
Protocol of half-duplex system (RS-232C/485):

Baud rate: 9600

Data Bits: 8

Parity: Even

Stop Bits: 1

Communication Protocol:

a) Computer send STX+ADD. Then startup strip screen to receive message. All of strip screen waiting for receive ADD after receiving STX. They will go on if they received address accord with the range of themselves

b) Computer send command. Strip screen run the right process or send and receive message after receiving command. Computer going on send a series of data if necessary. Every frame (16 data validity at most) must end with ETX or ETB. The last frame end with ETX and other frames end with ETB.

c) The strip screen return ACK after correct examination, otherwise return NACK and waiting for the computer Re-transmit.

d) The format of next frame is SYN + Data Message + ETX(ETB) If last frame was received correctly and in order to be over continued. Otherwise the strip screen finish receive data and makes data incomplete processing

e) In any transmission waiting process, if the receiving side end standby period surpasses 3 seconds but has not received should to the information data, then does Overtime processing, the receiving end withdrawal receive and makes data incomplete processing. The sending side has not received anything or receives the wrong reply when waiting reply process the reply in 3 seconds, should attempt 3 time Re-transmits this frame data, if still has not received the reply or the accumulation receives 3 times of wrong replies, then produces the line fault prompt.

f) Direction of transmission control: Principal and subordinate type software protocol, The host computer controls the way. Like uses 485 networks, All strip screen is at the receive condition when spare, and not control bus. While not connect the cable from half-duplex converter to host computer 232C mouth, the half-duplex switch 485 outputs also is at the receive condition, this time the main line does not have the equipment. Need connect the terminal resistance.

Transmission character description:

1. Control word:

STX(0xCD): Start of Text

ETX(0xAA+0xE6): End of Text

ETB(0xE7): End Of Transmission Block

SYN(0xCF): Synchronous Character

ACK(0xF0): Acknowledge

NACK(0x0F): Negative acknowledge

2. Address word:

The strip screen address code is the BCD form, Altogether 2 bytes, High bit in front, Low bit in after, Scope 0000--9999, Each strip screen has an independent address, All strip

screen has a public broadcast address which is 9999. The most number of strip screen in one network is 9999.

ADD (9,999):Broadcast address

ADD (0-9998):Strip screen address, corresponding screen number 1-9999.

3.Command word:

Connect (0x00):Strip screen connection

PowerOn (0x01): Open the strip screen

PowerOff (0x02):Close the Strip screen

ReadBMes (0x03):Reading the strip screen basic information

ReadList (0x04):Reading listed files of the strip screen,According to numeral,Small letter,Capital letter order

ReadPlay (0x05):Reading play lists of the strip screen

ReadFile (0x06):Reading files of the strip screen

StoreFile (0x07):Write a file to the strip screen

ToTest (0x08):Download a file to carry on the test

WritePlay (0x09):Writes play list to the strip screen

SetPlayTime (0x0A):Setup information play time of the strip screen

ToPlay (0x0B): Order programme one file of strip screen

SetTime (0x0C):Setup time of strip screen

EraseFile (0x0D):Delete one file of strip screen

ClearSign (0x0E):Elimination strip screen memory

Computer command and reply:

1.Strip screen connection test:STX+ADD+Connect+ETX

Reply:*ACK:Connects successfully

*NACK: Command to receive the mistake,Re-transmit

*No reply:This screen has not connected to the network

2.Open the strip screen:STX+ADD+PowerOn+ETX

Reply:*ACK: Success,Screen could receive the new Command or the data after 3 seconds

*NACK:Command to receive the mistake,Re-transmit

*No reply:This screen has not connected to the network

3.Close the strip screen:STX+ADD+PowerOff+ETX

Reply:*ACK:Success

*NACK:Command to receive the mistake,Re-transmit

*No reply:This screen has not connected to the network

4.Reading basic information of the strip screen:STX+ADD+ReadBMes+ETX

*Computer receive reply: *ACK:Success

*NACK:Command to receive the mistake,Re-transmit

*No reply:This screen has not connected to the network

*Computer receive data:After receives ACK,The Computer prepares for receive the data

Data format:STX+RTC+MES+VER+MM+YY+Checksum+ETX

RTC:0x00 (has not installed),0x04 (has installed).

MES:Currently filename of screen which moves ("0--9,A--Z,A--z"),0x00:Demo

information,0x04:Test information

VER: Version number of Strip screen Software,BCD form,Like 10 expressions edition 1.0

MM+YY: production month,Year of the Strip screen,BCD form

Checksum: sum of RTC+MES+VER+MM+YY examination,1 byte

*Computer transmission reply:The Computer send ACK after examination each received data were accord with the requirement,Otherwise send NACK and waiting Re-receives

5.Reading file list of strip screen::STX+ADD+ReadList+ETX

*Computer receive reply:*ACK:Success.

*NACK: Command to receive the mistake,Re-transmit.

* No reply:This screen has not connected to the network.

*Computer receive data:After receive ACK,computer prepare for receive data.

First frame form of the data:

STX+ByteNum+FileName1+FileSize1+FileTime1+...+FileName(n)+FileSize(n)
+FileTime(n)+Checksum+ETB(ETX)

ByteNum: The effective byte counting of this frame, Including filename, the size of the file, file play time.

FileName:"0--9,A--Z,a--z".

FileSize: The size of the file, regard byte as the unit.

FileTime: The file play time, BCD form : Begin week (0 --6, 9 express and has not set for the time started), Begin hour (0--23),Begin cent (0 --59),Finish week (0 --6, 9 express has not established and finish time), Finish hour(0--23),Finish cent (0 --59).

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+FileName(k)+FileSize(k)+FileTime(k)+...
+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

*Computer receive reply: Send ACK after the computer measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

6. Read play list of the strip screen:STX+ADD+ReadPlay+ETX

*Computer receive and reply:*ACK:sucess.

*NACK:Command to receive the mistake,Re-transmit.

*No reply:This screen has not connected to the network.

*Computer receive data: After receiving ACK, the computer prepares for receive the data.

First frame form of the data:

STX+ByteNum+FileName1+FileName2+...+FileName(n)+Checksum+ETB(ETX)

ByteNum: This effective byte of frame is counted.

FileName:Filename"0--9,A--Z,a--z"

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+FileName(k)+FileName(k+1)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

* Computer receive reply: Send ACK after the computer measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

7. Reading one file of strip screen::STX+ADD+ReadFile+FileType+FileName+ETX

FileType: Type of the file, 0x00: Text file, 0x04: Figure file

FileName: File name of the text "0--9,A--Z,a--z", File name of the Figure "A--Z"

*Computer receive and reply: *ACK:sucess.

*NACK:Command to receive the mistake,Re-transmit.

*No reply:This screen has not connected to the network.

*Computer receive data: After receiving ACK, the computer prepares for receive the data.

First frame form of the data:

STX+ByteNum+Data1+Data2+...+Data(n)+Checksum+ETB(ETX)

ByteNum: The effective byte counting of this frame.

Data:data

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+Data(k)+Data(k+1)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

* Computer receive reply: Send ACK after the computer measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

8. Write information to one file of strip screen:

STX+ADD+StoreFile+FileType+FileName+ETX

* Computer receive reply: *ACK:Success

*NACK:Command to receive the mistake,Re-transmit

*No reply:This screen has not connected to the network.

* Computer send data: After receiving ACK, the computer prepares for send the data..

First frame form of the data:

STX+ADD+ByteNum+Data1+Data2+...+Data(n)+Checksum+ETB(ETX)

ByteNum:The effective byte counting of this frame.

Data:data

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+Data(k)+Data(k+1)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

* Send replying from the screen:Send ACK after the screen measures all data received and fulfils requirements,otherwise send NACK and wait Re-transmit.

9.Download information to screen for test:STX+ADD+ToTest+FileType+ETX

*Computer receive reply: *ACK:sucess.

*NACK:Command to receive the mistake,Re-transmit.

*No reply:This screen has not connected to the network.

*Computer send data:After receiving ACK, the computer plan to send data.

First frame form of the

data:STX+ADD+ByteNum+Data1+Data2+...+Data(n)+Checksum+ETB(ETX)

ByteNum: The effective byte counting of this frame.

Data: data

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+Data(k)+Data(k+1)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

*Send replying from the screen: Send ACK after the screen measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

10. Write new play list to screen: STX+ADD+WritePlay+ETX

*Computer receive reply: *ACK: success.

*NACK: Command to receive the mistake, Re-transmit.

*No reply: This screen has not connected to the network.

*Computer send data: After receiving ACK, the computer plan to send data.

First frame form of the data:

STX+ADD+ByteNum+FileName1+FileName2+...+FileName(n)+Checksum+ETB(ETX)

ByteNum: The effective byte counting of this frame.

FileName: File name "0--9, A--Z, a--z"

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+FileName(k)+FileName(k+1)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

*Send replying from the screen: Send ACK after the screen measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

11. Set play time of file to the screen: STX+ADD+SetPlayTime+ETX

*Computer receive reply: *ACK: success.

*NACK: Command to receive the mistake, Re-transmit.

*No reply: This screen has not connected to the network.

*Computer send data: After receiving ACK, the computer plan to send data.

First frame form of the data:

STX+ADD+ByteNum+FileName1+FileTime1+...+FileName(n)+FileTime(n)+Checksum+ETB(ETX)

ByteNum: The effective byte counting of this frame, including file name, the size of the file, the file broadcasts time.

FileName: File name "0--9, A--Z, a--z"

FileTime: File play time, BCD form: The week at the beginning (0--6, 9 express has not set for the time started), beginning hour (0--23), beginning cent (0--59), finish week (0--6, 9 express has not established finish time), finish hour (0--23), finish cent (0--59).

Checksum: Sum of the effective data, 1 byte.

Spread the form of frames continuously:

SYN+ByteNum+FileName(k)+FileTime(k)+...+Checksum+ETB(ETX)

The last frame is end with ETX, other frames are end with ETB.

*Send replying from the screen: Send ACK after the screen measures all data received and fulfils requirements, otherwise send NACK and wait Re-transmit.

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12. Order programme one file of strip screen:STX+ADD+ToPlay+FileName+ETX
 *Computer receive reply:*ACK:sucess,Do not show when the file name requested does not exist and return ACK.
 *NACK:Command to receive the mistake,Re-transmit.
 *No reply:This screen has not connected to the network.
- 13.Set time of screen (Only when RTC is installed):
- STX+ADD+SetTime+YY+MM+DD+DAY+HH+MM+TimeType+Checksum+ETX
 TimeType:form of time(1--5).
- *Computer receive reply:*ACK:sucess.
 *NACK:Command to receive the mistake,Re-transmit.
 *No reply:This screen has not connected to the network.
- 14.Delete one file of screen:STX+ADD+EraseFile+FileName+FileType+ETX
 *Computer receive reply:*ACK:sucess.
 *NACK:Command to receive the mistake,Re-transmit.
 *No reply:This screen has not connected to the network.
- 15.Clean up the memory of screen:STX+ADD+ClearSign+ETX
 *Computer receive reply:*ACK:sucess.
 *NACK:Command to receive the mistake,Re-transmit.
 *No reply:This screen has not connected to the network.

Notice:* When information divides frames to convey, every frame information effective

byte it counts to be very 16 most

- *The content of text information is ASCII code (include the special symbol),
- Model sign (0xFF,0x03,Model number),
- Speed sign (0xFF,0x02, speed number),
- Font sign(0xFF,0x01,Font number),
- Colour sign(0xFF,0x00,Colour sign),
- Image sign (0xFF,0x04,File name of Image),
- Time sign(0xFF,0x05,Time number),
- Colour number:
 - 00:RED,01:LRD,02:GRN,03:LGN,04:AMB,05:BRN,06:ORG,07:YEL,
 - 08:RB1, 09:RB2
- Font number: 00:SS5,01:ST5,02:WD5,03:WS5,04:SS7,05:ST7,06:WD7,07:WS7
- Speed number: 0x00--0x05
- Model number:
 - 00:HLD,01:FLS,02:WLUp,03:WLDwn,04:WLLft,05:WLRght,06:
 - WLUnite,07:WLCleft,08:RLUp,09:RLDwn,0A:RLLeft,0B:RLRght,0
 - C: RLUnite,
 - 0D:RLCleft,0E:SPC,0F:SCR,10H:ROT,11H:CRT,12H:AUT

One text file include several above-mentioned form association , curtain of information, the largest length is 255 byteses.

*The content of the information of the image is dot matrix, each point takes two byteses, the first express green, the second expresses red, 0x3F Showing the whole luminance, 0x36 expresses half a luminance, 0x30 express not show bright, the color is made up as follows: RED: 0x30,0x3F; LRD: 0x30,0x36; GRN: 0x3F,0x30; LGN: 0x36,0x30; AMB: 0x3F,0x3F; LGN: 0x36,0x36; ORG: 0x36,0x3F; YEL: 0x3F,0x36 transmitted from the first point of the first row to the last point of the last row.