
SpartanMC

***Configurable Parallel Output for 1
to 18 Bit (port_out)***

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Configurable Parallel Output for 1 to 18 Bit (port_out)

The port output module provides up to 18 output signals. Each output pin can be activated through the corresponding bit in the control register PORT_OUT_OE. If an output is not activated it is set to high-impedance.

1. Module Parameters

Table 1: PORT_OUT module parameters

Parameter	Default Value	Description
BASE_ADR		Start address of the memory mapped peripheral registers. The value is taken as offset to the start address of the peripheral memory space. This parameter is set by jConfig automatically.
PORT_WIDTH	18	Number of output bits.

2. Peripheral Registers

2.1. Output Port Register Description

The output port peripheral provides two 18 bit registers which are mapped to the SpartanMC address space e.g. $0x1A000 + \text{BASE_ADR} + \text{Offset}$.

Table 2: PORT_OUT registers

Offset	Name	Access	Description
0	PIN_OUT_DAT	read/ write	Register for outgoing data.
1	PIN_OUT_OE	read/ write	If set to one the corresponding output pin in PIN_OUT_DAT is enabled. After system reset all PIN_BI_OE bits are initialized with zero.

2.2. PORT_OUT C-Header for Register Description

```
#ifndef PORT_OUT_H_
#define PORT_OUT_H_

#define OU00 (1 << 0)
#define OU01 (1 << 1)
#define OU02 (1 << 2)
#define OU03 (1 << 3)
#define OU04 (1 << 4)
#define OU05 (1 << 5)
#define OU06 (1 << 6)
#define OU07 (1 << 7)
#define OU08 (1 << 8)
#define OU09 (1 << 9)
#define OU10 (1 << 10)
#define OU11 (1 << 11)
#define OU12 (1 << 12)
#define OU13 (1 << 13)
#define OU14 (1 << 14)
#define OU15 (1 << 15)
#define OU16 (1 << 16)
#define OU17 (1 << 17)

typedef struct port_out {
    volatile unsigned int data;    // read/write
    volatile unsigned int oe;     // read/write
} port_out_t;

#endif /* PORT_OUT_H_ */
```