

Lock communication protocol

APP content design:

Power: real-time display of the current lock power, (80 instructions)

ID: displays the current ID (80 instructions)

Software version: displays the current machine version *F10#V (3A instruction)

Unlock: can send unlocking instruction, *F10#88888888 (3A)

Location: displays the location of the current machine (Chinese and maps) (80 instructions)

Unlock status: shows the current status of the lock, on or off (80 instructions)

Connection status: communication status between APP and lock (connected, disconnected)

Work mode: the current working mode of the machine, such as continuous reporting, sleep, factory mode (80 instructions)

GSM signal: the strength of the current machine's GSM (80 instructions)

GPS positioning time: (80 instructions)

GPS stars: (80 instructions)

Fixed return time: lock and lock off of the timing, return time set, *F10#G, 300600, (3A instructions)

Number of locks: Statistics on the number of locks (terminal Statistics) V4-V7 domain

Be careful:

1, APP and platform issued by the 3A instruction must have terminal reply, if not received reply heavy hair, if the machine is not online, the machine is online in the hair.

2, 3A, this content in the platform and APP to pre-sale an empty name, there is debugging information, you can send the content by yourself (a lot of use, where you can not take *F10# content)

The content reported in 3 and 84 should be shown on the APP and platform,

One phase functional agreement

1 communication mode

The default is TCP communication, which can be set to UDP. Through the GPRS network transmission.

2 message detailed format description

2.1 message common format

All messages are transmitted in the following general format. By default, the HEX code is used, and the total packet length of the BIGENDIAN packet is not more than 512 bytes:

Field name	Remarks
Data frame head	2 bytes fixed to 0x29 0x29
Command word	1 bytes, take 0x00-0xFF
Data length	The 2 byte, 0x00 28, indicates the length of the first byte from the data length byte position until the end of the data frame
Terminal serial number	"4 bytes" means the unique ID that converts the product factory number into the server identification terminal by specifying a method, with reference to appendix C
Parameter content	0-N bytes, and parameter fields that match the command word
check	From the beginning of the data frame, or after the same word, or until the previous byte
Data frame tail	1 bytes, fixed to 0x0D

- 1、 Be careful:
- 2、 1, the following example is only a reference, all the checksum is not matching,
- 3、 2, some examples of errors, please format to master

2.2 central instruction message

2.2.1.1 call the roll

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	30	View the current location of the specified vehicle
Data length	2	00 06	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
check	1	55	XOR check
Data frame	1	0D	Fixed data frame tail

tail			
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Use case:

The calling operation message of the terminal equipment No. 29801234:

2929300006 1D D0 8C 2255 0D

The vehicle returns the 81 instruction and assignments 30 in the V8 domain of the location information.

2.2.1.2 Dispatch vehicle information—3A (@)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	3A	
Data length	2	6+N	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	N	SMS contact	Format is Chinese character code (GB2312 code) SMS content is not longer than 240BYTE
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

For terminal equipment, the factory number is 29801234, and the terminal sends HELLO operation message:

2929, 3A, 00, 0B, 1D, D0, 8C,, 4C, 0D, 4C, 4F, A6, and...

The vehicle returns the 85 instruction and assignments 3A in the V8 field of the location information.

2.2.1.3 Set overspeed alarm value —3F (*@)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	3F	
Data length	2	00 07	

Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	1	0	Overspeed alarm upper limit, unit kilometer /h, range 0-255 HEX format. When the setting value is 0, the overspeed alarm is turned off
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

For terminal equipment, factory number is 29801234, turn off overspeed alarm operation message: 2929, 3F 0007, 1D, D0, 8C, 2200, A6, 0D

The vehicle returns the 85 instruction and assignments 3F in the V8 field of the location information.

2.2.1.4 Remotely modify UDP (IP and port numbers)—69 (*@)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	69	
Data length	2	1C	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	16	22 31 32 31 2E 30 31 34 2E 31 33 36 2E 32 32 33 22 2C 37 37 37 37	IP address + port number, the format is "121.014.136.223", 7777 The ASC code contains 22 bytes. Note that IP needs 0 less than three
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

For terminal equipment, the factory number is 29801234, set the center IP to 121.14.136.223, port 7777 operation message:

29 29 69 00 1C 1D D0 8C 22 1E 22 31 32 31 2E 30 31 34 2E 31 33 36 2E 32 32 33 22 2C 37 37 37 37 A6 0D

The vehicle returns the 85 instruction and assignments 69 in the V8 domain of the location information.

2.2.1.5 set the lock when it opens, the timing of the return location information, time interval - 70

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	70	
Data length	2	00 08	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	2	01 23	The default value of the station is 30 seconds, the parameter value is double byte HEX, and the digital time range (time interval range: 3 seconds to 18.2 hours), Set the time interval of =X1*256+X2.
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

For the terminal device, the factory number is set at 29801234 291s intervals to report the operation message:

2929700008, 1D, D0, 8C, 220123, A6, 0D

The vehicle returns the 85 instruction and assignments 70 in the V8 domain of the location information.

2.2.1.6 Remotely modify the GPRS parameter (APN, user name, password)—C1 (*)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	C1	
Data length	2	19	
Terminal serial	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234

number			
Parameter content	13	22 43 4D 4E 45 54 2C 43 4D 4E 45 54 2C 43 4D 4E 45 54 22	APN+USER+PASSWD, format "APN", "USER", "PASSWD" ASCII code
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

For terminal equipment, the factory number is 29801234, set the center IP to 121.14.136.223, port 7777 operation message:

2929, C1, 0019, 1D, D0, 8C, 22, 1E, 2243, 4D, 4E, 4554, 2C, 43, 4D, 4E, 4554, 2C, 43, 4D, 4E, 455422,, 0D, A6

The vehicle returns the 85 instruction and assignments 70 in the V8 domain of the location information.

1.1.1.1 The platform opens and closes the instructions—E4 (F300)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	E4	
Data length	2	N(Byte)	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	1	0x00	00 means close door , 01 means open the door
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Terminal response 85, V8 domain value E4

2929E400071A8B801901EA0D

2929E400071781CC1300AA0D

1.2 terminal actively sends an instruction message

1.2.1 Handshake message—B1 (*)

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	B1	Terminal handshake and heartbeat uploading
Data length	2	00 07	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	1	0C	Reservation (not defined, not referenced)
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Use case:

The terminal equipment is numbered 29801234 and the handshake is reported:

29 29 B1 00 07 1D D0 8C 22 1E 0C A6 0D

The center sends 21 confirmation instructions

Field name	Length	content value	Remarks& notes
Data frame head	2	29 29	Fixed data frame header
Command word	1	21	
Data length	2	00 05	
Receive message checksum	1	A6	Receive message checksum
Receive message master signaling	1	B1	Receive message master signaling
Receive message sub signaling	1	0C	Receive message sub signaling
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

tail			
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29 29 21 00 05 A6 B1 0C A6 0D

1.1.1 Location data—80 (*)

Field name	0x length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	80	
Data length	2	00 28	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
time	6	14 08 06 12 02 15	Means 2014-08-06 12: 02: 15
latitude	4	02 23 60 35	
longitude	4	11 35 22 26	
speed	2	00 63	
direction	2	01 37	
Antenna state	1	84	See below for antenna status definition
mileage	3	00 00 00	
Alarm status	4	ST1ST2ST3ST4	See the alarm status definition for the following table
CSQ	1		1-31, ,
Number of stars	1		
Positioning time	1		Unit S
Unlock times	4	00 00 00 00	
V8	1		See additional data C
Additional data	n		
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

天线状态定义:

D7	D6	D5	D4	D3	D2	D1	D0
position marker	Antenna state		Power status		mileage		

0 not positioned already positioned	11: the antenna is normal 10: Antenna short circuit 01: open the antenna 00: Antenna fault	11: power normal 10: the main power missed 01: undervoltage alarm	000: unit is rice 010: the unit is kilometers
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报警状态定位

BIT	ST1		ST2		ST3		ST4	
D7	lock	0 closes, 1 opens	SOS	0 opens and 1 passes				
D6	Custom 1	0 opens and 1 passes	speeding	0 opens and 1 passes	21 response	0 platform does not respond 1 platform to answer		
D5	Custom 2	0 opens and 1 passes			Connection mode	0 is UDP 1 is TCP		
D4	Demolition alarm	0 opens and 1 passes			Modular	1 turn on, 0 off		
D3	Custom 4	0 opens and 1 passes			base station	1 turn on, 0 off		
D2	Oil circuit condition	0 opens and 1 passes						
D1								
D0								

Be careful:

The platform analyzes the priority order of the terminal location

1, the platform first to determine whether the positioning flag positioning, if the location, the alarm state, ST3 D4\D3 bit invalid, if it is not positioning, then judge the following content

2, if not positioning, and then determine the alarm status of the ST3 D4 bits, if this is 1 for the reported latitude and longitude valid, but the time is invalid, GPS time platform to take the time to receive the message itself. The location ID is LBS-1

3, if the base station module is 0, then the base station platform data analytic location

identifier -LBS-2

1.1.2 Roll call data—81 (*)

Field name	length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	81	
Data length	2	00 28	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	22		Location data
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

1.1.1 Alarm information—82 (*) √

Field name	OX length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	82	
Data length	2	00 23	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
time	6	14 08 06 12 02 15	Means 2014-08-06 12: 02: 15
latitude	4	02 23 60 35	
longitude	4	11 35 22 26	
speed	2	00 63	
direction	2	01 37	
Location	1	84	
Reserve	2	00 00	
Alarm status	3	00 02 00	
Alarm	5	00 00 00 00 00	

parameter			
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

Positioning state:

The positioning state is made up of single bytes:

D7	D6	D5	D4	D3	D2	D1	D0
position marker	Differential positioning	Retain		Reservations (sometimes GPS stars)			
0 not positioned	0 no difference	/		/			
1 already positioned	1 difference						

Alarm parameter (0 is no alarm, 1 is alarm)

byte	First byte	Second bytes	Third bytes
D7	Incoming alarm	Illegal door opening	Idle alarm
D6	Out zone alarm	Illegal displacement	Fatigue driving
D5	Offset route alarm	Vibration alarm	
D4	Low voltage alarm	Custom 4	Anti demolition alarm
D3	Custom 5	Power-off alarm	
D2	Custom 1	Parking timeout	Abnormal temperature
D1	Custom 2	Speed Alarm	
D0	Illegal start	Emergency alarm	

Alarm status (attention)

Bit	first byte	second bytes	third bytes	fourth bytes	fifth bytes
D7					
D6					
D5					
D4					
D3		The lock was cut			
D2					
D1					
D0		Lock status			

Note: the D0 bits of the second bytes represent the lock state, where the lock pass represents 0 and the lock open is represented as 1

1.1.3 scheduling information transmission 84

Field name	length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	84	
Data length	2	N+6	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	N		SMS 《BG2312》
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

1.1.4 Set response data—85 (*)

Field name	length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	85	
Data length	2	00 28	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	22		position information
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

1.1.1 Blind spot position data transfer command—8E

Description: upload blind spot position data transfer command

Field name	length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	8E	
Data length	2	00 28	
Terminal serial number	4	1D D0 8C 22	The terminal number corresponding to the product number 29801234
Parameter content	22		position information
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

The center sends 21 confirmation instructions

Field name	length	content value	note description
Data frame head	2	29 29	Fixed data frame header
Command word	1	21	
Data length	2	00 05	
Receive message checksum	1	A6	Receive message checksum
Receive message master signaling	1	B1	Receive message master signaling
Receive message sub signaling	1	0C	Receive message sub signaling
check	1		XOR check
Data frame tail	1	0D	Fixed data frame tail

29 29 21 00 05 A6 B1 0C A6 0D

			A4 9591 F0 stands for the RFID number The contents of the card are defined by the user later
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Appendix A location information

yymmddhhmmss wwwwww jjjj ssff st lichen1 lichen2 lichen3 st1st2st3st4 v1v2v3v4v5v6v7v8

Field name	length	content value	note description
Date time	6	yymmddhhmmss	Date indicated range: year, after two; month; 1-12; date; 1-31 Time representation range: hours, 00 - 23; minutes; 00 - 59; seconds; 00 - 59 Compressed BCD codes are used in time, minutes and seconds. [for example,]:07, January 1st, 10:23, 15 seconds: 07H,01H,01H,10H,23H,15H
latitude	4		Latitude indicates 00 degrees, 0 points - 89 degrees, 59.999 points; Compressed BCD encoding is used, but the MSB is the symbol bit. "Being" "North", "negative" means "south"; "Cent" unit is: 1/1000 minutes. For example: latitude 30 degrees 37.901 minutes for: 83H, 03H, 79H, 01H
longitude	4		Longitude range: 000 degrees, 0 minutes - 179 degrees, 59.999 minutes; Compressed BCD encoding is used, but the MSB is the symbol bit. "Positive" means "east longitude" and "negative" means "west longitude"; "Cent" unit is: 1/1000 minutes. For example: 130 degrees west longitude 45.608 points expressed as: (Note: 1 degrees =60) 93H, 04H, 56H, 08H
speed	2		Velocity representation: Range of expression: 0 - 9999 km / h Using compressed BCD encoding.

			For example: 120 km / h is expressed as: 01H, 20H
direction	2		Azimuth representation: Range of expression: 000 - 359 degrees Using compressed BCD encoding, the north is 0 degrees, clockwise count. Unit: degree. For example: 154 degrees for 01H, 54H
Location, antenna, power status	1		Reference location, antenna, power status definition
mileage	3		HEX format 0x00-0XFFFFFF (16777215) Meter
Vehicle condition	4		Refer to the st1-st vehicle status definition
V1-V8 domain	8		

The position of the antenna, the power supply, is defined as follows:

The positioning state is made up of single bytes:

D7	D6	D5	D4	D3	D2	D1	D0
position marker	Antenna status		power status		mileage		
0 not positioned already	11: the antenna is normal 10: Antenna short circuit 01: open the antenna 00: Antenna fault		11: power normal 10: the main power missed 01: undervoltage alarm		000: unit is rice 010: the unit is kilometers		

Attached: the GPS module fault is defined as the GPS module, which does not output NMEA0183 messages or outputs messages that do not conform to the NMEA0183 definition, such as garbled code.

st1st2st3 st4: Vehicle condition

BIT	ST1		ST2		ST3		ST4	
D7	Lock switch	0 closes, 1 opens	SOS	0 open 1 close	fatigue	0 open 1 close		
D6	Custom 1	0 opens and 1	Speeding	0 open 1 close	21 response	0 platform does not respond		

	Base station identification number: 2 BYTE hex format Receive signal level: 2 BYTE hex format		
example: 00 16 00 0A 04 60 00 00 25 FB 0E 12 00 59 80 81 00 00 00 00 00 00 00 00			
name	length	Order	data
Bytes occupied	2	2	2
Power section	data 0x0006	0x00a1	<u>power</u>
Explain	The percentage of batteries reported is two decimal places		
Example: 00 04 00 63 57 99.87 Battery capacity is A1			
name	length	Order	data
Bytes occupied	2	2	5
Time segment	data 0x0007	0x00a3	<u>Work, sleep, regular return</u>
explain	Reporting is the current machine (work), sleep (m), regular return (s) interval		
For example: 000700 A3 000105 A0 01 working time is: 1 minutes, sleep time: 1400 minutes, car tracking status: 2 transport mode, 1 is car chase, and 0 is sleep			
name	length	Order	data
Bytes occupied	2	2	n
type	0x0005	0x00a5	<u>251</u>
explain	The report is the current software version of the machine		
example: 00 05 00 A3 32 35 31 The current machine version is251			
name	length	Order	data
Bytes occupied	2	2	5
Through transmission, cleaning, boot time	0x0007	0x00a6	Status (1 bytes) + time (4 bytes, unit s) Status: 00 no work 01 boot start 02 boot time statistics 03 boot end

explain	Cleaning time by opening and transmitting (middle section)		
example: 00 07 00 A6 00 00 00 00 00			
Name	length	instruction	data
Bytes occupied	2	2	5
Through transmission cleaning time	0x0007	0x00a7	Status (1 bytes) + time (4 bytes, unit s) Status: 00 no work 01 start work 02 working hours statistics 03 end of work
explain	Time of cleaning through transmission (middle section)		
example: 00 07 00 A7 00 00 00 00 00			

Appendix B position data 2

04	12	12	08	12	00														
Time						Latitude			longitude			speed	direction, angle	positioning	no load	sign			

Representation of time:

Date indicated range: year, after two; month; 1-12; date; 1-31

Time representation range: hours, 00 - 23; minutes; 00 - 59; seconds; 00 - 59

Compressed BCD codes are used in time, minutes and seconds.

For example: 15 seconds for 10:23:

10H, 23H, 15H

Latitude representation:

Latitude indicates 00 degrees, 0 points - 89 degrees, 59.999 points;

Compressed BCD encoding is used, but the MSB is the symbol bit. "Being" "North", "negative" means "south";

"Cent" unit is: 1/1000 minutes.

For example: latitude 30 degrees 37.901 minutes for:

83H, 03H, 79H, 01H

Longitude representation:

Longitude range: 000 degrees, 0 minutes - 179 degrees, 59.999 minutes;

Compressed BCD encoding is used, but the MSB is the symbol bit. "Positive" means "east

longitude" and "negative" means "west longitude";

"Cent" unit is: 1/1000 minutes.

For example: 130 degrees west longitude 45.608 points expressed as: (Note: 1 degrees =60)

93H, 04H, 56H, 08H

Velocity representation:

Range of expression: 0 - 9999 km / h

Using compressed BCD encoding.

For example: 120 km / h is expressed as:

01H, 20H

Azimuth representation:

Range of expression: 000 - 359 degrees

Using compressed BCD encoding, the north is 0 degrees, clockwise count.

Unit: degree.

For example: 154 degrees for:

01H, 54H

Positioning state:

The positioning state is made up of single bytes:

D7	D6	D5	D4	D3	D2	D1	D0
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D7	position marker
0	Not positioned
1	Already positioned

D6	Differential positioning mark
0	undifferential positioning
1	Differential positioning

D5	D4	Explain
X	X	Retain

D3	D2	D1	D0	Number of stars received
0	0	0	0	scope: 0—15
1	1	1	1	

Empty overloaded state:

Range of expression: 0 - 1

Using compressed BCD encoding.

1 means heavy duty, 0 means no load

Sign off status:

Range of expression: 0 - 1

Using compressed BCD encoding.

1 means "sign 0", which means withdrawal

Appendix C terminal sequence number generation method

Label the serial number (8 bits) on the product shell, turn each 2 into a HEX format, and then add the second, third part to the 0x80

For example, 29800298

Separate into 4 parts

29800298

Turn into HEX

1D 500262

Part two or three plus 0x80

1D D0 8262