ~ 99</td> </tr> </tbody> </table> <b>Binary Format:</b> <table border="1" data-bbox="528 1245 1375 1433"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Desc iption</th> </tr> </thead> <tbody> <tr> <td>Number of DTC</td> <td>1</td> <td>Unsigned Integer</td> <td>0 ~ 99</td> </tr> <tr> <td>DTC #1</td> <td>2</td> <td>Unsigned Integer</td> <td></td> </tr> <tr> <td>DTC #2</td> <td>2</td> <td>Unsigned Integer</td> <td></td> </tr> <tr> <td>...</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Parameter	Format	Description	Number of DTC	##	0 ~ 99	Name	Size	Type	Desc iption	Number of DTC	1	Unsigned Integer	0 ~ 99	DTC #1	2	Unsigned Integer		DTC #2	2	Unsigned Integer		...			
Parameter	Format	Description																									
Number of DTC	##	0 ~ 99																									
Name	Size	Type	Desc iption																								
Number of DTC	1	Unsigned Integer	0 ~ 99																								
DTC #1	2	Unsigned Integer																									
DTC #2	2	Unsigned Integer																									
...																											



AT\$OBDGDTC      Get DTC Code (For UCAN)	
<b>Description</b>	To Get DTC number gathered from OBD BUS.
<b>Syntax</b>	<b>Read Command:</b> AT\$ OBDGDTC?
<b>Parameters</b>	None
<b>Return Value</b>	<b>Read Command:</b> OK : OBDDTC \$ OBDGDTC =<number of DTC's>,<DTC#1>,<DTC#2>,... <b>Error Response:</b> ERROR : OBDGDTC
<b>Example</b>	AT\$ OBDGDTC? OK : OBDDTC \$OBDGDTC=6,0100,0200,0300,c100,8200,4300
<b>Note</b>	Each trouble code is encoded in 4 BCD encoded characters.

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2014/05/30 15:51





AT\$OBD RPM Engine Over-Revving Alert (For UCAN)															
<b>Description</b>	To enable or disable engine over-revving alert.														
<b>Syntax</b>	<b>Write Command:</b> AT\$ OBD RPM =<Threshold>,<Duration> <b>Read Command:</b> AT\$ OBD RPM?														
<b>Parameters</b>	< Threshold > RPM threshold														
	< Duration > Minimum time in seconds that engine RPM is above the threshold set above.														
<b>Return Value</b>	<b>Write Command:</b> OK : OBD RPM <b>Read Command:</b> OK : OBD RPM \$ OBD RPM =< Threshold >,< Duration > <b>Error Response:</b> ERROR : OBD RPM														
<b>Example</b>	Engine RPM is above 3500 for 10 seconds: AT\$ OBD RPM =3500,10 OK : OBD RPM														
<b>Note</b>	Message ID: 321 Alert Format: <a href="#">Asynchronous Position Message</a> + <RPM> Formula: <RPM> / 4 <b>ASCII Format:</b> <table border="1" data-bbox="528 1245 1375 1323"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>RPM</td> <td>#####</td> <td>0 ~ 16383</td> </tr> </tbody> </table> <b>Binary Format:</b> <table border="1" data-bbox="528 1357 1375 1435"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>RPM</td> <td>2</td> <td>Unsigned Integer</td> <td>0 ~ 16383</td> </tr> </tbody> </table>	Parameter	Format	Description	RPM	#####	0 ~ 16383	Name	Size	Type	Description	RPM	2	Unsigned Integer	0 ~ 16383
Parameter	Format	Description													
RPM	#####	0 ~ 16383													
Name	Size	Type	Description												
RPM	2	Unsigned Integer	0 ~ 16383												



AT\$OBDECT Engine Over Heated Alert (For UCAN)										
<b>Description</b>	To enable or disable engine coolant temperature over heated alert.									
<b>Syntax</b>	<b>Write Command:</b> AT\$ OBDECT =<Threshold>,<Duration> <b>Read Command:</b> AT\$ OBDECT?									
<b>Parameters</b>	< Threshold >	Over heated temperature threshold								
	< Duration >	Minimum time in minutes that coolant temperature is above the threshold set above.								
<b>Return Value</b>	<b>Write Command:</b> OK : OBDECT <b>Read Command:</b> OK : OBDECT \$ OBDECT =< Threshold >,< Duration > <b>Error Response:</b> ERROR : OBDECT									
<b>Example</b>	Engine coolant temperature is above 100 °C for 3 minutes: AT\$ OBDECT =100,3 OK : OBDECT									
<b>Note</b>	Message ID: 322 Alert Format: <a href="#">Asynchronous Position Message</a> + <temperature> Formula: <temperature> - 40 <b>ASCII Format:</b>									
	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>temperature</td> <td>###</td> <td>-40 ~ 215</td> </tr> </tbody> </table>			Parameter	Format	Description	temperature	###	-40 ~ 215	
	Parameter	Format	Description							
	temperature	###	-40 ~ 215							
<b>Binary Format:</b>										
<table border="1"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>temperature</td> <td>1</td> <td>Unsigned Integer</td> <td>-40 ~ 215</td> </tr> </tbody> </table>			Name	Size	Type	Description	temperature	1	Unsigned Integer	-40 ~ 215
Name	Size	Type	Description							
temperature	1	Unsigned Integer	-40 ~ 215							



AT\$OBDPDL Acceleration Pedal Over Stepping Alert (For UCAN)																	
<b>Description</b>	To enable or disable over-stepping acceleration pedal alert.																
<b>Syntax</b>	<b>Write Command:</b> AT\$ OBDPDL=<Threshold>,<Duration> <b>Read Command:</b> AT\$ OBDPDL?																
<b>Parameters</b>	< Threshold >	Acceleration pedal position threshold															
	< Duration >	Minimum time in seconds that acceleration pedal is positioned above the threshold set above.															
<b>Return Value</b>	<b>Write Command:</b> OK : OBDPDL <b>Read Command:</b> OK : OBDPDL \$ OBDPDL =< Threshold >,< Duration > <b>Error Response:</b> ERROR : OBDPDL																
<b>Example</b>	Acceleration pedal is positioned deeper than 25% for 10 seconds: AT\$ OBDPDL =25,10 OK : OBDPDL																
<b>Note</b>	Message ID: 323 Alert Format: <a href="#">Asynchronous Position Message</a> + <pedal position> Formula: < pedal position > * 100 / 255 <b>ASCII Format:</b> <table border="1" data-bbox="528 1301 1375 1377"> <thead> <tr> <th>Parameter</th> <th>Format</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>pedal position</td> <td>###</td> <td>0 ~ 100</td> </tr> </tbody> </table> <b>Binary Format:</b> <table border="1" data-bbox="528 1413 1375 1487"> <thead> <tr> <th>Name</th> <th>Size</th> <th>Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>pedal position</td> <td>1</td> <td>Unsigned Integer</td> <td>0 ~ 100</td> </tr> </tbody> </table>			Parameter	Format	Description	pedal position	###	0 ~ 100	Name	Size	Type	Description	pedal position	1	Unsigned Integer	0 ~ 100
Parameter	Format	Description															
pedal position	###	0 ~ 100															
Name	Size	Type	Description														
pedal position	1	Unsigned Integer	0 ~ 100														



13. The Extra Application Commands

AT\$REPORT User defined report configuration		
<b>Description</b>	This command is used to set/query user defined report configuration.	
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$REPORT=&lt;User Report ID&gt;,&lt;Enable&gt;[,&lt;Input Event&gt;,&lt;Input Event State&gt;,&lt;GF Index&gt;,&lt;GF Option&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Action&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Reserved&gt;,&lt;Force Connection&gt;]</p> <p><b>Read Command:</b>            AT\$REPORT?</p>	
<b>Parameters</b>	<User Report ID>	User defined message ID (500 .. 549)
	<Enable>	0 – Disable 1 – Enable
	<Input Event>	This is a 4-byte value for event bits. 1 – Ignition (ACC) 2 – Reserved 4 – Reserved 8 – Reserved 16 – Reserved 32 – Reserved 64 – Reserved 128 – Reserved 256 – Engine Event 512 – Speed Event 1024 – Reserved 2048 – Main Power Low Event 4096 – Main Power Failure Event 8192 – Battery Power Low Event 16384 – Reserved 32768 – Main Power Restored Event 65536 – Battery Power Restored Event 131072 – Motion Event 262144 – Impact Event 524288 – Idle Event



	<Input Event State>	<p>This is a 4-bytes event state bits Input State :</p> <p>Bit 00 – Ignition (ACC) 0 – From High signal to Low signal. 1 – From Low signal to High signal.</p> <p>Bit 01 – Reserve Bit 02 – Reserve Bit 03 – Reserve Bit 04 – Reserve Bit 05 – Reserve Bit 06 – Reserve Bit 07 – Reserve Bit 08 – Engine Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 09 – Speed Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 10 – Reserved 0 – Event Inactive 1 – Event Active</p> <p>Bit 11 – Main Power Low Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 12 – Main Power Failure Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 13 – Battery Power Low Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 14 – Reserved 0 – Event Inactive 1 – Event Active</p> <p>Bit 15 – Main Power Restored Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 16 – Battery Power Restored Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 17 – Motion Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 18 – Impact Event 0 – Event Inactive 1 – Event Active</p> <p>Bit 19 – Idle Event 0 – Event Inactive 1 – Event Active</p>
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	<GF Index>	Geo-Fence setting index (1 .. 50) 0 – Disable
	<GF Option>	Geo-Fence condition 0 – Inside geo-fence 1 – Outside geo-fence
	<Reserved>	Reserved
	<Reserved>	Reserved
	<Action>	This parameter defines the actions to be taken once the report is in an active state. One or more actions can be specified on any report. The following list defines all available action types: 1 – Logging When all defined report conditions are true, log the most recent GPS position to non-volatile flash memory for future retrieval. 2 – Polling When all defined report conditions are true, send the latest GPS position to the remote base station.
	<Reserved>	Reserved
	<Reserved>	Reserved
	<Reserved>	Reserved
	<Reserved>	Reserved
	<Reserved>	Reserved
	<Force Connection>	0 – Disable Bit 0 – Deliver HB before report (Only ASCII mode) Bit 1 – Send SMS Report to number defined in AT\$SMSDST Bit 2 – Reserved Bit 3 – Send SMS to SMLST numbers 1 Bit 4 – Send SMS to SMLST numbers 2 Bit 5 – Send SMS to SMLST numbers 3 Bit 6 – Send SMS to SMLST numbers 4 (Default is 0)
<b>Return Value</b>	<b>Write Command:</b> OK : REPORT <b>Read Command:</b> OK : REPORT \$REPORT=<User Report ID>,<Enable>,<Input Event>,<Input Event State>,<GF Index>,<GF Option>,<Reserved>,<Reserved>,<Action>,<Reserved>,<Reserved>,<Reserved>,<Reserved>,<Reserved>,<Force Connection> <b>Error Response:</b> ERROR : REPORT	
<b>Example</b>	To send to server report ID 500 when ACC is ON AT\$REPORT=500,1,1,1,0,0,0,0,2,0,0,0,0,0 To send to server report ID 501 when ACC is OFF AT\$REPORT=501,1,1,0,0,0,0,0,2,0,0,0,0,0	
<b>Note</b>		



AT\$GFSP Geo-fence speed alert setting	
<b>Description</b>	This command is used to set speed alert in each defined Geo-Fence zone.
<b>Syntax</b>	<b>Write Command:</b> AT\$GFSP=<Index>,<Enable>,<Speed Limit> <b>Read Command:</b> AT\$GFSP?
<b>Parameters</b>	<Index>                      Index of Geo-Fence (1~50)
	<Enable>                      Enable Geo-Fence Speed Alert 0 – Disable   1 - Enable
	<Speed Limit>                      Speed limit in 0.1 meters/second [ (Kilometer per Hour) / 0.36] (1~65535)
<b>Return Value</b>	<b>Write Command:</b> OK : GFSP <b>Read Command:</b> OK : GFSP \$GFSP=1,1,28 <b>Error Response:</b> ERROR : GFSP
<b>Example</b>	AT\$GFSP=1,1,28 OK : GFSP



AT\$COMM Communication parameters configuration																									
<b>Description</b>	This command is used to set or query specified communication parameters.																								
<b>Syntax</b>	<p><b>Write Command:</b>            AT\$COMM=&lt;Modem ID&gt;,&lt;Format&gt;,&lt;SMSDST&gt;,&lt;SMSLST1&gt;,&lt;APN Name&gt;,&lt;HOST1_Address&gt;,&lt;HOST1_Port&gt;,&lt;GPRSEN&gt;,&lt;HB_Period&gt;,&lt; Reserved &gt;,&lt;PDSR_Mode&gt;,&lt;PDSR_Min. Time&gt;</p> <p><b>Read Command:</b>            AT\$COMM?</p>																								
<b>Parameters</b>	<table border="1"> <tr> <td>&lt;Modem ID&gt;</td> <td>Refer to AT\$MODID</td> </tr> <tr> <td>&lt;Format&gt;</td> <td>Refer to AT\$FORMAT</td> </tr> <tr> <td>&lt;SMSDST&gt;</td> <td>Refer to AT\$SMSDST</td> </tr> <tr> <td>&lt;SMSLST1&gt;</td> <td>Refer to AT\$SMSLST</td> </tr> <tr> <td>&lt;APN Name&gt;</td> <td>Refer to AT\$APN</td> </tr> <tr> <td>&lt;HOST1_Address&gt;</td> <td>Refer to AT\$HOSTS</td> </tr> <tr> <td>&lt;HOST1_Port&gt;</td> <td>Refer to AT\$HOSTS</td> </tr> <tr> <td>&lt;GPRSEN&gt;</td> <td>Refer to AT\$GPRSEN</td> </tr> <tr> <td>&lt;HB_Period&gt;</td> <td>Refer to AT\$HB</td> </tr> <tr> <td>&lt;Reserved&gt;</td> <td>Reserved</td> </tr> <tr> <td>&lt;PDSR_Mode&gt;</td> <td>Refer to AT\$PDSR</td> </tr> <tr> <td>&lt;PDSR_Min. Time&gt;</td> <td>Refer to AT\$PDSR</td> </tr> </table>	<Modem ID>	Refer to AT\$MODID	<Format>	Refer to AT\$FORMAT	<SMSDST>	Refer to AT\$SMSDST	<SMSLST1>	Refer to AT\$SMSLST	<APN Name>	Refer to AT\$APN	<HOST1_Address>	Refer to AT\$HOSTS	<HOST1_Port>	Refer to AT\$HOSTS	<GPRSEN>	Refer to AT\$GPRSEN	<HB_Period>	Refer to AT\$HB	<Reserved>	Reserved	<PDSR_Mode>	Refer to AT\$PDSR	<PDSR_Min. Time>	Refer to AT\$PDSR
<Modem ID>	Refer to AT\$MODID																								
<Format>	Refer to AT\$FORMAT																								
<SMSDST>	Refer to AT\$SMSDST																								
<SMSLST1>	Refer to AT\$SMSLST																								
<APN Name>	Refer to AT\$APN																								
<HOST1_Address>	Refer to AT\$HOSTS																								
<HOST1_Port>	Refer to AT\$HOSTS																								
<GPRSEN>	Refer to AT\$GPRSEN																								
<HB_Period>	Refer to AT\$HB																								
<Reserved>	Reserved																								
<PDSR_Mode>	Refer to AT\$PDSR																								
<PDSR_Min. Time>	Refer to AT\$PDSR																								
<b>Return Value</b>	<p><b>Write Command:</b>            OK : COMM</p> <p><b>Read Command:</b>            OK : COMM</p> <p>\$COMM=&lt;Modem ID&gt;,&lt;Format&gt;,&lt;SMSDST&gt;,&lt;SMSLST1&gt;,&lt;APN Name&gt;,&lt;HOST1_Address&gt;,&lt;HOST1_Port&gt;,&lt;GPRSEN&gt;,&lt;HB_Period&gt;,&lt;Reserved&gt;,&lt;PDSR_Mode&gt;,&lt;PDSR_Min. Time&gt;</p> <p><b>Error Response:</b>            ERROR : COMM</p>																								
<b>Example</b>	AT\$COMM=3010000001,1,123456789,,internet,,0,1,0,0,1,20 OK : COMM																								
<b>Note</b>																									





AT\$FTP FTP firmware download command		
<b>Description</b>	This command is used to download firmware from FTP server.	
<b>Syntax</b>	<b>Write Command:</b> AT\$FTP=<Hostname>,<Username>,<Password>,<FTP_port_number>,<Filename>,<Filesize> <b>Read Command:</b> AT\$FTP?	
<b>Parameters</b>	<Hostname>	FTP hostname (Max 29 characters)
	<Username>	Username to login (Max 10 characters)
	<Password>	Password to login (Max 10 characters)
	<FTP_port_number>	FTP port number (0~65535)
	<Filename>	Filename of file for download (Max 20 characters)
	<Filesize>	File size of file for download (1~4294967295)
<b>Return Value</b>	<b>Write Command:</b> OK : FTP <b>Read Command:</b> \$FTP=ftp.systech.com.tw,u1test,***,0,U1_v1.00_r09.bin,230400,230400 OK : FTP <b>Error Response:</b> ERROR : FTP	
<b>Example</b>	AT\$FTP=ftp.systech.com.tw,test,12345,,U1_v1.00_r09.bin,230400 OK : FTP	
<b>Note</b>	FTP_DOWNLOAD_REPORT: ID=59, with string OK:filename FTP_DOWNLOAD_REPORT: ID=60, with string ERROR:filename	



AT\$FILE Firmware file uploading command		
<b>Description</b>	This command is used to update firmware or configuration file.	
<b>Syntax</b>	<b>Write Command:</b> AT\$FILE=<Attrib>,<Type>,<Filename>,<Filesize>	
<b>Parameters</b>	<Attrib>	File attrib (upd – file update)
	<Type>	File type (fw – update fw) (cf – update configuration file)
	<Filename>	Filename of file for download (Max 20 characters)
	<Filesize>	File size of file for download (fw: 256 ~ 262144) (cf: 256 ~ 61440)
<b>Return Value</b>	<b>Write Command:</b> OK : FILE	
<b>Example</b>	AT\$FILE=upd,fw,UCv1.0r06.bin,173056 OK : FILE	
<b>Note</b>	FILE_UPDATE_REPORT : ID=61, with string OK:filename FILE_UPDATE_REPORT : ID=62, with string ERROR:filename It's recommended that one to set aside enough time for the device to perform firmware update before going into next power saving stage. Please refer to AT\$PWRM for details.	



AT\$RFOUT RF Output Control	
<b>Description</b>	This command is used to set control for each RF output.
<b>Syntax</b>	<b>Write Command:</b> AT\$RFOUT=<Index>,<New Value>,<Enable> <b>Read Command:</b> AT\$RFOUT?
<b>Parameters</b>	<Index> Output ID (1 to 2 for UCAN model) 1 – channel 1 RF relay 2 – channel 2 RF relay
	<New Value> New Value for the output. 0 – Off 1 – On
	<Enable> Enable RF relay for output control 0 – Disable 1 – Enable
<b>Return Value</b>	<b>Write Command:</b> OK : RFOUT <b>Read Command:</b> OK : RFOUT \$RFOUT=<Index>,<New Value>,<Enable> <b>Error Response:</b> ERROR : RFOUT
<b>Example</b>	AT\$RFOUT=1,1,1 OK : RFOUT
<b>Note</b>	



AT\$RELAYID Relay ID Set and Clear		
<b>Description</b>	This command is used to set Relay ID for each RF channel.	
<b>Syntax</b>	<b>Write Command:</b> AT\$RELAYID=<Channel>,<Value> <b>Read Command:</b> AT\$RELAYID?	
<b>Parameters</b>	<Channel>	indicates the RF channel for RF Relay (1~2)
	<Value>	RF RELAY control 0 – Clear relay ID to empty for the specified RF Relay(channel) If the relay ID is cleared, the cleared RF relay will turn on/off some times. <i>(Warning! All the same channel of relays will be clear on the radio communication range)</i> 1 – Set Relay ID for a empty ID of RF relay If the relay ID is set, the RF relay will turn on/off some times The Relay ID is last 7 digital of IMEI number.. Only the empty relay of RF relay can be set.
<b>Return Value</b>	<b>Write Command:</b> OK : RELAYID <b>Read Command:</b> OK : RELAYID \$RELAYID=<Relay ID> <b>Error Response:</b> ERROR : RELAYID	
<b>Example</b>		
<b>Note</b>		



## VI. Appendices

### A. Message ID Description

Message ID (Heximal)	Message ID (Decimal)	Description	Remark
0x0000	0	Get position	
0x0001	1	Log position	
0x0002	2	Tracking position	
0x000B	11	Ignition (ACC) status Alert	
0x003B	59	FTP Download OK! Report	
0x003C	60	FTP Download Error Report	
0x003D	61	File Update MCU OK! Report	
0x003E	62	File pdate MCU Error Fail	
0x00A0	160	Power-Up Alert	
0x00A1	161	Engine Status Alert	
0x00A2	162	High Speed Alert	
0x00A3	163	High Speed Report	
0x00A4	164	GeoFence Entry Alert	AT\$GF
0x00A5	165	GeoFence Exit Alert	AT\$GF
0x00A6	166	Main Power Low Alert	
0x00A7	167	Main Power Failure Alert	
0x00A8	168	Battery Power Low Alert	
0x00A9	169	Reserved	
0x00AA	170	Main Power Removal Alert	
0x00AB	171	Heartbeat (Binary Format)	AT\$HB
0x00AC	172	GPS Failure Alert (No GPS lock)	
0x00AF	175	Main Power Restored Alert	
0x00B0	176	Battery Power Restored	
0x00B2	178	Reserved	
0x00B3	179	Motion Detection Alert	AT\$MOTDET
0x00B4	180	Impact Detection Alert	AT\$IMPDET
0x00B7	183	Idle Alert	AT\$IDLE
0x00B8	184	Idle Alert Report	AT\$IDLE
0x00BF	191	Geo-fence speed alert	AT\$GFSP
0x00C1	193	Entering Low Power Mode Report	AT\$LPRC
0x00C2	194	Wake-up from Very Low Power Mode Report	AT\$LPRC
0x00C7	199	Deceleration start report 2	AT\$HADEN
0x00C8	200	Deceleration stop report 2	AT\$HADEN
0x00C9	201	Wake-up from Low Power Mode Report	AT\$LPRC



Released Date: Apr. 30, 2014

0x00CA	202	Entering Very Low Power Mode Report	AT\$LPRC
0x00CE	206	Acceleration start report	AT\$SSADEN / AT\$HADEN
0x00CF	207	Acceleration stop report	
0x00D0	208	Deceleration start report	
0x00D1	209	Deceleration stop report	
0x00D2	210	Geo-fence speed alert end	AT\$GFSP
0x00E3	227	Harsh cornering alert	AT\$HAC
0x00E4	228	Harsh cornering report	AT\$HAC
0x012C	300	OBDRPT Group0 report	AT\$OBDRPT
	301~315	Reserved	
0x0140	320	DTC Alert	AT\$OBDDTC
0x0141	321	Over-Revving Alert	AT\$OBDRPM
0x0142	322	Over-Heated Alert	AT\$OBDECT
0x0143	323	Over-Pedaling Alert	AT\$OBDPDL
0x0144	324	OBDRPT Average Report	
0x0145	325	OBDRPT VIN Report	AT\$OBDALRT
0x01F4~0x0225	500~549	User Define Report	



**B. CME Errors Description**

Error Code	Description
0	Phone failure
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
100	Unknown
100..255	Reserved



### C. CMS Errors Description

Error Code	Description
1	Unassigned (unallocated) number
8	Operator determined barring
10	Call barred
21	Short message transfer rejected
27	Destination out of service
28	Unidentified subscriber
29	Facility rejected
30	Unknown subscriber
38	Network out of order
41	Temporary failure
42	Congestion
47	Resources unavailable, unspecified
50	Requested facility not subscribed
69	Requested facility not implemented
81	Invalid short message transfer reference value
95	Invalid message, unspecified
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message not compatible with short message protocol state
99	Information element non-existent or not implemented
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be actioned
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred





197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	D0 SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
255	Unspecified error cause
300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	no network service
332	Network timeout
340	NO +CNMA ACK EXPECTED
500	Unknown error or SMS collision
512	User abort
513	unable to store



## D. LED Indications

### 1. GPS LED Status Table

Power Mode	GPS Status	GPS LED
Power Off	N/A	Off
Low Power	N/A	Off
Full Power	Acquiring	Flash Green (five times/second)
Full Power	Tracking	Solid Green

### 2. GSM LED Status Table

Power Mode	GSM/GPRS Status	GSM LED
Power Off	N/A	Off
Low Power	N/A	Off
Full Power	Acquiring	Flash Yellow (three times/second)
Full Power	Registered	Solid yellow



## VII. About Systems & Technology Corporation

CAREU U-Series AVL device is produced by Systems & Technology Corporation. The company is a key developer and supplier of advanced systems in the Automatic Vehicle Location (AVL), Digital Map and Car Navigation Systems.

If you need information on other maps solutions or products, please contact us at the phone and fax numbers listed below, or visit our web sites.

Contact Information for Systems & Technology Corp.



Contact Information for Systems & Technology Corp.

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