

### Character reception

During an USART reception, data shifts in least significant bit first (default configuration) through the RX pin. In this mode, the USART\_RDR register consists of a buffer (RDR) between the internal bus and the receive shift register.

#### Character reception procedure

1. Program the M bit in USART\_CR1 to define the word length.
2. Select the desired baud rate using the baud rate register USART\_BRR
3. Program the number of stop bits in USART\_CR2.
4. Enable the USART by writing the UE bit in USART\_CR1 register to 1.
5. Select DMA enable (DMAR) in USART\_CR3 if multibuffer communication is to take place. Configure the DMA register as explained in multibuffer communication.
6. Set the RE bit USART\_CR1. This enables the receiver which begins searching for a start bit.

For code example refer to the Appendix section [A.15.4: USART receiver configuration code example](#).

When a character is received:

- The RXNE bit is set to indicate that the content of the shift register is transferred to the RDR. In other words, data has been received and can be read (as well as its associated error flags).
- An interrupt is generated if the RXNEIE bit is set.
- The error flags can be set if a frame error, noise or an overrun error has been detected during reception. PE flag can also be set with RXNE.
- In multibuffer, RXNE is set after every byte received and is cleared by the DMA read of the Receive data Register.
- In single buffer mode, clearing the RXNE bit is performed by a software read to the USART\_RDR register. The RXNE flag can also be cleared by writing 1 to the RXFRQ in the USART\_RQR register. The RXNE bit must be cleared before the end of the reception of the next character to avoid an overrun error.

For code example refer to the Appendix section [A.15.5: USART receive byte code example](#).

#### Break character

When a break character is received, the USART handles it as a framing error.

#### Idle character

When an idle frame is detected, there is the same procedure as for a received data character plus an interrupt if the IDLEIE bit is set.