Communication Protocol and Data Format

This standard applies to the communication between vehicle Terminial & online tracking platform.

1 Abbreviation

The following abbreviations are applicable to this document

APN Access Point Name
SMS Short Message Service
TCP Transmission Control Protocol
TTS Text To Speech
UDP User Datagram Protocol

2.Protocol Basics

2.1 Communication Way

This communication protocol using TCP or UDP, platform as a server, the terminal as a client.

2.2 Data Type

Data type of message used in protocol is show in table 1:

Table 1 Data Type

Data Type	Description & Requirements
BYTE	Unsigned single byte integers (byte, 8)
WORD	Unsigned two-byte integers (word, 16 bytes)
DWORD	Unsigned four-byte integer (double-word, 32 bytes)
BYTE[n]	N byte
BCD[n]	8421 code，n byte
STRING	GBK code，blank if no data

2.3 Transport Rules

Protocol uses network byte order of big-endian mode to transfer word & dword.

Rules as bellow:

Transfer rules of BYTE：by byte stream transmission

Transfer rules of WORD: high 8 first, and then the low 8;

Transfer rules of DWORD：order is high 24, high 16, high 8 and low 8.

2.4 Message Composition

2.4.1 Structure

Each message is component with identity header, message header, message body and checksum. Message Structure is as Chart 1 shows:

Identity bit	Message header	Message body	Checksum	identity

Chart 1 message structure

2.4.2 Identity bit

Shown as 0x7e，if there is 0x7e in checksum, message header/body, it will have to be escaped, **Escape rule as bellow:**

0x7e ←→0x7d followed by 0x02；

0x7d ←→0x7d followed by 0x01

Escape process is as bellow:

Message Sending：Message encapsulation → computer and populate checksum → escape；

Message Receiving: Transfer reduction → checksum verification→ parse message

E.G：

Send a data packet content as 0x30 0x7e 0x08 0x7d 0x55，encapsulated as follow：0x7e 0x30 0x7d 0x02 0x08 0x7d 0x01 0x55 0x7e.

2**.4.3 Message Header**

Message header content shown in Table 2

Table 2 Message Header

Start Byte	Field	Data Types	Explain
0	Message ID	WORD	
2	Message Body Properties	WORD	Message Body attribute format structure shown

			in Chart 2
4	Terminal mobile No.	BCD[6]	Converted from terminal SIM card No., add digital in front if less than 12 digitals. China mainland mobile add digit 0, Hong Kong, Macao & Taiwan mobile No. will supplemented with its area code.
10	Message Serial No.	WORD	From 0 to start the cycle accumulate by transmission order.
12	Message packet Package Items		This item have content only if message body attributes associated identity bit determine the message subcontracting process, or, absence.

Message Body attribute format structure shown in Chart 2：

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved		**Subcontractor (SUB-PACK)**	Data Encryption			Message Body Length									

Chart 2 Message Body attribute format structure

Data Encryption Way：

----------bit10~bit12 is data encryption identity bit；

----------message body not encrypted when those three are 0；

----------Message body encrypted by RSA algorithm when the bit 10th

----------Others reserved

(P.S.: bit 15 as multimedia data identification, means all data package included 8 bits identifies in front. This is only for **WEB TRACK®**)

Sub-pack：

Message body is a long message when the 13th bit of message body property is 1, should make sub-package sending process, specific message determined by message sub-pack item; Message header without message sub-pack item field if the 13th bit is 0.

Message package pack item contents shown in Table 3

Table 3 Message package pack item contents

Start byte	Field	Data Type	Description & Requirement
0	Message Package Total No.	WORD	Total No. of packets after messages sub-packed
2	Packet sequence No.	WORD	Starting at 1

2.4.4 Checksum

Checksum means starting from the message header, with the latter byte XOR, until the byte before checksum, occupies one byte.

3. Communication Connection

3.1 Connection establish

Daily connection of data between terminal and platform is using TCP or UDP, terminal should connect platform as soon as possible after it is reset, and send terminal authentication message immediately after connected successfully.

3.2 Connection Maintainance

After Connection established and terminal authentication successes, terminal should send heartbeat messages to platform periodically, and platform should reply to those messages, the reply should with platform common reply messages. Period decided by terminal parameters.

3.3 Disconnection

Platform and terminal can disconnect initiatively according to TCP protocol, both of them should determine initiatively that whether TCP disconnected.

Method of platform determine TCP disconnected:

—determine terminal disconnected initiatively according to TCP protocol;

—Theterminal with same identity establishes a new connection, means the original one has disconnected.

—Not received message from terminal within a certain period of time, such as heartbeat.

Method of terminal determine TCP disconnected:

—Judge platform disconnect initiatively according to TCP Protocol.
—Data communication link disconnected;
—Data communication link normal, not receive response after reach the number of retransmissions.

4. Message Process

4.1 TCP & UDP message process

4.1.1 Messages send by platform initiatively

All messages send by platform initiatively require terminal reply, reply divided into general and specialized ones, determined by specific features protocol.

4.2 Messages send by terminal initiatively

4.2. 1 Data communication link normal

When data communication link works normally, all messages send by terminal initiatively require platform reply, reply divided into general & specialized ones which determined by specific features protocol. Response message will retransmission if the last message is still not received when time is out. For critical alert messages, if it still not gets response when it reached retransmission times, it will be saved. And the saved critical alert message will be send before any other coming messages.

4.2.2 Data communication link error

When data communication link is error, terminal should save the location messages and reports. Those saved messages will send out as soon as data communication link is ok.

5. Protocol classification and description

5.1 Outline

5.2 Terminal management protocol （7.2）

Terminal registration/cancellation

For the unregistered terminal, it must be registered first, terminal will get authentication code after registered success and preserve it, the code will use when terminal login. Terminal should logout to cancel correspondence between it and vehicle when this terminal need to removed or replaced.

If terminal send registration or cancellation messages via SMS, platform will send terminal registration response (0x8100) via SMS, and platform common response will send via SMS as a reply to terminal cancellation.

Terminal Authentication

Authentication must be made when each connection is made between terminal and platform after terminal is registered. Terminal cannot send other message after authentication successes.
Terminal will send authentication message and platform reply a common message.

Set/query Terminal Parameters

Platform set terminal parameter via message, terminal will reply a common message. Platform send message to query terminal parameters, and terminal reply query response message. Terminal should support specific parameters of different network.

Terminal Control

Platform send message to control terminal and terminal reply common message.

5.3 Protocol of location and alerts.

Location report

Terminal sends location reports with period which set by parameters.

According to parameter control, terminal can send location information when vehicle cornering is detected.

Location inquiry

Platform send location inquiry message to check current position of specified terminal and terminal will reply with location information query response message.

Temporary Position Tracking Control

Platform send temporary location tracking control message to start/stop location tracking, location tracking require cycle report before terminal stop, according time interval which is specified in messages. Terminal reply common message.

Terminal Alert

Terminal will send location information when it determines an alert, and appropriated alert flag will set.
Platform can process alert via common response message.

Please check alert type in description of message report information. Alert flag maintained until alert condition removed. Location information should send immediately when alert condition removed. To make the corresponding alert flag shows clearly.

5.4 Vehicle control protocol

Platform send vehicle control message to require terminal control vehicle with specified action. Terminal response immediately with common reply and then, terminal will control vehicle, and reply vehicle control response message according to result.

5.5 Vehicle Management Protocol

Platform sends circular, rectangular and polygon area to set area or routine of terminal. Terminal determine whether the area or routine property meet alert requirement. Alert include over-speed alert, in/out area/routine alert and routine driving time too long/short alert, corresponding location information should be included.

Area or routine ID range is: 1~0xFFFFFFFF. If the setting ID is existed in the terminal, the existing one will be updated.

Platform can delete circular, rectangular or polygon area to remove the routines or areas which is existed in terminal.

Set/delete area or routine message requires terminal common reply.

5.6 Information collect protocol

Collect driver identity data

Terminal get driver identity information data and upload it on platform to make distinguish, platform reply success/failed.

Collect traveling data recorder data

Platform send traveling data recorder data to collect command message and require terminal upload specified data, the message require terminal reply traveling data recorder data upload message.

Downstream traveling data recorder parameters

Platform send traveling data recorder downstream command to require terminal upload specified data, terminal common reply is required.

6. Data Format

6.1 Terminal common response

Message ID:0x0001.

Terminal common response message body data format shown as table 4.

Table 4 Terminal Common Response Message Body data format

Start Byte	Field	Data Type	Description and Requirements
0	Answer Serial No.	WORD	Platform message corresponding serial number.
2	Answer ID	WORD	Platform message corresponding ID
4	Result	BYTE	0：Success/Confirm; 1:Failed 2: Message Error 3：Not support

6.2 Platform Common Answer【8001】

Message ID:0x8001.

Platform Common Answer message body data format shown as Table 5

Table 5 Platform common answer message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Answer Serial No.	WORD	Terminal message corresponding serial number.
2	Answer ID	WORD	Terminal message corresponding ID
4	Result	BYTE	0：Success/Confirm; 1:Failed 2: Message Error 3：Not support 4: Alert processing confirm

7.3 Terminal Heartbeat【0002】

Message ID: 0x0002

7.4 Terminal Register【0100】

Message ID: 0x0100

Terminal Register Message Body Data Format Shown as Table 6

Table 6 Terminal Register Message Body Data Format

Start Byte	Field	Data Type	Description and Requirement
0	Provincial ID	WORD	Indicate which province the terminal vehicle is in, 0 reserved, platform uses default value. GB/T2260 stipulated 6 administrative divisions, and provincial ID uses the first 2 digitals.
2	City & Prefecture ID	WORD	Indicate which city the terminal vehicle is in, 0 reserved, platform uses default value. GB/T2260 stipulated 6 administrative divisions, and city/prefecture ID uses the last 6 digitals.
4	Manufacturer ID	BYTE[5]	5 bytes, terminal manufacturer number
9	Terminal Models	BYTE[8]	8 bytes, terminal model number is defined by manufacturer, fill with space if it is less than 8. (P.S: additional information required 20 bytes, if less than 20, fill with 0x00 on the back)

17	Terminal ID	BYTE[7]	7 bytes, comprised with capital letters and numbers, terminal ID is defined by manufacturer, if less than 8, fill with 0x00 on the back)
24	License Plate Color	BYTE	License plate number, in accordance with 5.4.12 JT/T415-2006, if the vehicle don't have license plate yet, use value 0
25	License Plate	STRING	Vehicle license plate issued by Public security traffic management department (P.S.: additional information required if car plate color is 0, vehicle VIN number should indicated here)

7.5 Terminal Registration Reply【8100】

Message ID:0x8100

Terminal registration reply message body data format shown as Table 7

Table 7 Terminal registration reply message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Answer Serial Number	WORD	Corresponding terminal registration message serial number
2	Result	BYTE	0： Success; 1: Vehicle registered; 2: Vehicle not in database: 3: Terminal registered; 4: Vehicle not in database;
3	Authentication Code	STRING	The field only exist if successes

8.7 Terminal Authentication【0102】

Message ID:0x0102

Terminal Authentication message body data format shown in Table 8

Table 8 Terminal Authentication message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Authentication Code	STRING	Terminal reconnect and upload authentication code

7.7 Set Terminal Parameters【8103】

Message ID:0x8103

Set Terminal parameter message body data format shown as Table 9

Table 9 Terminal parameter message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Total Parameters	BYTE	
1	Number of pack parameters		Parameter format shown in table 10

Table 10 Terminal parameter data format

Field	Data Type	Description and Requirement
Parameter ID	DWORD	Parameter ID definition and description shown in table 11
Parameter Length	BYTE	
Parameter Value		If it is a multi-value parameter, the message will use many parameter entries with the same ID, such as dispatch center phone number.

Table 11 Terminal settings of each parameters definition and explain

Parameter ID	Data Type	Description and Requirement
0x0001	DWORD	Terminal heartbeat time interval (s)
0x0010	STRING	Main server APN， wireless communication dial-up access points. If network standard is CDMA, it will be PPP dial numbers here.
0x0013	STRING	Main Server address, IP or domain name
0x0017	STRING	Backup server address, IP or domain name
0x0018	DWORD	Server TCP Port
0x0019	DWORD	Server UDP Port
0x0020	DWORD	Location report strategy, 0: report with time interval; 1:report with distance interval; 2. Report with time and distance interval
0x0027	DWORD	Report time interval in sleeping mode, (s), >0
0x0029	DWORD	Default time report interval, unit is second (s), >0
0x002C	DWORD	Default distance report time interval, unit is mile (m), >0
0x0050	DWORD	Alert block character, corresponding to alert mark in location information, if corresponding bit is 1, that means alert blocked, *A6S doesn't support this function.
0x0052	DWORD	Alert shot switch, corresponding to alert mark in location information, if corresponding bit is 1, that means default channel 1 photographing [SOS Panic /over-speed/fatigue/GPS Antenna circuit open/ low power/ power off/ parking over-time]
0x0053	DWORD	Alert shot storage mark, corresponding with alert markin location information, corresponding bit=1 means store the photographs when alert triggered, or, realtime uploaded.
0x0055	DWORD	Max. speed, unit is kilometers per hour (km/h)
0x0056	DWORD	Over-speed lasting time, unit is second (s)
0x0057	DWORD	Continuous driving time threshold, unit is second (s)
0x0058	DWORD	Day accumulated driving time threshold, unit is second(s)
0x0059	DWORD	Min. rest time, unit is second (s)
0x005A	DWORD	Max. parking time, unit is second (s)
0x0080	DWORD	Vehicle Odometer reading, 1/10km
0x0083	STRING	Vehicle License plate number which issued by Public security and traffic management departments
0x0084	BYTE	License plate color, inaccordance with 5.4.12 JT/T415-2006
Extended Protocol		
0X1001	DWORD	Baud rate setting of transmit transparently port
0x100E	BYTE	Alert mode: 0-internal buzzer, 1-external buzzer, 2-TTS,3-internal buzzer+TTS;
0x100F	BYTE	Pre overspeed initial lead, unit: km/h
0x1010	BYTE	Pre-fatigue initial lead, unit: second
0x1011	BYTE[n]	Set pre-overspeed voice prompt content, no longer than100 bytes, TTS protocol

		format.
0x1012	BYTE[n]	Set overspeed voice prompt content, no longer than 100 bytes, TTS protocol format.
0x1013	BYTE[n]	Set pre-fatigue voice prompt content, no longer than 100 bytes, TTS protocol format.
0x1014	BYTE[n]	Set pre-fatigue prompt voice content, no longer than 100 bytes, TTS protocol format.
0x1018	BYTE	Whether ACC is associated with location update 0-not associate; 1-associate;
0x1022	BYTE[4]	Set SD Card image storage time interval. Camera No. + resolution+storage time interval Camera No.: 1 byte< low 4 bit indicate designated cameras, E.g.: B3 B2 B1 B0 respectively indicate 1 way, 2 way, 3 way and 4 way > Resolution:1 byte <1：320*240, 2：640*480> Storage time interval: 2 bytes, unit is second, 0 is stop. P.S.: for split device, the parameter is picture storage time interval for docked P3, camera number and resolution keep unused and storage time interval >=5 seconds
0x1023	BYTE	Set associate of ACC & camera, (if ACC is associated, camera take picture with time interval and SD card storage with time interval invalided under ACC OFF, it will valid until ACC ON) Not associated, 1-associate; P.S.: for split device, the parameter is for whether picture storage which docked P3 associated with ACC
0x1024	DWORD	Set custom status trigger image shot switch, corresponding to status bit in location information, 1 means trigger corresponding status bit and start camera shooting. P.S.: Only support door magnetic, custom high 1, custom high 2, custom low 1 and custom low 2. Default 1st channel camera shot.
0x1025	DWORD	Set custom status trigger camera shot storage mark, corresponding with status bit in location information, 1 means store the picture, or, real-time upload.
0x1026	BYTE	Set alert picture shot attribute 1 byte correspond 0x0052 protocol <Low 4 bit indicate designated camera respectively, E.g.: B3 B2 B1 B0 indicate 1 way 2 way 3 way 4 way> <High 4 bit indicate resolution: 1：320*240, 2：640*480>
0x1027	BYTE	Set alert interval image shot attribute corresponds 0x1015 protocol <Low 4 bit indicate designated camera respectively, E.g.: B3 B2 B1 B0 indicate 1way 2 way 3 way 4 way> <High 4 bit indicate resolution: 1：320*240, 2：640*480>
0x1028	BYTE	Set custom status trigger camera shot attribute corresponds 0x1024 protocol <Low 4 bit indicate designated camera respecitively, E.g.: B3 B2 B1 B0 indicate 1 way 2 way 3 way 4 way> <High 4 bit indicate resolution: 1：320*240, 2：640*480>

7.8 Query Terminal Parameters【8104】

Message ID:0x8104

Query terminal parameter message body blank, terminal use 0x0104 command as response

7.9 Query terminal parameter response【0104】

Message ID:0x0104

Query terminal parameter response message body data format shown as Table 12

Table 12 Query terminal parameter response message body data format

Start Byte	Field	Data Type	Description and Requirements
0	Response Serial No.	WORD	Corresponding terminal data query message serial No.
2	Response Parameter Quantity	BYTE	
3	Parameter Item List		Parameter item list and definition is in Table 10

7.10 Terminal Control【8105】

Message ID: 0x8105

Terminal control message body data format is in Table 13

Table 13 Terminal control message body data format

Start Byte	**Field**	**Data Type**	**Description and Requirements**
0	Command word	BYTE	Terminal Control Command description in Table14
1	Command Parameter	STRING	Command parameter format please check following table. Half-width “；” is used between each field, each STRING field will disposed with GBK code before message composition.

Table 14 Terminal control command

Command Word	Command Parameter	Description and Requirement
4	Blank	Terminal Rest
Ox64	Blank	Cut off fuel/electric loop(custom, recommend start from 100)
0x65	Blank	Connect fuel/electric loop

7.11 Location information report【0200】

Location information message body is composed with location basic information and additional item list, message structure as shown in Table 3

Basic location information	Location additional message items list

Table 3 Location report message structure list

Location additional message item list is combinated with various location additional information items, it can be blank, blank or not is determined by message header length field.

Location basic information data format shown in Table 16

Table 16 Location basic information data format

Start Byte	Field	Data Type	Explanation
0	Alert Mark	DWORD	Alert mark bit definition is in Table 18
4	Status	DWORD	Status bit definition is in Table 17
8	Latitude	DWORD	Latitude value (under unit degree) multiplies the 6^{th} power of 10, accurate to millionth degrees.
12	Longitude	DWORD	Longitutde value (under unit degree) multiplies the 6^{th} power of 10, accurate to millionth degrees.
16	Height	WORD	Altitude, unit is mile (m)

18	Speed	WORD	1/10km/h
20	Direction	WORD	0—359，north is 0, clockwise
21	Time	BCD[6]	YY-MM-DD-hh-mm-ss（GMT+8，all of the time appeared in this standardis with this time zone）

Table 17 Status bit definition

Bit	Status
0	0：ACC OFF 1：ACC ON
1	0：undefined 1：located
2	0：North latitude 1：South latitude
3	0：East Longitude 1：West Longitude
4	reserve
5	0：Latitude & longitude without secret widget encryption; 1: latitude & longitude with secret widget encryption
6	reserve
7	reserve
8-9	reserve
10	0：Vehicle fuel loop normal 1：Vehicle fuel loop disconnected
11	0：Vehicle power loop normal 1：Vehicle power loop disconnected
12	0：Vehicle door unlocked 1：Vehicle door locked
13-31	reserve

Table 18 Alert Standard Bit Definition

Bit	Definition	Processing Instruction
0	1：Emergency Alert, touch SOS button to trigger	Cleared after receive reply
1	1：Over-speed alert	Mark maintained until alert condition lifted
2	1: Fatigue drivin	Mark maintained until alert condition lifted
3	1：Pre-alert	Cleared after receive reply
4	1：GNSS Module Error	Mark maintained until alert condition lifted
5	1：GNSS Antenna not connected or cutted off	Mark maintained until alert condition lifted
6	1：GNSS Antenna short circuit	Mark maintained until alert condition lifted

7	1：Terminal main power voltage low	Mark maintained until alert condition lifted
8	1：Terminal main power cut off	Mark maintained until alert condition lifted
9	1：Terminal LCD or monitor error	Mark maintained until alert condition lifted
10	1：TTS Module Error	Mark maintained until alert condition lifted
11	1：Camear Error	Mark maintained until alert condition lifted
12	reserve	
13	reserve	
14	reserve	
15	reserve	
16	reserve	
17	reserve	
18	1: accumulated driving time out on that day	Mark maintained until alert condition lifted
19	1：Parking overtime	Mark maintained until alert condition lifted
20	1：in/out area	Cleared after receive reply
21	1：in/out routine	Cleared after receive reply
22	1：driving time not long enough/too long on the section of a way	Cleared after receive reply
23	1：Route deviate alert	Mark maintained until alert condition lifted
24	1：Vehicle VSS error	Mark maintained until alert condition lifted
25	1：Vehicle fuel amount abnormal	Mark maintained until alert condition lifted
26	1：Vehicle Stolen (through vehicle alarm)	Mark maintained until alert condition lifted
27	1：Vehicle illegal fire	Cleared after receive reply
28	1：Vehicle illgal displacement	Cleared after receive reply
29	1：Collision rollover alert	Mark maintained until alert condition lifted
30	reserve	
31	reserve	

Location additional information item format in Table 19

Table 19 Location additional message item format

Field	Data Type	Description and Requirement

Additional Message ID	BYTE	1～255
Additional Message Length	BYTE	
Additional Message		Additional Message definition in Table 20

Table 20 Additional Message Definition

Additional Messag ID	Additional Message Length	Description and Requirement
0x01	4	Mileage，DWORD，1/10km，corresponding vehicle odometer readings
0x02	2	Fuel amount, WORD，1/10L, corresponding to car fuel gauge readings.
0x03	2	Speed obtained by driving record function, WORD,1/10km/h
0x04—0x10	reserve	
0x11	1 or 5	Over speed alert additional information inTable 21
0x12	6	Out/in range/routine alert additional message in Table 22

Table 21 Over speed alert additional message body data format

Start Byte	Field	Data Type	Explanation
0	Location information report	BYTE	0：No specific location 1：Circular Area 2：Rectangular Area 3：Polygon Area 4：Road section
1	Area or road section ID	DWORD	Don't have this field if location type is 0

Table 22 in/out area/routine alert additional message body data format

Start Byte	Field	Data Type	Description and explanation
0	Location information report	BYTE	1：Circular Area 2：Rectangular Area 3：Polygon Area 4：Road section
1	Area or road section ID	DWORD	
5	Direction	BYTE	0：in； 1：out

7.12 Location Message Query【8201】
Message ID: 0x8201.
Location message Query message body is blank.

7.13 Location message query response【0201】
Message ID: 0x0201.
Location message query response message body data format in Table 24

Table 24 Location message query response message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Answer serial No.	WORD	Corresponding location information query message serial number.
2	Location Information report		Location information report in 8.12

7.15.1 Artificial confirm alert message【8203】 New Beidou Protocol
Message ID: 0x8203.
Artificial confirm alert message body data format as following Table:

Aritificial confirm alert message body data format

Start Byte	Field	Data Type	Description and Requirement
0	Alert Message Serial No.	WORD	Alert message serial No. which need confirmed artificially, 0 indicate all information of this alert type.
2	Artificial Alert Type	DWORD	Bit0: 1: Confirm Emergenc Alert Bit1-2: Reserved Bit3: 1: Confirm danger pre-alert Bit4~19: Reserved Bit20: 1: Confirm in/out area alert Bit21: 1: Confirm in/out routine alert Bit22: 1: Confirm routine driving time not long enough/process alert Bit23-26: Reserved Bit27: 1: Confirm vehicle illegual fire alert Bit28: 1: Confirm Vehicle illegual displacement alert Bit29-31: Reserved

7.16 Text Message issued【8300】
Message ID: 0x8300.
Test message issued information body data format is in Table 26

Table 26 Test message issued infromaton body data format

Start Byte	Field	Data Type	Description and Requirement
0	Mark	BYTE	Test Message Mark bit implication is in Table 27
1	Test Message	STRING	Up to 1024 bytes, encoded by GBK

Table 27 Test Message Mark Bit Implication

Bit	Mark
0	1：Emegercy
1	Reserved
2	1：Terminal Monitor display
3	1：Terminal TTS broadcast
4	1：Advertisement screen display
5	Reserved
6～7	Reserved

7.17 vehicle control [8500]

Message ID: 0x8500.

Vehicle control message body data format is in Table42

Start Byte	Field	Data Type	Description and Requirement
0	Control flag	BYTE	Control command data format is in Table43

Control command data format Table 43

Bit	Mark
0	0: vehicle door unlocked 1: vehicle door locked
1-7	Reserved

7.17 vehicle control response[0500]

Message ID: 0x0500.

Vehicle control reponse message body data format is in Table44

Table44

Start Byte	Field	Data Type	Description and Requirement
0	Response Serial No.	word	Control command data format is in Table43
2	Location message message body		According to vehivle state judging control success or not

8.32 Set Polygon Area【8604】

Message ID: 0x8604

Set Polygon area message body data format is in Table 52

Table 52 Set Polygon area message body data format

Start Byte	Field	Data Type	Description and requirement
0	Area ID	DWORD	
4	Area Property	WORD	Area Property definition is in table 47
6	Start Time	BCD[6]	Same as setup of circular area time range
12	End Time	BCD[6]	Same as setup of circular area time range
18	Highest Speed	WORD	Unit is kilometer per hour (km/h), if area property bit 1 is 0, and then doesn't have this field.
20	Overspeed Duration Time	BYTE	Unit is second (s), if area property bit 1 is 0, and then doesn't have this field.
21	Area Total Vertex Amount	WORD	
23	Total Amountof Vertex		Polygon area vertex item data format is in Table 53

Table 53 Polygon area vertex item data format

Start Byte	Field	Data Type	Description and requirement
0	Vertex Latitude	DWORD	Latitude value (unit: degree) multiplies the 6^{th} power of 10, accurate to millionth degree.

4	Vertex Longitude	DWORD	Longitude value (unit: degree) multiplies the 6th power of 10, accurate to millionth degree.

8.33 Delete polygon area【8605】

Message ID: 0x8605

Delete polygon area message body data format is in Table 54

Table 54 Delete polygon area message body data format

Start Byte	Field	Data Type	Description and requirement
0	Area Amount	BYTE	Area amount included in this message is not more than 125, suggested to use multiple messages for more than 125 ones, 0 is cancel all rectangular area.
1	Area ID1	DWORD	
	……	DWORD	
	Area IDn	DWORD	

8.34 Set Routine【8606】

Message ID: 0x8606

Set routine message body data format is in Table 55

Table 55 Set routine message body data format

Start Byte	Field	Data Type	Description and requirement
0	Routine ID	DWORD	
4	Routine Property	WORD	Routine Property format is in Table56
6	Start Time	BCD[6]	Same as time range setup of circular area
12	End Time	BCD[6]	Same as time range setup of circular area
18	Routine Turning Point Total Amount	WORD	
20	Turning Point Item		Routine turning point item amount data is in Table 57

Table 56 Routine Property Data Format

Bit	Mark
0	1：According to time
1	Reserved
2	1：in routine trigger alert and send to driver
3	1：in routine trigger alert and send to platform
4	1：out routine trigger alert and send to driver
5	1：out routine trigger alert and send to platform
6～15	Reserved

Table 57 Routine Turning point amount data format

Start Byte	Field	Data Type	Description and requirement

0	Turning Point ID	DWORD	
4	Road Section ID	DWORD	
8	Turning Point Latitude	DWORD	Latitude value (unit: degree) multiplies the 6^{th} power of 10, accurate to millionth degrees.
12	Turning Point Longitude	DWORD	Longitude value (unit: degree) multiplies the 6^{th} power of 10, accurate to millionth degrees.
16	Road Section Width	BYTE	Unit is mile (m), road section is from this turning point to the next one.
17	Road section property	BYTE	Road section property data format is in Table 58
18	Road Section driving too long threshold	WORD	Unit is second(s), if road section property 0 bit is 0, and then doesn't have this field
20	Road Section driving insufficient threshold	WORD	Unit is second(s), if road section property 0 bit is 0, and then doesn't have this field
22	Road Section Max. Speed	WORD	Unit is kilometer per hour (km/h), if road section property 1 bit is 0, and then doesn't have this field
24	Road Section Overspeed Duration Time	BYTE	Unit is second (s), if road section property bit 1 is 0, and then doesn't have this field.

Table 57 Routine Turning Point Amount data format

Bit	Mark
0	1：Driving Time
1	1：Speed Limit
2	0：North Latitude; 1：South Latitude;
3	0：East Longitude; 1：West Logntitude；
4～7	Reserved

8.35 Delete Routine【8607】

Message ID: 0x8607

Delete routine message body data format is in Table 59

Table 59 Delete routine message body data format

Start Byte	Field	Data Type	Description and requirement
0	Routine Amount	BYTE	Area amount included in this message is not more than 125, suggested to use multiple messages for more than 125 ones, 0 is cancel all routines
1	Routine ID1	DWORD	
	……	DWORD	
	Routine IDn	DWORD	

8.46 Data downlink unvarnished transmission【8900】

Message ID: 0x8900.

Data downlink unvarnished transmission message body data format is in Table 74

Table 74 Data downlink unvarnished transmission message body data format

Start Byte	Field	Data Type	Description and requirement
0	Unvarnished Transmission Message Type	BYTE	Please check table of unvarnished transmission type
1	Unvarnished message content		Different unvarnished transmissiontype have different meaning

8.50 Data uplink unvarnished transmission【0900】
Message ID: 0x0900
Data uplink unvarnished transmission message body data format is in Table 75

Table 75 Data uplink unvarnished transmission message body data format

Start Byte	Field	Data Type	Description and requirement
0	Unvarnished message type	BYTE	
1	Unvarnished message content		

8.6 Bilnd area data upload 【0704】
Message ID: 0x0704

Bilnd area data format

Start Byte	Field	Data Type	Description and requirement
0	Toal Number of position data	WORD	Number of data ， >0
1	type of position data	BYTE	0: normal position data 1: bilnd area data upload
2	data block content	BYTE	**See following Table**

Data block format

Start Byte	Field	Data Type	Description and requirement
0	Length	WORD	Length of one positioning message
2	Positioning Content	BYTE[n]	Same format as 0x200 location message