

# PibusBcu Functional Description

This hardware component is a PIBUS controller. The tree basic functionalities are :

- arbitration between simultaneous initiator requests.
- selection of the addressed target, by decoding the MSB address bits.
- time-out, when the selected target does not complete the transaction.

The main features are the following :

- The default master mechanism is not supported. \*, The supported PIBUS response codes are PI\_ACK\_RDY, PI\_ACK\_WAT, and PI\_ACK\_ERR.
- The arbitration policy between initiators is round-robin.
- This component uses the mapping table to build the ROM that decodes the address MSB bits and give the target index used to activate the proper p\_sel[i] signal.
- The COUNT\_REQ[i] register counts the total number of transactions for initiator i.
- The COUNT\_WAIT[i] register counts the total number of wait cycles for initiator i.

## Component definition

Available in source:trunk/soclib/desc/soclib/pibus\_bcu.sd

## Usage

PibusBcu has no parameters

```
Uses( 'pibus_bcu' )
```

## PibusBcu CABA Implementation

The caba implementation is in

- source:trunk/soclib/systemc/include/caba/interconnect/pibus\_bcu.h
- source:trunk/soclib/systemc/src/caba/interconnect/pibus\_bcu.cc

## Template parameters

None

## Constructor parameters

```
PiBcu(  
    sc_module_name name,    // Instance Name  
    const soclib::common::MappingTable &mp,    // Mapping Table  
    size_t nb_master,    // Number of initiators  
    size_t nb_slave,    // Number of targets  
    uint32_t time_out);    // Time-out (number of cycles)
```

## Ports

- sc\_in<bool> **p\_resen** : Global system reset
- sc\_in<bool> **p\_clk** : Global system clock
- sc\_out<bool> **\*p\_gnt** : Pointer to the grant ports array
- sc\_in<bool> **\*p\_req** : Pointer to the request ports array
- sc\_out<bool> **\*p\_sel** : Pointer to the select ports array
- sc\_in<sc\_uint<32>> **p\_a** : Pibus address
- sc\_in<bool> **lock** : Pibus lock (used for bursts)
- sc\_in<sc\_uint<2>> **p\_ack** : Pibus response code
- sc\_out<bool> **p\_tout** : Pibus Time-out