

wishbone_standard_uart.v

AUTHORS

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DATES

2024/02/29

INFORMATION

Brief

AXI Lite 1553 is a core for interfacing with 1553 devices over the AXI lite bus.

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wishbone_standard_uart

```
module wishbone_standard_uart #(
  parameter
  ADDRESS_WIDTH
  =
  32,
  parameter
  BUS_WIDTH
  =
  4,
  parameter
  CLOCK_SPEED
  =
  100000000,
  parameter
```

```

BAUD_RATE
=
115200,
parameter
PARITY_ENA
=
0,
parameter
PARITY_TYPE
=
0,
parameter
STOP_BITS
=
1,
parameter
DATA_BITS
=
8,
parameter
RX_DELAY
=
0,
parameter
RX_BAUD_DELAY
=
0,
parameter
TX_DELAY
=
0,
parameter
TX_BAUD_DELAY
=
0
) ( input clk, input rst, input s_wb_cyc, input s_wb_stb, input s_wb_we, inp

```

Wishbone Standard based uart device.

Parameters

ADDRESS_WIDTH parameter	Width of the address bus in bits.
BUS_WIDTH parameter	Width of the data bus in bytes.
CLOCK_SPEED parameter	This is the aclk frequency in Hz
BAUD_RATE parameter	Serial Baud, this can be any value including non-standard.
PARITY_ENA parameter	Enable Parity for the data in and out.
PARITY_TYPE parameter	Set the parity type, 0 = even, 1 = odd, 2 = mark, 3 = space.
STOP_BITS parameter	Number of stop bits, 0 to crazy non-standard amounts.
DATA_BITS parameter	Number of data bits, 1 to crazy non-standard amounts.
RX_DELAY parameter	Delay in rx data input.
RX_BAUD_DELAY parameter	Delay in rx baud enable. This will delay when we sample a bit (default is midpoint when rx delay is 0).

TX_DELAY parameter	Delay in tx data output. Delays the time to output of the data.
TX_BAUD_DELAY parameter	Delay in tx baud enable. This will delay the time the bit output starts.

Ports

clk	Clock for all devices in the core
rst	Positive reset
s_wb_cyc	Bus Cycle in process
s_wb_stb	Valid data transfer cycle
s_wb_we	Active High write, low read
s_wb_addr	Bus address
s_wb_data_i	Input data
s_wb_sel	Device Select
s_wb_ack	Bus transaction terminated
s_wb_data_o	Output data
s_wb_err	Active high when a bus error is present
irq	Interrupt when data is received
tx	transmit for UART (output to RX)
rx	receive for UART (input from TX)
rts	request to send is a loop with CTS
cts	clear to send is a loop with RTS

up_rreq

```
wire up_rreq
```

uP read bus request

up_rack

```
wire up_rack
```

uP read bus acknowledge

up_raddr

```
wire [ADDRESS_WIDTH-(
BUS_WIDTH
2
)-1:0] up_raddr
```

uP read bus address

up_rdata

```
wire [31:0] up_rdata
```

uP read bus request

up_wreq

```
wire up_wreq
```

uP write bus request

up_wack

```
wire up_wack
```

uP write bus acknowledge

up_waddr

```
wire [ADDRESS_WIDTH-(  
    BUS_WIDTH  
    /  
    2  
)-1:0] up_waddr
```

uP write bus address

up_wdata

```
wire [31:0] up_wdata
```

uP write bus data

INSTANTIATED MODULES

inst_up_wishbone_standard

```
up_wishbone_standard #(  
    ADDRESS_WIDTH(ADDRESS_WIDTH),  
    BUS_WIDTH(BUS_WIDTH)  
) inst_up_wishbone_standard ( .clk(clk), .rst(rst), .s_wb_cyc(s_wb_cyc), .s
```

Module instance of up_wishbone_standard for the Wishbone Classic Standard bus to the uP bus.

inst_up_uart

```

up_uart #(
    ADDRESS_WIDTH(ADDRESS_WIDTH),
    BUS_WIDTH(BUS_WIDTH),
    CLOCK_SPEED(CLOCK_SPEED),
    BAUD_RATE(BAUD_RATE),
    PARITY_ENA(PARITY_ENA),
    PARITY_TYPE(PARITY_TYPE),
    STOP_BITS(STOP_BITS),
    DATA_BITS(DATA_BITS),
    RX_DELAY(RX_DELAY),
    RX_BAUD_DELAY(RX_BAUD_DELAY),
    TX_DELAY(TX_DELAY),
    TX_BAUD_DELAY(TX_BAUD_DELAY)
) inst_up_uart ( .clk(clk), .rstn(~rst), .up_rreq(up_rreq), .up_rack(up_rack)

```

Module instance of up_uart creating a Logic wrapper for uart axis bus cores to interface with uP bus.