Next Vision Display





UARTBOARD_NT040-N001ET

Next Vision Display
Brighten The Future

Datasheet

Version	Description	Issue date
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1.1 Storage space: default 16MB, expandable to 32MB

Storage space	
Font space [4]	60 fonts; support GBK (simplified), BIG5 (traditional), SJIS (Japanese), HANGUL (Korean), UNICODE text encoding standards, support users to design their own fonts. It needs to be configured through the FLASH space configuration file
image storage space	Maximum 16MB, save 10 full-screen images by default, 2MB icon space;

1.2 Instruction Set

Support "serial screen instruction set"

Catagory	command	command parameters	illustrate
	0x00	non parameter	View configuration and version information
		0x01	Read back the unique ID number of the serial screen
		0x02	reserve
		0x03	Read LCD or MonitorModel Number
		0x04	read firmware version
		0x05	Read FLASH status
		0x06	Read 485 address
Force a terminal reset	0x01	55 AA 5A A5	Force the terminal toreset immediately
Forcibly send touch coordinates to the host	0x03	55 AA 5A A5 <enable>	In the automatic touch mode, in addition to workingnormally in the automatictouch mode, the terminal isalso forced to send touchcoordinates to the host 0 : do not send 1 : Forced to send
variable display	0x1A	0x01 X Y Mode Fcolor Bcolor Int_Value	Integer variable display
		0x02 X Y Mode Fcolor Bcolor Float_Value	Floating pointvariable display

QR code display	0x21	X Y QR_Pixel Datas	QR code display
Dual display witching	0x26	0x00	The dual display pages are automatically and intelligently switched by the terminal without user intervention
		0x01	Manually switch between dual display pages
		0x02	Switch video memory and synchronize double buffering
		0x03 55 AA 5A A5 <Enable/Disable>	Enable/disable display double buffering
Read icon configuration table	0x27	0x00	Read out the header of the icon information configuration table; users generally do not need to operate, it is automatically set by the FANCYVIEW.EXE development software.
barcode display	0x2A	X Y Datas	EAN13 barcode display
write data storage	0x31	Type Address Datas	Write user parameter
read data storage	0x32	Type Address Length	Read user parameter
Display parameter configuration	0x40	Fcolor+Bcolor	set palette
	0x41	D_X（0x00-0x7F）+D_Y（0x00-0x7F）	Set character display spacing
	0x42	X+Y	Pick color to background color palette
	0x43	X+Y	Pick color to foreground color palette
	0x44	Mode+X+Y+Wide(0x01-0x1F)+Height(0x01-0x1F)	Set cursor display mode
	0x45	color	Set graphics clippingtransparent color
	0x46	TK_Pic	Set interface number
	0x47	ChnDotMatrix	Chinese character dot matrix source selection

text display	0x53	ToPIC+X+Y+String	8×8 dot matrix ASCIIcharacters
	0x54		16×16 dot matrix GBK expansion
	0x55		32×32 dot matrix GB2312 internal code string display
	0x6E		12×12 dot matrix GBK extension codestring display
	0x6F		24×24 dot matrix GB2312 internal code string display
	0x96	ToPIC+Lib_ID+C_mode+C_dots+Fcolor+Bcolor+X0+Y0+CHAR0+…+Xn+Yn+CHARn	Multiple characters aredisplayed cluttered
	0x97	ToPIC+X+Y+DY+Lib_ID+C_Code+C_dots+Fcolor+Bcolor+string	Display a line ofcharacters vertically
	0x98	ToPIC+X+Y+Lib_ID+C_mode+C_dot+Fcolor+Bcolor+String	Arbitrary dot matrix, arbitrary coded stringdisplay
	0x77	Option + bc + (xs, ys) + (xe, ye)	Get fonts in thespecified area
	0x78	Hor_Width + (xs, ys) + (zimo0, zimo1,…)	
set dot	0x50	ToPIC +(x,y)0+(x,y)1+……+(x,y)n	Set multiplepoints for the background color(delete dots)
	0x51		Foreground color set multiple points
	0x74	ToPIC +X+Ys+Ye+Bcolor+(y,Fcolor)0+……+(y,Fcolor)n	Dynamic curve quick pointsetting
	0x72	Address(H:M:L)+Data_word0+……+Data_wordn	direct memory operation
Line Segments and Polygons	0x56	ToPIC +(x,y)0+(x,y)1+……+(x,y)n	Connect thespecified pointswith a foregroundline segment(display polygon)
	0x6D		Connect thespecified pointswith a line segmentof the backgroundcolor (delete the polygon)
	0x75	ToPIC +X+Y＋Height_max+Height0+Height1+……+Heightn	Quickly display consecutive vertical linesegments with the same bottom (spectrum)
	0x76	ToPIC +X+X_dis（0x00-0xFF）+Y0+Y1+……+Yn	Quickly display aline chart(Xi=X+i *X_dis,Yi= Yi)
Arcs and Circles	0x57	ToPIC + (Type,x,y,r)0+(Type,x,y,r)1+……+(Type,x,y,r)n	Invert colors/showmultiple arcs
Rectangle	0x59	ToPIC + (xs,ys,xe,ye)0+(xs,ys,xe,ye)1+……+(xs,ys,xe,ye)n	The foreground color displays multiple rectangles(displayrectangles)
	0x69		Background color to display multiple rectangles (remove rectangles)

regional operations	0x64	ToPIC +X+Y+Color	Fill Specified area
	0x52	none or background color	Clean screen
	0x5A	ToPIC +(xs,ys,xe,ye)0+(xs,ys,xe,ye)1+·····+(xs,ys,xe,ye)n	Clear multiple specified areas
	0x5B		Fill multiple specified area
	0x5C		Invert color for multiplespecified areas
	0x60	ToPIC +(xs,ys,xe,ye,n)0+(xs,ys,xe,ye,n)1+·····+(xs,ys,xe,ye,n)n	Move multiple designated areas to the eft
	0x61		Multiple specified areas move right
	0x62		Move multiple designated areas to the eft
	0x63		Multiple designated areasmove right
	0x70	Picture_ID	Display a full-screen image saved in the terminal
Picture/icon display	0x71	ToPIC+Picture_ID+Xs+Ys+Xe+Ye+X+Y	Cut a part of apicture saved inthe terminal for display (backgrounddisplay)
	0x73	Type + xs + ys + xe + ye	The RGB of thespecified area onthe screen is dimmed or grayed out
	0x9C	ToPIC+Picture_ID+Xs+Ys+Xe+Ye+X+Y	Cut a part of apicture saved inthe terminal for display (thebackground is notdisplayed)
clipboard operation	0x7A	ToPIC+0x00/0x01 +(Xs, Ys) + (Xe, Ye)+<tk_pic>	0x00: copy a rectangle on the screen to the clipboard 0x01: copy a rectangle onthe clipboard to the video memory
	0x7B	0x00	0x00: Close the clipboardchannel
		0x01	0x01: open the clipboard channel
picture save	0xE2	Picture_ID	Save the current display screen to the terminal
icon operation	0x99	ToPIC+(x,y,Icon_ID)0+·····+(x,y,Icon_ID)n/无	User-defined icon display
	0x80	ToPIC+< Icon _ID> <x> <y> + <tk_pic>	Show icons in icon mode
	0x81	ToPIC+< Icon _ID> <x> <y> + <tk_pic>	Transparent icondisplay in icon mode
	0x82	1B 82 <StartX><StartY><DeltX><ICO_No0>...<ICO_Non> BB 44 B4 4B	Display n icons at specified horizontal positions
	0x83	ToPIC+< tk_pic > <Ico_Width> <Ico_Height> <x> <y>	Cut an area in theupper left cornerof tk_pic and display it at screen coordinates(x, y). The width of this rectangular area is Ico_Width, and the height is Ico_Height;
	0xE3	<Write Type> <Icon_ID> <Block Addr> <StartX,StartY> <Icon_Width> <Icon_Height>	Write a certainarea displayed on the screen into NF
	0x9E	<X> <Y> <Icon_ID> <Mode><Angle><Xc><Yc>	Rotate icon

animation support	0x9A	0xFF/Pack_ID				Turn off/on to automatically execute the commandgroup preset by the user
database operation	0xF2	0xF2+0xF2+0x5A+0xA5+Lib_ID				modify font
	0x90	0x55+0xAA+0x5A+0xA5+Address(H:MH:ML:L)+Data				Write data to userdatabase (32MB)
	0x91	Address+Read_Length(H:L)				Read data from userdatabase (32MB)
	0x92 (SD card operation)	0x00	FileName	<Data0…Datan>		Write data to thefile in the SD card, without verification, thefile is opened in "rw" mode
		0x01	FileName	<Data0…Datan>		Write data to thefile in the SD card, and verify thatthe data file isopened in "rw" mode
		0x02	FileName	mode	<Data0…Datan>	Write data to thefile in the SD card, without verification, specify the file opening mode
		0x03	FileName	mode	<Data0…Datan>	Write data to thefile in the SD card, verify the data,and specify thefile opening mode
		0x04	FileName	mode		Open the specified filename in the specified wayfopen
		0x05	Handle	offset	fromwhere	seek file pointer fseek
		0x06	Handle	<Data0…Datan>		Write to the filespecified by 0x01 fwrite
		0x07	Handle	Length		Read Length bytesfrom the specifiedfile handle fread
		0x08	Handle			Get the offset ofthe file pointer relative to thebeginning of thefile
		0x09	Handle			close file
		0x0A	offset	Length	fromwhere	FileName	Read data from thespecified filename
		0x0B	FileName			remove specified file
		0x0C	none			close all files
		0x0D	Handle			get file size
		0x10	Dir Name			create a new directory
		0x11	Dir Name			switch directory
		0x12	Dir Name			Remove directory
		0x13	Type + Dir Name			Scan all folders and files in this directory
		0x1f	none			SD card status
		0x20	FileName			Display full screenimage (FCY file format), without scaling
		0x21	FileName			Display full screenimage for zooming(FCY file format)

		0x22	FileName	(x,y)				Display icon at (X,Y) ((FCY file format)
		0x23	FileName	<xs,ys> <xe,ye> <x,y>				SD card file area cut display
		0x24	FileName	<x,y> <scale>				Display the JPGpicture in the SDcard at the specified location,scale is thereduction factor
		0x30	Run	Loop	Filename			Play sound files from SD card
		0x31	Run	Loop	Loc	No	Filetype	Play sound files inFLASH
		0x32	Volume					Adjust playback volume
		0x40	Type	FileName				save current screen
		0x41	Type	(xs,ys)	(xe, ye)	FileName		save current region
		0x80						Initialize the JPEGstream buffer
		0x81	Data_n					JPEG file
		0x82	X	Y	scale			Display the JPEGfile sent by thehost to the terminal in realtime at thespecified coordinates
touch panel operation	0x72	Touch_X+Touch_Y						After the touchscreen is released,the last data upload (can bedisabled by settingthe 0xE0 command)
	0x73							When the touchscreen is pressed,the data is uploaded (the 0xE0command can be setto only transmitonce)
	0xE4	0x55+0xAA+0x5A+0xA5						touch screen calibration
	0x78	Touch_Code						In the automaticswitching mode ofthe touch interface, the preset keycode isautomatically uploaded.
	0x7C	<TextBox_No>						The host actively obtains the parameters entered in the input box
	0x7D	< Control_No > <para>						Host Settings ControlParameters
Buzzer control	0x79	<Type> <BZ_time>						buzzer control
Backlight control	0x5E	none or 0x55+0xAA+0x5A+0xA5+V_ON+V_OFF+ON_TIME						Turn off thebacklight or set the touch (key) backlight mode
	0x5F	none or PWM_T（0x00-0x3F）						Turn on thebacklight or PWM mode

clock operation	0x9B	0x00				Turn off the clockdisplay
		0xFF+M+TM+Color+X+Y（open）				Turn on the clock display
		0x5A				read Gregorian calendar
		0x5B				read lunar calendar
	0xE7	0x55+0xAA+0x5A+0xA5＋YY:MM:DD:HH:MM:SS				set the clock
parameter configuration	0xE0	Panel_Set+Bode_Set+Para1				Configure userserial port rate, touch screen dataupload format, backlight controlmode
practical algorithm	0xB0	0x01+PY_Code response:0x01+HZ_num+String				Pinyin input methodbased on secondary character library
		0x02 <A,B,C,D>				MAC calculation
		0x03 <Pack0> The array to be sorted, the array data is 2 bytes;				array sort
		0x04				Call calculator widget
		0x05				Invokes theDate/Time Settings Widget
485 highway address setting	0xE6	0x55AA5AA5	Address(2 bytes)			485 address setting
AV operation	0x93	0x55AA5AA5	Video source(1 bytes)			Video input source: 00---RGB（MCU）01---AV1 02---AV2
		0xa55aaa55	Brightness (1 bytes)	Contrast （1 bytes）	Chroma （ 1 bytes ）	Definition （1 bytes） Set brightness/contrast /chroma/sharpness and save them in FLASH
			without parameters			Savebrightness/contras t/chroma/sharpnessin terminal
		0xaa55a55a	Type (1 bytes)	Value （1 bytes）		Type Value 00 00~255 ： brightness 01 00~255 : contrast ratio 02 00~255 ： Chromaticity is only set but not saved

progress bar	0x9F	0x00	<pb_num> <xc, yc> <r_i_x> <r_i_y> <r_o_x> <r_o_y><start_angle> <end_angle> <pb_fc> <pb_bc> <ch_x, ch_y> <ch_fc> <ch_dots> <ch_pos>	Circular/ellipticalprogress bar initializationwithout icons
		0x01	<pb_num> <xs, ys> <xe, ye> <pb_fc> <pb_bc> <ch_x,ch_y> <ch_fc> <ch_dots> <ch_pos>	Rectangularprogress bar initializationwithout icons
		0x02	<pb_num> <ico> <ico_x, ico_y> <xc, yc> <r_i_x> <r_i_y> <r_o_x> <r_o_y><start_angle> <end_angle> <pb_fc> <pb_bc> <ch_x, ch_y> <ch_fc> <ch_dots> <ch_pos>	Circular/ellipticalprogress bar initialization withicons
		0x03	<pb_num> <ico> <ico_x, ico_y> <xs, ys> <xe, ye> <pb_fc> <pb_bc> <ch_x,ch_y> <ch_fc> <ch_dots> <ch_pos>	Initialize arectangularprogress bar with an icon
		0x80	<pb_num> <pos>	The current indication position of thecircular/elliptical progress bar
		0x81	<pb_num> <pos>	The current indication position of therectangular progress bar

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User Interface

Communication/Power Interface

Communication (RS232)/power interface (CN1/CN2 choose one)



CN1



CN2

Pin Name	SN CN1	SN CN2	Pin Type	illustrate
VIN	1, 2	1, 2	P	+5V Power supply input
DIN	3	3	I	uart input
DOUT	4	4	O	uart output [6] [7]
GND	5, 6	5, 6	P	public land

I: INPUT, O: OUTPUT, P: POWER

Note [5]:
1. CN1 adopts 6Pin1.25mm pitch 51146 ultra-thin socket,
CN2 adopts 6Pin0.5mm spacing to insert the FPC seat at the front and then lift it;
2. The signal direction is defined relative to the HMI, "I" means that the signal is transmitted from the user system to the HMI to receive;
3. The pins with the same definition have been connected together inside the HMI.

Note [6]:
1. Serial port mode: full-duplex asynchronous serial port (UART), 8N1 mode (1 start bit, 1 stop bit, 8 data bits, No check digit), baud rate 1200-115200bps, different baud rates can be set by software, and will not be lost when power off.

baud rate	1200	2400	4800	9600	19200	38600	57600	115200（默认）	230400	460800	92160
Bode_Set	0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A

Note [7]:
The high-speed serial port can be realized through the communication port CN1/CN2, that is, regardless of whether CN1 is configured as TTL or RS232 level,te highest baud rate can reach 921600b/s.

SD card interface

SD card interface



Pin name	SN	Pin type	illustrate
SD-CS	1	I/O	
SD-MISO	2	I/O	card data output
SD-CD	3	I/O	test card
SD-MOSI	4	I/O	card data input
SD-CLK	5	I/O	clock
GND	6	P	public land
GND	7	P	public land
3.3V	8	P	SD card power supply

Note: 1. Support external SD card/TF card. By default, it is directly mounted on the intelligent terminal (CN3)

2. SD card is used for mass production to download pictures offline.

LCD interface definition



Pin name	SN	Pin type	illustrate
LED+	1	P	Power for LED backlight(Anode)
LED-	2	P	Power for LED backlight(Cathode)
LED-	3	P	Power for LED backlight(Cathode)
GND	4	P	Ground
3.3V	5	P	Digital Power +3.3V
RSTB	6	I/O	Global reset pin
NC	7-8	I/O	Not connect
SDA	9	I/O	SPI Data signal
SCL	10	I/O	SPI Clock signal
CS	11	I/O	SPI Chip select signal
DCLK	12	I/O	RGB dot clock signal
DE	13	I/O	RGB data enable signal
VS	14	I/O	RGB frame synchronizing signal
HS	15	I/O	RGB line synchronizing signal
DB0-DB17	16-33	RGB data	RGB data signal
GND	34	P	Ground

	TK-IRQ	35	I/O	Touch Interrupt
	TK-DOUT	36	I/O	Touch IIC Data signal
	TK-CLK	37	I/O	Touch IIC Clock signal
	TK-DIN	38	I/O	Touch Reset Signal
	3.3V	39	P	Touch Power supply
	GND	40	P	Ground

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