

PibusBcu

1) Functional Description

This hardware component is a PIBUS controller. It can be used in conjunction with the [VciPiInitiatorWrapper](#) and the [VciPiInitiatorWrapper](#) to build a system using a PIBus interconnect.

The tree basic functionalities of the BCU 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.

2) Component definition & usage

[source:trunk/soclib/soclib/module/network_component/pibus_bcu/caba/metadata/pibus_bcu.sd?](#)

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

3) CABA Implementation

CABA sources

- interface :
[source:trunk/soclib/soclib/module/network_component/pibus_bcu/caba/source/include/pibus_bcu.h?](#)
- implementation :
[source:trunk/soclib/soclib/module/network_component/pibus_bcu/caba/source/src/pibus_bcu.cpp?](#)

CABA 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)
```

CABA Ports

- sc_in<bool> **p_resetn** : 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

4) TLM-T Implementation

There is no TLM-T implementation for this component.