BinaryColors_Transmitter HDL Module Documentation

BinaryColors_Transmitter module transmits the sequence of bytes, corresponding to each LED's red, green and blue state. Bytes follow the order: global brightness, blue, green, and red. First transmitted three bits of brightness are always ones and the remaining value cannot exceed the max_brightness constant value. Color bytes can only hold values 0 and 255.

Parameters

Parameter	Default value	Type	Description
LED_number	8	Integer	Defines the number of LEDs in the chain
max_brightness	8	Integer	Default value and the maximum value of the global brightness
const_brightness	0	bool	If true, overrides any user global brightness value with the constant one

Signals

Signal	Direction	Width (bits)	Description
CLK	IN	1	Clock signal
NRST	IN	1	Synchronous reset. Active low
TX_COUNTER_MAX	IN	16	How many bytes to transmit. Assigned to LED_number / 16 + 1
TX_COUNTER	OUT	16	Not used
NEXT_BYTE	IN	8	The next byte to transmit. Assigned to 0
GBCR_GB	IN	5	Global brightness value, cannot exceed max_brightness
R	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's red channel on/off state
G	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's green channel on/off state
B	IN	(LED_number-1) / 8) + 1) * 8	Each i-th bit corresponds to the i-th LED's blue channel on/off state