The differences among three protocols

There are three communication protocols:

#1. MR688-AC35 Communication Protocol (Apply to MR688)
#2. MR688B RS232 Serial Communication Protocol (Apply to MR688B)
#3. MR688B RS232 Serial Communication Protocol v1803 (Incoming, apply to MR688B, this is a customized expansion version which is compatible with #2)

Below are differences in details:

1. The Format of Send-out Command Frame
The format of #1 #2 #3 is same
Fixed frame header (AA 75) + command + parameter area + SUM

#3 is compatible with #1 #2, has more detailed definitions for parameter area
Fixed frame word m0m1 (AA 75)+ Command m2 (1 byte)+ sub command m3 (1 byte)+ Command frame ID m4m5 (2 bytes)+ parameter area m6m7m8 (3 bytes)+ SUM (1 byte)
Command frame ID is confirmed by host. Slave will send back its related command frame ID.

#3 has more definitions for the format of return data frame
Fixed frame word m0m1 (AA 75)+ Command m2 (1 byte)+ number of bytes in frame data area m3m4 (2 bytes represent, number of bytes from m5~sum)+ parameter m5m6 (2 bytes)+ command frame ID m7m8 (2 bytes, command frame m4m5)+ data area+ SUM

2. Alarm Information
#1 fixed alarm information AA 75 51 00 04 51 51 51 51 B8 (sum)

#2 adds more alarm types, add alarm ID. Alarm image data includes relevant alarm ID
AA 75 51 00 04 m5 m6 m7 m8 SUM
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

#3 is same as #2

3. Alarm Image Reading

#1 Image Reading

Real time image reading AA 75 56 56 56 56 F5 00 00 SUM

History image reading AA 75 56 56 56 56 F6 00 m8 SUM m8 is image serial number

#2 adds reading images with different resolution

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

#3 adds the following details (compare with #2)

1. Collect image with designated ID: AA 75 56 56 m4 m5 F7 m7 m8 SUM
   m7m8 is the designated image ID (corresponding to alarm ID number)

2. Separately collect history alarm image packages: AA 75 56 57 m4 m5 m6 00 m8 SUM
   m6 is package serial number, 0 (&H00)<=m6 <=30 (&H1E), each package does not exceed 2K (current is 1021)
   m8 storage serial number 0 means latest, 1 (&H01)<=m8<=39 (&H27)

3. Separately collect images with designated ID: AA 75 56 58 m4 m5 m6 m7m8 SUM
   m6 is package serial number, 0 (&H00)<=m6 <=30 (&H0A), each package does not exceed 2K (current is 1021)
   m7m8 is designated image ID (corresponding to alarm ID number)

4. Format of Return Image Data

#1

frame header		command	bytes' No. of total data area		bytes' No. of image area		Number of feedback image		Image type	Other parameter	data area of fatigue image	
AA	75	56	m3	m4	m5	m6	m7	m8	m9	Other parameter of 16 byte	Image data	sum

m3m4=length of total data area=5+16+(m5m6), means length of total data area. Data area includes 4 bytes' image meaning area,16 byte of other, and image area of m5m6 byte.
16 byte data is for other use

m5m6 means the number of image byte, if m5 m6=0000，the return is: AA 75 56 00 04 00 00 00 00 79(SUM), it means the collection is finished

m7m8=00 00

m9= the host's command of image collection-m6 means output image type.
F5 is immediate image, F6 is fatigue alarm image

#2 Same format with additional definition
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

#3 adds
m7m8, command frame ID

5. Return of Image Reading Error
#1
AA 75 56 00 04 00 00 m7 m8 SUM

#2

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

#3
AA 75 56 00 04 m5 m6 m7 m8 SUM indicate collection error, return 0 byte data
m5m6 error code default is &H00 00
m7m8 command frame ID (m4m5) corresponding

6. Parameter Settings and Reading
#1 Set and read via single command

#2 #3 Set and read address via standard Modbus protocol