quectel\_bc66\_drv

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# 2 File Index

bc66\_obj\_t

# 2.1 File List

Here is a list of all files with brief descriptions:

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/Users/jcbecerra/dev/fw/iot/quectel\_bc66\_driver/src/bc66\_drv.h MIT License

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# 3 Data Structure Documentation

# 3.1 bc66\_at\_cmd\_t Struct Reference

BC66 Command struct.

#### **Data Fields**

const char \* cmd

at command sentence

• cmd\_flgs\_t cmd\_flags

flags for command implementation (see

• char \* cmd\_rsp

expected command response

uint32\_t rsp\_timeout

response timeout [ms]

#### 3.1.1 Detailed Description

BC66 Command struct.

#### 3.1.2 Field Documentation

# 3.1.2.1 cmd const char\* cmd

at command sentence

# $\textbf{3.1.2.2} \quad \textbf{cmd\_flags} \quad \texttt{cmd\_flgs\_t} \quad \texttt{cmd\_flags}$

flags for command implementation (see flags enum)

# 3.1.2.3 cmd\_rsp char\* cmd\_rsp

expected command response

```
3.1.2.4 rsp_timeout uint32_t rsp_timeout
```

response timeout [ms]

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

• /Users/jcbecerra/dev/fw/iot/quectel\_bc66\_driver/src/bc66\_drv.c

# 3.2 bc66\_obj\_t Struct Reference

```
#include <bc66_drv.h>
```

#### **Data Fields**

```
const void(* func_init_ptr )()
     uart initialize function pointer
const void(* func_delay )(uint32_t t)
     delay function pointer
int(* func_w_bytes_ptr )(uint8_t *txc, uint8_t size)
     write bytes function pointer
int(* func_r_bytes_ptr )(uint8_t *rxc)
     read one-byte function pointer
struct {
    void(* MDM_PSM_EINT_N )(size_t pin_value)
      delay function pointer
    void(* MDM_PWRKEY_N )(size_t pin_value)
      modem power key function pointer
    void(* MDM_RESET_N )(size_t pin_value)
      modem reset function pointer
    void(* MDM_RI )()
      modem ring interrupt function pointer
 } control_lines
```

#### 3.2.1 Field Documentation

```
3.2.1.1 struct { ... } control_lines
```

```
3.2.1.2 func_delay const void(* func_delay) (uint32_t t)
```

delay function pointer

```
3.2.1.3 func_init_ptr const void(* func_init_ptr) ()
uart initialize function pointer

3.2.1.4 func_r_bytes_ptr int(* func_r_bytes_ptr) (uint8_t *rxc)
read one-byte function pointer

3.2.1.5 func_w_bytes_ptr int(* func_w_bytes_ptr) (uint8_t *txc, uint8_t size)
write bytes function pointer

3.2.1.6 MDM_PSM_EINT_N void(* MDM_PSM_EINT_N) (size_t pin_value)
delay function pointer
```

**3.2.1.7** MDM\_PWRKEY\_N void(\* MDM\_PWRKEY\_N) (size\_t pin\_value) modem power key function pointer

**3.2.1.8** MDM\_RESET\_N void(\* MDM\_RESET\_N) (size\_t pin\_value) modem reset function pointer

**3.2.1.9 MDM\_RI** void(\* MDM\_RI) ()

modem ring interrupt function pointer

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

• /Users/jcbecerra/dev/fw/iot/quectel\_bc66\_driver/src/bc66\_drv.h

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#### 4 File Documentation

# 4.1 /Users/jcbecerra/dev/fw/iot/quectel\_bc66\_driver/src/bc66\_drv.c File Reference

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <stdarg.h>
#include "bc66_drv.h"
```

# **Data Structures**

struct bc66\_at\_cmd\_t
 BC66 Command struct.

#### **Macros**

• #define CMD END LINE "\r\n"

End of line command chars.

• #define RSP OK "\r\nOK\r\n"

Ok response.

#define RSP\_ERROR "\r\nERROR\r\n"

Error response.

• #define RSP END OF LINE "\r\n"

End of line response chars.

• #define RSP\_TIMEOUT "BC66\_TIMEOUT\r\n"

Answer when a timeout is occurred.

#define RSP\_NO\_CMD\_IMPEMENTED "BC66\_NO\_CMD\r\n"

The command is not implemented.

#define MAX\_RSP\_SIZE 64

Max AT response size.

### **Enumerations**

enum cmd\_flgs\_t { TEST = 0x1 , READ = 0x2 , WRITE = 0x4 , EXE = 0x8 }
 Command possibilities indicator flags.

#### **Functions**

void bc66\_init (bc66\_obj\_t \*bc66\_obj)

Function to initialize bc66 object.

void bc66\_deinit (bc66\_obj\_t \*bc66\_obj)

Function to initialize bc66 object.

• char \* bc66\_send\_at\_command (bc66\_cmd\_type\_t cmd\_type, const bc66\_cmd\_list\_t cmd\_lst, const char \*exp\_rsp, const char \*arg\_fmt,...)

Function to send at command sentence to bc66 module through an external function communication.

char \* bc66\_get\_at\_response (char \*rsp)

Function to get any response stored in the RX buffer.

void bc66\_reset (void)

Reset the module when PIN is low.

void bc66\_power\_on ()

Pull down PWRKEY to turn on the module.

void bc66\_power\_off ()

Pull up PWRKEY to turn off the module.

#### **Variables**

• const bc66\_at\_cmd\_t bc66\_cmds\_list[]

Define AT commands list: order must be equal to commands definition enum bc66\_cmd\_list\_t.

#### 4.1.1 Macro Definition Documentation

4.1.1.1 CMD\_END\_LINE #define CMD\_END\_LINE "\r\n"

End of line command chars.

4.1.1.2 MAX\_RSP\_SIZE #define MAX\_RSP\_SIZE 64

Max AT response size.

4.1.1.3 RSP\_END\_OF\_LINE #define RSP\_END\_OF\_LINE "\r\n"

End of line response chars.

4.1.1.4 RSP\_ERROR #define RSP\_ERROR "\r\nERROR\r\n"

Error response.

4.1.1.5 RSP\_NO\_CMD\_IMPEMENTED #define RSP\_NO\_CMD\_IMPEMENTED "BC66\_NO\_CMD\r\n"

The command is not implemented.

4.1.1.6 RSP\_OK #define RSP\_OK "\r\nOK\r\n"

Ok response.

4.1.1.7 RSP\_TIMEOUT #define RSP\_TIMEOUT "BC66\_TIMEOUT\r\n"

Answer when a timeout is occurred.

# 4.1.2 Enumeration Type Documentation

### 4.1.2.1 cmd\_flgs\_t enum cmd\_flgs\_t

Command possibilities indicator flags.

#### Enumerator

TEST	Command has test posibility.
READ	Command has read posibility.
WRITE	Command has write posibility.
EXE	Command has execute posibility.

#### 4.1.3 Function Documentation

```
4.1.3.1 bc66_deinit() void bc66_deinit ( bc66_obj_t * bc66_obj )
```

Function to initialize bc66 object.

#### **Parameters**

bc66\_obj

# **4.1.3.2** bc66\_get\_at\_response() char\* bc66\_get\_at\_response ( char \* rsp )

Function to get any response stored in the RX buffer.

### **Parameters**

```
rsp : response to get
```

#### Returns

Response if found, NULL otherwise

Function to initialize bc66 object.

#### **Parameters**

bc66\_obj

```
4.1.3.4 bc66_power_off() void bc66_power_off ( )
```

Pull up PWRKEY to turn off the module.

```
4.1.3.5 bc66_power_on() void bc66_power_on ( )
```

Pull down PWRKEY to turn on the module.

```
4.1.3.6 bc66_reset() void bc66_reset (
```

Reset the module when PIN is low.

Function to send at command sentence to bc66 module through an external function communication.

#### **Parameters**

cmd_type	: BC66_CMD_TEST, BC66_CMD_READ, BC66_CMD_WRITE or BC66_CMD_EXE type.	
cmd_lst	: command to send (see command list).	
rsp	: pointer to expected response text.	
arg_fmt	: arguments format (like printf function) and must be sended all arguments too.	

# Returns

- · Command aswer text
- OK
- ERROR
- TIMEOUT

#### 4.1.4 Variable Documentation

```
4.1.4.1 bc66_cmds_list const bc66_at_cmd_t bc66_cmds_list[]
```

Define AT commands list: order must be equal to commands definition enum bc66\_cmd\_list\_t.

#### 4.2 /Users/jcbecerra/dev/fw/iot/quectel\_bc66\_driver/src/bc66\_drv.h File Reference

MIT License.

```
#include <stdint.h>
#include <stdbool.h>
#include <stddef.h>
```

#### **Data Structures**

struct bc66 obj t

#### **Enumerations**

```
    enum bc66_cmd_type_t { BC66_CMD_TEST, BC66_CMD_READ, BC66_CMD_WRITE, BC66_CMD_EXE }
    AT command posibility. Erch command can test and/or read and/or write and/or execute. Use with bc66_send_at_command() function.
    enum bc66_cmd_list t {
```

```
bc66_cmd_list_AT, bc66_cmd_list_ATI, bc66_cmd_list_ATE, bc66_cmd_list_CEREG, bc66_cmd_list_CESQ, bc66_cmd_list_CGATT, bc66_cmd_list_CGPADDR, bc66_cmd_list_QCGDEFCONT, bc66_cmd_list_CIMI, bc66_cmd_list_CPIN, bc66_cmd_list_CPSMS, bc66_cmd_list_QNBIOTEVENT, bc66_cmd_list_QMTCFG, bc66_cmd_list_QMTOPEN, bc66_cmd_list_QMTCLOSE, bc66_cmd_list_QMTCONN, bc66_cmd_list_QMTDISC, bc66_cmd_list_QMTSUB, bc66_cmd_list_QMTUNS, bc66_cmd_list_QMTPUB, bc66_cmd_list_size}
```

This is the commands implemented list.

#### **Functions**

```
    void bc66_init (bc66_obj_t *bc66_obj)
```

Function to initialize bc66 object.

char \* bc66\_get\_at\_response (char \*rsp)

Function to get any response stored in the RX buffer.

 char \* bc66\_send\_at\_command (bc66\_cmd\_type\_t cmd\_type, const bc66\_cmd\_list\_t cmd\_lst, const char \*exp\_rsp, const char \*arg\_fmt,...)

Function to send at command sentence to bc66 module through an external function communication.

void bc66 reset (void)

Reset the module when PIN is low.

void bc66\_power\_on ()

Pull down PWRKEY to turn on the module.

void bc66\_power\_off ()

Pull up PWRKEY to turn off the module.

#### 4.2.1 Detailed Description

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Juan Cruz Becerra

BC66 NB-IoT modem driver. ( https://www.quectel.com/product/bc66.htm)

AT Command Syntax The  $\hat{a} \in \alpha AT \hat{a} \in \phi$  or  $\hat{a} \in \alpha AT \hat{a} \in \phi$  prefix must be set at the beginning of each command line. Entering <CR> will terminate a command line. Commands are usually followed by a response that includes  $\hat{a} \in \alpha <$ CR> <LF> <response> <CR> <LF $> \hat{a} \in \phi$ . Throughout this document, only the responses are presented,  $\hat{a} \in \alpha <$ CR> <LF $> \hat{a} \in \phi$  are omitted intentionally.

Types of AT Commands and Responses

- Test Command AT+<x>=?
- Read Command AT+<x>?
- Write Command AT+<x>=<â€|>
- Execution Command AT+<x>

Date

15 de marzo de 2021, 10:06

Author

Eng. Juan Cruz Becerra

Version

1.0.0

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Date

15 de marzo de 2021, 10:06

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Eng. Juan Cruz Becerra

Version

1.0.0

# 4.2.2 Enumeration Type Documentation

# $\textbf{4.2.2.1} \quad \textbf{bc66\_cmd\_list\_t} \quad \texttt{enum} \ \texttt{bc66\_cmd\_list\_t}$

This is the commands implemented list.

#### Enumerator

AT command. Use to sync baud rate.
Display Product Identification Information.
Set Command Echo Mode.
EPS Network Registration Status.
Extended Signal Quality.
PS Attachment or Detachment.
Show PDP Addresses.
Set Default PSD Connection Settings.
Request International Mobile Subscriber Identity.
Enter PIN.
Power Saving Mode Setting.
Enable/Disable NB-IoT Related Event Report.
Configure Optional Parameters of MQTT.
Open a Network for MQTT Client.
Close a Network for MQTT Client.
Connect a Client to MQTT Server.
Disconnect a Client from MQTT Server.
Subscribe to Topics.
Unsubscribe from Topics.
Publish Messages.
Is not a command. Only to know commands quantity.

# 4.2.2.2 bc66\_cmd\_type\_t enum bc66\_cmd\_type\_t

AT command posibility. Erch command can test and/or read and/or write and/or execute. Use with  $bc66\_send\_at\_command()$  function.

#### Enumerator

BC66_CMD_TEST	Send AT TEST command.
---------------	-----------------------

#### Enumerator

BC66_CMD_READ	Send AT READ command.
BC66_CMD_WRITE	Send AT WRITE command.
BC66_CMD_EXE	Send AT TEST command.

#### 4.2.3 Function Documentation

```
4.2.3.1 bc66_get_at_response() char* bc66_get_at_response ( char * rsp )
```

Function to get any response stored in the RX buffer.

#### **Parameters**

```
rsp : response to get
```

#### Returns

Response if found, NULL otherwise

# **4.2.3.2 bc66\_init()** void bc66\_init ( bc66\_obj\_t \* bc66\_obj )

Function to initialize bc66 object.

#### **Parameters**

bc66 obj

# 4.2.3.3 bc66\_power\_off() void bc66\_power\_off ( )

Pull up PWRKEY to turn off the module.

# **4.2.3.4 bc66\_power\_on()** void bc66\_power\_on ( )

Pull down PWRKEY to turn on the module.

```
4.2.3.5 bc66_reset() void bc66_reset (
```

Reset the module when PIN is low.

# 4.2.3.6 bc66\_send\_at\_command() char\* bc66\_send\_at\_command (

```
bc66_cmd_type_t cmd_type,
const bc66_cmd_list_t cmd_lst,
const char * exp_rsp,
const char * arg_fmt,
```

Function to send at command sentence to bc66 module through an external function communication.

# **Parameters**

cmd_type	: BC66_CMD_TEST, BC66_CMD_READ, BC66_CMD_WRITE or BC66_CMD_EXE type.	
cmd_lst	: command to send (see command list).	
rsp	: pointer to expected response text.	
arg_fmt	: arguments format (like printf function) and must be sended all arguments too.	

# Returns

- · Command aswer text
- OK
- ERROR
- TIMEOUT

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