

# FIFO Collection - Quick Reference

### **UVVM Support Component**

The FIFO Collection is a memory buffer that can be used to hold one or more FIFOs. Each FIFO will be allocated a chosen size and ID number. This allows a selectable number of FIFOs to operate individually and be independently accessed.

#### uvvm\_fifo\_init ([buffer\_idx,] buffer\_size\_in\_bits)

**Example**: v\_buffer\_idx := uvvm\_fifo\_init(C\_BUFFER\_SIZE-1); -- returns a buffer index on initialization **Example**: uvvm\_fifo\_init(C\_BUFFER\_IDX\_1, C\_BUFFER\_SIZE-1); -- buffer index is selected

#### uvvm\_fifo\_put ( buffer\_idx, data )

**Example**: uvvm\_fifo\_put(C\_BUFFER\_IDX\_1, v\_rx\_data);

#### uvvm\_fifo\_get ( buffer\_idx, entry\_size\_in\_bits )

**Example**: v\_rx\_data := uvvm\_fifo\_get (C\_BUFFER\_IDX\_1, C\_ENTRY\_SIZE\_1);

#### uvvm\_fifo\_flush ( buffer\_idx )

**Example**: uvvm\_fifo\_flush(C\_BUFFER\_IDX\_1);

#### uvvm\_fifo\_peek ( buffer\_idx, entry\_size\_in\_bits )

**Example**: v rx data := uvvm fifo peek(C BUFFER IDX 1, C ENTRY SIZE 1);

#### uvvm\_fifo\_get\_count(buffer\_idx)

**Example**: v\_num\_elements := uvvm\_fifo\_get\_count(C\_BUFFER\_IDX\_1);

#### uvvm\_fifo\_get\_max\_count ( buffer\_idx )

**Example**: v\_max\_fifo\_elements := uvvm\_fifo\_get\_max\_count(C\_BUFFER\_IDX\_1);

#### uvvm\_fifo\_is\_full ( buffer\_idx )

**Example**: v\_fifo\_is\_full := uvvm\_fifo\_is\_full (C\_BUFFER\_IDX\_1);





## FIFO Collection – Functional parameters

Name	Type	Example(s)	Description
buffer_idx	natural	1	The index of the FIFO that shall be initialized.
buffer_size_in_bits	natural	1024	The size of the FIFO.
data	SLV	v_rx_data	The data that shall be pushed to the FIFO.

# FIFO Collection details

All FIFO functions and procedures are defined in the UVVM Data FIFO package, ti\_data\_fifo\_pkg.vhd

### 1 FIFO Collection details and examples

Method	Description			
uvvm_fifo init()	uvvm_fifo_init([buffer_idx,] buffer_size_in_bits)			
	This UVVM FIFIO call will allocate space in the FIFO buffer. If no buffer_idx is given, the call will return a buffer index for use when addressing the FIFO. Note that 0 will be returned on error. If a buffer_idx is given, the FIFO is initialized with this index.			
	<pre>Example:     uvvm_fifo_init(C_BUFFER_IDX_1, C_BUFFER_SIZE-1); initialize buffer with index C_BUFFER_IDX_1     v_fifo_idx := uvvm_fifo_init(C_BUFFER_SIZE-1);</pre>			
uvvm_fifo_put()	uvvm_fifo_put(buffer_idx, data)			
	This procedure puts data into a FIFO with index buffer_idx. The size of the data is unconstrained, meaning that it can be any size. Pushing data with a size that is larger than the FIFO size results in wrapping, i.e., that when reaching the end that data remaining will overwrite the data that was first written.			
	<pre>Example:     uvvm_fifo_put(C_BUFFER_IDX_1, v_rx_data);</pre>			
uvvm_fifo_get()	uvvm_fifo_get(buffer_idx, entry_size_in_bits)			
	This function returns the data from the FIFO and removes the returned data from the FIFO.  Note that buffer_idx is the index of the FIFO that shall be read, and that entry_size_in_bits is the size of the returned data as SLV.  Attempting to get data from an empty FIFO is allowed but triggers a TB_WARNING and returns garbage data. Attempting to get a larger value than the FIFO size is allowed but triggers a TB_WARNING.			
	<pre>Example:     v_rx_data := uvvm_fifo_get(C_BUFFER_IDX_1, C_ENTRY_SIZE-1);</pre>			



uvvm_fifo_flush()	uvvm_fifo_flush(buffer_idx)			
	This procedure empties the FIFO given by buffer_idx.			
	<pre>Example:     uvvm_fifo_flush(C_BUFFER_IDX_1);</pre>			
uvvm_fifo_peek()	fo_peek() uvvm_fifo_peek(buffer_idx, entry_size_in_bits)			
	This function returns the data from the FIFO without removing it.  Note that, apart from not removing the data, this function will behave in the same way as the uvvm_fifo_get() function.			
	<pre>Example:     v_rx_data := uvvm_fifo_peek(C_BUFFER_IDX_1, C_ENTRY_SIZE-1);</pre>			
uvvm_fifo_get_count()	uvvm_fifo_get_count(buffer_idx)			
	This function returns a natural indicating the number of elements currently occupying the FIFO given by buffer_idx.			
	<pre>Example:     v_num_elements := uvvm_fifo_get_count(C_BUFFER_IDX);</pre>			
uvvm_fifo_get_max_count()	ifo_get_max_count() uvvm_fifo_get_max_count(buffer_idx)			
	This function returns a natural indicating the maximum number of elements that can occupy the FIFO given by buffer_idx.			
	<pre>Example:     v_max_elements := uvvm_fifo_get_max_count(C_BUFFER_IDX);</pre>			
uvvm_fifo_is_full()	uvvm_fifo_is_full(buffer_idx)			
	This function returns a boolean indicating if the FIFO is full or not.			
	<pre>Example:     v_fifo_is_full := uvvm_fifo_is_full(C_BUFFER_IDX);</pre>			



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