

wishbone_classic_1553.v

AUTHORS

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DATES

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INFORMATION

Brief

wishbone classic to uP core for 1553 comms.

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wishbone_standard_1553

```
module wishbone_standard_1553 #(
  parameter
    ADDRESS_WIDTH
    =
    32,
  parameter
    BUS_WIDTH
    =
    4,
  parameter
    CLOCK_SPEED
    =
    100000000,
  parameter
```

```

SAMPLE_RATE
=
20000000,
parameter
BIT_SLICE_OFFSET
=
0,
parameter
INVERT_DATA
=
0,
parameter
SAMPLE_SELECT
=
0
) ( input clk, input rst, input s_wb_cyc, input s_wb_stb, input s_wb_we, input s_wb_addr, input s_wb_data_i, input s_wb_data_o, input s_wb_err, input i_diff, input o_diff, input en_o_diff, input irq

```

Wishbone Stanard based 1553 communications device.

Parameters

ADDRESS_WIDTH parameter	Width of the address bus in bits, max 32 bit.
BUS_WIDTH parameter	Width of the data bus in bytes.
CLOCK_SPEED parameter	This is the aclk frequency in Hz
SAMPLE_RATE parameter	Rate of in which to sample the 1553 bus. Must be 2 MHz or more and less than aclk. This is in Hz. BIT_SLICE_OFFSET- Adjust where the sample is taken from the input.
INVERT_DATA parameter	Invert all 1553 bits coming in and out.
SAMPLE_SELECT parameter	Adjust where in the array of samples to select a bit.

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
i_diff	Input differential signal for 1553 bus
o_diff	Output differential signal for 1553 bus
en_o_diff	Enable output of differential signal (for signal switching on 1553 module)
irq	Interrupt when data is received

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

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

inst_up_1553

```
up_1553 #(
    ADDRESS_WIDTH(ADDRESS_WIDTH),
    BUS_WIDTH(BUS_WIDTH),
    CLOCK_SPEED(CLOCK_SPEED),
    SAMPLE_RATE(SAMPLE_RATE),
    BIT_SLICE_OFFSET(BIT_SLICE_OFFSET),
    INVERT_DATA(INVERT_DATA),
    SAMPLE_SELECT(SAMPLE_SELECT)
) inst_up_1553 ( .clk(aclk), .rstn(arstn), .up_rreq(up_rreq), .up_rack(up_rack)
```

Module instance of up_1553 creating a Logic wrapper for 1553 bus cores to interface with uP bus.