

# wishbone\_classic\_1553.v

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## AUTHORS

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## DATES

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## INFORMATION

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### Brief

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wishbone classic to uP core for 1553 comms.

### License MIT

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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

<b>ADDRESS_WIDTH</b> parameter	Width of the address bus in bits, max 32 bit.
<b>BUS_WIDTH</b> parameter	Width of the data bus in bytes.
<b>CLOCK_SPEED</b> parameter	This is the aclk frequency in Hz
<b>SAMPLE_RATE</b> 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.
<b>INVERT_DATA</b> parameter	Invert all 1553 bits coming in and out.
<b>SAMPLE_SELECT</b> parameter	Adjust where in the array of samples to select a bit.

## Ports

<b>clk</b>	Clock for all devices in the core
<b>rst</b>	Positive reset
<b>s_wb_cyc</b>	Bus Cycle in process
<b>s_wb_stb</b>	Valid data transfer cycle
<b>s_wb_we</b>	Active High write, low read
<b>s_wb_addr</b>	Bus address
<b>s_wb_data_i</b>	Input data
<b>s_wb_sel</b>	Device Select
<b>s_wb_ack</b>	Bus transaction terminated
<b>s_wb_data_o</b>	Output data
<b>s_wb_err</b>	Active high when a bus error is present
<b>i_diff</b>	Input differential signal for 1553 bus
<b>o_diff</b>	Output differential signal for 1553 bus
<b>en_o_diff</b>	Enable output of differential signal (for signal switching on 1553 module)
<b>irq</b>	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

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### inst\_up\_wishbone\_standard

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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(ac1k), .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.