18.7   AVR USART MSPIM vs. AVR SPI

The USART in MSPIM mode is fully compatible with the AVR SPI regarding:

• Master mode timing diagram.

• The UCPOLn bit functionality is identical to the SPI CPOL bit.

• The UCPHAn bit functionality is identical to the SPI CPHA bit.

• The UDORDn bit functionality is identical to the SPI DORD bit.

However, since the USART in MSPIM mode reuses the USART resources, the use of the USART in MSPIM mode is somewhat different compared to the SPI. In addition to differences of the control register bits, and that only master operation is supported by the USART in MSPIM mode, the following features differ between the two modules:

• The USART in MSPIM mode includes (double) buffering of the transmitter. The SPI has no buffer.

• The USART in MSPIM mode receiver includes an additional buffer level.

• The SPI WCOL (Write Collision) bit is not included in USART in MSPIM mode.

• The SPI double speed mode (SPI2X) bit is not included. However, the same effect is achieved by setting UBRRn accordingly.

• Interrupt timing is not compatible.

• Pin control differs due to the master only operation of the USART in MSPIM mode.

A comparison of the USART in MSPIM mode and the SPI pins is shown in Table 18-3 on page 210.

Table 18-3.   Comparison of USART in MSPIM mode and SPI pins.

USART_MSPIM	SPI	Comment
TxDn	MOSI	Master Out only
RxDn	MISO	Master In only
XCKn	SCK	(Functionally identical)
(N/A)	$\overline{SS}$	Not supported by USART in MSPIM