

wishbone_standard_gpio.v

AUTHORS

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DATES

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INFORMATION

Brief

Wishbone standard UART core.

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wishbone_standard_gpio

```
module wishbone_standard_gpio #(
  parameter
    ADDRESS_WIDTH
    =
    32,
  parameter
    BUS_WIDTH
    =
    4,
  parameter
    GPIO_WIDTH
    =
    32,
  parameter
```

```

IRQ_ENABLE
=
) ( input clk, input rst, input s_wb_cyc, input s_wb_stb, input s_wb_we, inp

```

Wishbone Classic Standard based uart device.

Parameters

ADDRESS_WIDTH Width of the address bus in bits, max 32 bit.
parameter

BUS_WIDTH	Width of the data bus in bytes.
<i>parameter</i>	

GPIO_WIDTH parameter	Width of the GPIO for inputs and outputs
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IRQ_ENABLE	Enable interrupt
parameter	

Ports

clk	Clock for all devices in the core
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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
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s_wb_data_i Input data

s_wb_sel	Device Select
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s_wb_ack	Bus transaction terminated
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s_wb_data_o Output data

s_wb_err Active high when a bus error is present

irq Interrupt when data is received

gpio_io_i Input for GPIO

gpio_io_o Output for GPIO

gpio_io_t	Tristate for GPIO
------------------	-------------------

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_gpio

```

up_gpio #(
ADDRESS_WIDTH(ADDRESS_WIDTH),
BUS_WIDTH(BUS_WIDTH),
GPIO_WIDTH(GPIO_WIDTH),
IRQ_ENABLE(IRQ_ENABLE)
) inst_up_gpio ( .clk(clk), .rstn(~rst), .up_rreq(up_rreq), .up_rack(up_rack)

```

Module instance of up_gpio.