

# Catalogue

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## Chapter 1 Summarization

### A. Summarization

Huaxian LED display use ASCII Text\String\Graphics\Time input and special function enactment.

Huaxian LED display allow to write text file/character string file/graphics file/time value to display by protocol; also allow to read text file/character string file/graphics file and time value from display.

Huaxian LED display allow to set up display parameters by the protocol, including password setup, device number setup, turn on/off time setup, display mode setup, deletion text file/graphics file and system reset etc.

The display by the protocol allow to take out data and edit data by remote keyboard.

### B. For the display text

Text file is a file type which including ASCII character\display mode\font value\color value\graphics file\character string file\time data etc.

#### 1. Character string file

Including character string attribute and ASCII character file type.

Character string file is used in the text file, only set up character string file name in the text file, the real content a is stored alone the character string file, the character string file is used for the regular changed data display, only need modify the character string file content and needn't modify text file content. The character string file is only stored working memory, can't keep the content when turn off the pc.

The max length of every character string file is 60 byte, ASCII character font and color in character string file is defined in the front of string in the text file, one character string file only allow the same font display.

#### 2. Graphics file

The graphics file is loaded in the text file, similar with character string, only set up graphics file name in the text file, the detailed content is stored graphics file solely.

System distribute every graphics file 4K byte space, the max dot is 4000 dots, max width dot is 240dots. Every byte show a dot color value, only allow 8 color value, the detail will be defined in "Write graphics command".

#### 3. Time

The protocol define 10 time display format, display hour/minute, year/moth/day, week.

System will get current time when meeting time value, and change ASCII character according the stipulated format and insert text file.

### C. Serial communication setup

HX led display sustain two communication standards: RS-232 and RS-485.

RS232 is available for the near communication distance, the communication distance is below 30M. By RS232 way can't allow many displays to connect the same general line.

RS-485 is available for far communication distance or many displays, the communication distance is below 1500M. By RS-485 allow 32 displays to connect the same data general line, over 32, by communication device to do grouping. The communication cable is different by RS-232 and RS-485.

HX led display communication baud rate is 9600BPS、 8 digit data bit、 1 digit stop bit、 1 digit efficacy bit.

### D. The text file display stipulation

Text file default font is SS7, default color is AUTO. After meeting font setup value, ASCII character display according to the font setup until the next font setup value. After meeting color setup value, ASCII character display according to the color setup display until the next color setup value. If the color value is AUTO then every color display will be stochastic.

Text display mode is set according to "display mode value", if display mode value is AUTO then every time

The display mode is stochastic. Text display show according "display speed value", the speed value is from 1-5, the Default value is 2, 1 is the fastest value. Text still stop time is regulated according to "display stop Value", the range is form 1-9, the default value is 2. If the "display mode" setup is "According to time display", will show the text file

according to "allow display date" and "start to display time" and "finish display time" in the text file, only accord with the term, will show the text, otherwise will not show.

The default value is "always display". That is: "allow display date" is 0xFF, "start to display time" is 00 hour and 00 minute, "finish display time" is 24 hour 00 minute.

### E. Communication protocol basic format

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>

All the commands(including sending and receiving) should accord with the above protocol and use the same

serial number	Types	Length	Illustration																		
<b>A</b>	<NUL>	5 byte, 0x00	Baud rate is self available, the start part of data bag.																		
<b>B</b>	<SOH>	1 byte, 0x01	Start Of Head																		
<b>C</b>	Sender Address	2 byte ASCII	Sending address, appointed "FF" as pc address., "00" is as broadcast address which can't be as sending address.																		
<b>D</b>	Receiver Address	2byte ASCII	Receiving address, "00" is broadcast address, all displays receive data; "FF" appoint pc fixed address which is used when the display return data to pc. "?" is wildcard character, "1?" allow all the displays to receive data from "10" to "1F".																		
<b>E</b>	<STX>	1byte,0x02	ASCII character, "Start" of "TeXt".																		
<b>F</b>	Command Code	1byte ASCII	<p>Command code, 1 byte ASCII character show different functions.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Command code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>'A'</td> <td>Write text file command</td> </tr> <tr> <td>'B'</td> <td>Read text file command</td> </tr> <tr> <td>'C'</td> <td>Write character string command</td> </tr> <tr> <td>'D'</td> <td>Read character string command</td> </tr> <tr> <td>'E'</td> <td>Write graphics file command</td> </tr> <tr> <td>'F'</td> <td>Read graphics file command</td> </tr> <tr> <td>'W'</td> <td>Write special function command</td> </tr> <tr> <td>'R'</td> <td>Read special function command</td> </tr> </tbody> </table>	Command code	Description	'A'	Write text file command	'B'	Read text file command	'C'	Write character string command	'D'	Read character string command	'E'	Write graphics file command	'F'	Read graphics file command	'W'	Write special function command	'R'	Read special function command
Command code	Description																				
'A'	Write text file command																				
'B'	Read text file command																				
'C'	Write character string command																				
'D'	Read character string command																				
'E'	Write graphics file command																				
'F'	Read graphics file command																				
'W'	Write special function command																				
'R'	Read special function command																				
<b>G</b>	Data Field	Unsure length	Data zone																		
<b>H</b>	<ETX>	1byte,0x03	End of TeXt																		
<b>I</b>	CheckSum	4 byte ASCII	Efficacy code, the accumulative total from<SOH> to <ETX>																		
<b>J</b>	<ETO>	1 byte,0x04	End Of Transmission																		

format.

The display will judge whether allow the display receive after taking STX, if allow to receive then keep all the received data until receiving EOT, then judge CHECKSUM whether it is right, if it is wrong then reject the command, if it is right then deal with received command; if find the command and not allow the display to receive, the system will not receive all the data, but the display always listen all the data until receiving NUL, then start to deal with new command and repeat the front process.

During all the command are sending,<NUL><SOH><STX><EOT> only appear in the stated position, the other positions will not be allowed to use these ASCII characters.

## F. Efficacy code

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>

The first efficacy value is 0x00, from E(included) to H(included), add up to every byte, the effect is the efficacy value. For example, the accumulative total value is 0x013f then show "013F".

## Chapter2: text command

### A. Write text file command ( A command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)		<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)			
<b>CommandCode</b>		<b>Data Field</b>											
'A'		File name	Text file data										
A		B	C										
Tab	Title	Illustration											
A	Command Code	The fixed value is "A"											
B	File ID	The virtual value is "0"- "9", "A"- "Z"											
C	Data Field	Text file data	Text zone of text file is including font, color, graphics file, character string, time, ASCII character.										
			Type	Length	Additional character	Data							
			Font value	2 byte	0xFE	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'
						SS5	ST5	WD5	WS5	SS7	ST7	WD7	WS7
						'I'	'J'	'K'	'L'	'M'	'N'	'O'	'P'
						SDS	SRF	STF	WDF	WSF	SDF	SS10	SS15
			color value	2 byte	0xFD	'A'	'B'	'C'	'D'	'E'	'F'	'G'	
						AUTO	LIGHT RED	LIGHT GREEN	RED	GREEN	YELLOW	BROWN	
						'H'	'I'	'J'	'K'	'L'	'M'		
						AMBER	ORANGE	MIXV1	MIXV2	MIXH	BLACK		
Graphics file	2 byte	0xFC	Graphics file name, the virtual value is '0' — '9', 'A' — 'Z'										
character string file	2 byte	0xFB	Character string file name, the virtual value is "A"- "Z".										
Time	2 byte	0xFA	'A'	hh:mm:ss	'F'	Yyyy-mm-dd							
			'B'	hh:mm:ss A/PM	'G'	dd.MM yyyy <sup>①</sup>							
			'C'	hh:mm	'H'	mm'dd'yyyy							
			'D'	hh:mm A/PM	'I'	English week shortened form							
			'E'	mm/dd/yyyy	'J'	English week full form							
			①: MM is for month English shortened form										
ASCII	1byte	No	The available character 0X20 – 0X7F in the ASCII character string table.										

When led display is power on, will show the content according the original display setup, there are 3 show types, 1 is

show all the existent text file, 2 is show according to time setup of text file; 3 is show according the play list setup, the play list is including 4 groups.

When writing text file, the display will stop show until receive and finish work, display will reset and show according the selective play list. All the other graphics file\ character string file and time etc will be showed according the setup by the text file.

Text file default font value is SS7, default color value is AUTO.

The attribute of text file can be modified by writing control command, if without set, system will set default value. Display mode is AUTO, speed value is 2, stop time is 2 seconds, allowable display time is 0XFF, start display time is 00 hour 00 minute, and finish display time is 24 hour 00 minute.

The display will divide up word according blank (0X20), if a word can't display wholly in one line, will change next line automatically. If a word length is over one line range, will display by moving-left way.

0X7F is defined Enter key, will appear return character when editing. During display, meet the enter symbol will change another line for display, will not appear enter symbol.

### B. Read text file command (B command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)						
<table border="1"> <tr> <th>Command Code</th> <th>Data Field</th> </tr> <tr> <td>'B'</td> <td>File name</td> </tr> <tr> <td>A</td> <td>B</td> </tr> </table>		Command Code	Data Field	'B'	File name	A	B								
Command Code	Data Field														
'B'	File name														
A	B														
Tab	Title		Illustration												
A	Command Code 'B'		Fixed is "B"												
B	Data Field	File ID	Text file name, virtual value is '0' — '9', 'A' — 'Z'												

When read text file, please confirm in the same net, every display device number is only and is different name, otherwise will appear fault. When read text file, system will pause, after finish sending will continue to display from the pause place,

The display received the read text file command will response by the format as follow:

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Send Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)									
<table border="1"> <tr> <th>CommandCode</th> <th colspan="2">Data Field</th> </tr> <tr> <td>'A'</td> <td>file name</td> <td>text file data</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> </tr> </table>		CommandCode	Data Field		'A'	file name	text file data	A	B	C	<ul style="list-style-type: none"> <li>● Receive Address fixed as "FF".</li> <li>● Send Address Is the display number</li> <li>● Command Code is "A"</li> <li>● The file name is the text file name appointed by pc.</li> </ul>							
CommandCode	Data Field																	
'A'	file name	text file data																
A	B	C																
Tab	Title		Illustration															
A	Command Code 'A'		Fixed "A"															
B	Data Field	File ID	The virtual value is '0' — '9', 'A' — 'Z'															
C		text file data	Text zone of text file is including font, color, graphics file, character string, time, ASCII character.															

## chapter 3 string command

### A. Write string command (C command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)												
<table border="1"> <tr> <th>Command Code</th> <th colspan="3">Data Field</th> </tr> <tr> <td>'C'</td> <td>character string file</td> <td>string attribute</td> <td>character string data</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> </tr> </table>		Command Code	Data Field			'C'	character string file	string attribute	character string data	A	B	C	D								
Command Code	Data Field																				
'C'	character string file	string attribute	character string data																		
A	B	C	D																		
Tab	type	Illustration																			
A	command code	'C'																			
B	character string file name	'A' — 'Z'.																			
C	character string attribute	Display mode is for 2 types: "0"= still,"1"---"4"= flash speed																			
D	character string data	ASCII character, the max length is 60 characters.																			

Character string content will be used in text file.

Character sting is inserted position defined by text file when display.

The font and color are defined in text file.

If the first character of character string is 0X00, means the empty character string, will ignore it when display, also can delete character string by writing empty character string.

### B. Read string command (D command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)						
<table border="1"> <tr> <th>Command Code</th> <th>Data Field</th> </tr> <tr> <td>'D'</td> <td>string file name</td> </tr> <tr> <td>A</td> <td>B</td> </tr> </table>		Command Code	Data Field	'D'	string file name	A	B								
Command Code	Data Field														
'D'	string file name														
A	B														
Tab	Title	Illustration													
A	Command Code	Fixed is "D"													
B	character string file name	'A' — 'Z'.													

After display received the command will return character string data by "C"command.

Return the command, Send Address is the display number, Receiver Address is fixed "FF"

## Chapter 4 graphics command

### A. WRITE GRAPHICS COMMAND (E command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)																												
<table border="1"> <thead> <tr> <th>Command Code</th> <th colspan="3">Data Field</th> </tr> </thead> <tbody> <tr> <td>'E'</td> <td>graphics file name</td> <td>graphics attribute</td> <td>graphics data</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> <td>D</td> </tr> </tbody> </table>		Command Code	Data Field			'E'	graphics file name	graphics attribute	graphics data	A	B	C	D																								
Command Code	Data Field																																				
'E'	graphics file name	graphics attribute	graphics data																																		
A	B	C	D																																		
Tab	Title	Illustration																																			
A	Command Code	Fixed is :”E”																																			
B	Graphics file name	The virtual value ‘0’ — ‘9’ , ‘A’ — ‘Z’																																			
C	Graphics attribute	”XX,XX” is for the graphics height and width. The height and width is 2 byte ASCII data. For example “ 10 , 20” , ,graphics height is 16dots, width is 32 dots “ 07 , 1F” , Graphics height is 7 dots, width is 31 dots.																																			
D	graphics data	Graphics dot color value, sending at first line then arrange. <table border="1"> <tr> <td></td> <td>‘B’</td> <td>‘C’</td> <td>‘D’</td> <td>‘E’</td> <td>‘F’</td> <td>‘G’</td> </tr> <tr> <td></td> <td>LIGHT RED</td> <td>LIGHT GREEN</td> <td>RED</td> <td>GREEN</td> <td>YELLOW</td> <td>BROWN</td> </tr> <tr> <td>‘H’</td> <td>‘I’</td> <td></td> <td></td> <td></td> <td>‘M’</td> <td></td> </tr> <tr> <td>AMBER</td> <td>ORANGE</td> <td></td> <td></td> <td></td> <td>BLACK</td> <td></td> </tr> </table>									‘B’	‘C’	‘D’	‘E’	‘F’	‘G’		LIGHT RED	LIGHT GREEN	RED	GREEN	YELLOW	BROWN	‘H’	‘I’				‘M’		AMBER	ORANGE				BLACK	
	‘B’	‘C’	‘D’	‘E’	‘F’	‘G’																															
	LIGHT RED	LIGHT GREEN	RED	GREEN	YELLOW	BROWN																															
‘H’	‘I’				‘M’																																
AMBER	ORANGE				BLACK																																

Graphics data is composed of line and arrange.

Finish the first line color value then send second line dot color value, send in order until all data are finished sending.

Every line dot is same with the width defined value in the graphics attribute when sending.

The max width value is 240dots.

### B. READ GRAPHICS COMMAND (F command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)						
<table border="1"> <thead> <tr> <th>Command Code</th> <th>Data Field</th> </tr> </thead> <tbody> <tr> <td>'F'</td> <td>graphics file name</td> </tr> <tr> <td>A</td> <td>B</td> </tr> </tbody> </table>		Command Code	Data Field	'F'	graphics file name	A	B								
Command Code	Data Field														
'F'	graphics file name														
A	B														
Tab	Title	Illustration													
A	Command Code	Fixed is "F"													

B	Graphics file name	Graphics name, the virtual value is '0' — '9', 'A' — 'Z'。
---	--------------------	---

After display received the command will return graphics data by "E" command format.

When sending back the data, first send the line data then arrange data.

Send Address is display number, Receiver Address is fixed "FF".

If the graphics isn't existent, will return the width and height value for "00". Graphics data will not send again.

### Chapter5 control command

#### A. WRITE CONTROL COMMAND (W command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Sender Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)												
<table border="1"> <tr> <th>Command Code</th> <th colspan="3">Data Field</th> </tr> <tr> <td>'W'</td> <td>Control</td> <td>subcommand</td> <td>data zone</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> <td></td> </tr> </table>		Command Code	Data Field			'W'	Control	subcommand	data zone	A	B	C									
Command Code	Data Field																				
'W'	Control	subcommand	data zone																		
A	B	C																			
T A B	Control Sub- command	Control command date zone	Illustration																		
S	'A'	"YYYYMMD DHHMMSSW"	Set up clock, 15 ASCII character. Year/month/day/hour/minute/second/week. For example "200404271020322", 2004 year 04 month 27 day 10 hour 20 minute 32 second Tuesday																		
	'B'	Empty	software reset																		
	'C'	"XXXXXX"	Set up password, 6 ASCII characters. 。 The virtual value is '0' — '9', 'A' — 'Z'																		
	'D'	"XX"	Device number setup, 2 ASCII。 Value is "01"—"FE". Using the command, Receiver Address is "00". The command only can set up single device and can't exist the same device number in same system, otherwise will appear immeasurable fault																		
	'E'	"SHSM, EHSM: SHSM, EHSM: SHSM, EHSM: SHSM, EHSM: SHSM, EHSM."	Four groups turn on/off time setup. Totally 40 ASCII characters. In turn, the first group : turn on hour minute, turn off hour minute; the second group: turn on hour minute, turn off hour minute. The third group: turn on hour minute, turn off hour minute; the fourth group: turn on hour minute and turn off hour minute.																		
	'F'	'A' or 'T' or '1' -- '4'	Display mode set up, totally 3 choices, 1 ASCII character. "A"=Display all files; "T"== Display according setup time; "1"—"4"== Display according play group.																		

'G'	"TMRPDDSHS MEHEM"	Totally 14 ASCII characters. The command allow to set up every file attribute. T= text file name; M= display mode; R= speed, P= stop time; DD= allowable display date, SH= start hour; SM= start minute, EH= Ending hour; EM=Ending minute							
		Type	Length	Illustration					
		Text display mode	1 byte	26 types, the virtual value is 'A' — 'Z'					
				A	AUTO	J	ROLL RIGHT	S	WIPE DOWN
				B	FLASH	K	ROTATE	T	WIPE UP
				C	HOLD	L	SLIDE	U	WIPE IN
				D	INTERLOCK	M	SNOW	V	WIPE OUT
				E	ROLL DOWN	N	SPARKLE	W	WIPE LEFT
F	ROLL UP			O	SPRAY	X	WIPE RIGHT		
G	ROLL IN			P	STAR BRUST	Y	CYCLE COLOR		
H	ROLL OUT			Q	SWITCH	Z	CLOCK		
I	ROLL LEFT	R	TWINKLE						
Display Speed	1byte	Total 5 kinds, the virtual value is							
		'1'	'2'	'3'	'4'	'5'			
		Fastest	Faster	Normal	Slow	Slower			
Pause time	1byte	Total 10 kinds, the virtual value '0' — '9'							
Allowable display character	2byte	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
		Null	Saturday	Friday	Thursday	Wednesday	Tuesday	Monday	Sunday
		The corresponding value is "1", show at current day, "0" is unhalloved to show at the current day. Will make a byte by this way then show by 2 ASCII way, for example "F3"06".							
Start Time	4byte	Start to display time and minute, show 24 hour table. For example"1220", show 12 hour 20 minute to start display.							
Stop Time	4byte	Ending display time and minute, show 24 hour table. For example"1330", show 13 hour 30 minute to stop display.							
Backup	4byte	Total is 0XFF.							
'H'	'X'	Delete text file,1 byte For "X"=="?", delete all the files, otherwise delete corresponding file.							
'I'	'X'	Delete defined graph, 1 byte. For "X"=="?", delete all the defined graphs, otherwise delete corresponding graphics.							
'J'	'X'	Set up key cue voice,"1"== turn on, "0" == turn off.							
'K'	'X'	Set up password input,"1"==Input password,"0"== needn't input password. After setup password input by remote, will appear password input frame, should input right password to edit.							
'L'	Empty	Clear all data, will delete all the display data and can't resume.							
'S'	"SRDDP"	Write device attribute, including key-press cue voice, display mode setup, device number setup and password setup. 'S' == '0' or '1'; 'R' == 'A' or 'T' or '1' — '4'; 'DD' == '01' — 'FE'; 'P' == '0' or '1'.							

## B. READ CONTROL COMMAND (R command)

<NUL><NUL><NUL><NUL><NUL> (0x00,0x00,0x00,0x00,0x00)	<SOH> (0x01)	Send Address	Receiver Address	<STX> (0x02)	Command Code	Data Field	<ETX> (0x03)	CheckSum	<EOT> (0x04)									
<table border="1"> <thead> <tr> <th>Command Code</th> <th colspan="2">Data Field</th> </tr> </thead> <tbody> <tr> <td>'R'</td> <td>Control subcommand</td> <td>control subcommand data zone</td> </tr> <tr> <td>A</td> <td>B</td> <td>C</td> </tr> </tbody> </table>		Command Code	Data Field		'R'	Control subcommand	control subcommand data zone	A	B	C								
Command Code	Data Field																	
'R'	Control subcommand	control subcommand data zone																
A	B	C																
tab	Sub-command	Control sub-command Data filed	illustration															
	'A'	empty	Read clock value, return "YYYYMMDDHHMMSSW", total 15 ASCII characters.															
	'B'	Empty	Read display type. HX – "HH""WWW""C" <u>HX</u> -- Manufacturer code <u>HH</u> — Height, 1 or 2 ASCII character <u>WWW</u> — Width, 2 or 3 ASCII character <u>C</u> — Color "M" for unit color, "C" for tricolor For example: "HX-780M " . — 7x80Mono-color display "HX-8120C " . — 8x120Tricolor display "HX-16160C " . — 16x160Tricolor display "HX-24240M " . — 24x240Mono-color display Display receive the command will return by "T" command.															
	'C'	Empty	Read turn on/off time, <b>return</b> four groups turn on/turn off time setup.															
	'D'	'T'	"MRPDDSHSMEHEM". Read text file attribute. "T" is file name, the virtual value is '0' — '9', 'A' — 'Z' . Return 13 byte which is display mode value, speed value, stop time, display date, start display hour minute, finish display hour minute..															
	'E'	'X'	"XX, XX". Read user-defined graphics attribute. "X" is for graphics name, the virtual value is "0"-"9", "A"-"Z". Return 5 byte, "XX, XX" is for the height value and width value.															
	'F'	'X'	Read device attribute, including key-press cue voice setup, display mode setup, device number and password setup. Return by "S" command, "Speed" 5 ASCII character. 'S' == '0' or '1'; 'R' == 'A' or 'T' or '1' — '4'; 'DD' == '01' — 'FE'; 'P' == '0' or '1'.															

## Chapter 6 Example

### A、 Write text file to all the displays

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"00"	<STX>	"AAHELLO"	<ETX>	"01FB"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	Title	data	Illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	PC address						
D	Receiver address	"00"	All display received.						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'A'	Write text file name						
	Data	File Id	'A'	Text file name					
	Field	ASCII	"HELLO"	Character string					
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"01FB"	Efficacy code.						
I	<EOT>	0x04	"End Of Transmission".						

### B、 Write text file to a appointed display

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"03"	<STX>	"AAHELLO"	<ETX>	"01FB"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	Title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	PC address						
D	Receiver address	"03"	Number 3 display						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'A'	Write text file command						
	Data	File Id	'A'	Text file name					
	Field	ASCII	"HELLO"	Character string					
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"01FB"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

### C、 Write text file to a group display

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"2?"	<STX>	"AAHELLO"	<ETX>	"01FB"	<EOT>
A		B	C	D	E	F	G	H	I
tab	title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	PC address						
D	Receiver address	"2?"	Display number from"20" to "2F" will allow to receive the data.						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'A'	Write text file command						
	Data	File Id	'A'	Text file name					
	Field	ASCII	"HELLO"	Character string					
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"01FB"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

### D、 Read text file from appointed display

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"03"	<STX>	"BA"	<ETX>	"0088"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	title	data	Illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	PC address						
D	Receiver address	"03"	Number 3 display						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'B'	Read text file command						
	Data Field	'A'	Text file name						
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"0088"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

Display will return by as follow format

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"03"	"FF"	<STX>	"AAHELLO"	<ETX>	"01FB"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"03"	Number 3 display						

D	Receiver address	"FF"	PC address	
E	<STX>	0x02	"Start of TeXt".	
F	Command	'A'	Write text file command	
	Data Field	File Id	'A'	Text file name
	ASCII	"HELLO"	Character string	
G	<ETX>	0x03	"End of TeXt".	
H	Checksum	"01FB"	Efficacy code	
I	<EOT>	0x04	"End Of Transmission".	

### E、Write string to appointed display

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"22"	<STX>	"CBHELLO"	<ETX>	"01FE"	<EOT>
A	B	C	D	E	F	G	H	I
tab	title	data	illustration					
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	Pc address					
D	Receiver address	"22"	Number 34 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'C'	character string command					
	Data Field	String Id	'B'	Character file name				
	ASCII	"HELLO"	Character string					
G	<ETX>	0x03	"End of TeXt".					
H	Checksum	"01FE"	Efficacy code					
I	<EOT>	0x04	"End Of Transmission".					

### F、Read string from appointed display


<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"22"	<STX>	"DB"	<ETX>	"008B"	<EOT>
A	B	C	D	E	F	G	H	I
tab	title	data	illustration					
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	PC address					
D	Receiver address	"22"	Number 34 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'D'	Write string command					
	Data Field	'B'	String file name					
G	<ETX>	0x03	"End of TeXt".					

H	Checksum	"008B"	Efficacy code
I	<EOT>	0x04	"End Of Transmission".

Return by the format as follow:

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"22"	"FF"	<STX>	"CBHELLO"	<ETX>	"01FE"	<EOT>
A		B	C	D	E	F	G	H	I
tab	title	data	illustration						
A	<NUL>	0x00	⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"22"	Number 34 display						
D	Receiver address	"FF"	PC address						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'C'	Write string file command						
	Data	String Id	'B'	String file name					
	Field	ASCII	"HELLO"	String					
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"01FE"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

### G、 Write graphics to appointed display

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"12"	<STX>	"EB07,08"		<ETX>	"116A"	<EOT>
A		B	C	D	E	F	G	H	I	J
" B B M M M M B B "		'B' : LIGHT RED								
" B B M M M B B M "		'C' : LIGHT GREEN								
" M M M M B B M M "		'D' : RED								
" M M M B B M M M "		'E' : GREEN								
" M M B B M M M M "		'F' : YELLOW								
" M B B M M M B B "		'G' : BROWN								
" B B M M M M B B "		'H' : AMBER								
		'I' : ORANGE								
		'M' : BLACK								
tab	title	data	illustration							
A	<NUL>	0x00	⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩ ⟨NUL⟩							
B	<SOH>	0x01	"Start Of Head".							
C	Sender address	"FF"	PC address							
D	Receiver address	"12"	Number 18 display							
E	<STX>	0x02	"Start of TeXt".							
F	Command	'E'	Write graphics command							
	Data	Dots Id	'B'	Graphics file name						
	Field	Height & Width	"07,08"	Height 07dot, width 08 dot						

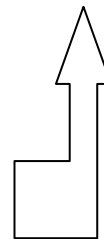
G	Color	"..."	"BBMMMMBB" "BBMMMMBBM" "MMMMBBMM" "MMMBBMMM" "MMBBMMMM" "MBBMMMMB" "BBMMMMBB"
H	<ETX>	0x03	"End of TeXt".
I	Checksum	"116A"	Efficacy code
J	<EOT>	0x04	"End Of Transmission".

### H、 Read graphics file from appointed display

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"03"	<STX>	"FB"	<ETX>	"008D"	<EOT>
A	B	C	D	E	F	G	H	I
tab	title	data	Illustration					
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	PC address					
D	Receiver address	"03"	Number 03 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'F'	Read graphics command					
	Data Field	'B'	Graphics file name					
G	<ETX>	0x03	"End of TeXt".					
H	Checksum	"008D"	Efficacy code					
I	<EOT>	0x04	"End Of Transmission".					

The display will return the data by format as follow when receiving the command

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"03"	"FF"	<STX>	"EB07,08"		<ETX>	"116A"	<EOT>
A	B	C	D	E	F	G	H	I	J
" B B M M M M B B "	'B' :	LIGHT RED							
" B B M M M B B M "	'C' :	LIGHT GREEN							
" M M M M B B M M "	'D' :	RED							
" M M M B B M M M "	'E' :	GREEN							
" M M B B M M M M "	'F' :	YELLOW							
" M B B M M M B B "	'G' :	BROWN							
" B B M M M M B B "	'H' :	AMBER							
	'I' :	ORANGE							
	'M' :	BLACK							
Tab	Title	data	说明						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	"Start Of Head".						



C	Sender address	"03"	Number 03 display	
D	Receiver address	"FF"	PC address	
E	<STX>	0x02	"Start of TeXt".	
F	Command		'E'	Write graphics command
	Data Field	Dots Id	'B'	Graphics file name
		Height & Width	"07,08"	Height07dot, width 08dot
G	Color	"..."	7X8=56dots.Graphics color value: "BBMMMMBB" "BBMMMMBB" "MMMMBBMM" "MMMMBBMM" "MMBBMMMM" "MBMMMMBB" "BBMMMMBB"	
H	<ETX>	0x03	"End of TeXt".	
I	Checksum	"116A"	Efficacy code	
J	<EOT>	0x04	"End Of Transmission".	

### I、 Write clock command

<NUL><NUL><NUL><NUL><NUL>					<SOH>	"FF"	"22"	<STX>	"WA200404021236235"	<ETX>	"038F"	<EOT>
A					B	C	D	E	F	G	H	I
Tab	Title	Data	illustration									
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>									
B	<SOH>	0x01	"Start Of Head".									
C	sender address	"FF"	PC address									
D	receiver address	"22"	Number 34 display									
E	<STX>	0x02	"Start of TeXt".									
F	Command		'W'	Write special function command								
	Data Field	Sub Command	'A'	Write clock command								
		Clock Data	"200404021236235"	2004year 04 month 02 day 12hour 36minute23seconc Friday								
G	<ETX>	0x03	"End of TeXt".									
H	Checksum	"038F"	Efficacy code									
I	<EOT>	0x04	"End Of Transmission".									

### J、 Software reset

<NUL><NUL><NUL><NUL><NUL>					<SOH>	"FF"	"22"	<STX>	"WB"	<ETX>	"009E"	<EOT>
A					B	C	D	E	F	G	H	I
Tab	title	data	Illustration									
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>									
B	<SOH>	0x01	"Start Of Head".									

C	sender address		"FF"	PC address
D	receiver address		"22"	Number 34 display
E	<STX>		0x02	"Start of TeXt".
F	Command		'W'	Write special function command
	Data Field	Sub Command	'B'	Software reset command
G	<ETX>		0x03	"End of TeXt".
H	CheckSum		"009E"	Efficacy code
I	<EOT>		0x04	"End Of Transmission".

### K、 Password setup

	<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"22"	<STX>	"WC123456"	<ETX>	"01D4"	<EOT>
	A	B	C	D	E	F	G	H	I
tab	Title	Data	Illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	"Start Of Head".						
C	sender address	"FF"	PC address						
D	receiver address	"22"	Number 34 display						
E	<STX>	0x02	"Start of TeXt".						
F	Command		'W'	Write special function command					
	Data Field	Sub Command	'C'	Password setup command					
		Data	"123456"	Password data					
G	<ETX>	0x03	"End of TeXt".						
H	CheckSum	"01D4"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

### L、 setup device number

	<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"00"	<STX>	"WD12"	<ETX>	"0103"	<EOT>
	A	B	C	D	E	F	G	H	I
tab	title	data	illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	"Start Of Head".						
C	Sender Address	"FF"	PC address						
D	Receiver Address	"00"	Random display can receive. The command can't be used for many displays in general communication line system.						
E	<STX>	0x02	"Start of TeXt".						
F	Command		'W'	Write special function command					
	Data Field	Sub Command	'D'	Setup device number command					
		Data	"12"	Device number, number 18 display					
G	<ETX>	0x03	"End of TeXt".						

H	Checksum	"0103"	Efficacy code
I	<EOT>	0x04	"End Of Transmission".

### M、 setup turn on/off time

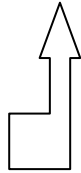
<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"08"	<STX>	"WE"		<ETX>	"0643"	<EOT>
A	B	C	D	E	F	G	H	I	J

**"0600, 0700; 0900, 1030; 1200, 1425; 0000, 0000."**

**A          B          C          D**

**A:** The first group on/off time. 6 hour 00 minute on,7hour 00 minute off  
**B:** The second group on/off time 9 hour 00 minute on,10 hour 30 minute off  
**C:** The third group on/off time 12hour 00 minute on,14 hour 25 minute off  
**D:** The forth group on/off time 00 hour 00 minute on, 00 hour 00 minute off

Ending time setup is 00hour00minute, can ignore the setup.



tab	Title	Data	illustration
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>
B	<SOH>	0x01	"Start Of Head".
C	Sender Address	"FF"	PC address
D	Receive Address	"08"	number 08 display
E	<STX>	0x02	"Start of TeXt".
F	Command	'W'	Write special function command
	Sub Command	'E'	Set Turn on/off time.
G	Data Field	Data	"0600, 0700: 0900, 1030: 1200, 1425; 0000, 0000."
			Turn on/off time.
H	<ETX>	0x03	"End of TeXt".
I	Checksum	"0643"	Efficacy code.
J	<EOT>	0x04	"End Of Transmission".

### N、 Setup display mode

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"22"	<STX>	"WFA"	<ETX>	"00E3"	<EOT>
A	B	C	D	E	F	G	H	I

tab	title	data	illustration
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>
B	<SOH>	0x01	"Start Of Head".
C	Sender address	"FF"	PC address
D	Receiver address	"22"	Number 34 display.
E	<STX>	0x02	"Start of TeXt"
F	Command	'W'	Write special function command
	Sub Command	'F'	Enact display mode command

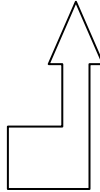
	Field	Data	"A"	Display mode choose Allowable choose is 3 types 'A' == Display all text files 'T' == Display text file according the time setup '1' — '4' == Display according play list 1-4
G	<ETX>	0x03		"End of TeXt".
H	Checksum	"00E3"		Efficacy code
I	<EOT>	0x04		"End Of Transmission".

### O、 Setup text file attribute

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"30"	<STX>	"WG"	"AA24FF06001800"	<ETX>	"03A6"	<EOT>
A	B	C	D	E	F	G	H	I	J

**"T M R P DD SHSM EHEM"**

- 'T': Text file name
- 'M': Display mode, 26 choice
- 'R': Display speed, 5 choice
- 'P': Stop time, 10 choice
- 'DD': Allowable display time
- 'SHSM': Start display time
- 'EHEM': End display time



tab	title	Data	illustration
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>
B	<SOH>	0x01	"Start Of Head".
C	sender address	"FF"	PC address
D	Receiver address	"30"	Number 48 display
E	<STX>	0x02	"Start of TeXt".
F	Command	'W'	Write special function command
	Sub Command	'G'	setup text file attribute command
G	Data Field	Data	"AA24FF06001800"
			A: Text file name A: Display mode is automatic mode 2: Display speed is FASTER 4: Pause time is 4 second FF: Allow all the date to display 0600: On 6hour 00minute start to display 1800: On 18hour 00minute to end display
H	<ETX>	0x03	"End of TeXt".
I	Checksum	"03A6"	Efficacy code
J	<EOT>	0x04	"End Of Transmission".

### P、 Delete text file

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"12"	<STX>	"WHA"	<ETX>	"00E5"	<EOT>
A	B	C	D	E	F	G	H	I

Tab	title	data	illustration
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>

B	<SOH>	0x01	“Start Of Head”.
C	Sender address	“FF”	PC address
D	Receiver address	“12”	Number 18 display
E	<STX>	0x02	“Start of TeXt”.
F	Command		‘W’ Write special function command
	Data Field	Sub Command	‘H’ Delete text file command
		File Id	“A” Text file name If “?” then delete all files
G	<ETX>	0x03	“End of TeXt”.
H	Checksum	“00E5”	Efficacy code
I	<EOT>	0x04	“End Of Transmission”.

### Q、Delete graphics file

<NUL><NUL><NUL><NUL><NUL>				<SOH>	“FF”	“20”	<STX>	“WID”	<ETX>	“00E9”	<EOT>
A				B	C	D	E	F	G	H	I
Tab	title	data	Illustration								
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉								
B	<SOH>	0x01	“Start Of Head”.								
C	Sender address	“FF”	PC address.								
D	Receiver address	“20”	Number 32 display								
E	<STX>	0x02	“Start of TeXt”.								
F	Command		‘W’	Write special function command.							
	Data Field	Sub Command	‘I’	Delete graphics command.							
		Data	“D”	Graphics file name, if “?”then delete all graph							
G	<ETX>	0x03	“End of TeXt”.								
H	Checksum	“00E9”	Efficacy code								
I	<EOT>	0x04	“End Of Transmission”.								

### R、setup key-press cue voice

<NUL><NUL><NUL><NUL><NUL>				<SOH>	“FF”	“10”	<STX>	“WJ1”	<ETX>	“00D7”	<EOT>
A				B	C	D	E	F	G	H	I
tab	title	data	Illustration								
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉								
B	<SOH>	0x01	“Start Of Head”.								
C	Sender address	“FF”	PC address								
D	Receiver address	“10”	Number 16 display.								
E	<STX>	0x02	“Start of TeXt”.								
F	Command		‘W’	Write special function command.							
	Data Field	Sub Command	‘J’	Setup key-press cue voice command.							
		Data	“1”	On key-press cue voice, if “0” then off key-press cue voice.							
G	<ETX>	0x03	“End of TeXt”.								
H	Checksum	“00D7”	Efficacy code								
I	<EOT>	0x04	“End Of Transmission”.								


## S、password input function

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"10"	<STX>	"WK1"	<ETX>	"00D8"	<EOT>
A		B	C	D	E	F	G	H	I
tab	Title	data	Illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	“Start Of Head”。						
C	Sender address	“FF”	PC address						
D	Receiver address	“10”	Number 16 display						
E	<STX>	0x02	“Start of TeXt”。						
F	Command		'W'	Write special function command.					
	Data Field	Sub Command	'K'	Password input setup					
		Data	"1"	Turn on password input function, if "0"then off password input function Turn on password input function by remote, should input right password to edit					
G	<ETX>	0x03	“End of TeXt”。						
H	Checksum	"00D8"	Efficacy code						
I	<EOT>	0x04	“End Of Transmission”。						

## T、Delete all data

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"10"	<STX>	"WL"	<ETX>	"00A8"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	title	Data	illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	“Start Of Head”。						
C	Sender address	“FF”	PC address						
D	Receiver address	“10”	Number 16 display						
E	<STX>	0x02	“Start of TeXt”。						
F	Command		'W'	Write special function command					
	Data Field	Sub Command	'L'	Delete all data, the data can't be resumed.					
G	<ETX>	0x03	“End of TeXt”。						
H	Checksum	"00A8"	Efficacy code						
I	<EOT>	0x04	“End Of Transmission”。						

### U、 Setup device attribute

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"10"	<STX>	"WS"	"0TF31"	<ETX>	"01DD"	<EOT>
A	B	C	D	E	F	G	H	I	J
<p><b>"S R DD P"</b></p> <p><b>S:</b> Key-press cue voice, "0" for off or "1" for on.</p> <p><b>R:</b> display mode choose, "A" is for display all text file,"T" is for display according time setup. Display text file according "1"- "4" play list</p> <p><b>DD:</b> Allowable display date</p> <p><b>P:</b> Password input function,"0" is for off, "1" is for on</p> <p>The command is a combined command</p>									
									
Tab	title	data	Illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	PC address						
D	Receiver address	"10"	Number 16 display						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'W'	Write special function command						
	Sub Command	'S'	Device attribute setup command						
G	Data Field	Data	"0TF31"						
			0: Turn off key-press cue voice T: Display text according the time F3: 11110011 . Allow to display but Tuesday/Wednesday. 1: Turn on password input function						
H	<ETX>	0x03	"End of TeXt".						
I	Checksum	"01DD"	Efficacy code						
J	<EOT>	0x04	"End Of Transmission".						

### V、 read time

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"22"	<STX>	"RA"	<ETX>	"0098"	<EOT>
A	B	C	D	E	F	G	H	I
tab	title	data	Illustration					
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	Pc address					
D	Receiver address	"22"	Number 34 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'R'	read control command					
	Data Field	'A'	Read time command					
G	<ETX>	0x03	"End of TeXt".					
H	Checksum	"0098"	Efficacy code					
I	<EOT>	0x04	"End Of Transmission".					


system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"22"	"FF"	<STX>	"WA200404021236235"	<ETX>	"038F"	<EOT>
A		B	C	D	E	F	G	H	I
tab	title	data			Illustration				
A	<NUL>	0x00			〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉				
B	<SOH>	0x01			“ Start Of Head”。				
C	Sender address	“22”			Number 34 display				
D	Receiver address	“FF”			PC address				
E	<STX>	0x02			“ Start of TeXt”。				
F	Command		‘W’		Write special function command				
	Data Field	Sub Command	‘A’		Write clock command				
		Clock Data	“200404021236235”		2004year 04month02day12hour36minute23second Friday				
G	<ETX>	0x03			“ End of TeXt”。				
H	Checksum	“038F”			Efficacy code				
I	<EOT>	0x04			“ End Of Transmission”。				

### W、 read display type

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"22"	<STX>	"RB"	<ETX>	"0099"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	title	data	illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	“ Start Of Head”。						
C	Sender address	“FF”	Pc address						
D	Receiver address	“22”	Number 34 display						
E	<STX>	0x02	“ Start of TeXt”。						
F	Command	‘R’	read control command						
	Data Field	‘B’	Read display type command						
G	<ETX>	0x03	“ End of TeXt”。						
H	Checksum	“0099”	Efficacy code						
I	<EOT>	0x04	“ End Of Transmission”。						

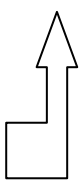
system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"22"	"FF"	<STX>	"WT"	"HX—16160C"	<ETX>	"02BE"	<EOT>
A	B	C	D	E	F	G	H	I	J
<p><b>"HX— HH WWW C"</b></p> <p><b>HX—</b> : Manufacturer code</p> <p><b>HH</b>: Height dot, 1 ASCII character of 2 ASCII character</p> <p><b>WWW</b>: Width dot, 2 ASCII character or 3 ASCII character</p> <p><b>C</b>: Color, "M" is for mono-color, "C" is for tricolor</p>									
									
tab	title	data	illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"22"	Number 34 display						
D	Receiver address	"FF"	Pc address						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'W'	Write special function command						
	Sub Command	'T'	Sending display type						
G	Data Field	Data "HX—16160C"	HX—: Manufacture code 16: Height16dots 160: Width 160dots C: Colorful display						
H	<ETX>	0x03	"End of TeXt".						
I	Checksum	"02BE"	Efficacy code						
J	<EOT>	0x04	"End Of Transmission".						

### X、 read turn on/off time

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"12"	<STX>	"RC"	<ETX>	"009A"	<EOT>
A	B	C	D	E	F	G	H	I
tab	title	data	illustration					
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	Pc address					
D	Receiver address	"12"	Number 18 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'R'	read control command					
	Data Field	'C'	Read turn on/off time command					
G	<ETX>	0x03	"End of TeXt".					
H	Checksum	"009A"	Efficacy code					
I	<EOT>	0x04	"End Of Transmission".					

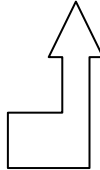
system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"12"	"FF"	<STX>	"WE"		<ETX>	"0643"	<EOT>
A	B	C	D	E	F	G	H	I	J
<p><b>"0600, 0700; 0900, 1030; 1200, 1425; 0000, 0000."</b></p> <p><b>A            B            C            D</b></p> <p><b>A:</b> The first group on/off time.6 hour00 minute on, 7hour00 minute off  <b>B:</b> The second group on/off time.9hour00minute on,10hour30minute off  <b>C:</b> The third group on/off time. 12hour00minuteon, 14hour25minute off  <b>D:</b> The fourth group on/off time.00hour00minute on, 00hour00minute off</p> <p>When ending time value is 00hour00minute,then ignore the setup.</p> 									
tab	title	data		Illustration					
A	<NUL>	0x00		<NUL> <NUL> <NUL> <NUL> <NUL>					
B	<SOH>	0x01		"Start Of Head".					
C	Sender address	"12"		Number 18 display					
D	Receiver address	"FF"		PC address					
E	<STX>	0x02		"Start of TeXt".					
F	Command	'W'		Write special function command					
	Sub Command	'E'		Setup turning on/off time command					
G	Data Field	Data		"0600, 0700; 0900, 1030; 1200, 1425; 0000, 0000. "					
				Turn on/off time					
H	<ETX>	0x03		"End of TeXt".					
I	Checksum	"0643"		Efficacy code					
J	<EOT>	0x04		"End Of Transmission".					

### Y、 read text file attribute

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"12"	<STX>	"RDB"	<ETX>	"00DD"	<EOT>	
A	B	C	D	E	F	G	H	I	
tab	Title	data		illustration					
A	<NUL>	0x00		<NUL> <NUL> <NUL> <NUL> <NUL>					
B	<SOH>	0x01		"Start Of Head".					
C	Sender address	"FF"		PC address					
D	Receiver address	"12"		Number 18 display					
E	<STX>	0x02		"Start of TeXt".					
F	Command	'R'		read control command					
	Data Field	'D'		Read text file attribute command					
		'B'		Text file name					
G	<ETX>	0x03		"End of TeXt".					
H	Checksum	"00DD"		Efficacy code					
I	<EOT>	0x04		"End Of Transmission".					

system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"12"	"FF"	<STX>	"WG"	"BA24FF06001800"	<ETX>	"03A2"	<EOT>
A	B	C	D	E	F	G	H	I	J
<p><b>"T M R P DD SHSM EHEM"</b></p> <ul style="list-style-type: none"> <li>'T': Text file name</li> <li>'M': Display mode,26 types for choice</li> <li>'R': Display speed,5 types for choice</li> <li>'P': Stopping time,10 types for choice</li> <li>'DD': Allow to display date</li> <li>'SHSM': Start display time</li> <li>'EHEM': Ending display time</li> </ul> 									
Tab	title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"12"	Number 18 display						
D	Receiver address	"FF"	PC address						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'W'	Write special function command						
	Sub Command	'G'	Setup text file attribute command						
G	Data Field	Data	"BA24FF06001800"	B: Text file name A: Display mode is automatic mode 2: Display speed is FASTER 4: Stop time is 4 seconds FF: Allow display all the dates 0600: Start display in 6 hour 00 minute 1800: End display in 18 hour00 minute					
H	<ETX>	0x03	"End of TeXt".						
I	Checksum	"03A2"	Efficacy code						
J	<EOT>	0x04	"End Of Transmission".						

### Z、read graphics file attribute

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"FF"	"16"	<STX>	"REF"	<ETX>	"00E2"	<EOT>
A	B	C	D	E	F	G	H	I
Tab	title	data	illustration					
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>					
B	<SOH>	0x01	"Start Of Head".					
C	Sender address	"FF"	Pc address					
D	Receiver address	"16"	Number 22 display					
E	<STX>	0x02	"Start of TeXt".					
F	Command	'R'	read control command					
	Data Field	'E'	Read graphics file attribute command					

		'F'	Graphics file name
G	<ETX>	0x03	"End of TeXt".
H	Checksum	"00E2"	Efficacy code
I	<EOT>	0x04	"End Of Transmission".

system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"16"	"FF"	<STX>	"WQ07,1F"	<ETX>	"01B7"	<EOT>
A		B	C	D	E	F	G	H	I
Tab	title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"16"	Number 22 display						
D	Receiver address	"FF"	Pc address						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'W'	Write control command						
	Data	Dots Id	'Q'	Write graphics file attribute command					
	Field	Height & Width	"07,1F"	Height 07dts, width31 dots					
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"01B7"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

### AA、read device attribute

<NUL><NUL><NUL><NUL><NUL>		<SOH>	"FF"	"18"	<STX>	"RF"	<ETX>	"009D"	<EOT>
A		B	C	D	E	F	G	H	I
tab	Title	data	illustration						
A	<NUL>	0x00	<NUL> <NUL> <NUL> <NUL> <NUL>						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"FF"	Pc address						
D	Receiver address	"18"	Number 24 display						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'R'	read control command						
	Data Field	'F'	Read device attribute command						
G	<ETX>	0x03	"End of TeXt".						
H	Checksum	"009D"	Efficacy code						
I	<EOT>	0x04	"End Of Transmission".						

system will return data as follows:

<NUL><NUL><NUL><NUL><NUL>	<SOH>	"18"	"FF"	<STX>	"WS"	"13F30"	<ETX>	"01BC"	<EOT>
A	B	C	D	E	F	G	H	I	J
<p><b>"S R DD P"</b></p> <p><b>S:</b> Key-press cue voice, "0" is off, "1" is for on.</p> <p><b>R:</b> Display mode for choice, "A" display all text files, "T" display file according the time, "1"-"4" display file according play list.</p> <p><b>DD:</b> The date allowable for display</p> <p><b>P:</b> Password input function, "0" is for off or "1" is for on.</p> <p>The command is a combined command.</p>									
tab	title	data	illustration						
A	<NUL>	0x00	〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉 〈NUL〉						
B	<SOH>	0x01	"Start Of Head".						
C	Sender address	"18"	Number 24 display						
D	Receiver address	"FF"	Pc address						
E	<STX>	0x02	"Start of TeXt".						
F	Command	'W'	Write special function command						
	Sub Command	'S'	Device attribute setup command						
G	Data Field	Data	"13F30"						
			1: Turn of key-press cue voice 3: Display text according the third group play list F3: 11110011, All the other dates for display except Tuesday and Wednesday 0: Password input function is off.						
H	<ETX>	0x03	"End of TeXt".						
I	Checksum	"01BC"	Efficacy code						
J	<EOT>	0x04	"End Of Transmission".						



### BB、Text file example

{ "HELLO", 0xFE, 'A', 0xFD, 'B', "YOU", 0xFD, 'D', "ARE", 0xFE, 'F', "WELCOME" }

- A: Default font is SS7, color is AUTO, show "HELLO" by this format.
- B: The font is changed to SS5
- C: The color is changed to LIGHT RED
- D: The font is SS5, the color is LIGHT RED, show "YOU" by this format.
- E: The color is changed to RED
- F: The font is SS5, the color is RED, and show "ARE" by this format.
- G: The font is changed to ST7
- H: The font is ST7, the color is RED, show "WELCOME" by this format.

{ 0xFE, 'C', 0xFD, 'F', "Today", 0xFE, 'G', 0xFD, 'H', "is", 0xFA, 'E' }

- A: Setup font is WD5
- B: Setup color is YELLOW.
- C: The font is WD5, the color is yellow, show "Today" by this format.

- D: The font is changed to WD7.
- E: The color is changed to AMBER.
- F: The font is WD7, the color is AMBER, show "is" by this format.
- G: The font is WD7, the color is AMBER, show "04/20/2004" by this format.

{0xFE, 'F', "Dots", 0xFE, 'G', 0xFD, 'E', "1", 0xFE, 'E', "is", 0xFC, 'A' }

A            B            C            D            E            F            G            H            I

- A: The font is ST7
- B: The font is ST7, the color is AUTO, show "Dots" by this format.
- C: The font is changed to WD7
- D: The color is changed to GREEN
- E: The font is WD7, the color is GREEN, show "1" by this format.
- F: The font is changed to SS7.
- G: The color is changed to AMBER.
- H: The font is SS7, the color is AMBER, show "is" by this format.
- I: Display graphics file named A.

{"String", 0xFE, 'G', 0xFD, 'E', "1", 0xFE, 'E', "is", 0xFB, 'C' }

A            B            C            D            E            F            G

- A: The font is SS7, the color is AUTO, show "String" by this format.
- B: The font is changed to WD7.
- C: The color is changed to GREEN.
- D: The font is WD7, the color is GREEN, show "1" by this format.
- E: The font is changed to SS7.
- F: The font is SS7, the color is GREEN, show "is" by this format.
- G: The font is SS7, the color is GREEN, show character string named "C".