

IOb-Uart

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Chapter 1

File Index

1.1 File List

Here is a list of all documented files with brief descriptions:

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| iob-uart.h | IOb-Uart software drivers | 3 |
|----------------------------|-------------------------------------|---|

Chapter 2

File Documentation

2.1 iob-uart.h File Reference

IOb-Uart software drivers.

```
#include <stdlib.h>
#include <stdarg.h>
#include <stdint.h>
#include "iob_uart_swreg.h"
```

Macros

- #define `UART_PROGNAME` "IOb-UART"
- #define `STX` 2
- #define `ETX` 3
- #define `EOT` 4
- #define `ENQ` 5
- #define `ACK` 6
- #define `FTX` 7
- #define `FRX` 8

Functions

- void `uart_init` (int base_address, uint16_t div)
Initialize UART.
- void `uart_finish` ()
Close transmission.
- void `uart_twait` ()
Wait for TX.
- void `uart_putc` (char c)
Print char.
- void `uart_puts` (const char *s)
Print string.
- void `uart_sendfile` (char *file_name, int file_size, char *mem)
Send file.
- void `uart_rwait` ()
Wait for RX Data.
- char `uart_getc` ()
Get char.
- int `uart_recvfile` (char *file_name, char **mem)
Receive file.

2.1.1 Detailed Description

IOb-Uart software drivers.

Public driver functions for the IOb-Uart peripheral.

2.1.2 Macro Definition Documentation

2.1.2.1 ACK

```
#define ACK 6
```

Acknowledge. Signal reception of incoming message.

2.1.2.2 ENQ

```
#define ENQ 5
```

Enquiry. Signal start of UART connection.

2.1.2.3 EOT

```
#define EOT 4
```

End of transmission. Signal end of UART connection.

2.1.2.4 ETX

```
#define ETX 3
```

End text. Signal end of data sequence to be printed.

2.1.2.5 FRX

```
#define FRX 8
```

File reception. Signal file reception request.

2.1.2.6 FTX

```
#define FTX 7
```

File transfer. Signal file transfer request.

2.1.2.7 STX

```
#define STX 2
```

Start text. Signal start of data sequence to be printed.

2.1.2.8 UART_PROGNAME

```
#define UART_PROGNAME "IOb-UART"
```

Prefix to IOb-Uart specific prints.

2.1.3 Function Documentation

2.1.3.1 uart_finish()

```
void uart_finish ( )
```

Close transmission.

Send end of transmission (EOT) command via UART. Active wait until TX transfer is complete. Use this function to close console program.

Returns

void.

2.1.3.2 uart_getc()

```
char uart_getc ( )
```

Get char.

Active wait and receive char/byte from UART.

Returns

received byte from UART.

2.1.3.3 uart_init()

```
void uart_init (
    int base_address,
    uint16_t div )
```

Initialize UART.

Reset UART, set IOb-Uart base address and set the division factor. The division factor is the number of clock cycles per symbol transferred.

For example, for a case with fclk = 100 Mhz for a baudrate of 115200 we should have $div = (100 * 10^6 / 115200) = (868)$.

Parameters

| | |
|---------------------|---|
| <i>base_address</i> | IOb-Uart instance base address in the system. |
| <i>div</i> | Equal to round (fclk/baudrate). |

Returns

void.

2.1.3.4 uart_putc()

```
void uart_putc (
    char c )
```

Print char.

Send character via UART to be printed by in console program.

Parameters

| | |
|----------|---------------------|
| <i>c</i> | Character to print. |
|----------|---------------------|

Returns

void.

2.1.3.5 uart_puts()

```
void uart_puts (
    const char * s )
```

Print string.

Send string via UART to be printed by in console program.

Parameters

| | |
|----------|--------------------------------------|
| <i>s</i> | Pointer to char array to be printed. |
|----------|--------------------------------------|

Returns

void.

2.1.3.6 uart_rcvfile()

```
int uart_rcvfile (
    char * file_name,
    char ** mem )
```

Receive file.

Request variable size file via UART. Order of commands:

1. Send file receive (FRX) command.
2. Send file_name.
3. Receive file_size (in little endian format).
4. Send ACK command.
5. Receive file.

If memory pointer is not initialized, allocates memory for incoming file.

Parameters

| | |
|------------------|---|
| <i>file_name</i> | Pointer to file name string. |
| <i>mem</i> | Pointer in memory to store incoming file. |

Returns

Size of received file.

2.1.3.7 uart_rxwait()

```
void uart_rxwait ( )
```

Wait for RX Data.

Active wait for RX incoming data.

Returns

void.

2.1.3.8 uart_sendfile()

```
void uart_sendfile (
    char * file_name,
    int file_size,
    char * mem )
```

Send file.

Send variable size file via UART. Order of commands:

1. Send file transmit (FTX) command.
2. Send *file_name*.
3. Send *file_size* (in little endian format).
4. Send file.

Parameters

| | |
|------------------|------------------------------|
| <i>file_name</i> | Pointer to file name string. |
| <i>file_size</i> | Size of file to be sent. |
| <i>mem</i> | Pointer to file. |

Returns

void.

2.1.3.9 uart_txwait()

```
void uart_txwait ( )
```

Wait for TX.

Active wait until TX is ready to process new byte to send.

Returns

void.

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