

FreescalE MQX RTOS Example Guide

SPI master example

This document explains the SPI master driver example, what to expect from the example and a brief introduction to the SPI master driver API.

The Example

The example shows the usage of the SPI master driver as a master, which communicates with a SPI slave example (mqx\examples\spi_slave) on another MCU.

Running the example

The connections needed for running this example are:

- Serial cable connected to the UART used, this may vary between targets. And a terminal set to 115200 baud, no parity, 8 bits.
- Connect corresponding SPI signals of two boards.
For example, on SABRE-SDB boards we can connect ECSPI4 signals on SD2 socket.

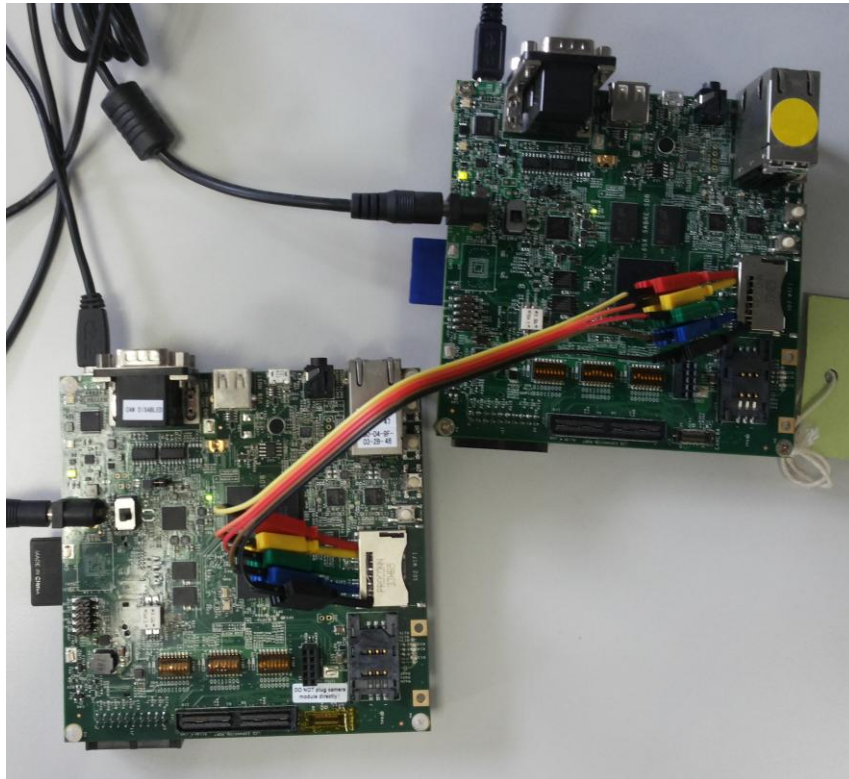


Figure 1

Communications lines

cable	SD socket index	SPI Pin
Black		Ground
Red	2	MISO
Yellow	4	MOSI
Green	8	CLK
Blue	12	SS3

SD index means the sequential SD socket pin position (From 1 to 15) on the board.

After the connections are set, the application can be executed. Make sure that the target BSP has the SPI driver installed, if not, please add the proper macro `BSPCFG_ENABLE_SPIn` and rebuild the libraries and example.

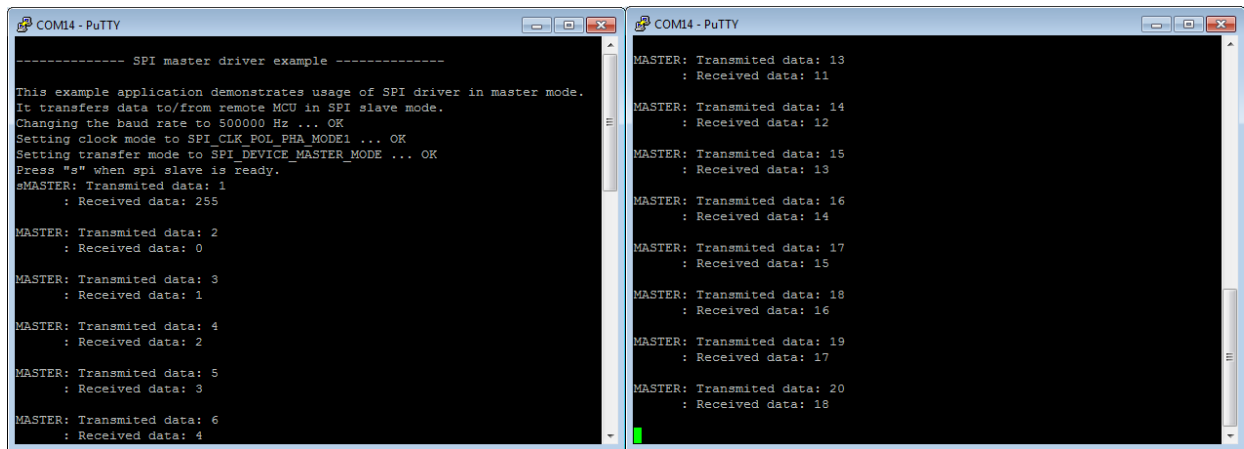
Explaining the example

The driver example will open the SPI driver and will test the different IOCTL commands that are available on the driver, such as:

- `IO_IOCTL_SPI_SET_BAUD`
- `IO_IOCTL_SPI_SET_MODE`
- `IO_IOCTL_SPI_SET_TRANSFER_MODE`

The master example will communicate with slave MCU with command `IO_IOCTL_SPI_READ_WRITE`. By default, the example use chip select signal CS3 to connect the SPI master and slave. It simply sending increments from 1 to 20 every transfer and reading data received from slave. All transferred data are printed on console.

The master example must be run before slave example, or the initialization of master SPI would cause slave example data loss. After SPI slave example on another board is executed, press "s" to start the communication.



The image shows two side-by-side PuTTY terminal windows, both titled 'COM14 - PuTTY'. The left window displays the initial setup and the first few data transfers. The right window continues the sequence with data transfers 13 through 20. Each transfer is shown as a line with 'Transmitted data' and 'Received data' values.

```
----- SPI master driver example -----  
This example application demonstrates usage of SPI driver in master mode.  
It transfers data to/from remote MCU in SPI slave mode.  
Changing the baud rate to 500000 Hz ... OK  
Setting clock mode to SPI_CLK_POL_PHA_MODE1 ... OK  
Setting transfer mode to SPI_DEVICE_MASTER_MODE ... OK  
Press "s" when spi slave is ready.  
sMASTER: Transmitted data: 1  
      : Received data: 255  
  
MASTER: Transmitted data: 2  
      : Received data: 0  
  
MASTER: Transmitted data: 3  
      : Received data: 1  
  
MASTER: Transmitted data: 4  
      : Received data: 2  
  
MASTER: Transmitted data: 5  
      : Received data: 3  
  
MASTER: Transmitted data: 6  
      : Received data: 4  
  
MASTER: Transmitted data: 13  
      : Received data: 11  
  
MASTER: Transmitted data: 14  
      : Received data: 12  
  
MASTER: Transmitted data: 15  
      : Received data: 13  
  
MASTER: Transmitted data: 16  
      : Received data: 14  
  
MASTER: Transmitted data: 17  
      : Received data: 15  
  
MASTER: Transmitted data: 18  
      : Received data: 16  
  
MASTER: Transmitted data: 19  
      : Received data: 17  
  
MASTER: Transmitted data: 20  
      : Received data: 18
```

Figure 2
Example output from SPI master example