Pixel Display Driver

Interface

Version 1.0

(11-21-2017)

Data Transfer

Data is transferred to the display through a standard 2-wire SPI interface with a single data-in line and a clock line. All data is communicated by sending an entire data packet which includes the color data, meta data, and a sync byte. The end of a packet communication is signaled by a delay in the clock line.

Packet: [data (1536)] [meta (1)] [sync (1)]

data- [xxxx xxxx - xxxx xxxx]

Display data - *each pixel is 3 bytes (RGB) and fills each row from left to right and down through each row.*

meta- [xxRS xxBB]

R - *(reset) set to 1 to reset to the splash screen*

S - *(standby) set to 1 to initiate standby mode*

BB - *(brightness) set brightness value from 0-3*

sync- [0000 0001]

Sync byte to ensure correct data transfer

Timing Requirements

Parameter	**Value**	**Description**
Max Clock Frequency	1.8MHz	The maximum clock frequency that can be used when sending a packet
Min Packet End Delay	8ms	The minimum amount of time required to signal the end of a packet communication
Time to Timeout	~2s	If no packets are sent within this time, the display enters timeout mode
Max Frame Rate	60fps	The maximum frames that can’t be transferred to the display per second

Display Modes

The Pixel Display can be in different modes depending on meta data sent or current state of data transfer.

Reset

(reset) -> [Loading Page]

Standby

(standby) -> [Loading Page] -> (wait 2s) -> [Loading Page] -> (clk line low) -> [Loading Page] -> (wait 2s) -> [Blank]

Timeout

(timeout) -> [Blank]

Data

(data) -> [Display Data]