# cQueue

1.3

Generated by Doxygen 1.8.13

# Contents

# 1 Deprecated List

**Global q_clean**
q_clean was already used in cQueue lib, alias is made to keep compatibility with earlier versions

**Global q_nbRecs**
q_nbRecs was already used in cQueue lib, alias is made to keep compatibility with earlier versions

**Global q_pull**
q_pull was already used in cQueue lib, alias is made to keep compatibility with earlier versions

# 2 Data Structure Index

## 2.1 Data Structures

Here are the data structures with brief descriptions:

# 3 File Index

## 3.1 File List

Here is a list of all files with brief descriptions:

# 4 Data Structure Documentation

## 4.1 Queue_t Struct Reference

Queue type structure holding all variables to handle the queue.

```
#include <src/cQueue.h>
```

#### Data Fields

- QueueType impl

  *Queue implementation: FIFO LIFO.*
- bool ovw

  *Overwrite previous records when queue is full allowed.*
- uint16_t rec_nb

  *number of records in the queue*
- uint16_t rec_sz

  *Size of a record.*
- uint8_t ∗ queue

  *Queue start pointer (when allocated)*
- uint16_t in

  *number of records pushed into the queue*
- uint16_t out

  *number of records pulled from the queue (only for FIFO)*
- uint16_t cnt

  *number of records not retrieved from the queue*
- uint16_t init

  *set to QUEUE_INITIALIZED after successful init of the queue and reset when killing queue*

### 4.1.1 Detailed Description

Queue type structure holding all variables to handle the queue.

### 4.1.2 Field Documentation

#### 4.1.2.1 cnt

`uint16_t Queue_t::cnt`

number of records not retrieved from the queue

#### 4.1.2.2 impl

`QueueType Queue_t::impl`

Queue implementation: FIFO LIFO.

#### 4.1.2.3 in

`uint16_t Queue_t::in`

number of records pushed into the queue

#### 4.1.2.4 init

`uint16_t Queue_t::init`

set to QUEUE_INITIALIZED after successful init of the queue and reset when killing queue

#### 4.1.2.5 out

`uint16_t Queue_t::out`

number of records pulled from the queue (only for FIFO)

#### 4.1.2.6 ovw

```
bool Queue_t::ovw
```

Overwrite previous records when queue is full allowed.

#### 4.1.2.7 queue

```
uint8_t* Queue_t::queue
```

Queue start pointer (when allocated)

#### 4.1.2.8 rec_nb

```
uint16_t Queue_t::rec_nb
```

number of records in the queue

#### 4.1.2.9 rec_sz

```
uint16_t Queue_t::rec_sz
```

Size of a record.

The documentation for this struct was generated from the following file:

- src/cQueue.h

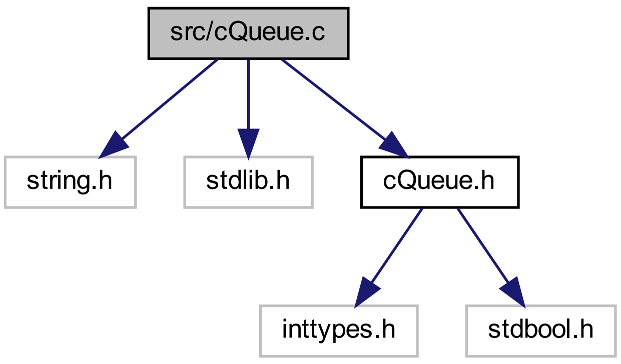
# 5 File Documentation

## 5.1 src/cQueue.c File Reference

Queue handling library (designed in c on STM32)

```
#include <string.h>
#include <stdlib.h>
#include "cQueue.h"
```

Include dependency graph for cQueue.c:



### Macros

- #define INC_IDX(ctr, end, start)

  *Increments buffer index* ***ctr*** *rolling back to* ***start*** *when limit* ***end*** *is reached.*
- #define DEC_IDX(ctr, end, start)

  *Decrements buffer index* ***ctr*** *rolling back to* ***end*** *when limit* ***start*** *is reached.*

### Functions

- void ∗ q_init (Queue_t ∗q, const uint16_t size_rec, const uint16_t nb_recs, const QueueType type, const bool overwrite)

  *Queue initialization.*
- void q_kill (Queue_t ∗q)

  *Queue destructor: release dynamically allocated queue.*
- void q_flush (Queue_t ∗q)

  *Flush queue, restarting from empty queue.*
- bool q_push (Queue_t ∗q, const void ∗record)

  *Push record to queue.*
- bool q_pop (Queue_t ∗q, void ∗record)

  *Pop record from queue.*
- bool q_peek (Queue_t ∗q, void ∗record)

  *Peek record from queue.*
- bool q_drop (Queue_t ∗q)

  *Drop current record from queue.*

### 5.1.1 Detailed Description

Queue handling library (designed in c on STM32)

**Author**

SMFSW

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Queue handling library (designed in c on STM32)

### 5.1.2 Macro Definition Documentation

#### 5.1.2.1 DEC_IDX

```
#define DEC_IDX(
              ctr,
              end,
              start )
```

**Value:**

```
if (ctr > (start))  { ctr--; }       \
                                     else                { ctr = end-1; }
```

Decrements buffer index **ctr** rolling back to **end** when limit **start** is reached.

#### 5.1.2.2 INC_IDX

```
#define INC_IDX(
              ctr,
              end,
              start )
```

**Value:**

```
if (ctr < (end-1))  { ctr++; }       \
                                     else                { ctr = start; }
```

Increments buffer index **ctr** rolling back to **start** when limit **end** is reached.

### 5.1.3 Function Documentation

#### 5.1.3.1 q_drop()

```
bool q_drop (
             Queue_t * q )
```

Drop current record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |

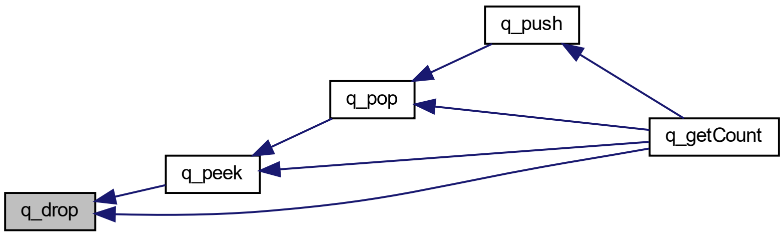
**Returns**

drop status

**Return values**

| | |
|---|---|
| *true* | if successfully dropped from queue |
| *false* | if queue is empty |

Here is the caller graph for this function:



#### 5.1.3.2 q_flush()

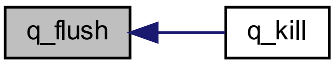
```
void q_flush (
            Queue_t * q )
```

Flush queue, restarting from empty queue.

**Parameters**

| | | |
|---|---|---|
| `in,out` | *q* | - pointer of queue to handle |

Here is the caller graph for this function:



#### 5.1.3.3 q_init()

```
void* q_init (
            Queue_t * q,
            const uint16_t size_rec,
            const uint16_t nb_recs,
            const QueueType type,
            const bool overwrite )
```

Queue initialization.

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |
| in | *size_rec* | - size of a record in the queue |
| in | *nb_recs* | - number of records in the queue |
| in | *type* | - Queue implementation type: FIFO, LIFO |
| in | *overwrite* | - Overwrite previous records when queue is full |

**Returns**

NULL when allocation not possible, Queue tab address when successful

#### 5.1.3.4 q_kill()

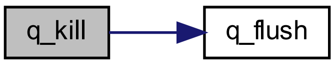
```
void q_kill (
            Queue_t * q )
```

Queue destructor: release dynamically allocated queue.

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |

Here is the call graph for this function:



#### 5.1.3.5 q_peek()

```
bool q_peek (
            Queue_t * q,
            void * record )
```

Peek record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| in | *q* | - pointer of queue to handle |
| in,out | *record* | - pointer to record to be peeked from queue |

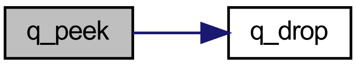
**Returns**

Peek status

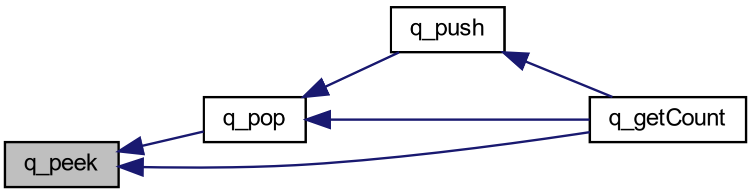
**Return values**

| | |
|---|---|
| *true* | if successfully pulled from queue |
| *false* | if queue is empty |

Here is the call graph for this function:



Here is the caller graph for this function:



#### 5.1.3.6 q_pop()

```
bool q_pop (
            Queue_t * q,
            void * record )
```

Pop record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| `in` | *q* | - pointer of queue to handle |
| `in,out` | *record* | - pointer to record to be popped from queue |

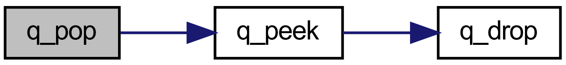
**Returns**

Pop status

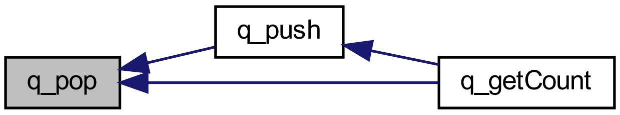
**Return values**

| | |
|---|---|
| *true* | if successfully pulled from queue |
| *false* | if queue is empty |

Here is the call graph for this function:



Here is the caller graph for this function:



#### 5.1.3.7 q_push()

```
bool q_push (
            Queue_t * q,
            const void * record )
```

Push record to queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| `in,out` | *q* | - pointer of queue to handle |
| `in` | *record* | - pointer to record to be pushed into queue |

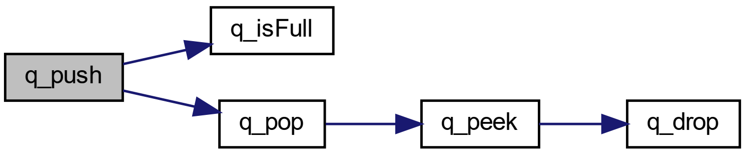
**Returns**

Push status

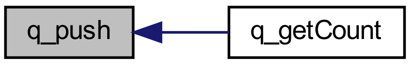
**Return values**

| | |
|---|---|
| *true* | if successfully pushed into queue |
| *false* | if queue is full |

Here is the call graph for this function:



Here is the caller graph for this function:

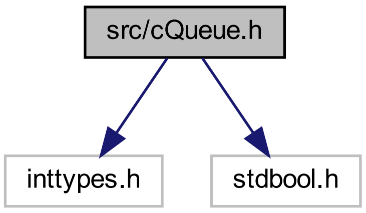


## 5.2 src/cQueue.h File Reference

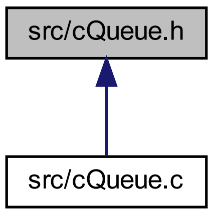
Queue handling library (designed in c on STM32)

```
#include <inttypes.h>
#include <stdbool.h>
```

Include dependency graph for cQueue.h:



This graph shows which files directly or indirectly include this file:



### Data Structures

- struct Queue_t

  *Queue type structure holding all variables to handle the queue.*

### Macros

- #define QUEUE_INITIALIZED 0x5AA5

  *Queue initialized control value.*
- #define q_init_def(q, sz) q_init(q, sz, 20, FIFO, false)

  *Some kind of average default for queue initialization.*
- #define q_pull q_pop
- #define q_nbRecs q_getCount
- #define q_clean q_flush

### Typedefs

- typedef enum enumQueueType QueueType
- typedef struct Queue_t Queue_t

### Enumerations

- enum enumQueueType { FIFO = 0, LIFO = 1 }

  *Queue behavior enumeration (FIFO, LIFO)*

**Functions**

- void ∗ q_init (Queue_t ∗q, const uint16_t size_rec, const uint16_t nb_recs, const QueueType type, const bool overwrite)

  *Queue initialization.*
- void q_kill (Queue_t ∗q)

  *Queue destructor: release dynamically allocated queue.*
- void q_flush (Queue_t ∗q)

  *Flush queue, restarting from empty queue.*
- bool q_isInitialized (const Queue_t ∗q)

  *get initialization state of the queue*
- bool q_isEmpty (const Queue_t ∗q)

  *get emptiness state of the queue*
- bool q_isFull (const Queue_t ∗q)

  *get fullness state of the queue*
- uint16_t q_getCount (const Queue_t ∗q)

  *get number of records in the queue*
- bool q_push (Queue_t ∗q, const void ∗record)

  *Push record to queue.*
- bool q_pop (Queue_t ∗q, void ∗record)

  *Pop record from queue.*
- bool q_peek (Queue_t ∗q, void ∗record)

  *Peek record from queue.*
- bool q_drop (Queue_t ∗q)

  *Drop current record from queue.*

### 5.2.1 Detailed Description

Queue handling library (designed in c on STM32)

**Author**

SMFSW

**Copyright**

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Queue handling library (designed in c on STM32)

### 5.2.2 Macro Definition Documentation

#### 5.2.2.1 q_clean

```
#define q_clean q_flush
```

**Deprecated** q_clean was already used in cQueue lib, alias is made to keep compatibility with earlier versions

#### 5.2.2.2 q_init_def

```
#define q_init_def(
              q,
              sz ) q_init(q, sz, 20, FIFO, false)
```

Some kind of average default for queue initialization.

#### 5.2.2.3 q_nbRecs

```
#define q_nbRecs q_getCount
```

**Deprecated** q_nbRecs was already used in cQueue lib, alias is made to keep compatibility with earlier versions

#### 5.2.2.4 q_pull

```
#define q_pull q_pop
```

**Deprecated** q_pull was already used in cQueue lib, alias is made to keep compatibility with earlier versions

#### 5.2.2.5 QUEUE_INITIALIZED

```
#define QUEUE_INITIALIZED 0x5AA5
```

Queue initialized control value.

### 5.2.3 Typedef Documentation

#### 5.2.3.1 Queue_t

```
typedef struct Queue_t Queue_t
```

#### 5.2.3.2 QueueType

```
typedef enum enumQueueType QueueType
```

### 5.2.4 Enumeration Type Documentation

#### 5.2.4.1 enumQueueType

```
enum enumQueueType
```

Queue behavior enumeration (FIFO, LIFO)

**Enumerator**

| | |
|---|---|
| FIFO | First In First Out behavior. |
| LIFO | Last In First Out behavior. |

### 5.2.5 Function Documentation

#### 5.2.5.1 q_drop()

```
bool q_drop (
            Queue_t * q )
```

Drop current record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |

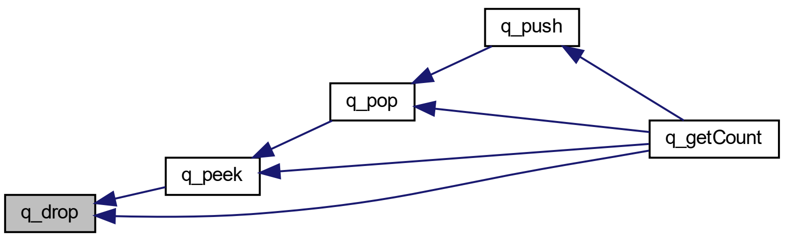
**Returns**

drop status

**Return values**

| | |
|---|---|
| *true* | if successfully dropped from queue |
| *false* | if queue is empty |

Here is the caller graph for this function:



#### 5.2.5.2 q_flush()

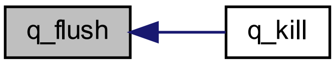
```
void q_flush (
            Queue_t * q )
```

Flush queue, restarting from empty queue.

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |

Here is the caller graph for this function:



#### 5.2.5.3 q_getCount()

```
uint16_t q_getCount (
            const Queue_t * q )  [inline]
```

get number of records in the queue

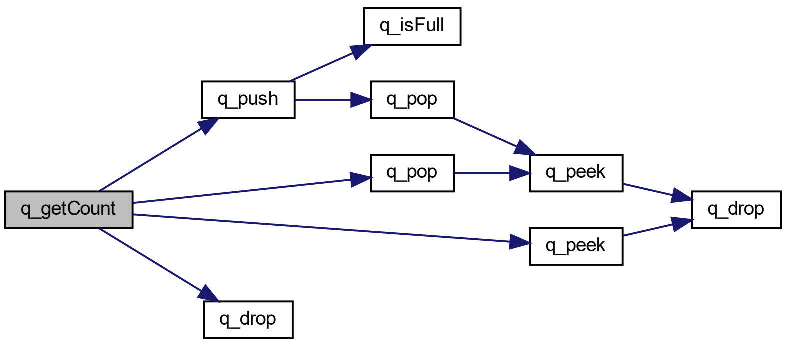
**Parameters**

| | | |
|---|---|---|
| in | *q* | - pointer of queue to handle |

**Returns**

Number of records left in the queue

Here is the call graph for this function:



### 5.2.5.4 q_init()

```
void* q_init (
              Queue_t * q,
              const uint16_t size_rec,
              const uint16_t nb_recs,
              const QueueType type,
              const bool overwrite )
```

Queue initialization.

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |
| in | *size_rec* | - size of a record in the queue |
| in | *nb_recs* | - number of records in the queue |
| in | *type* | - Queue implementation type: FIFO, LIFO |
| in | *overwrite* | - Overwrite previous records when queue is full |

**Returns**

NULL when allocation not possible, Queue tab address when successful

### 5.2.5.5 q_isEmpty()

```
bool q_isEmpty (
              const Queue_t * q )  [inline]
```

get emptiness state of the queue

**Parameters**

| | | |
|---|---|---|
| in | *q* | - pointer of queue to handle |

**Returns**

Queue emptiness status

**Return values**

| | |
|---|---|
| *true* | if queue is empty |
| *false* | is not empty |

#### 5.2.5.6 q_isFull()

```
bool q_isFull (
             const Queue_t * q )  [inline]
```

get fullness state of the queue

**Parameters**

| | | |
|---|---|---|
| in | *q* | - pointer of queue to handle |

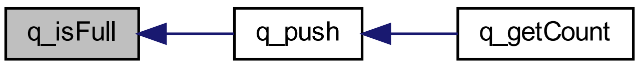
**Returns**

Queue fullness status

**Return values**

| | |
|---|---|
| *true* | if queue is full |
| *false* | is not full |

Here is the caller graph for this function:



#### 5.2.5.7 q_isInitialized()

```
bool q_isInitialized (
            const Queue_t * q )  [inline]
```

get initialization state of the queue

**Parameters**

| | | |
|---|---|---|
| in | *q* | - pointer of queue to handle |

**Returns**

Queue initialization status

**Return values**

| | |
|---|---|
| *true* | if queue is allocated |
| *false* | is queue is not allocated |

#### 5.2.5.8 q_kill()

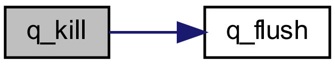
```
void q_kill (
            Queue_t * q )
```

Queue destructor: release dynamically allocated queue.

**Parameters**

| | | |
|---|---|---|
| in,out | *q* | - pointer of queue to handle |

Here is the call graph for this function:



#### 5.2.5.9 q_peek()

```
bool q_peek (
            Queue_t * q,
            void * record )
```

Peek record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| `in` | *q* | - pointer of queue to handle |
| `in,out` | *record* | - pointer to record to be peeked from queue |

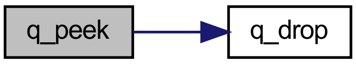
**Returns**

Peek status

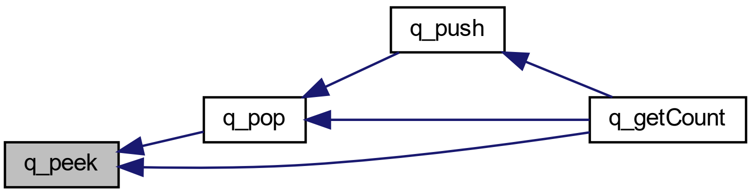
**Return values**

| | |
|---|---|
| *true* | if successfully pulled from queue |
| *false* | if queue is empty |

Here is the call graph for this function:



Here is the caller graph for this function:



### 5.2.5.10 q_pop()

```
bool q_pop (
            Queue_t * q,
            void * record )
```

Pop record from queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| `in` | *q* | - pointer of queue to handle |
| `in,out` | *record* | - pointer to record to be popped from queue |

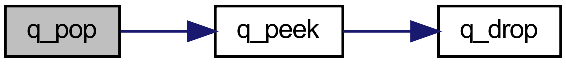
**Returns**

Pop status

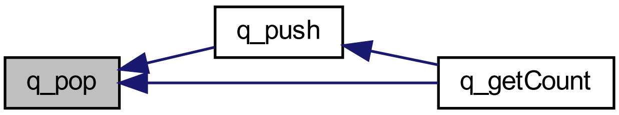
**Return values**

| | |
|---|---|
| *true* | if successfully pulled from queue |
| *false* | if queue is empty |

Here is the call graph for this function:



Here is the caller graph for this function:



#### 5.2.5.11 q_push()

```
bool q_push (
            Queue_t * q,
            const void * record )
```

Push record to queue.

**Warning**

If using q_push, q_pop, q_peek and/or q_drop in both interrupts and main application, you shall disable interrupts in main application when using these functions

**Parameters**

| | | |
|---|---|---|
| `in,out` | *q* | - pointer of queue to handle |
| `in` | *record* | - pointer to record to be pushed into queue |

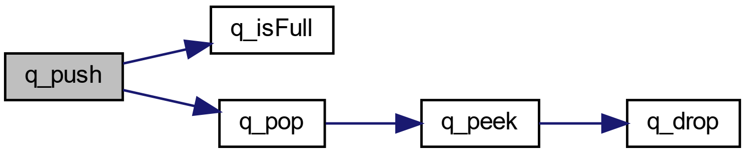
**Returns**

Push status

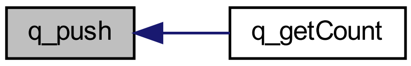
**Return values**

| | |
|---|---|
| *true* | if successfully pushed into queue |
| *false* | if queue is full |

Here is the call graph for this function:



Here is the caller graph for this function:



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