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Specification Issue 1 26/6/2012

SERIAL TFT MODULE APPLICATION NOTE 1

Compiling and transferring image files via the USB interface.

Date	Description of change
26/6/12	Initial creation

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Overview

The Midas range of serial TFT modules offer the ability to store images which are then selected for display using serial commands. This overcomes the need to transfer large amounts of data over the serial interface. The following application note describes how to prepare image files and transfer them to the display module flash memory drive via the USB interface.

Requirements

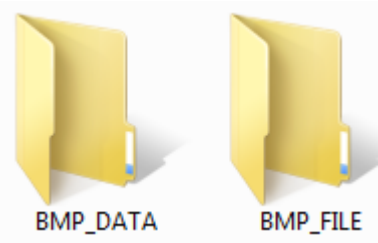
Midas Serial TFT display module.

USB cable type A to mini B.

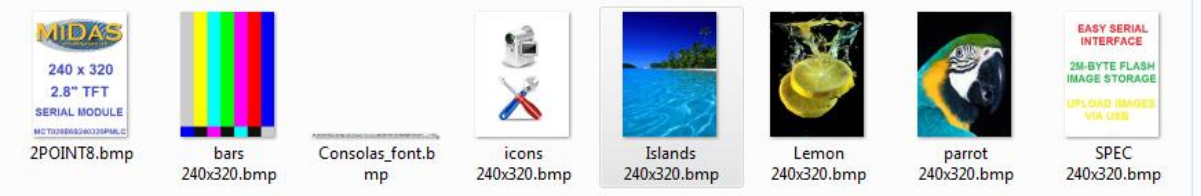
BmpToBin application software (available from Midas).

Procedure

1) Create two directories one called BMP_DATA and the other BMP_FILE .



2) Place all the bitmap files you require for your project in the BMP_FILE directory. Note that the files must be 24-bit bitmap type.



Note that the size of the combined images must not be greater than 2M bytes. This is the sum of x*y*2 for each image. Ie. For the above

(240*320*2)+ (240*320*2)+ (240*320*2)+ (240*320*2)+ (240*320*2)+ (240*320*2)+ (240*320*2)+ (1315*32*2)=1159360

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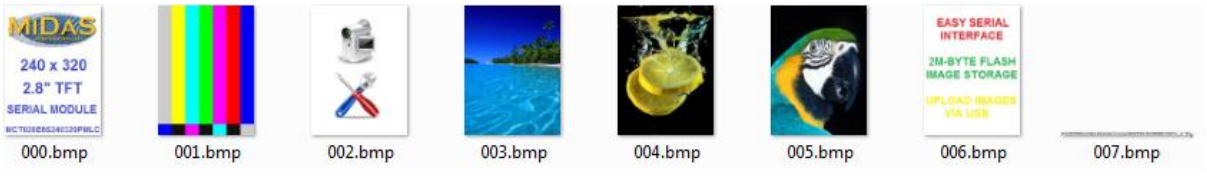
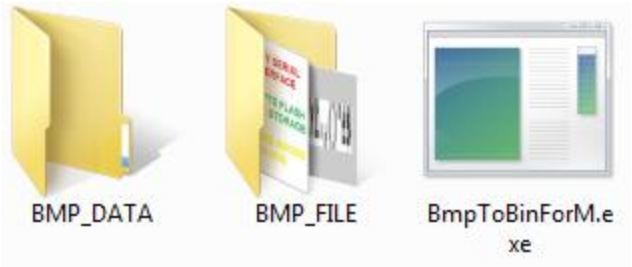
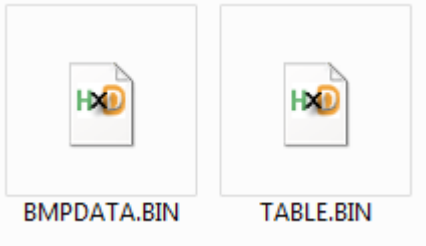
3) Re-name each image numerically in the sequence required bearing in mind that any short animation sequences need to be in sequential order. i.e:



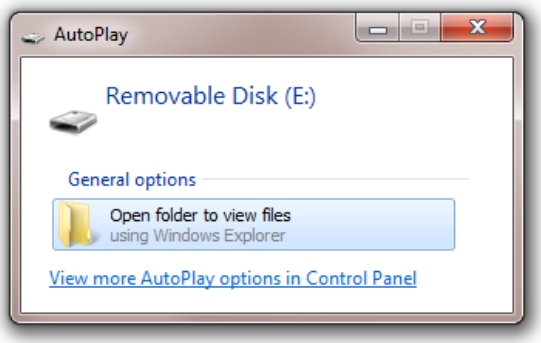
4) Exit this directory and place the BmpToBin application file in the parent directory i.e



5) Run the BmpToBinForM.exe application by double clicking the icon. This will then create two files within the BMP_DATA directory.



6) Plug the TFT module into your PC using a USB A to mini B cable. The module should then appear on your PC as a flash memory device.



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7) Simply Copy the two files BMPDATA.BIN and TABLE.BIN created earlier to the module flash drive. These images are then available to be displayed via serial command. If there are already files on the module flash drive you may want to back them up to your PC. You can now via the serial interface view the images on the display module using commands such as: Browse Pictures, Cut a Picture, Animation, Call on PIC and Run Demo.

Command Summary

Commands are sent to the board via the Serial UART (TTL levels) on J1. The default serial format is 9600,N,8,1. All commands are ASCII characters followed by CR LF (0D0A hex).

Function	Command Format	Example	Busy Low time
Browse Pictures	ALL	"ALL\n"	-
Draw a circle	CIRCLE Xa Ya R C	"CIRCLE 100 100 50 31\n"	4ms
Fill in colour	CLR Xa Ya Xe Ye C	"CLR 0 0 100 100 31\n"	5ms
Clear Screen	CLS C	"CLS 31\n"	28ms
Cut a picture	CUT Pn Xa Ya Xb Yb Xs Ys	"CUT 1 30 30 0 0 100 100 \n"	20ms
Draw a dot	DOT Xa Ya C	"DOT 100 100 31\n"	0.12ms
Draw a frame with line type and chamfer	FRAME Xa Ya Xe Ye Ds Do C	"FRAME 10 10 200 40 2 3 31\n"	4ms
Draw a line	LINE Xa Ya Xe Ye C	"LINE 10 10 50 50 31\n"	0.7ms
Backlight on	LEDON	"LEDON\n"	4us
Backlight off	LEDOFF	"LEDOFF\n"	4us
Animation	MOT Xa Ya Ps Pe Pt	"MOT 0 0 10 14 100\n"	0.15ms
Animation off	MOFF	"MOFF\n"	4us
Call on PIC	PIC Pn Xa Ya	"PIC 1 30 30\n"	125ms
Draw a rectangle	RECT Xa Ya Xe Ye C	"RECT 10 10 100 100 31\n"	5ms
Get screen size *	SIZE	"SIZE\n"	13ms
Display alphabetic string	STR Xa Ya C Str	"STR 0 0 31 Hello World\n"	0.8ms / char
Display alphabetic string with background colour	STR Xa Ya C Cb Str	"STR 0 20 65535 31 Hello World\n"	30us / char
Set baud rate	BAUD b1 b2	"BAUD 9600 9600\n"	20ms
Run demo	DEMO Dt Xa Ya	"DEMO 1000 0 0\n"	20ms
Stop demo	DMOFF	"DMOFF\n"	20ms
Change orientation	TURN Tn	"TURN 90\n"	140ms

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Notes:

Xa Ya	:Start x y coordinates.	Xe Ye	:End x y coordinates.
C	:Colour (16 bits,RGB 565).		
Xb Yb	:Start x y coordinates in flash image.	Xs yS	:Size of flash image block.
Ds Do	:Length of solid line / dotted line.	Str	:ASCII String (8x16).
Pn	:Picture number in flash 000-999.	R	:Radius in pixels.
Ps	:Start Picture number.		
Pe	:End picture number.		
Pt	:Time between pictures (step:100ms).		
*	:Returned on RX “STY Xsize Ysize\n”		
b1 b2	:Baud rate (2400,4800,9600,19200,38400,56000,57600,115200)		
Dt	:Time between pictures (step:100ms).		
Tn	:Rotation angle (0,90)		

Notes:

Anti-static precautions should be observed whilst handling this product.

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