MR688B RS232 Serial Communication Protocol

Communication Interface
RS232

1. Communication parameter:

Baud Rate: 115200
Data Bits: 8
Stop Bits: 1
Parity Check: No check

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2. Communication Protocol

2.1. Communication Process

In the following description, the MR688B is the slave and the external device is the host.

When an alarm is triggered, MR688B sends the alarm data frame to the host automatically.

When reading the alarm image, the host sends commands to MR688B, and the MR688B returns the image data frame. If the command frame received by the MR688B was checked there is an error, MR688B will not return any information.

2.2. Data Frame Format:

2.2.1. The host sends protocol(fixed 10 bytes in length):
Fixed frame header (AA 75) + command + parameter area + SUM

2.2.2. MR688B uploads protocol(longer or equal to 10 bytes in length):
Fixed frame header (AA 75) + command + number of bytes in data area (2 bytes represent) + data area + SUM

SUM is the sum check of all bytes from the frame header

2.4. Fatigue Alarm

After the vehicle speed reaches or over the alarm start up speed, MR688B will send an alarm message to the host when an alarm is triggered

AA 75 51 00 04 m5 m6 m7 m8 SUM

m5~m8:

m5m6: Alarm ID no. (Note: ID will be used for other events. The alarm event does not always increase by 1)

m7 is alarm type , m8 is alarm parameter

m7m8

5101   fatigue remind

5102   fatigue alarm

5103   fatigue warning

5200   distraction alarm

5300   no portrait alarm

2.5. Images Collection

2.5.1. Host Command

Byte   m0~m9

1. Collect the current alarm image: AA 75 56 56 56 56   F6   00 00   SUM
2. Collect the history alarm image :   AA 75 56 56 56 56   F6   00 m8   SUM

   1(&H01)<=m7m8<=49(&H31)
3. Collect the current real time image

   (Set resolution to collect alarm image): AA 75 56 56 56 56   F5   00 00   SUM

   (Resolution 160x120): AA 75 56 56 56 56   F5   01 00   SUM

   (Resolution 320x240): AA 75 56 56 56 56   F5   02 00   SUM

   (Resolution 640x480): AA 75 56 56 56 56   F5   03 00   SUM
4. Collect the specified ID image :AA 75 56 56 56 56 F7   m7m8   SUM

   m7m8 is the specified image ID (corresponding to alarm ID number)

2.5.2. Format of image data returned by the MR688B:

MR688B：AA 75 56 m3 m4 m5 m6 m7 m8 m9 +16 bytes track (m10~m25)+ fatigue image data

area+SUM

m3m4=5+16+(m5m6) indicates the length of the whole data area, the data area contains 4 bytes
image meaning area, 16 bytes track area, and m5m6 bytes image area;

The 16-byte track area is reserved for data area only.

m22 m23 is alarm serial number

m24 is the alarm type

0x81   fatigue alarm image

0x91   second grade fatigue image

0xA1   fatigue remind image

0x82   distraction alarm image

0x83   no portrait alarm image

0x84   Retained

0x88   Retained

0x89   Retained

0x8a   Retained

m5~m9 are image meaning area：

Image format is JPEG compression format.

m5m6 indicates the number of image bytes. (m5m6 = 0x0000 means there is no fatigue image)

m7m8 is equal to the m7m8 sent by the host

m9 is equal to the m6 of host, indicates the type of output image.

Note: Fatigue images can be acquired after the alarm message is received only.

AA 75 45 00 04 01 m6 m7 m8 SUM   means image acquisition error
m6m7m8 corresponds to the m6m7m8 of acquisition command

2.6. Parameter reading and setting

Use the part of the MODBUS protocol to read and write parameter registers

2.6.1. Function Code 03H：Read Register

Host reads the data package：

Address Code	Function Code	Initial Address	Register Number N	CRC Check code
1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes
01H	03H		0001H	

MR688B responses data package：

Address Code	Function Code	Bytes Number	Register Data	CRC Check Code
1 Byte	1 Byte	1 Byte	Nx2 Byte	2 Bytes
01H	03H	02H	High byte. Low byte	

2.6.2. Function Code 10H：Write Register

Host writes the data package：

Address Code	Function Code	Initial Address	Register Number N	Bytes Number	Write in Data High Byte	Write in Data Low Byte	CRC Check code
1 Byte	1 Byte	2 Bytes	2 Bytes	1 Byte	1 Byte	1 Byte	2 Bytes
01H	10H		0001H	02H			

MR688B responses data package:

Address Code	Function Code	Initial Register Address	Register Number N	CRC Check Code
1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes
01H	03H		0001H	

2.7. Speed Synchronization

When the speed changes, the host sends the current speed to the MR688B, usually send one time every 5-10 seconds. When sending or receiving other data (alarm, picture, etc.), do not send speed.

2.7.1 Host Command

Host：AA 75 55 m3 m4 m5 m6 m7 m8　　　　　　　SUM

m3=vehicle speed; m4=year; m5=month; m6=day; m7=hour; m8=minute;
If can not track GPS signal, the speed output 0xFF, MR688B judges m3 = 255 as no GPS signal, if the host does not have year, month, day, hour and minute, all of them are equal to 0.

Year, month, day, hour and minute are hexadecimal, for example:

AA 75 55 31 0C 09 10 11 12 SUM

AA 75 55 is the frame head，31 indicates vehicle speed is 49 Km/hour；0C indicates year 2012；09 indicates September；10 indicates Date 16th；11 indicates 17 o'clock；12 indicates 18 minute。Unreasonable data will not be able to get return, such as month> = 32, hour> = 24 or minute> = 60 and so on.

2.7.2. MR688B Return

MR688B：AA 75 55 00 04　m5 m6 m7 m8　　　　　　SUM
m5~m8 : Retain definition