CAN BUS protocol for car tpms

Version: 2.0. Fixed bugs in version 1.0

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1. Programming baud rate of receiver

Notice:

(1). Our default baud rate is 500kbps. You can change the baud rate by the command as bellows.

(2). Pc send to receiver in can-id 0x77c

Receiver response to PC in can-id 0x77d

(3). You need to cut off the power supply DC12V of the TPMS receiver after changing the baud rate for each time, and then power it on. Otherwise, the device will crash after repeated changes

A. Baud rate change to 1000kbps

PC send: FB 88 88 55 55 55 01 00 ; CAN-ID 0x77c

Receiver response: FB 88 88 55 55 55 01 00 ; can-id 0x77d

B. Baud rate change to 500kbps

PC send: FB 88 88 55 55 55 02 00 ; CAN-ID 0x77c

Receiver response: FB 88 88 55 55 55 02 00 ; can-id 0x77d

B. Baud rate change to 250kbps

PC send: FB 88 88 55 55 55 03 00 ; CAN-ID 0x77c

Receiver response: FB 88 88 55 55 55 03 00 ; can-id 0x77d

2. Receiver send tire data to your equipment by can-bus

CAN news : CYCLE : 100ms CAN ID : 0x77e Band rate : 500kbps (can be changed) Send from : TPMS DLC : 8 Receiver : instrument Priority : 6						
Data define						
Data define	Start bit	Bit length			Description	Remark
Tire position	1.1	8			01H-fisrt tire, 02H-second tire, 03H-Third tire, 04H-fourth tire, 05h-fifth tire, 06h- sixth tire, 07h- Seventh tire, 08h- eighth tire, 09h- Ninth tire, 0AH- The Tenth tire	
Tire pressure	2.1	16			The unit of pressure is KPa, the hex data change to decimal data, and the decimal data is actual pressure data	
Tire temperature	4.1	8			The unit of temperature is ℃, the hex data change to decimal data, and the decimal data is actual temperature data	
Sensor voltage	5.1	8			The unit of voltage of sensor is V, Convert the uploading data to be decimal. Then divide 10, is actual voltage value	
Air leakage state	6.1	1			0: normal 1: air leakage	
Reserve	6.2	1			0	
Reserve	6.3	1			0	
Low voltage sign	6.4	1			0 : normal voltage 1 : low voltage	
Temperature positive and negative sign	6.5	1			0 : positive temperature 1 : negative temperature	
Sensor state	6.6	1			0: normal 1 : sensor signal loss	
Reserve	6.7	1			0	
Reserve	6.8	1				Use 0 to fill
Reserve	7-8					

3、ID Learning Process

if you registered sensor ID to receiver, we give 2 type method.

Method 1: Write sensor ID to receiver by can-bus

Notice:

(1) you need to know the sensor ID number before you write

(2) PC or your equipment Send write ID command in the can-id of 0x77c

(3) Receiver respond to your equipment CAN-ID is 0x77d

(4) For each instruction to write the ID, the next step can only be carried out after the correct response instruction is received. If the correct response instruction is not received, please write the ID several times

A. Write the No.1 Sensor ID (Front Left tire) to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 01 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 01 00 ID1 ID2 ID3

B. Write the No.2 Sensor ID (Front Right tire) to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 02 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 02 00 ID1 ID2 ID3

C. Write the No.3 Sensor ID (Rear Left tire) to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 03 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 03 00 ID1 ID2 ID3)

D. Write the No.4 Sensor ID (Rear Right tire) to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 04 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 04 00 ID1 ID2 ID2

Notice: if you more tires, please change the number of tire in this command, support up 10 tires , as bellows:

E. Write the No.5 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 05 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 05 00 ID1 ID2 ID3

F. Write the No.6 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 06 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 06 00 ID1 ID2 ID3

G. Write the No.7 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 07 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 07 00 ID1 ID2 ID3

H. Write the No.8 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 08 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 08 00 ID1 ID2 ID3

I. Write the No.9 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 09 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 09 00 ID1 ID2 ID3

J. Write the No.10 Sensor ID to receiver.

PC send New sensor ID to receiver (CAN-ID 0X77C)

E5 88 88 0A 00 ID1 ID2 ID3

Receiver respond to PC (CAN-ID 0X77D)

E5 88 88 0A 00 ID1 ID2 ID3

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Method 2: Registered sensor ID by deflate or inflate tire with internal sensor, And remove or install external sensor to tire.

M1.Tire No.1 ID learning：

Pc send: **(can-id:** 0x77c)

0xf1 0x88 0x88 0x00 0x00 0x00 0x01 0x01

CAN receiver back to pc： **(can-id:** 0x77d)

0xf1 0x88 0x88 0xff 0xff 0xff 0x01 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous：**(can-id:** 0x77c)

0xf1 0x88 0x88 0x00 0x00 0x00 0x01 0x01

The can receiver back to pc, and the tire No.1 is id learning ok ：**(can-id:** 0x77d)

0xf1 0x88 0x88 ID1 ID2 ID3 0x01 0x00

You must send the end command to receiver when the id learning is ok：**(can-id:** 0x77c)

0xf1 0x88 0x88 0xff 0xff 0xff 0x01 0x01

M2.Tire No.2 ID learning：

Pc send:

0xf1 0x88 0x88 0x00 0x00 0x00 0x02 0x01

CAN receiver back to pc：

0xf1 0x88 0x88 0xff 0xff 0xff 0x02 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous：

0xf1 0x88 0x88 0x00 0x00 0x00 0x02 0x01

The can receiver back to pc, and the tire No.2 is id learning ok ：

0xf1 0x88 0x88 ID1 ID2 ID3 0x02 0x00

You must send the end command to receiver when the id learning is ok：

0xf1 0x88 0x88 0xff 0xff 0xff 0x02 0x01

M3. Tire No.3 ID learning：

Pc send:

0xf1 0x88 0x88 0x00 0x00 0x00 0x03 0x01

CAN receiver back to pc :

0xf1 0x88 0x88 0xff 0xff 0xff 0x03 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous :

0xf1 0x88 0x88 0x00 0x00 0x00 0x03 0x01

The can receiver back to pc, and the tire No.3 is id learning ok :

0xf1 0x88 0x88 ID1 ID2 ID3 0x03 0x00

You must send the end command to receiver when the id learning is ok :

0xf1 0x88 0x88 0xff 0xff 0xff 0x03 0x01

Notice: 00 00 56 is the No.3 sensor's ID , The data is replaced by the actual ID

M4. Tire No.4 ID learning :

Pc send:

0xf1 0x88 0x88 0x00 0x00 0x00 0x04 0x01

CAN receiver back to pc :

0xf1 0x88 0x88 0xff 0xff 0xff 0x04 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous :

0xf1 0x88 0x88 0x00 0x00 0x00 0x04 0x01

The can receiver back to pc, and the tire No.4 is id learning ok :

0xf1 0x88 0x88 ID1 ID2 ID3 0x04 0x01

You must send the end command to receiver when the id learning is ok :

0xf1 0x88 0x88 0xff 0xff 0xff 0x04 0x01

M5. Tire No.5 ID learning :

Pc send:

0xf1 0x88 0x88 0x00 0x00 0x00 0x05 0x01

CAN receiver back to pc :

0xf1 0x88 0x88 0xff 0xff 0xff 0x05 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous :

0xf1 0x88 0x88 0x00 0x00 0x00 0x05 0x01

The can receiver back to pc, and the tire No.5 is id learning ok :

0xf1 0x88 0x88 ID1 ID2 ID3 0x05 0x00

You must send the end command to receiver when the id learning is ok :

0xf1 0x88 0x88 0xff 0xff 0xff 0x05 0x01

M5. Tire No.6 ID learning :

Pc send:

0xf1 0x88 0x88 0x00 0x00 0x00 0x06 0x01

CAN receiver back to pc :

0xf1 0x88 0x88 0xff 0xff 0xff 0x06 0x01

Leak to tire or wake up the sensor by LFI tool, and the PC send the command continuous :

0xf1 0x88 0x88 0x00 0x00 0x00 0x06 0x01

The can receiver back to pc, and the tire No.6 is id learning ok :

0xff 0x88 0x88 ID1 ID2 ID3 0x06 0x00

You must send the end command to receiver when the id learning is ok :

0xf1 0x88 0x88 0xff 0xff 0xff 0x06 0x01

4. ID query (CAN-ID 0X77C)

The all sensor's id can be query when the Pc send the command :

0xfe 0x88 0x88 0x00 0x00 0x00 0x01 0x01 ; **CAN-ID 0X77C**

The CAN receiver back the all sensor's id to pc When the CAN receiver received the command : **CAN-ID 0X77D**

01 00 00 00 00 ID1 ID2 ID3 (No.1 sensor ID : ID1 ID2 ID3,)

02 00 00 00 00 ID1 ID2 ID3 (No.2 sensor ID : ID1 ID2 ID3,)

03 00 00 00 00 ID1 ID2 ID3 (No.3 sensor ID : ID1 ID2 ID3,)

04 00 00 00 00 ID1 ID2 ID3 (No.4 sensor ID : ID1 ID2 ID3,)

05 00 00 00 00 ID1 ID2 ID3 (No.5 sensor ID : ID1 ID2 ID3,)

06 00 00 00 00 ID1 ID2 ID3 (No.6 sensor ID : ID1 ID2 ID3,)

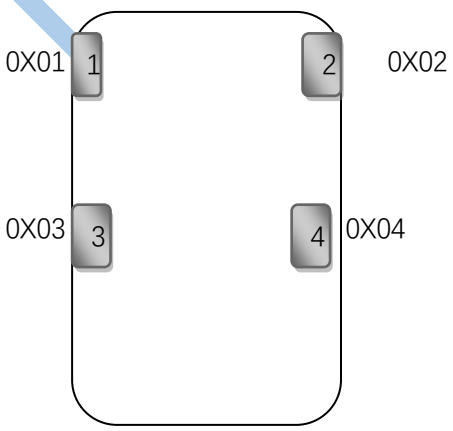
07 00 00 00 00 ID1 ID2 ID3 (No.7 sensor ID : ID1 ID2 ID3,)

08 00 00 00 00 ID1 ID2 ID3 (No.8 sensor ID : ID1 ID2 ID3,)

09 00 00 00 00 ID1 ID2 ID3 (No.9 sensor ID : ID1 ID2 ID3,)

0A 00 00 00 00 ID1 ID2 ID3 (No.10 sensor ID : ID1 ID2 ID3,)

All ID numbers will hold on 2s, then TPMS receiver will send normal data to pc or can-bus after 2s



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5. Tire number settings: (CAN-ID: 0x77C)

When we ship, we upload data in 4 to 20 tires by default, once you want to change the tire number, please send the command as follows:

1). Change to 2 tires, Pc send:

F3 88 88 55 55 55 02 01 ; Two tires

Once set ok, receiver will feedback:

F3 88 88 55 55 55 02 01 (CAN-ID: 0x77D)

2). Change to 4 tires, Pc send:

F3 88 88 55 55 55 04 01 ; Four tires

Once set ok, receiver will feedback:

F3 88 88 55 55 55 04 01 (CAN-ID: 0x77D)

3). Change to 6 tires, Pc send:

F3 88 88 55 55 55 06 01 ;Six tires

Once set ok, receiver will feedback:

F3 88 88 55 55 55 06 01 (CAN-ID: 0x77D)

4). Change to 8 tires, Pc send:

F3 88 88 55 55 55 08 01 ;Eight tires

Once set ok, receiver will feedback:

F3 88 88 55 55 55 08 01 (CAN-ID: 0x77D)

5). Change to 10 tires, Pc send:

F3 88 88 55 55 55 0A 01 ;Ten tires

Once set ok, receiver will feedback:

F3 88 88 55 55 55 0A 01 (CAN-ID: 0x77D)

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