OSIRE® E3731i OSP

V1.1.0

Generated by Doxygen 1.9.5

Chapter 1

OSIRE® E3731i OSP

- OSIRE® E3731i EVK Firmware Version 2.1.0
- OSP - Open Standard Protocol Implementation V1.0.0
- S32 Design Studio for Arm 3.5 Project
- Generic OSP commands
  - osp_reset
  - osp_init_bidir
  - osp_go_active
  - osp_clr_error
  - osp_init_loop
  - osp_go_sleep
  - osp_go_deep_sleep
- RGBi OSP commands
  - osp_osire_set_setup
  - osp_osire_read_setup
  - osp_osire_read_tempstatus
  - osp_osire_set_pwm
  - osp_osire_read_pwm
  - osp_osire_read_otp
  - osp_osire_p4error_bidir
  - osp_osire_clr_error_sr
  - osp_osire_go_sleep_sr
  - osp_osire_go_active_sr
  - osp_osire_go_deep_sleep_sr
  - osp_osire_read_status
  - osp_osire_read_comstatus
  - osp_osire_read_ledstatus
  - osp_osire_read_temp
  - osp_osire_read_otth
  - osp_osire_set_otth
  - osp_osire_set_otth_sr
  - osp_osire_set_setup_sr
  - osp_osire_set_pwm_sr
  - osp_osire_p4error_loop

Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

Chapter 4

Data Structure Documentation

4.1 ComStatus_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t comStatus
  struct {
  uint8_t sio1_state:2
  uint8_t sio2_state:2
  uint8_t reserved:4
  } bit
  } data

- uint16_t address:10

4.1.1 Detailed Description

Definition at line 210 of file osireDevice.h.

4.1.2 Field Documentation

4.1.2.1 address

`uint16_t address`
device address
Definition at line 222 of file osireDevice.h.

4.1.2.2

`struct { ... } bit`

4.1.2.3 comStatus

`uint8_t comStatus`
COM STATUS register
Definition at line 214 of file osireDevice.h.

4.1.2.4

`union { ... } data`

4.1.2.5 reserved

`uint8_t reserved`
reserved
Definition at line 219 of file osireDevice.h.

4.1.2.6 sio1_state

`uint8_t sio1_state`
Communication mode of SIO1
Definition at line 217 of file osireDevice.h.

4.1.2.7 sio2_state

`uint8_t sio2_state`
Communication mode of SIO2
Definition at line 218 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.2 InitRsp_t Struct Reference

`#include <genericDevice.h>`

Data Fields

- union {
  uint8_t rsp [10]
  struct {
  uint8_t temp
  uint8_t status
  uint16_t address:10
  } bit
  } data

4.2.1 Detailed Description

Enumeration OSP Generic Device error codes
Definition at line 109 of file genericDevice.h.

4.2.2 Field Documentation

4.2.2.1 address

`uint16_t address`
device address
Definition at line 118 of file genericDevice.h.

4.2.2.2

```
struct { ...  } bit
```

4.2.2.3

```
union { ...  } data
```

4.2.2.4 rsp

```
uint8_t rsp[10]
```
response buffer for OSP_INIT_BIDIR command
Definition at line 113 of file genericDevice.h.

4.2.2.5 status

```
uint8_t status
```
current status
Definition at line 117 of file genericDevice.h.

4.2.2.6 temp

```
uint8_t temp
```
temperature
Definition at line 116 of file genericDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/genericDevice.h

4.3 LedStatus_t Struct Reference

```
#include <osireDevice.h>
```

Data Fields

- union {
  uint8_t ledStatus
  struct {
  uint8_t blue_short:1
  uint8_t green_short:1
  uint8_t red_short:1
  uint8_t ledStatus_reserved_1:1
  uint8_t blue_open:1
  uint8_t green_open:1
  uint8_t red_open:1
  uint8_t ledStatus_reserved_2:1
  } bit
  } data

- uint16_t address:10

4.3.1 Detailed Description

Definition at line 177 of file osireDevice.h.

4.3.2 Field Documentation

4.3.2.1 address

`uint16_t address`
device address
Definition at line 194 of file osireDevice.h.

4.3.2.2

`struct { ... } bit`

4.3.2.3 blue_open

`uint8_t blue_open`
BLUE channel open fault flag.
Definition at line 188 of file osireDevice.h.

4.3.2.4 blue_short

`uint8_t blue_short`
BLUE channel short fault flag
Definition at line 184 of file osireDevice.h.

4.3.2.5

`union { ... } data`

4.3.2.6 green_open

`uint8_t green_open`
GREEN channel open fault flag.
Definition at line 189 of file osireDevice.h.

4.3.2.7 green_short

`uint8_t green_short`
GREEN channel short fault flag
Definition at line 185 of file osireDevice.h.

4.3.2.8 ledStatus

`uint8_t ledStatus`
LED STATUS register. Cleared after readout.
Definition at line 181 of file osireDevice.h.

4.3.2.9 ledStatus_reserved_1

`uint8_t ledStatus_reserved_1`
reserved
Definition at line 187 of file osireDevice.h.

4.3.2.10 ledStatus_reserved_2

`uint8_t ledStatus_reserved_2`
reserved
Definition at line 191 of file osireDevice.h.

4.3.2.11 red_open

`uint8_t red_open`
RED channel open fault flag.
Definition at line 190 of file osireDevice.h.

4.3.2.12 red_short

`uint8_t red_short`
RED channel short fault flag
Definition at line 186 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.4 osireTemp_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t temp_value
  } data

- uint16_t address:10

4.4.1 Detailed Description

Definition at line 199 of file osireDevice.h.

4.4.2 Field Documentation

4.4.2.1 address

`uint16_t address`
device address
Definition at line 205 of file osireDevice.h.

4.4.2.2

```
union { ... } data
```

4.4.2.3 temp_value

```
uint8_t temp_value
```

TEMP register
Definition at line 203 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.5 ospCmd_t Struct Reference

```
#include <ospCmdBuffer.h>
```

Data Fields

- uint16_t inDeviceAddress
- uint8_t inCmdId
- void * p_inParameter
- uint8_t * p_outCmdBuffer
- uint8_t outCmdBufferLength
- uint8_t outResponseLength
- bool outResponseMsg

4.5.1 Detailed Description

Definition at line 33 of file ospCmdBuffer.h.

4.5.2 Field Documentation

4.5.2.1 inCmdId

```
uint8_t inCmdId
```

INPUT: OSP command identifier
Definition at line 36 of file ospCmdBuffer.h.

4.5.2.2 inDeviceAddress

```
uint16_t inDeviceAddress
```

INPUT: device address
Definition at line 35 of file ospCmdBuffer.h.

4.5.2.3 outCmdBufferLength

```
uint8_t outCmdBufferLength
```

OUTPUT: length of requested OSP sequence
Definition at line 39 of file ospCmdBuffer.h.

4.5.2.4 outResponseLength

`uint8_t outResponseLength`
OUTPUT: length of the expected response
Definition at line 40 of file ospCmdBuffer.h.

4.5.2.5 outResponseMsg

`bool outResponseMsg`
OUTPUT: true if a response id expected
Definition at line 41 of file ospCmdBuffer.h.

4.5.2.6 p_inParameter

`void* p_inParameter`
INPUT: pointer to parameter structure
Definition at line 37 of file ospCmdBuffer.h.

4.5.2.7 p_outCmdBuffer

`uint8_t* p_outCmdBuffer`
OUTPUT: buffer with requested OSP sequence
Definition at line 38 of file ospCmdBuffer.h.
The documentation for this struct was generated from the following file:

- OSP/inc/ospCmdBuffer.h

4.6 ospHeader_t Union Reference

`#include <genericDevice.h>`

Data Fields

- uint8_t buf [4]
- struct {
  uint32_t reserved:8
  uint32_t command:7
  uint32_t psi:3
  uint32_t address:10
  uint32_t preample:4
  } bit

4.6.1 Detailed Description

Definition at line 126 of file genericDevice.h.

4.6.2 Field Documentation

4.6.2.1 address

`uint32_t address`
device address
Definition at line 134 of file genericDevice.h.

4.6.2.2

```
struct { ... } bit
```

4.6.2.3 buf

```
uint8_t buf[4]
```
header buffer
Definition at line 128 of file genericDevice.h.

4.6.2.4 command

```
uint32_t command
```
OSP or OSP_OSIRE command
Definition at line 132 of file genericDevice.h.

4.6.2.5 preample

```
uint32_t preample
```
OSP_PROTOCOL_PREAMPLE 0x0A
Definition at line 135 of file genericDevice.h.

4.6.2.6 psi

```
uint32_t psi
```
payload in bytes
Definition at line 133 of file genericDevice.h.

4.6.2.7 reserved

```
uint32_t reserved
```
reserved
Definition at line 131 of file genericDevice.h.
The documentation for this union was generated from the following file:

- OSP/inc/genericDevice.h

4.7 OtpData_t Struct Reference

```
#include <osireDevice.h>
```

Data Fields

- union {
    uint8_t byte [8]
  } data

- uint16_t address:10

4.7.1 Detailed Description

Definition at line 155 of file osireDevice.h.

4.7.2 Field Documentation

4.7.2.1 address

`uint16_t address`
device address
Definition at line 161 of file osireDevice.h.

4.7.2.2 byte

`uint8_t byte[8]`
buffer for one otp read block
Definition at line 159 of file osireDevice.h.

4.7.2.3

`union { ... } data`
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.8 OtpDataComplete_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t byte [32]
  } data

- uint16_t address:10

4.8.1 Detailed Description

Definition at line 166 of file osireDevice.h.

4.8.2 Field Documentation

4.8.2.1 address

`uint16_t address`
device address
Definition at line 172 of file osireDevice.h.

4.8.2.2 byte

`uint8_t byte[32]`
max. buffer for full otp read memory
Definition at line 170 of file osireDevice.h.

4.8.2.3

`union { ... } data`

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

- OSP/inc/osireDevice.h

4.9 OtthData_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t otthData [3]
  struct {
  uint8_t ot_high_value:8
  uint8_t ot_low_value:8
  uint8_t or_cycle:2
  uint8_t otth_reserved:6
  } bit
  } data

- uint16_t address:10

4.9.1 Detailed Description

Definition at line 263 of file osireDevice.h.

4.9.2 Field Documentation

4.9.2.1 address

`uint16_t address`

device address

Definition at line 276 of file osireDevice.h.

4.9.2.2

`struct { ... } bit`

4.9.2.3

`union { ... } data`

4.9.2.4 or_cycle

`uint8_t or_cycle`

overtemperature detection low pass filter cycle length

Definition at line 272 of file osireDevice.h.

4.9.2.5 ot_high_value

`uint8_t ot_high_value`
overtemperature fault threshold
Definition at line 270 of file osireDevice.h.

4.9.2.6 ot_low_value

`uint8_t ot_low_value`
overtemperature fault release threshold
Definition at line 271 of file osireDevice.h.

4.9.2.7 otth_reserved

`uint8_t otth_reserved`
reserved
Definition at line 273 of file osireDevice.h.

4.9.2.8 otthData

`uint8_t otthData[3]`
STATUS register
Definition at line 267 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.10 PwmData_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t pwmData [6]
  struct {
  uint16_t blue_pwm:15
  uint16_t blue_curr:1
  uint16_t green_pwm:15
  uint16_t green_curr:1
  uint16_t red_pwm:15
  uint16_t red_curr:1
  } bit
  } data

- uint16_t address:10

4.10.1 Detailed Description

Definition at line 135 of file osireDevice.h.

4.10.2 Field Documentation

4.10.2.1 address

`uint16_t address`
device address
Definition at line 150 of file osireDevice.h.

4.10.2.2

`struct { ... } bit`

4.10.2.3 blue_curr

`uint16_t blue_curr`
day or night mode
Definition at line 143 of file osireDevice.h.

4.10.2.4 blue_pwm

`uint16_t blue_pwm`
blue PWM value
Definition at line 142 of file osireDevice.h.

4.10.2.5

`union { ... } data`

4.10.2.6 green_curr

`uint16_t green_curr`
day or night mode
Definition at line 145 of file osireDevice.h.

4.10.2.7 green_pwm

`uint16_t green_pwm`
green PWM value
Definition at line 144 of file osireDevice.h.

4.10.2.8 pwmData

`uint8_t pwmData[6]`
PWM data buffer
Definition at line 139 of file osireDevice.h.

4.10.2.9 red_curr

`uint16_t red_curr`
day or night mode
Definition at line 147 of file osireDevice.h.

4.10.2.10 red_pwm

`uint16_t red_pwm`
red PWM value
Definition at line 146 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.11 SetSetupData_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t setupData
  struct {
  uint8_t uv_fsave:1
  uint8_t ot_fsave:1
  uint8_t los_fsave:1
  uint8_t ce_fsave:1
  uint8_t tempck_sel:1
  uint8_t crc_en:1
  uint8_t com_inv:1
  uint8_t fast_pwm:1
  } bit
  } data

- uint16_t address:10

4.11.1 Detailed Description

Definition at line 113 of file osireDevice.h.

4.11.2 Field Documentation

4.11.2.1 address

`uint16_t address`
device address
Definition at line 130 of file osireDevice.h.

4.11.2.2

`struct { ... } bit`

4.11.2.3 ce_fsave

`uint8_t ce_fsave`
communication error is detected
Definition at line 123 of file osireDevice.h.

4.11.2.4 com_inv

`uint8_t com_inv`
CLK polarity for MCU mode
Definition at line 126 of file osireDevice.h.

4.11.2.5 crc_en

`uint8_t crc_en`
CRC check
Definition at line 125 of file osireDevice.h.

4.11.2.6

`union { ... } data`

4.11.2.7 fast_pwm

`uint8_t fast_pwm`
PWM frequency and dynamic range
Definition at line 127 of file osireDevice.h.

4.11.2.8 los_fsave

`uint8_t los_fsave`
open/short error is detected
Definition at line 122 of file osireDevice.h.

4.11.2.9 ot_fsave

`uint8_t ot_fsave`
overtemperature error is detected
Definition at line 121 of file osireDevice.h.

4.11.2.10 setupData

`uint8_t setupData`
SETUP DATA register
Definition at line 117 of file osireDevice.h.

4.11.2.11 tempck_sel

`uint8_t tempck_sel`
Update rate of the temperature sensor
Definition at line 124 of file osireDevice.h.

4.11.2.12 uv_fsave

`uint8_t uv_fsave`
undervoltage error is detected
Definition at line 120 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.12 Status_t Struct Reference

`#include <osireDevice.h>`

Data Fields

- union {
  uint8_t status
  struct {
  uint8_t uv_flag:1
  uint8_t ot_flag:1
  uint8_t los_flag:1
  uint8_t ce_flag:1
  uint8_t com_mode:1
  uint8_t otpcrc_flag:1
  uint8_t state:2
  } bit
  } data

- uint16_t address:10

4.12.1 Detailed Description

Definition at line 227 of file osireDevice.h.

4.12.2 Field Documentation

4.12.2.1 address

`uint16_t address`
device address
Definition at line 243 of file osireDevice.h.

4.12.2.2

`struct { ... } bit`

4.12.2.3 ce_flag

`uint8_t ce_flag`
communication fault flag
Definition at line 237 of file osireDevice.h.

4.12.2.4 com_mode

`uint8_t com_mode`
communication direction
Definition at line 238 of file osireDevice.h.

4.12.2.5

```
union { ... } data
```

4.12.2.6 los_flag

```
uint8_t los_flag
```
LED fault flag
Definition at line 236 of file osireDevice.h.

4.12.2.7 ot_flag

```
uint8_t ot_flag
```
overtemperature fault flag
Definition at line 235 of file osireDevice.h.

4.12.2.8 otpcrc_flag

```
uint8_t otpcrc_flag
```
OTP error flag
Definition at line 239 of file osireDevice.h.

4.12.2.9 state

```
uint8_t state
```
device state
Definition at line 240 of file osireDevice.h.

4.12.2.10 status

```
uint8_t status
```
STATUS register
Definition at line 231 of file osireDevice.h.

4.12.2.11 uv_flag

```
uint8_t uv_flag
```
undervoltage fault flag
Definition at line 234 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

4.13 TempStatus_t Struct Reference

```
#include <osireDevice.h>
```

Data Fields

- union {
  uint8_t tempStatus [2]
  struct {
  uint8_t Status

```
        uint8_t Temp
      } byte
    } data
```

- uint16_t address:10

4.13.1 Detailed Description

Definition at line 248 of file osireDevice.h.

4.13.2 Field Documentation

4.13.2.1 address

`uint16_t address`
device address
Definition at line 259 of file osireDevice.h.

4.13.2.2

`struct { ... } byte`

4.13.2.3

`union { ... } data`

4.13.2.4 Status

`uint8_t Status`
Definition at line 255 of file osireDevice.h.

4.13.2.5 Temp

`uint8_t Temp`
Definition at line 256 of file osireDevice.h.

4.13.2.6 tempStatus

`uint8_t tempStatus[2]`
STATUS + TEMP registers
Definition at line 252 of file osireDevice.h.
The documentation for this struct was generated from the following file:

- OSP/inc/osireDevice.h

Chapter 5

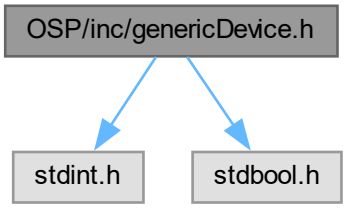
File Documentation

5.1 C:/_-uc-fpu/Documentation/mainpage_osp.md File Reference

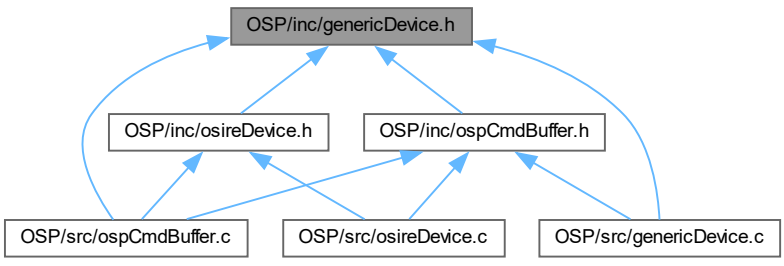
5.2 OSP/inc/genericDevice.h File Reference

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

Include dependency graph for genericDevice.h:



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



Data Structures

- struct InitRsp_t
- union ospHeader_t

Macros

- #define OSP_PROTOCOL_PREAMPLE 0x0A
- #define FIRST_BYTE_PAYLOAD 3
- #define BROADCAST_ADDRESS 0
- #define MAXIMUM_ADDRESS 1002
- #define LENGTH_INIT_MSG 4
- #define LENGTH_INIT_RSP 6
- #define LENGTH_RESET_MSG 4
- #define LENGTH_GO_ACTIVE_MSG 4
- #define LENGTH_GO_SLEEP_MSG 4
- #define LENGTH_GO_DEEP_SLEEP_MSG 4
- #define LENGTH_CLR_ERROR_MSG 4
- #define NO_OSP_RSP false
- #define OSP_RSP !NO_OSP_RSP
- #define LENGTH_NO_OSP_RSP 0

Typedefs

- typedef struct InitRsp_t ospInitRsp_t

Enumerations

- enum OSP_GENERIC_DEVICE_CMDS {
  OSP_RESET = 0x00 , OSP_CLR_ERROR = 0x01 , OSP_INIT_BIDIR = 0x02 , OSP_INIT_LOOP = 0x03 ,
  OSP_GO_SLEEP = 0x04 , OSP_GO_ACTIVE = 0x05 , OSP_GO_DEEP_SLEEP = 0x06 }
- enum OSP_ERROR_CODE {
  OSP_NO_ERROR = 0x00 , OSP_ADDRESS_ERROR , OSP_ERROR_INITIALIZATION , OSP_ERROR_CRC
  ,
  OSP_ERROR_SPI , OSP_ERROR_PARAMETER , OSP_ERROR_NOT_IMPLEMENTED }

Functions

- enum OSP_ERROR_CODE osp_init_bidir (uint16_t deviceAddress, ospInitRsp_t *p_rsp)

  OSP_INIT_BIDIR command Initiates the automatic addressing of the chain and sets the communication direction to bidirectional. The command shall be addressed to the first unit in the chain always with address 0x001. The last unit in the chain (indicated by the EOL mode) returns its address to the master.
- enum OSP_ERROR_CODE osp_reset (uint16_t deviceAddress)

  OSP_RESET command Performs a complete reset of one or all devices. The effect is identical to a power cycle. All register values are set to their default values, all error flags are cleared, the communication mode detection is restarted, LED drivers are turned off, and the address is set to 0x3ff. The device enters the UNINITIALIZED mode.
- enum OSP_ERROR_CODE osp_go_active (uint16_t deviceAddress)

  OSP_GO_ACTIVE command. Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.
- enum OSP_ERROR_CODE osp_init_loop (uint16_t deviceAddress, ospInitRsp_t *p_rsp)

  OSP_INIT_LOOP command Same as INITBIDIR but sets the communication mode to loop-back. The response to the master is sent in the forward direction.
- enum OSP_ERROR_CODE osp_go_sleep (uint16_t deviceAddress)

  OSP_GO_SLEEP command Sends one or all devices into SLEEP state.
- enum OSP_ERROR_CODE osp_go_deep_sleep (uint16_t deviceAddress)

  OSP_GO_DEEP_SLEEP command Sends one or all devices into DEEPSLEEP state.
- enum OSP_ERROR_CODE osp_osire_clr_error (uint16_t deviceAddress)

  OSP_CLEAR_ERROR command This function will clear all error flags, if an error still exists for example short/open the error flag is set again.
- void build_header (uint8_t *p_msg, uint16_t deviceAddress, uint8_t command, uint8_t lengthMsg)

  Internal function for OSP header creation.

5.2.1 Macro Definition Documentation

5.2.1.1 BROADCAST_ADDRESS

```
#define BROADCAST_ADDRESS 0
```
Definition at line 51 of file genericDevice.h.

5.2.1.2 FIRST_BYTE_PAYLOAD

```
#define FIRST_BYTE_PAYLOAD 3
```
Definition at line 47 of file genericDevice.h.

5.2.1.3 LENGTH_CLR_ERROR_MSG

```
#define LENGTH_CLR_ERROR_MSG 4
```
Definition at line 67 of file genericDevice.h.

5.2.1.4 LENGTH_GO_ACTIVE_MSG

```
#define LENGTH_GO_ACTIVE_MSG 4
```
Definition at line 61 of file genericDevice.h.

5.2.1.5 LENGTH_GO_DEEP_SLEEP_MSG

```
#define LENGTH_GO_DEEP_SLEEP_MSG 4
```
Definition at line 65 of file genericDevice.h.

5.2.1.6 LENGTH_GO_SLEEP_MSG

```
#define LENGTH_GO_SLEEP_MSG 4
```
Definition at line 63 of file genericDevice.h.

5.2.1.7 LENGTH_INIT_MSG

```
#define LENGTH_INIT_MSG 4
```
Definition at line 56 of file genericDevice.h.

5.2.1.8 LENGTH_INIT_RSP

```
#define LENGTH_INIT_RSP 6
```
Definition at line 57 of file genericDevice.h.

5.2.1.9 LENGTH_NO_OSP_RSP

```
#define LENGTH_NO_OSP_RSP 0
```
Definition at line 71 of file genericDevice.h.

5.2.1.10 LENGTH_RESET_MSG

```
#define LENGTH_RESET_MSG 4
```
Definition at line 59 of file genericDevice.h.

5.2.1.11 MAXIMUM_ADDRESS

```
#define MAXIMUM_ADDRESS 1002
```
Definition at line 52 of file genericDevice.h.

5.2.1.12 NO_OSP_RSP

```
#define NO_OSP_RSP false
```
Definition at line 69 of file genericDevice.h.

5.2.1.13 OSP_PROTOCOL_PREAMPLE

```
#define OSP_PROTOCOL_PREAMPLE 0x0A
```
Brief OSP Library - Generic Device
Customer API for devices that are communicating with OSP Generic Device Protocol
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf" Defines OSP Generic Device commands
Definition at line 46 of file genericDevice.h.

5.2.1.14 OSP_RSP

```
#define OSP_RSP !NO_OSP_RSP
```
Definition at line 70 of file genericDevice.h.

5.2.2 Typedef Documentation

5.2.2.1 ospInitRsp_t

```
typedef struct InitRsp_t ospInitRsp_t
```
Enumeration OSP Generic Device error codes

5.2.3 Enumeration Type Documentation

5.2.3.1 OSP_ERROR_CODE

```
enum OSP_ERROR_CODE
```
Enumeration OSP Generic Device error codes

Enumerator

OSP_NO_ERROR	no error
OSP_ADDRESS_ERROR	invalid device address
OSP_ERROR_INITIALIZATION	error while initializing
OSP_ERROR_CRC	incorrect CRC of OSP command
OSP_ERROR_SPI	SPI interface error
OSP_ERROR_PARAMETER	invalid parameter error
OSP_ERROR_NOT_IMPLEMENTED	CMD not implemented error

Definition at line 92 of file genericDevice.h.

```
00093 {
00094   OSP_NO_ERROR = 0x00,
00095   OSP_ADDRESS_ERROR,
00096   OSP_ERROR_INITIALIZATION,
00097   OSP_ERROR_CRC,
00099   OSP_ERROR_SPI,
00100   OSP_ERROR_PARAMETER,
00101   OSP_ERROR_NOT_IMPLEMENTED
00102 };
```

5.2.3.2 OSP_GENERIC_DEVICE_CMDS

```
enum OSP_GENERIC_DEVICE_CMDS
```

Enumeration OSP Generic Device commands

Enumerator

OSP_RESET	implemented
OSP_CLR_ERROR	implemented
OSP_INIT_BIDIR	implemented
OSP_INIT_LOOP	implemented
OSP_GO_SLEEP	implemented
OSP_GO_ACTIVE	implemented
OSP_GO_DEEP_SLEEP	implemented

Definition at line 76 of file genericDevice.h.

```
00077 {
00078   OSP_RESET = 0x00,
00079   OSP_CLR_ERROR = 0x01,
00080   OSP_INIT_BIDIR = 0x02,
00081   OSP_INIT_LOOP = 0x03,
00082   OSP_GO_SLEEP = 0x04,
00083   OSP_GO_ACTIVE = 0x05,
00084   OSP_GO_DEEP_SLEEP = 0x06,
00085 };
```

5.2.4 Function Documentation

5.2.4.1 build_header()

```
void build_header (
            uint8_t * p_msg,
            uint16_t deviceAddress,
            uint8_t command,
            uint8_t lengthMsg )
```

Internal function for OSP header creation.

Parameters

p_msg	message buffer to create the OSP header
deviceAddress	0..1000 RGBi device address (0: broadcast)
command	OSP or OSP_OSIRE command
lengthMsg	length of the buffer that is used lengthMsg

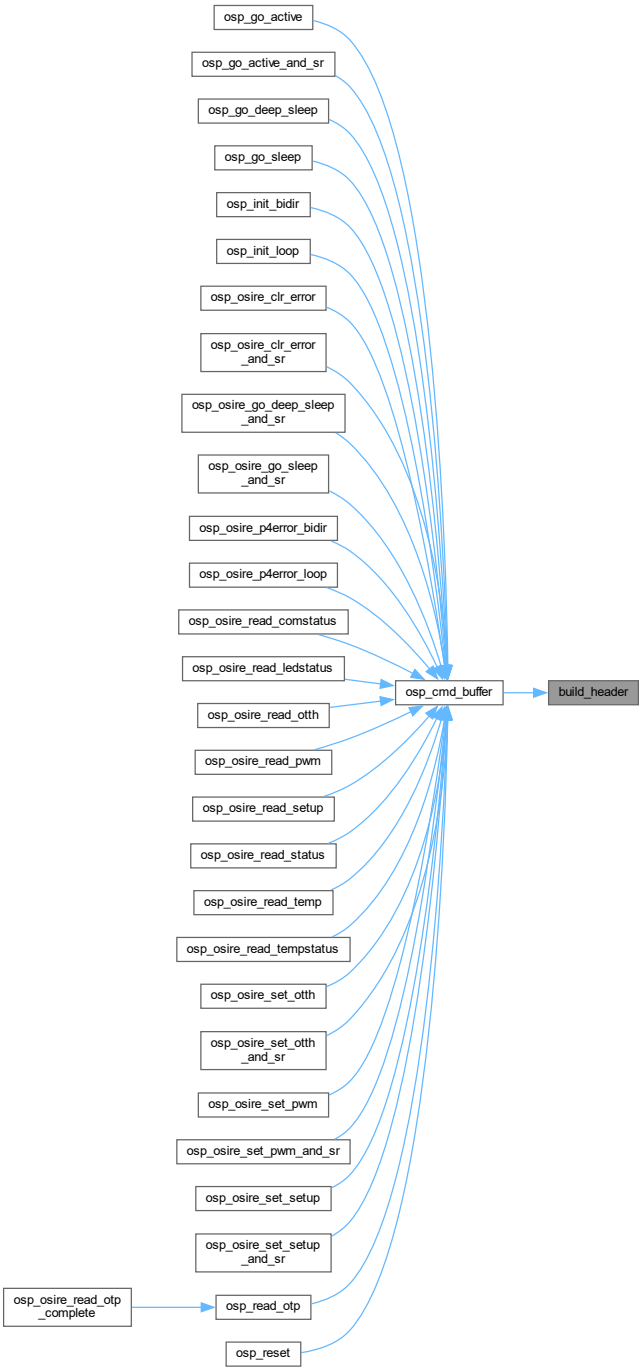
Returns

error communication or command parameter error

Definition at line 269 of file genericDevice.c.

```
00271 {
00272   ospHeader_t hdr;
00273
00274   hdr.bit.preample = OSP_PROTOCOL_PREAMPLE;
00275   hdr.bit.address = deviceAddress;
00276
00277   if (lengthMsg == 12)
00278     {
00279       hdr.bit.psi = 7;
00280     }
00281   else
00282     {
00283       hdr.bit.psi = lengthMsg - 4;
00284     }
00285   hdr.bit.command = command;
00286
00287   for (uint8_t i = 0; i < 3; i++)
00288     {
00289       *p_msg = hdr.buf[3 - i];
00290       p_msg++;
00291     }
00292 }
```

Here is the caller graph for this function:



5.2.4.2 osp_go_active()

```
enum OSP_ERROR_CODE osp_go_active (
            uint16_t deviceAddress )
```

OSP_GO_ACTIVE command. Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.

For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

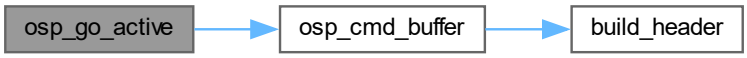
Returns

error communication or command parameter error

Definition at line 150 of file genericDevice.c.

```
00151 {
00152   ospCmdBuffer_t ospCmd;
00153   enum OSP_ERROR_CODE ospErrorCode;
00154   errorSpi_t spiError;
00155
00156   ospCmd.inCmdId = OSP_GO_ACTIVE;
00157   ospCmd.inDeviceAddress = deviceAddress;
00158   ospCmd.p_inParameter = NULL;
00159
00160   ospErrorCode = osp_cmd_buffer (&ospCmd);
00161   if (ospErrorCode != OSP_NO_ERROR)
00162     {
00163       return ospErrorCode;
00164     }
00165
00166   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00167                                           ospCmd.outCmdBufferLength);
00168
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173
00174   return OSP_NO_ERROR;
00175 }
```

Here is the call graph for this function:



5.2.4.3 osp_go_deep_sleep()

```
enum OSP_ERROR_CODE osp_go_deep_sleep (
            uint16_t deviceAddress )
```

OSP_GO_DEEP_SLEEP command Sends one or all devices into DEEPSLEEP state.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

Returns

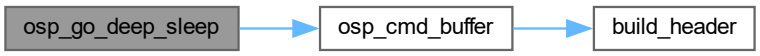
error communication or command parameter error

Definition at line 209 of file genericDevice.c.

```
00210 {
00211   ospCmdBuffer_t ospCmd;
```

```
00212   enum OSP_ERROR_CODE ospErrorCode;
00213   errorSpi_t spiError;
00214
00215   ospCmd.inCmdId = OSP_GO_DEEP_SLEEP;
00216   ospCmd.inDeviceAddress = deviceAddress;
00217   ospCmd.p_inParameter = NULL;
00218
00219   ospErrorCode = osp_cmd_buffer (&ospCmd);
00220   if (ospErrorCode != OSP_NO_ERROR)
00221     {
00222       return ospErrorCode;
00223     }
00224
00225   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00226                                           ospCmd.outCmdBufferLength);
00227
00228   if (spiError != NO_ERROR_SPI)
00229     {
00230       return OSP_ERROR_SPI;
00231     }
00232
00233   return OSP_NO_ERROR;
00234
00235 }
```

Here is the call graph for this function:



5.2.4.4 osp_go_sleep()

```
enum OSP_ERROR_CODE osp_go_sleep (
            uint16_t deviceAddress )
```

OSP_GO_SLEEP command Sends one or all devices into SLEEP state.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

Returns

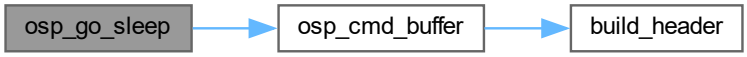
error communication or command parameter error

Definition at line 179 of file genericDevice.c.

```
00180 {
00181   ospCmdBuffer_t ospCmd;
00182   enum OSP_ERROR_CODE ospErrorCode;
00183   errorSpi_t spiError;
00184
00185   ospCmd.inCmdId = OSP_GO_SLEEP;
00186   ospCmd.inDeviceAddress = deviceAddress;
00187   ospCmd.p_inParameter = NULL;
00188
00189   ospErrorCode = osp_cmd_buffer (&ospCmd);
00190   if (ospErrorCode != OSP_NO_ERROR)
00191     {
00192       return ospErrorCode;
00193     }
00194
00195   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00196                                           ospCmd.outCmdBufferLength);
00197
00198   if (spiError != NO_ERROR_SPI)
00199     {
```

```
00200       return OSP_ERROR_SPI;
00201     }
00202
00203   return OSP_NO_ERROR;
00204
00205 }
```

Here is the call graph for this function:



5.2.4.5 osp_init_bidir()

```
enum OSP_ERROR_CODE osp_init_bidir (
            uint16_t deviceAddress,
            ospInitRsp_t * p_rsp )
```

OSP_INIT_BIDIR command Initiates the automatic addressing of the chain and sets the communication direction to bidirectional. The command shall be addressed to the first unit in the chain always with address 0x001. The last unit in the chain (indicated by the EOL mode) returns its address to the master.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	start address of 1st device, shall be 1
p_rsp	response data from device

Returns

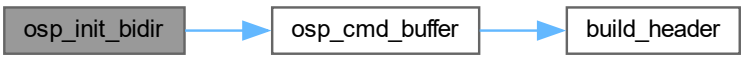
error communication or command parameter error

Definition at line 30 of file genericDevice.c.

```
00031 {
00032   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00033   ospCmdBuffer_t ospCmd;
00034   enum OSP_ERROR_CODE ospErrorCode;
00035   errorSpi_t spiError;
00036
00037   // clear response buffer
00038   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00039
00040   ospCmd.inCmdId = OSP_INIT_BIDIR;
00041   ospCmd.inDeviceAddress = deviceAddress;
00042   ospCmd.p_inParameter = NULL;
00043
00044   ospErrorCode = osp_cmd_buffer (&ospCmd);
00045   if (ospErrorCode != OSP_NO_ERROR)
00046     {
00047       return ospErrorCode;
00048     }
00049
00050   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00051                                                       rspBuffer,
00052                                                       ospCmd.outCmdBufferLength,
00053                                                       ospCmd.outResponseLength);
00054
00055   if (spiError != NO_ERROR_SPI)
00056     {
00057       return OSP_ERROR_SPI;
00058     }
00059
00060   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00061     {
```

```
00062       return OSP_ERROR_CRC;
00063     }
00064
00065   p_rsp->data.bit.temp = rspBuffer[3];
00066   p_rsp->data.bit.status = rspBuffer[4];
00067   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00068       | ((rspBuffer[1] » 2) & 0x3F);
00069
00070   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00071   return OSP_NO_ERROR;
00072 }
```

Here is the call graph for this function:



5.2.4.6 osp_init_loop()

```
enum OSP_ERROR_CODE osp_init_loop (
            uint16_t deviceAddress,
            ospInitRsp_t * p_rsp )
```

OSP_INIT_LOOP command Same as INITBIDIR but sets the communication mode to loop-back. The response to the master is sent in the forward direction.
For further details refer to "OSIRE_E3731i_Start_Up_Guide"

Parameters

deviceAddress	start address of 1st device, shall be 1
p_rsp	response data from device

Returns

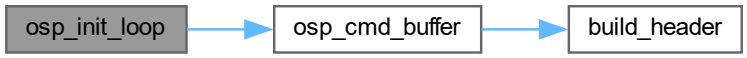
error communication or command parameter error

Definition at line 76 of file genericDevice.c.

```
00077 {
00078   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00079   ospCmdBuffer_t ospCmd;
00080   enum OSP_ERROR_CODE ospErrorCode;
00081   errorSpi_t spiError;
00082
00083   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00084
00085   ospCmd.inCmdId = OSP_INIT_LOOP;
00086   ospCmd.inDeviceAddress = deviceAddress;
00087   ospCmd.p_inParameter = NULL;
00088
00089   ospErrorCode = osp_cmd_buffer (&ospCmd);
00090   if (ospErrorCode != OSP_NO_ERROR)
00091     {
00092       return ospErrorCode;
00093     }
00094
00095   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00096                                                       rspBuffer,
00097                                                       ospCmd.outCmdBufferLength,
00098                                                       ospCmd.outResponseLength);
00099
00100   if (spiError != NO_ERROR_SPI)
00101     {
00102       return OSP_ERROR_SPI;
00103     }
```

```
00104
00105   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00106     {
00107       return OSP_ERROR_CRC;
00108     }
00109
00110   p_rsp->data.bit.temp = rspBuffer[3];
00111   p_rsp->data.bit.status = rspBuffer[4];
00112   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00113       | ((rspBuffer[1] » 2) & 0x3F);
00114
00115   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00116   return OSP_NO_ERROR;
00117 }
```

Here is the call graph for this function:



5.2.4.7 osp_osire_clr_error()

```
enum OSP_ERROR_CODE osp_osire_clr_error (
            uint16_t deviceAddress )
```

OSP_CLEAR_ERROR command This function will clear all error flags, if an error still exists for example short/open the error flag is set again.

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

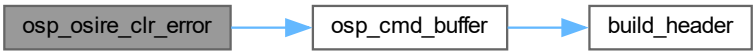
Returns

error communication or command parameter error

Definition at line 239 of file genericDevice.c.

```
00240 {
00241   ospCmdBuffer_t ospCmd;
00242   enum OSP_ERROR_CODE ospErrorCode;
00243   errorSpi_t spiError;
00244
00245   ospCmd.inCmdId = OSP_CLR_ERROR;
00246   ospCmd.inDeviceAddress = deviceAddress;
00247   ospCmd.p_inParameter = NULL;
00248
00249   ospErrorCode = osp_cmd_buffer (&ospCmd);
00250   if (ospErrorCode != OSP_NO_ERROR)
00251     {
00252       return ospErrorCode;
00253     }
00254
00255   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00256                                           ospCmd.outCmdBufferLength);
00257
00258   if (spiError != NO_ERROR_SPI)
00259     {
00260       return OSP_ERROR_SPI;
00261     }
00262
00263   return OSP_NO_ERROR;
00264
00265 }
```

Here is the call graph for this function:



5.2.4.8 osp_reset()

```
enum OSP_ERROR_CODE osp_reset (
            uint16_t deviceAddress )
```

OSP_RESET command Performs a complete reset of one or all devices. The effect is identical to a power cycle. All register values are set to their default values, all error flags are cleared, the communication mode detection is restarted, LED drivers are turned off, and the address is set to 0x3ff. The device enters the UNINITIALIZED mode. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceId	0..1000 RGBi device address (0: broadcast)

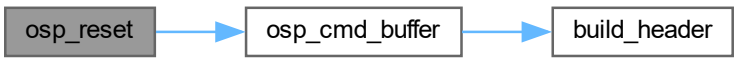
Returns

error communication or command parameter error

Definition at line 121 of file genericDevice.c.

```
00122 {
00123   ospCmdBuffer_t ospCmd;
00124   enum OSP_ERROR_CODE ospErrorCode;
00125   errorSpi_t spiError;
00126
00127   ospCmd.inCmdId = OSP_RESET;
00128   ospCmd.inDeviceAddress = deviceAddress;
00129   ospCmd.p_inParameter = NULL;
00130
00131   ospErrorCode = osp_cmd_buffer (&ospCmd);
00132   if (ospErrorCode != OSP_NO_ERROR)
00133     {
00134       return ospErrorCode;
00135     }
00136
00137   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00138                                           ospCmd.outCmdBufferLength);
00139
00140   if (spiError != NO_ERROR_SPI)
00141     {
00142       return OSP_ERROR_SPI;
00143     }
00144
00145   return OSP_NO_ERROR;
00146 }
```

Here is the call graph for this function:



5.3 genericDevice.h

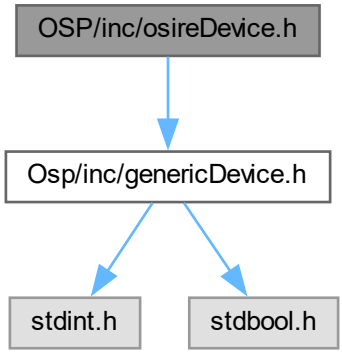
Go to the documentation of this file.

```
00001 /*****************************************************************************
00002 * Copyright 2022 by ams OSRAM AG                                             *
00003 * All rights are reserved.                                                   *
      *
00004 *                                                                            *
00005 * IMPORTANT - PLEASE READ CAREFULLY BEFORE COPYING, INSTALLING OR USING      *
00006 * THE SOFTWARE.                                                              *
00007 *                                                                            *
00008 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS        *
00009 * "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT          *
00010 * LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS          *
00011 * FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT   *
00012 * OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,      *
00013 * SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT           *
00014 * LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,      *
00015 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY      *
00016 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT        *
00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE      *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.       *
00019 *****************************************************************************/
00020 #ifndef OSP_INC_GENERIC_DEVICE_H_
00021 #define OSP_INC_GENERIC_DEVICE_H_
00022
00023 #ifdef __cplusplus
00024 extern "C"
00025   {
00026 #endif
00027
00028 #include <stdint.h>
00029 #include <stdbool.h>
00030
00044 /*****************************************************************************/
00045 /********************** defines **********************************************/
00046 #define OSP_PROTOCOL_PREAMPLE 0x0A
00047 #define FIRST_BYTE_PAYLOAD 3
00048
00049 /*****************************************************************************/
00050 /********************** defines **********************************************/
00051 #define BROADCAST_ADDRESS 0
00052 #define MAXIMUM_ADDRESS 1002
00053
00054 /*****************************************************************************/
00055 /********************** defines **********************************************/
00056 #define LENGTH_INIT_MSG 4
00057 #define LENGTH_INIT_RSP 6
00058 /*****************************************************************************/
00059 #define LENGTH_RESET_MSG 4
00060 /*****************************************************************************/
00061 #define LENGTH_GO_ACTIVE_MSG 4
00062 /*****************************************************************************/
00063 #define LENGTH_GO_SLEEP_MSG 4
00064 /*****************************************************************************/
00065 #define LENGTH_GO_DEEP_SLEEP_MSG 4
00066 /*****************************************************************************/
00067 #define LENGTH_CLR_ERROR_MSG 4
00068 /*****************************************************************************/
00069 #define NO_OSP_RSP false
00070 #define OSP_RSP !NO_OSP_RSP
00071 #define LENGTH_NO_OSP_RSP 0
00072 /*****************************************************************************/
00076 enum OSP_GENERIC_DEVICE_CMDS
00077 {
00078   OSP_RESET = 0x00,
00079   OSP_CLR_ERROR = 0x01,
00080   OSP_INIT_BIDIR = 0x02,
00081   OSP_INIT_LOOP = 0x03,
00082   OSP_GO_SLEEP = 0x04,
00083   OSP_GO_ACTIVE = 0x05,
00084   OSP_GO_DEEP_SLEEP = 0x06,
00085 };
00086
00087 /*****************************************************************************/
00088 /*****************************************************************************/
00092 enum OSP_ERROR_CODE
00093 {
00094   OSP_NO_ERROR = 0x00,
00095   OSP_ADDRESS_ERROR,
00096   OSP_ERROR_INITIALIZATION,
00097   OSP_ERROR_CRC,
00099   OSP_ERROR_SPI,
00100   OSP_ERROR_PARAMETER,
00101   OSP_ERROR_NOT_IMPLEMENTED
00102 };
```

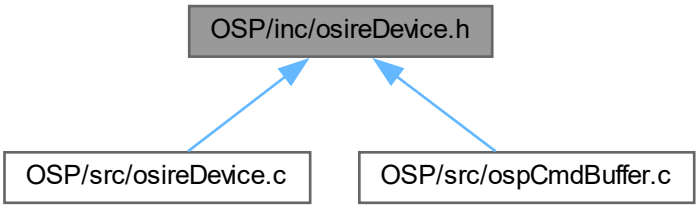
```
00103
00104 /*****************************************************************************/
00105 /*****************************************************************************/
00109 typedef struct InitRsp_t
00110 {
00111   union
00112   {
00113     uint8_t rsp[10];
00114     struct
00115     {
00116       uint8_t temp;
00117       uint8_t status;
00118       uint16_t address :10;
00119     } bit;
00120   } data;
00121   uint16_t address :10;
00122 } ospInitRsp_t;
00123
00124 /*****************************************************************************/
00125 /*****************************************************************************/
00126 typedef union
00127 {
00128   uint8_t buf[4];
00129   struct
00130   {
00131     uint32_t reserved :8;
00132     uint32_t command :7;
00133     uint32_t psi :3;
00134     uint32_t address :10;
00135     uint32_t preample :4;
00136   } bit;
00137 } ospHeader_t;
00138
00154 enum OSP_ERROR_CODE osp_init_bidir (uint16_t deviceAddress, ospInitRsp_t *p_rsp);
00155
00170 enum OSP_ERROR_CODE osp_reset (uint16_t deviceAddress);
00171
00185 enum OSP_ERROR_CODE osp_go_active (uint16_t deviceAddress);
00186
00199 enum OSP_ERROR_CODE osp_init_loop (uint16_t deviceAddress, ospInitRsp_t *p_rsp);
00200
00211 enum OSP_ERROR_CODE osp_go_sleep (uint16_t deviceAddress);
00212
00223 enum OSP_ERROR_CODE osp_go_deep_sleep (uint16_t deviceAddress);
00224
00234 enum OSP_ERROR_CODE osp_osire_clr_error (uint16_t deviceAddress);
00235
00247 void build_header (uint8_t *p_msg, uint16_t deviceAddress, uint8_t command,
00248                    uint8_t lengthMsg);
00249
00250 #ifdef __cplusplus
00251 }
00252 #endif
00253
00254 #endif  // OSP_INC_GENERIC_DEVICE_H_
```

5.4 OSP/inc/osireDevice.h File Reference

`#include <Osp/inc/genericDevice.h>`
Include dependency graph for osireDevice.h:



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



Data Structures

- struct SetSetupData_t
- struct PwmData_t
- struct OtpData_t
- struct OtpDataComplete_t
- struct LedStatus_t
- struct osireTemp_t
- struct ComStatus_t
- struct Status_t
- struct TempStatus_t
- struct OtthData_t

Macros

- #define LENGTH_SET_SETUP_MSG 5

- #define LENGTH_SET_PWM_MSG 10
- #define LENGTH_SET_OTTH_MSG 7
- #define LENGTH_READ_PWM_MSG 4
- #define LENGTH_READ_PWM_RSP 10
- #define LENGTH_READ_OTP_MSG 5
- #define LENGTH_READ_OTP_RSP 12
- #define LENGTH_READ_SETUP_MSG 4
- #define LENGTH_READ_SETUP_RSP 5
- #define LENGTH_READ_TEMPSTATUS_MSG 4
- #define LENGTH_READ_TEMPSTATUS_RSP 6
- #define LENGTH_READ_TEMP_MSG 4
- #define LENGTH_READ_TEMP_RSP 5
- #define LENGTH_READ_OTTH_MSG 4
- #define LENGTH_READ_OTTH_RSP 7
- #define LENGTH_READ_COMSTATUS_MSG 4
- #define LENGTH_READ_COMSTATUS_RSP 5
- #define LENGTH_READ_STATUS_MSG 4
- #define LENGTH_READ_STATUS_RSP 5
- #define LENGTH_READ_LEDSTATUS_MSG 4
- #define LENGTH_READ_LEDSTATUS_RSP 5
- #define LENGTH_P4ERROR_MSG 4

Typedefs

- typedef struct SetSetupData_t osireSetSetupData_t
- typedef struct PwmData_t osirePwmData_t
- typedef struct OtpData_t osireOtpData_t
- typedef struct OtpDataComplete_t osireOtpDataComplete_t
- typedef struct LedStatus_t osireLedStatus_t
- typedef struct osireTemp_t osireTemp_t
- typedef struct ComStatus_t osireComStatus_t
- typedef struct Status_t osireStatus_t
- typedef struct TempStatus_t osireTempStatus_t
- typedef struct OtthData_t osireOtthData_t

Enumerations

- enum OSP_OSIRE_DEVICE_CMDS {
  OSP_OSIRE_P4ERROR_BIDIR = 0x08 , OSP_OSIRE_CLR_ERROR_SR = 0x21 , OSP_OSIRE_GO_SLEEP_SR = 0x24 , OSP_OSIRE_GO_ACTIVE_SR = 0x25 ,
  OSP_OSIRE_GO_DEEP_SLEEP_SR = 0x26 , OSP_OSIRE_READ_STATUS = 0x40 , OSP_OSIRE_READ_TEMP_STATUS = 0x42 , OSP_OSIRE_READ_COM_STATUS = 0x44 ,
  OSP_OSIRE_READ_LED_STATUS = 0x46 , OSP_OSIRE_READ_TEMP = 0x48 , OSP_OSIRE_READ_OTTH = 0x4A , OSP_OSIRE_SET_OTTH = 0x4B ,
  OSP_OSIRE_SET_OTTH_SR = 0x6B , OSP_OSIRE_READ_SETUP = 0x4C , OSP_OSIRE_SET_SETUP = 0x4D , OSP_OSIRE_SET_SETUP_SR = 0x6D ,
  OSP_OSIRE_READ_PWM = 0x4E , OSP_OSIRE_SET_PWM = 0x4F , OSP_OSIRE_SET_PWM_SR = 0x6F , OSP_OSIRE_READ_OTP = 0x58 ,
  OSP_OSIRE_P4ERROR_LOOP = 0x09 }

Functions

- enum OSP_ERROR_CODE osp_osire_set_setup (uint16_t deviceAddress, osireSetSetupData_t data)

  OSP_OSIRE_SET_SETUP command.
- enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (uint16_t deviceAddress, osireSetSetupData_t data, osireTempStatus_t *p_data)

  OSP_OSIRE_SET_SETUP_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_set_pwm (uint16_t deviceAddress, osirePwmData_t data)

  OSP_OSIRE_SET_PWM command.
- enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (uint16_t deviceAddress, osirePwmData_t data, osireTempStatus_t *p_data)

  OSP_OSIRE_SET_PWM_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_read_pwm (uint16_t deviceAddress, osirePwmData_t *p_data)

  OSP_OSIRE_READ_PWM command.
- enum OSP_ERROR_CODE osp_read_otp (uint16_t deviceAddress, uint8_t otpAddress, osireOtpData_t *p_data)

  OSP_OSIRE_READ_OTP command Reads 8 bytes from OTP memory, from otpAddress. If readout address is beyond OTP address range, 0x00 will be delivered for these addresses.
- enum OSP_ERROR_CODE osp_osire_read_otp_complete (uint16_t deviceAddress, osireOtpDataComplete_t *p_data)

  Read complete OTP memory command Reads all bytes from OTP memory. By use of several consecutive OSP_OSIRE_READ_OTP commands.
- enum OSP_ERROR_CODE osp_osire_read_ledstatus (uint16_t deviceAddress, osireLedStatus_t *p_data)

  OSP_OSIRE_READ_LED_STATUS command This function reads the LED STATUS register of the device.
- enum OSP_ERROR_CODE osp_osire_read_tempstatus (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_OSIRE_READ_TEMP_STATUS command This function reads the STATUS and TEMP register in a single 2-byte payload of the device.
- enum OSP_ERROR_CODE osp_osire_read_temp (uint16_t deviceAddress, osireTemp_t *p_data)

  OSP_OSIRE_READ_TEMP command This function reads LED TEMP register of the device.
- enum OSP_ERROR_CODE osp_osire_set_otth (uint16_t deviceAddress, osireOtthData_t data)

  OSP_OSIRE_SET_OTTH command.
- enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (uint16_t deviceAddress, osireOtthData_t data, osireTempStatus_t *p_data)

  OSP_OSIRE_SET_OTTH_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_read_otth (uint16_t deviceAddress, osireOtthData_t *p_data)

  OSP_OSIRE_READ_OTTH command.
- enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_OSIRE_GO_SLEEP_SR command and read status and temperature This function sends one or all devices into SLEEP state Additionally the STATUS and TEMP register is read.
- enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_OSIRE_GO_DEEP_SLEEP_SR command and read status and temperature This function sends one or all devices into DEEP_SLEEP state Additionally the STATUS and TEMP register is read.
- enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_CLEAR_ERROR command and read status and temperature This function will clear all error flags, if an error still exists for example short/open the error flag is set again and LED TEMPSTAT Register will be sent.
- enum OSP_ERROR_CODE osp_osire_p4error_bidir (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_PING_FOR_ERROR_BIDIR command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).

- enum OSP_ERROR_CODE osp_osire_p4error_loop (uint16_t deviceAddress, osireTempStatus_t *p_data)

  OSP_PING_FOR_ERROR_LOOP command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).
- enum OSP_ERROR_CODE osp_go_active_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_GO_ACTIVE command and read status and temperature Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.
- enum OSP_ERROR_CODE osp_osire_read_setup (uint16_t deviceAddress, osireSetSetupData_t *p_data)

  OSP_OSIRE_READ_SETUP command This function reads SETUP register of the device.
- enum OSP_ERROR_CODE osp_osire_read_comstatus (uint16_t deviceAddress, osireComStatus_t *p_data)

  OSP_OSIRE_READ_COM_STATUS command This function reads COM STATUS register of the device.
- enum OSP_ERROR_CODE osp_osire_read_status (uint16_t deviceAddress, osireStatus_t *p_data)

  OSP_OSIRE_READ_STATUS command This function reads STATUS register of the device.

5.4.1 Macro Definition Documentation

5.4.1.1 LENGTH_P4ERROR_MSG

```
#define LENGTH_P4ERROR_MSG 4
```

Definition at line 78 of file osireDevice.h.

5.4.1.2 LENGTH_READ_COMSTATUS_MSG

```
#define LENGTH_READ_COMSTATUS_MSG 4
```

Definition at line 68 of file osireDevice.h.

5.4.1.3 LENGTH_READ_COMSTATUS_RSP

```
#define LENGTH_READ_COMSTATUS_RSP 5
```

Definition at line 69 of file osireDevice.h.

5.4.1.4 LENGTH_READ_LEDSTATUS_MSG

```
#define LENGTH_READ_LEDSTATUS_MSG 4
```

Definition at line 74 of file osireDevice.h.

5.4.1.5 LENGTH_READ_LEDSTATUS_RSP

```
#define LENGTH_READ_LEDSTATUS_RSP 5
```

Definition at line 75 of file osireDevice.h.

5.4.1.6 LENGTH_READ_OTP_MSG

```
#define LENGTH_READ_OTP_MSG 5
```

Definition at line 53 of file osireDevice.h.

5.4.1.7 LENGTH_READ_OTP_RSP

```
#define LENGTH_READ_OTP_RSP 12
```
Definition at line 54 of file osireDevice.h.

5.4.1.8 LENGTH_READ_OTTH_MSG

```
#define LENGTH_READ_OTTH_MSG 4
```
Definition at line 65 of file osireDevice.h.

5.4.1.9 LENGTH_READ_OTTH_RSP

```
#define LENGTH_READ_OTTH_RSP 7
```
Definition at line 66 of file osireDevice.h.

5.4.1.10 LENGTH_READ_PWM_MSG

```
#define LENGTH_READ_PWM_MSG 4
```
Definition at line 50 of file osireDevice.h.

5.4.1.11 LENGTH_READ_PWM_RSP

```
#define LENGTH_READ_PWM_RSP 10
```
Definition at line 51 of file osireDevice.h.

5.4.1.12 LENGTH_READ_SETUP_MSG

```
#define LENGTH_READ_SETUP_MSG 4
```
Definition at line 56 of file osireDevice.h.

5.4.1.13 LENGTH_READ_SETUP_RSP

```
#define LENGTH_READ_SETUP_RSP 5
```
Definition at line 57 of file osireDevice.h.

5.4.1.14 LENGTH_READ_STATUS_MSG

```
#define LENGTH_READ_STATUS_MSG 4
```
Definition at line 71 of file osireDevice.h.

5.4.1.15 LENGTH_READ_STATUS_RSP

```
#define LENGTH_READ_STATUS_RSP 5
```
Definition at line 72 of file osireDevice.h.

5.4.1.16 LENGTH_READ_TEMP_MSG

```
#define LENGTH_READ_TEMP_MSG 4
```
Definition at line 62 of file osireDevice.h.

5.4.1.17 LENGTH_READ_TEMP_RSP

```
#define LENGTH_READ_TEMP_RSP 5
```
Definition at line 63 of file osireDevice.h.

5.4.1.18 LENGTH_READ_TEMPSTATUS_MSG

```
#define LENGTH_READ_TEMPSTATUS_MSG 4
```
Definition at line 59 of file osireDevice.h.

5.4.1.19 LENGTH_READ_TEMPSTATUS_RSP

```
#define LENGTH_READ_TEMPSTATUS_RSP 6
```
Definition at line 60 of file osireDevice.h.

5.4.1.20 LENGTH_SET_OTTH_MSG

```
#define LENGTH_SET_OTTH_MSG 7
```
Definition at line 48 of file osireDevice.h.

5.4.1.21 LENGTH_SET_PWM_MSG

```
#define LENGTH_SET_PWM_MSG 10
```
Definition at line 46 of file osireDevice.h.

5.4.1.22 LENGTH_SET_SETUP_MSG

```
#define LENGTH_SET_SETUP_MSG 5
```
Brief OSP Library
Customer API for RGBi LED Stripe communication
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf" Include OSP generic definitions and data structures
Definition at line 44 of file osireDevice.h.

5.4.2 Typedef Documentation

5.4.2.1 osireComStatus_t

```
typedef struct ComStatus_t osireComStatus_t
```
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.2 osireLedStatus_t

```
typedef struct LedStatus_t osireLedStatus_t
```
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.3 osireOtpData_t

```
typedef struct OtpData_t osireOtpData_t
```
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.4 osireOtpDataComplete_t

typedef struct OtpDataComplete_t osireOtpDataComplete_t

5.4.2.5 osireOtthData_t

typedef struct OtthData_t osireOtthData_t
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.6 osirePwmData_t

typedef struct PwmData_t osirePwmData_t

5.4.2.7 osireSetSetupData_t

typedef struct SetSetupData_t osireSetSetupData_t
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.8 osireStatus_t

typedef struct Status_t osireStatus_t
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.9 osireTemp_t

typedef struct osireTemp_t osireTemp_t
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.2.10 osireTempStatus_t

typedef struct TempStatus_t osireTempStatus_t
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

5.4.3 Enumeration Type Documentation

5.4.3.1 OSP_OSIRE_DEVICE_CMDS

enum OSP_OSIRE_DEVICE_CMDS
Enumeration OSP OSire Device commands

Enumerator

OSP_OSIRE_P4ERROR_BIDIR	implemented
OSP_OSIRE_CLR_ERROR_SR	implemented
OSP_OSIRE_GO_SLEEP_SR	implemented
OSP_OSIRE_GO_ACTIVE_SR	implemented
OSP_OSIRE_GO_DEEP_SLEEP_SR	implemented
OSP_OSIRE_READ_STATUS	implemented
OSP_OSIRE_READ_TEMP_STATUS	implemented
OSP_OSIRE_READ_COM_STATUS	implemented
OSP_OSIRE_READ_LED_STATUS	implemented
OSP_OSIRE_READ_TEMP	implemented
OSP_OSIRE_READ_OTTH	implemented
OSP_OSIRE_SET_OTTH	implemented

Enumerator

OSP_OSIRE_SET_OTTH_SR	implemented
OSP_OSIRE_READ_SETUP	implemented
OSP_OSIRE_SET_SETUP	implemented
OSP_OSIRE_SET_SETUP_SR	implemented
OSP_OSIRE_READ_PWM	implemented
OSP_OSIRE_SET_PWM	implemented
OSP_OSIRE_SET_PWM_SR	implemented
OSP_OSIRE_READ_OTP	implemented
OSP_OSIRE_P4ERROR_LOOP	implemented; precondition: OSP_INIT_LOOP

Definition at line 85 of file osireDevice.h.

```
00086 {
00087   OSP_OSIRE_P4ERROR_BIDIR = 0x08,
00088   OSP_OSIRE_CLR_ERROR_SR = 0x21,
00089   OSP_OSIRE_GO_SLEEP_SR = 0x24,
00090   OSP_OSIRE_GO_ACTIVE_SR = 0x25,
00091   OSP_OSIRE_GO_DEEP_SLEEP_SR = 0x26,
00092   OSP_OSIRE_READ_STATUS = 0x40,
00093   OSP_OSIRE_READ_TEMP_STATUS = 0x42,
00094   OSP_OSIRE_READ_COM_STATUS = 0x44,
00095   OSP_OSIRE_READ_LED_STATUS = 0x46,
00096   OSP_OSIRE_READ_TEMP = 0x48,
00097   OSP_OSIRE_READ_OTTH = 0x4A,
00098   OSP_OSIRE_SET_OTTH = 0x4B,
00099   OSP_OSIRE_SET_OTTH_SR = 0x6B,
00100   OSP_OSIRE_READ_SETUP = 0x4C,
00101   OSP_OSIRE_SET_SETUP = 0x4D,
00102   OSP_OSIRE_SET_SETUP_SR = 0x6D,
00103   OSP_OSIRE_READ_PWM = 0x4E,
00104   OSP_OSIRE_SET_PWM = 0x4F,
00105   OSP_OSIRE_SET_PWM_SR = 0x6F,
00106   OSP_OSIRE_READ_OTP = 0x58,
00108   OSP_OSIRE_P4ERROR_LOOP = 0x09
00109 };
```

5.4.4 Function Documentation

5.4.4.1 osp_go_active_and_sr()

```
enum OSP_ERROR_CODE osp_go_active_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_rsp )
```

OSP_GO_ACTIVE command and read status and temperature Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

Returns

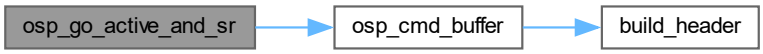
error communication or command parameter error

Definition at line 563 of file osireDevice.c.

```
00565 {
00566   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00567   ospCmdBuffer_t ospCmd;
00568   enum OSP_ERROR_CODE ospErrorCode;
00569   errorSpi_t spiError;
```

```
00570
00571   ospCmd.inCmdId = OSP_OSIRE_GO_ACTIVE_SR;
00572   ospCmd.inDeviceAddress = deviceAddress;
00573   ospCmd.p_inParameter = NULL;
00574
00575   ospErrorCode = osp_cmd_buffer (&ospCmd);
00576   if (ospErrorCode != OSP_NO_ERROR)
00577     {
00578       return ospErrorCode;
00579     }
00580
00581   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00582                                                       rspBuffer,
00583                                                       ospCmd.outCmdBufferLength,
00584                                                       ospCmd.outResponseLength);
00585
00586   if (spiError != NO_ERROR_SPI)
00587     {
00588       return OSP_ERROR_SPI;
00589     }
00590
00591   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00592     {
00593       return OSP_ERROR_CRC;
00594     }
00595
00596   for (uint8_t i = 0; i < 2; i++)
00597     {
00598       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00599     }
00600
00601   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00602   return OSP_NO_ERROR;
00603 }
```

Here is the call graph for this function:



5.4.4.2 osp_osire_clr_error_and_sr()

```
enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_CLEAR_ERROR command and read status and temperature This function will clear all error flags, if an error still exists for example short/open the error flag is set again and LED TEMPSTAT Register will be sent.

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

Returns

error communication or command parameter error

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

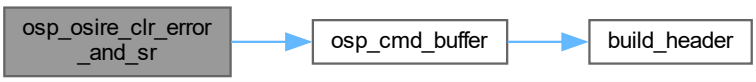
Returns

error communication or command parameter error

Definition at line 699 of file osireDevice.c.

```
00701 {
00702   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00703   ospCmdBuffer_t ospCmd;
00704   enum OSP_ERROR_CODE ospErrorCode;
00705   errorSpi_t spiError;
00706
00707   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00708
00709   ospCmd.inCmdId = OSP_OSIRE_CLR_ERROR_SR;
00710   ospCmd.inDeviceAddress = deviceAddress;
00711   ospCmd.p_inParameter = NULL;
00712
00713   ospErrorCode = osp_cmd_buffer (&ospCmd);
00714   if (ospErrorCode != OSP_NO_ERROR)
00715     {
00716       return ospErrorCode;
00717     }
00718
00719   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00720                                                       rspBuffer,
00721                                                       ospCmd.outCmdBufferLength,
00722                                                       ospCmd.outResponseLength);
00723
00724   if (spiError != NO_ERROR_SPI)
00725     {
00726       return OSP_ERROR_SPI;
00727     }
00728
00729   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00730     {
00731       return OSP_ERROR_CRC;
00732     }
00733
00734   for (uint8_t i = 0; i < 2; i++)
00735     {
00736       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00737     }
00738
00739   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00740   return OSP_NO_ERROR;
00741 }
```

Here is the call graph for this function:



5.4.4.3 osp_osire_go_deep_sleep_and_sr()

```
enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_GO_DEEP_SLEEP_SR command and read status and temperature This function sends one or all devices into DEEP_SLEEP state Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

Returns

error communication or command parameter error

Definition at line 653 of file osireDevice.c.

```
00655 {
00656   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00657   ospCmdBuffer_t ospCmd;
00658   enum OSP_ERROR_CODE ospErrorCode;
00659   errorSpi_t spiError;
00660
00661   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00662
00663   ospCmd.inCmdId = OSP_OSIRE_GO_DEEP_SLEEP_SR;
00664   ospCmd.inDeviceAddress = deviceAddress;
00665   ospCmd.p_inParameter = NULL;
00666
00667   ospErrorCode = osp_cmd_buffer (&ospCmd);
00668   if (ospErrorCode != OSP_NO_ERROR)
00669     {
00670       return ospErrorCode;
00671     }
00672
00673   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00674                                                       rspBuffer,
00675                                                       ospCmd.outCmdBufferLength,
00676                                                       ospCmd.outResponseLength);
00677
00678   if (spiError != NO_ERROR_SPI)
00679     {
00680       return OSP_ERROR_SPI;
00681     }
00682
00683   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00684     {
00685       return OSP_ERROR_CRC;
00686     }
00687
00688   for (uint8_t i = 0; i < 2; i++)
00689     {
00690       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00691     }
00692
00693   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00694   return OSP_NO_ERROR;
00695 }
```

Here is the call graph for this function:

5.4.4.4 osp_osire_go_sleep_and_sr()

```
enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_GO_SLEEP_SR command and read status and temperature This function sends one or all devices into SLEEP state Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

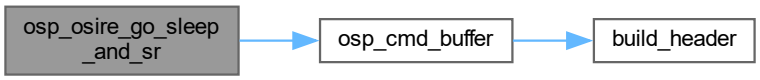
Returns

error communication or command parameter error

Definition at line 607 of file osireDevice.c.

```
00609 {
00610   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00611   ospCmdBuffer_t ospCmd;
00612   enum OSP_ERROR_CODE ospErrorCode;
00613   errorSpi_t spiError;
00614
00615   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00616
00617   ospCmd.inCmdId = OSP_OSIRE_GO_SLEEP_SR;
00618   ospCmd.inDeviceAddress = deviceAddress;
00619   ospCmd.p_inParameter = NULL;
00620
00621   ospErrorCode = osp_cmd_buffer (&ospCmd);
00622   if (ospErrorCode != OSP_NO_ERROR)
00623     {
00624       return ospErrorCode;
00625     }
00626
00627   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00628                                                       rspBuffer,
00629                                                       ospCmd.outCmdBufferLength,
00630                                                       ospCmd.outResponseLength);
00631
00632   if (spiError != NO_ERROR_SPI)
00633     {
00634       return OSP_ERROR_SPI;
00635     }
00636
00637   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00638     {
00639       return OSP_ERROR_CRC;
00640     }
00641
00642   for (uint8_t i = 0; i < 2; i++)
00643     {
00644       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00645     }
00646
00647   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00648   return OSP_NO_ERROR;
00649 }
```

Here is the call graph for this function:



5.4.4.5 osp_osire_p4error_bidir()

```
enum OSP_ERROR_CODE osp_osire_p4error_bidir (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_PING_FOR_ERROR_BIDIR command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

Returns

error communication or command parameter error

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

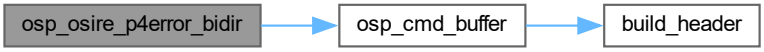
Returns

error communication or command parameter error

Definition at line 745 of file osireDevice.c.

```
00747 {
00748   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00749   ospCmdBuffer_t ospCmd;
00750   enum OSP_ERROR_CODE ospErrorCode;
00751   errorSpi_t spiError;
00752
00753   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00754
00755   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_BIDIR;
00756   ospCmd.inDeviceAddress = deviceAddress;
00757   ospCmd.p_inParameter = NULL;
00758
00759   ospErrorCode = osp_cmd_buffer (&ospCmd);
00760   if (ospErrorCode != OSP_NO_ERROR)
00761     {
00762       return ospErrorCode;
00763     }
00764
00765   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00766                                                       rspBuffer,
00767                                                       ospCmd.outCmdBufferLength,
00768                                                       ospCmd.outResponseLength);
00769
00770   if (spiError != NO_ERROR_SPI)
00771     {
00772       return OSP_ERROR_SPI;
00773     }
00774
00775   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00776     {
00777       return OSP_ERROR_CRC;
00778     }
00779
00780   for (uint8_t i = 0; i < 2; i++)
00781     {
00782       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00783     }
00784
00785   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00786   return OSP_NO_ERROR;
00787 }
```

Here is the call graph for this function:



5.4.4.6 osp_osire_p4error_loop()

```
enum OSP_ERROR_CODE osp_osire_p4error_loop (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_PING_FOR_ERROR_LOOP command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

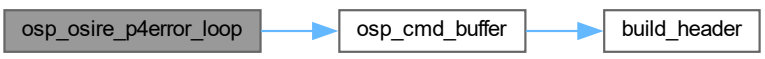
Returns

error communication or command parameter error

Definition at line 790 of file osireDevice.c.

```
00792 {
00793   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00794   ospCmdBuffer_t ospCmd;
00795   enum OSP_ERROR_CODE ospErrorCode;
00796   errorSpi_t spiError;
00797
00798   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00799
00800   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_LOOP;
00801   ospCmd.inDeviceAddress = deviceAddress;
00802   ospCmd.p_inParameter = NULL;
00803
00804   ospErrorCode = osp_cmd_buffer (&ospCmd);
00805   if (ospErrorCode != OSP_NO_ERROR)
00806     {
00807       return ospErrorCode;
00808     }
00809
00810   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00811                                                       rspBuffer,
00812                                                       ospCmd.outCmdBufferLength,
00813                                                       ospCmd.outResponseLength);
00814
00815   if (spiError != NO_ERROR_SPI)
00816     {
00817       return OSP_ERROR_SPI;
00818     }
00819
00820   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00821     {
00822       return OSP_ERROR_CRC;
00823     }
00824
00825   for (uint8_t i = 0; i < 2; i++)
00826     {
00827       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00828     }
00829
00830   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00831   return OSP_NO_ERROR;
00832 }
```

Here is the call graph for this function:



5.4.4.7 osp_osire_read_comstatus()

```
enum OSP_ERROR_CODE osp_osire_read_comstatus (
            uint16_t deviceAddress,
            osireComStatus_t * p_data )
```

OSP_OSIRE_READ_COM_STATUS command This function reads COM STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	pointer to response data from RGBi LED

Returns

error COM STATUS register response data

Definition at line 878 of file osireDevice.c.

```
00880 {
00881   uint8_t rspBuffer[LENGTH_READ_COMSTATUS_RSP]; // response buffer
00882   ospCmdBuffer_t ospCmd;
00883   enum OSP_ERROR_CODE ospErrorCode;
00884   errorSpi_t spiError;
00885
00886   memset (rspBuffer, 0, LENGTH_READ_COMSTATUS_RSP);
00887
00888   ospCmd.inCmdId = OSP_OSIRE_READ_COM_STATUS;
00889   ospCmd.inDeviceAddress = deviceAddress;
00890   ospCmd.p_inParameter = NULL;
00891
00892   ospErrorCode = osp_cmd_buffer (&ospCmd);
00893   if (ospErrorCode != OSP_NO_ERROR)
00894     {
00895       return ospErrorCode;
00896     }
00897
00898   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00899                                                       rspBuffer,
00900                                                       ospCmd.outCmdBufferLength,
00901                                                       ospCmd.outResponseLength);
00902
00903   if (spiError != NO_ERROR_SPI)
00904     {
00905       return OSP_ERROR_SPI;
00906     }
00907
00908   if (crc (rspBuffer, LENGTH_READ_COMSTATUS_RSP) != 0)
00909     {
00910       return OSP_ERROR_CRC;
00911     }
00912
00913   p_rsp->data.comStatus = rspBuffer[FIRST_BYTE_PAYLOAD];
00914
00915   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00916   return OSP_NO_ERROR;
00917 }
```

Here is the call graph for this function:

5.4.4.8 osp_osire_read_ledstatus()

```
enum OSP_ERROR_CODE osp_osire_read_ledstatus (
            uint16_t deviceAddress,
            osireLedStatus_t * p_data )
```

OSP_OSIRE_READ_LED_STATUS command This function reads the LED STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	LED STATUS register response data

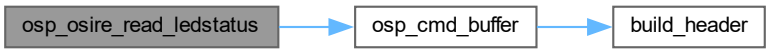
Returns

error communication or command parameter error

Definition at line 308 of file osireDevice.c.

```
00310 {
00311   uint8_t rspBuffer[LENGTH_READ_LEDSTATUS_RSP]; // response buffer
00312   ospCmdBuffer_t ospCmd;
00313   enum OSP_ERROR_CODE ospErrorCode;
00314   errorSpi_t spiError;
00315
00316   memset (rspBuffer, 0, LENGTH_READ_LEDSTATUS_RSP);
00317
00318   ospCmd.inCmdId = OSP_OSIRE_READ_LED_STATUS;
00319   ospCmd.inDeviceAddress = deviceAddress;
00320   ospCmd.p_inParameter = NULL;
00321
00322   ospErrorCode = osp_cmd_buffer (&ospCmd);
00323   if (ospErrorCode != OSP_NO_ERROR)
00324     {
00325       return ospErrorCode;
00326     }
00327
00328   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00329                                                       rspBuffer,
00330                                                       ospCmd.outCmdBufferLength,
00331                                                       ospCmd.outResponseLength);
00332
00333   if (spiError != NO_ERROR_SPI)
00334     {
00335       return OSP_ERROR_SPI;
00336     }
00337
00338   if (crc (rspBuffer, LENGTH_READ_LEDSTATUS_RSP) != 0)
00339     {
00340       return OSP_ERROR_CRC;
00341     }
00342
00343   p_rsp->data.ledStatus = rspBuffer[3];
00344
00345   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00346   return OSP_NO_ERROR;
00347 }
```

Here is the call graph for this function:



5.4.4.9 osp_osire_read_otp_complete()

```
enum OSP_ERROR_CODE osp_osire_read_otp_complete (
```

```
            uint16_t deviceAddress,
            osireOtpDataComplete_t * p_data )
```

Read complete OTP memory command Reads all bytes from OTP memory. By use of several consecutive OSP↩ _OSIRE_READ_OTP commands.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	full OTP memory data

Returns

error communication or command parameter error

Definition at line 282 of file osireDevice.c.

```
00284 {
00285   osireOtpData_t opt; // OTP buffer
00286
00287   for (uint8_t i = 0; i < 0x1F; i = i + 8)
00288     {
00289       enum OSP_ERROR_CODE errorCode = osp_read_otp (deviceAddress, i, &opt);
00290
00291       if (errorCode != OSP_NO_ERROR)
00292         {
00293           return errorCode;
00294         }
00295
00296       for (uint8_t j = 0; j < 8; j++)
00297         {
00298           p_rsp->data.byte[i + j] = opt.data.byte[j];
00299         }
00300     }
00301
00302   p_rsp->address = opt.address;
00303   return OSP_NO_ERROR;
00304 }
```

Here is the call graph for this function:

5.4.4.10 osp_osire_read_otth()

```
enum OSP_ERROR_CODE osp_osire_read_otth (
            uint16_t deviceAddress,
            osireOtthData_t * p_data )
```

OSP_OSIRE_READ_OTTH command.
This function reads the OTTH register of the device
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	PWM register response data

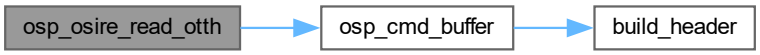
Returns

error communication or command parameter error

Definition at line 517 of file osireDevice.c.

```
00519 {
00520   uint8_t rspBuffer[LENGTH_READ_OTTH_RSP]; // response buffer
00521   ospCmdBuffer_t ospCmd;
00522   enum OSP_ERROR_CODE ospErrorCode;
00523   errorSpi_t spiError;
00524
00525   memset (rspBuffer, 0, LENGTH_READ_OTTH_RSP);
00526
00527   ospCmd.inCmdId = OSP_OSIRE_READ_OTTH;
00528   ospCmd.inDeviceAddress = deviceAddress;
00529   ospCmd.p_inParameter = NULL;
00530
00531   ospErrorCode = osp_cmd_buffer (&ospCmd);
00532   if (ospErrorCode != OSP_NO_ERROR)
00533     {
00534       return ospErrorCode;
00535     }
00536
00537   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00538                                                       rspBuffer,
00539                                                       ospCmd.outCmdBufferLength,
00540                                                       ospCmd.outResponseLength);
00541
00542   if (spiError != NO_ERROR_SPI)
00543     {
00544       return OSP_ERROR_SPI;
00545     }
00546
00547   if (crc (rspBuffer, LENGTH_READ_OTTH_RSP) != 0)
00548     {
00549       return OSP_ERROR_CRC;
00550     }
00551
00552   for (uint8_t i = 0; i < 3; i++)
00553     {
00554       p_rsp->data.otthData[i] = rspBuffer[5 - i];
00555     }
00556
00557   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00558   return OSP_NO_ERROR;
00559 }
```

Here is the call graph for this function:



5.4.4.11 osp_osire_read_pwm()

```
enum OSP_ERROR_CODE osp_osire_read_pwm (
            uint16_t deviceAddress,
            osirePwmData_t * p_data )
```

OSP_OSIRE_READ_PWM command.
This function reads the PWM register of the device
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	PWM register response data

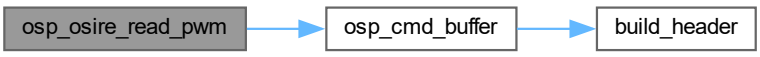
Returns

error communication or command parameter error

Definition at line 190 of file osireDevice.c.

```
00192 {
00193   uint8_t rspBuffer[LENGTH_READ_PWM_RSP]; // response buffer
00194   ospCmdBuffer_t ospCmd;
00195   enum OSP_ERROR_CODE ospErrorCode;
00196   errorSpi_t spiError;
00197
00198   memset (rspBuffer, 0, LENGTH_READ_PWM_RSP);
00199
00200   ospCmd.inCmdId = OSP_OSIRE_READ_PWM;
00201   ospCmd.inDeviceAddress = deviceAddress;
00202   ospCmd.p_inParameter = NULL;
00203
00204   ospErrorCode = osp_cmd_buffer (&ospCmd);
00205   if (ospErrorCode != OSP_NO_ERROR)
00206     {
00207       return ospErrorCode;
00208     }
00209
00210   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00211                                                       rspBuffer,
00212                                                       ospCmd.outCmdBufferLength,
00213                                                       ospCmd.outResponseLength);
00214
00215   if (spiError != NO_ERROR_SPI)
00216     {
00217       return OSP_ERROR_SPI;
00218     }
00219
00220   if (crc (rspBuffer, LENGTH_READ_PWM_RSP) != 0)
00221     {
00222       return OSP_ERROR_CRC;
00223     }
00224
00225   for (uint8_t i = 0; i < 6; i++)
00226     {
00227       p_rsp->data.pwmData[i] = rspBuffer[8 - i];
00228     }
00229
00230   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00231   return OSP_NO_ERROR;
00232 }
```

Here is the call graph for this function:



5.4.4.12 osp_osire_read_setup()

```
enum OSP_ERROR_CODE osp_osire_read_setup (
            uint16_t deviceAddress,
            osireSetSetupData_t * p_data )
```

OSP_OSIRE_READ_SETUP command This function reads SETUP register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	SETUP register response data

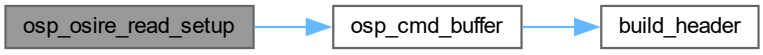
Returns

error communication or command parameter error

Definition at line 835 of file osireDevice.c.

```
00837 {
00838   uint8_t rspBuffer[LENGTH_READ_SETUP_RSP]; // response buffer
00839   ospCmdBuffer_t ospCmd;
00840   enum OSP_ERROR_CODE ospErrorCode;
00841   errorSpi_t spiError;
00842
00843   memset (rspBuffer, 0, LENGTH_READ_SETUP_RSP);
00844
00845   ospCmd.inCmdId = OSP_OSIRE_READ_SETUP;
00846   ospCmd.inDeviceAddress = deviceAddress;
00847   ospCmd.p_inParameter = NULL;
00848
00849   ospErrorCode = osp_cmd_buffer (&ospCmd);
00850   if (ospErrorCode != OSP_NO_ERROR)
00851     {
00852       return ospErrorCode;
00853     }
00854
00855   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00856                                                       rspBuffer,
00857                                                       ospCmd.outCmdBufferLength,
00858                                                       ospCmd.outResponseLength);
00859
00860   if (spiError != NO_ERROR_SPI)
00861     {
00862       return OSP_ERROR_SPI;
00863     }
00864
00865   if (crc (rspBuffer, LENGTH_READ_SETUP_RSP) != 0)
00866     {
00867       return OSP_ERROR_CRC;
00868     }
00869
00870   p_rsp->data.setupData = rspBuffer[FIRST_BYTE_PAYLOAD];
00871
00872   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00873   return OSP_NO_ERROR;
00874 }
```

Here is the call graph for this function:



5.4.4.13 osp_osire_read_status()

```
enum OSP_ERROR_CODE osp_osire_read_status (
            uint16_t deviceAddress,
            osireStatus_t * p_data )
```

OSP_OSIRE_READ_STATUS command This function reads STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS register response data

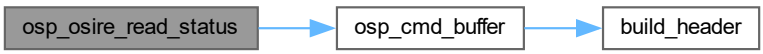
Returns

error communication or command parameter error

Definition at line 921 of file osireDevice.c.

```
00923 {
00924   uint8_t rspBuffer[LENGTH_READ_STATUS_RSP]; // response buffer
00925   ospCmdBuffer_t ospCmd;
00926   enum OSP_ERROR_CODE ospErrorCode;
00927   errorSpi_t spiError;
00928
00929   memset (rspBuffer, 0, LENGTH_READ_STATUS_RSP);
00930
00931   ospCmd.inCmdId = OSP_OSIRE_READ_STATUS;
00932   ospCmd.inDeviceAddress = deviceAddress;
00933   ospCmd.p_inParameter = NULL;
00934
00935   ospErrorCode = osp_cmd_buffer (&ospCmd);
00936   if (ospErrorCode != OSP_NO_ERROR)
00937     {
00938       return ospErrorCode;
00939     }
00940
00941   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00942                                                       rspBuffer,
00943                                                       ospCmd.outCmdBufferLength,
00944                                                       ospCmd.outResponseLength);
00945
00946   if (spiError != NO_ERROR_SPI)
00947     {
00948       return OSP_ERROR_SPI;
00949     }
00950
00951   if (crc (rspBuffer, LENGTH_READ_STATUS_RSP) != 0)
00952     {
00953       return OSP_ERROR_CRC;
00954     }
00955
00956   p_rsp->data.status = rspBuffer[FIRST_BYTE_PAYLOAD];
00957
00958   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00959   return OSP_NO_ERROR;
00960 }
```

Here is the call graph for this function:



5.4.4.14 osp_osire_read_temp()

```
enum OSP_ERROR_CODE osp_osire_read_temp (
            uint16_t deviceAddress,
            osireTemp_t * p_data )
```

OSP_OSIRE_READ_TEMP command This function reads LED TEMP register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	LED TEMP register response data

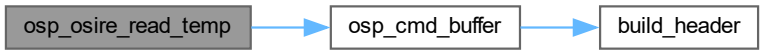
Returns

error communication or command parameter error

Definition at line 397 of file osireDevice.c.

```
00399 {
00400   uint8_t rspBuffer[LENGTH_READ_TEMP_RSP]; // response buffer
00401   ospCmdBuffer_t ospCmd;
00402   enum OSP_ERROR_CODE ospErrorCode;
00403   errorSpi_t spiError;
00404
00405   memset (rspBuffer, 0, LENGTH_READ_TEMP_RSP);
00406
00407   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP;
00408   ospCmd.inDeviceAddress = deviceAddress;
00409   ospCmd.p_inParameter = NULL;
00410
00411   ospErrorCode = osp_cmd_buffer (&ospCmd);
00412   if (ospErrorCode != OSP_NO_ERROR)
00413     {
00414       return ospErrorCode;
00415     }
00416
00417   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00418                                                       rspBuffer,
00419                                                       ospCmd.outCmdBufferLength,
00420                                                       ospCmd.outResponseLength);
00421
00422   if (spiError != NO_ERROR_SPI)
00423     {
00424       return OSP_ERROR_SPI;
00425     }
00426
00427   if (crc (rspBuffer, LENGTH_READ_TEMP_RSP) != 0)
00428     {
00429       return OSP_ERROR_CRC;
00430     }
00431
00432   p_rsp->data.temp_value = rspBuffer[FIRST_BYTE_PAYLOAD];
00433
00434   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00435   return OSP_NO_ERROR;
00436 }
```

Here is the call graph for this function:



5.4.4.15 osp_osire_read_tempstatus()

```
enum OSP_ERROR_CODE osp_osire_read_tempstatus (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_READ_TEMP_STATUS command This function reads the STATUS and TEMP register in a single 2-byte payload of the device.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

Returns

error communication or command parameter error

Definition at line 351 of file osireDevice.c.

```
00353 {
00354   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00355   ospCmdBuffer_t ospCmd;
00356   enum OSP_ERROR_CODE ospErrorCode;
00357   errorSpi_t spiError;
00358
00359   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00360
00361   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP_STATUS;
00362   ospCmd.inDeviceAddress = deviceAddress;
00363   ospCmd.p_inParameter = NULL;
00364
00365   ospErrorCode = osp_cmd_buffer (&ospCmd);
00366   if (ospErrorCode != OSP_NO_ERROR)
00367     {
00368       return ospErrorCode;
00369     }
00370
00371   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00372                                                       rspBuffer,
00373                                                       ospCmd.outCmdBufferLength,
00374                                                       ospCmd.outResponseLength);
00375
00376   if (spiError != NO_ERROR_SPI)
00377     {
00378       return OSP_ERROR_SPI;
00379     }
00380
00381   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00382     {
00383       return OSP_ERROR_CRC;
00384     }
00385
00386   for (uint8_t i = 0; i < 2; i++)
00387     {
00388       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00389     }
00390
00391   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00392   return OSP_NO_ERROR;
00393 }
```

Here is the call graph for this function:

5.4.4.16 osp_osire_set_otth()

```
enum OSP_ERROR_CODE osp_osire_set_otth (
            uint16_t deviceAddress,
            osireOtthData_t data )
```

OSP_OSIRE_SET_OTTH command.
Writes the OTTH register. See READOTTH for the payload format.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value

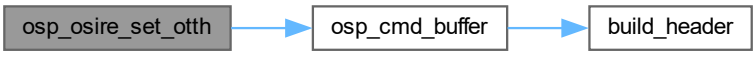
Returns

error, communication or command parameter error

Definition at line 440 of file osireDevice.c.

```
00442 {
00443   ospCmdBuffer_t ospCmd;
00444   enum OSP_ERROR_CODE ospErrorCode;
00445   errorSpi_t spiError;
00446
00447   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH;
00448   ospCmd.inDeviceAddress = deviceAddress;
00449   ospCmd.p_inParameter = &data.data.otthData;
00450
00451   ospErrorCode = osp_cmd_buffer (&ospCmd);
00452   if (ospErrorCode != OSP_NO_ERROR)
00453     {
00454       return ospErrorCode;
00455     }
00456
00457   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00458                                           ospCmd.outCmdBufferLength);
00459
00460   if (spiError != NO_ERROR_SPI)
00461     {
00462       return OSP_ERROR_SPI;
00463     }
00464
00465   return OSP_NO_ERROR;
00466 }
```

Here is the call graph for this function:



5.4.4.17 osp_osire_set_otth_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (
            uint16_t deviceAddress,
            osireOtthData_t data,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_OTTH_SR command and reads status and temperature.
Writes the OTTH register. See READOTTH for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
data	PWM register value
p_data	STATUS and TEMP register response data

Returns

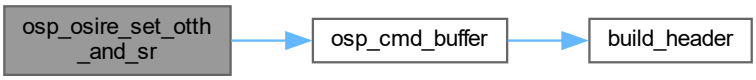
error communication or command parameter error

Definition at line 470 of file osireDevice.c.

```
00473 {
00474   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00475   ospCmdBuffer_t ospCmd;
00476   enum OSP_ERROR_CODE ospErrorCode;
```

```
00477   errorSpi_t spiError;
00478
00479   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00480
00481   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH_SR;
00482   ospCmd.inDeviceAddress = deviceAddress;
00483   ospCmd.p_inParameter = &data.data.otthData;
00484
00485   ospErrorCode = osp_cmd_buffer (&ospCmd);
00486   if (ospErrorCode != OSP_NO_ERROR)
00487     {
00488       return ospErrorCode;
00489     }
00490
00491   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00492                                                       rspBuffer,
00493                                                       ospCmd.outCmdBufferLength,
00494                                                       ospCmd.outResponseLength);
00495
00496   if (spiError != NO_ERROR_SPI)
00497     {
00498       return OSP_ERROR_SPI;
00499     }
00500
00501   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00502     {
00503       return OSP_ERROR_CRC;
00504     }
00505
00506   for (uint8_t i = 0; i < 2; i++)
00507     {
00508       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00509     }
00510
00511   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00512   return OSP_NO_ERROR;
00513 }
```

Here is the call graph for this function:



5.4.4.18 osp_osire_set_pwm()

```
enum OSP_ERROR_CODE osp_osire_set_pwm (
            uint16_t deviceAddress,
            osirePwmData_t data )
```

OSP_OSIRE_SET_PWM command.
Writes the PWM register. See READPWM for the payload format.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value

Returns

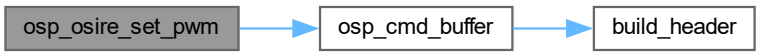
error, communication or command parameter error

Definition at line 112 of file osireDevice.c.

```
00114 {
```

```
00115   ospCmdBuffer_t ospCmd;
00116   enum OSP_ERROR_CODE ospErrorCode;
00117   errorSpi_t spiError;
00118
00119   ospCmd.inCmdId = OSP_OSIRE_SET_PWM;
00120   ospCmd.inDeviceAddress = deviceAddress;
00121   ospCmd.p_inParameter = &data.data.pwmData;
00122
00123   ospErrorCode = osp_cmd_buffer (&ospCmd);
00124   if (ospErrorCode != OSP_NO_ERROR)
00125     {
00126       return ospErrorCode;
00127     }
00128
00129   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00130                                           ospCmd.outCmdBufferLength);
00131
00132   if (spiError != NO_ERROR_SPI)
00133     {
00134       return OSP_ERROR_SPI;
00135     }
00136
00137   return OSP_NO_ERROR;
00138 }
```

Here is the call graph for this function:



5.4.4.19 osp_osire_set_pwm_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (
            uint16_t deviceAddress,
            osirePwmData_t data,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_PWM_SR command and reads status and temperature.
Writes the PWM register. See READPWM for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value
p_data	STATUS and TEMP register response data

Returns

error communication or command parameter error

Definition at line 143 of file osireDevice.c.

```
00146 {
00147   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00148   ospCmdBuffer_t ospCmd;
00149   enum OSP_ERROR_CODE ospErrorCode;
00150   errorSpi_t spiError;
00151
00152   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00153
00154   ospCmd.inCmdId = OSP_OSIRE_SET_PWM_SR;
00155   ospCmd.inDeviceAddress = deviceAddress;
```

```
00156   ospCmd.p_inParameter = &data.data.pwmData;
00157
00158   ospErrorCode = osp_cmd_buffer (&ospCmd);
00159   if (ospErrorCode != OSP_NO_ERROR)
00160     {
00161       return ospErrorCode;
00162     }
00163
00164   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00165                                                       rspBuffer,
00166                                                       ospCmd.outCmdBufferLength,
00167                                                       ospCmd.outResponseLength);
00168
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173
00174   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00175     {
00176       return OSP_ERROR_CRC;
00177     }
00178
00179   for (uint8_t i = 0; i < 2; i++)
00180     {
00181       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00182     }
00183
00184   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00185   return OSP_NO_ERROR;
00186 }
```

Here is the call graph for this function:

5.4.4.20 osp_osire_set_setup()

```
enum OSP_ERROR_CODE osp_osire_set_setup (
            uint16_t deviceAddress,
            osireSetSetupData_t data )
```

OSP_OSIRE_SET_SETUP command.
Writes the SETUP register. See READSETUP for the payload format.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	SETUP register values

Returns

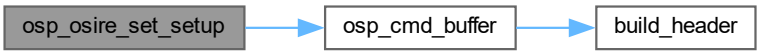
error communication or command parameter error

Include OSP Led Definitions and Data structures
Definition at line 36 of file osireDevice.c.

```
00038 {
00039   ospCmdBuffer_t ospCmd;
00040   enum OSP_ERROR_CODE ospErrorCode;
00041   errorSpi_t spiError;
00042
00043   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP;
00044   ospCmd.inDeviceAddress = deviceAddress;
```

```
00045   ospCmd.p_inParameter = &data.data.setupData;
00046
00047   ospErrorCode = osp_cmd_buffer (&ospCmd);
00048   if (ospErrorCode != OSP_NO_ERROR)
00049     {
00050       return ospErrorCode;
00051     }
00052
00053   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00054                                           ospCmd.outCmdBufferLength);
00055
00056   if (spiError != NO_ERROR_SPI)
00057     {
00058       return OSP_ERROR_SPI;
00059     }
00060
00061   return OSP_NO_ERROR;
00062 }
```

Here is the call graph for this function:



5.4.4.21 osp_osire_set_setup_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (
            uint16_t deviceAddress,
            osireSetSetupData_t data,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_SETUP_SR command and reads status and temperature.
Writes the SETUP register. See READSETUP for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress,0..1000	RGBi device address (0: broadcast)
data	SETUP register values
p_data	STATUS and TEMP register response data

Returns

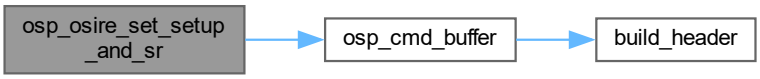
error communication or command parameter error

Definition at line 66 of file osireDevice.c.

```
00069 {
00070   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00071   ospCmdBuffer_t ospCmd;
00072   enum OSP_ERROR_CODE ospErrorCode;
00073   errorSpi_t spiError;
00074
00075   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00076
00077   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP_SR;
00078   ospCmd.inDeviceAddress = deviceAddress;
00079   ospCmd.p_inParameter = &data.data.setupData;
00080
00081   ospErrorCode = osp_cmd_buffer (&ospCmd);
00082   if (ospErrorCode != OSP_NO_ERROR)
00083     {
00084       return ospErrorCode;
```

```
00085     }
00086
00087   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00088                                                       rspBuffer,
00089                                                       ospCmd.outCmdBufferLength,
00090                                                       ospCmd.outResponseLength);
00091
00092   if (spiError != NO_ERROR_SPI)
00093     {
00094       return OSP_ERROR_SPI;
00095     }
00096
00097   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00098     {
00099       return OSP_ERROR_CRC;
00100     }
00101
00102   for (uint8_t i = 0; i < 2; i++)
00103     {
00104       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00105     }
00106   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00107   return OSP_NO_ERROR;
00108 }
```

Here is the call graph for this function:



5.4.4.22 osp_read_otp()

```
enum OSP_ERROR_CODE osp_read_otp (
              uint16_t deviceAddress,
              uint8_t otpAddress,
              osireOtpData_t * p_data )
```

OSP_OSIRE_READ_OTP command Reads 8 bytes from OTP memory, from otpAddress. If readout address is beyond OTP address range, 0x00 will be delivered for these addresses.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
otpAddress	address of the first read byte of OTP
p_data	OTP response data

Returns

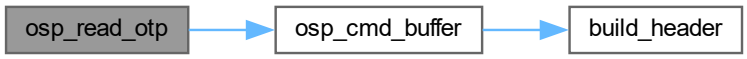
error communication or command parameter error

Definition at line 236 of file osireDevice.c.

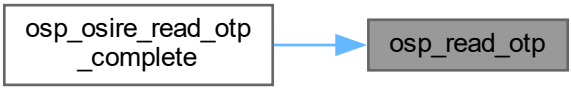
```
00238 {
00239   uint8_t rspBuffer[LENGTH_READ_OTP_RSP]; // response buffer
00240   ospCmdBuffer_t ospCmd;
00241   enum OSP_ERROR_CODE ospErrorCode;
00242   errorSpi_t spiError;
00243
00244   memset (rspBuffer, 0, LENGTH_READ_OTP_RSP);
00245
00246   ospCmd.inCmdId = OSP_OSIRE_READ_OTP;
00247   ospCmd.inDeviceAddress = deviceAddress;
00248   ospCmd.p_inParameter = &otpAddress;
```

```
00249
00250   ospErrorCode = osp_cmd_buffer (&ospCmd);
00251   if (ospErrorCode != OSP_NO_ERROR)
00252     {
00253       return ospErrorCode;
00254     }
00255
00256   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00257                                                       rspBuffer,
00258                                                       ospCmd.outCmdBufferLength,
00259                                                       ospCmd.outResponseLength);
00260
00261   if (spiError != NO_ERROR_SPI)
00262     {
00263       return OSP_ERROR_SPI;
00264     }
00265
00266   if (crc (rspBuffer, LENGTH_READ_OTP_RSP) != 0)
00267     {
00268       return OSP_ERROR_CRC;
00269     }
00270
00271   for (uint8_t i = 0; i < 8; i++)
00272     {
00273       p_rsp->data.byte[i] = rspBuffer[10 - i];
00274     }
00275
00276   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00277   return OSP_NO_ERROR;
00278 }
```

Here is the call graph for this function:



Here is the caller graph for this function:



5.5 osireDevice.h

Go to the documentation of this file.

```
00001 /*****************************************************************************
00002 * Copyright 2022 by ams OSRAM AG                                             *
00003 * All rights are reserved.
      *
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```

```
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00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE     *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.      *
00019 ******************************************************************************/
00020 #ifndef OSP_INC_OSIRE_DEVICE_H_
00021 #define OSP_INC_OSIRE_DEVICE_H_
00022
00023 #ifdef __cplusplus
00024 extern "C"
00025   {
00026 #endif
00027
00040 #include <Osp/inc/genericDevice.h>
00041
00042 /*****************************************************************************/
00043 /********************** defines **********************************************/
00044 #define LENGTH_SET_SETUP_MSG 5
00045 /*****************************************************************************/
00046 #define LENGTH_SET_PWM_MSG 10
00047 /*****************************************************************************/
00048 #define LENGTH_SET_OTTH_MSG 7
00049 /*****************************************************************************/
00050 #define LENGTH_READ_PWM_MSG 4
00051 #define LENGTH_READ_PWM_RSP 10
00052 /*****************************************************************************/
00053 #define LENGTH_READ_OTP_MSG 5
00054 #define LENGTH_READ_OTP_RSP 12
00055 /*****************************************************************************/
00056 #define LENGTH_READ_SETUP_MSG 4
00057 #define LENGTH_READ_SETUP_RSP 5
00058 /*****************************************************************************/
00059 #define LENGTH_READ_TEMPSTATUS_MSG 4
00060 #define LENGTH_READ_TEMPSTATUS_RSP 6
00061 /*****************************************************************************/
00062 #define LENGTH_READ_TEMP_MSG 4
00063 #define LENGTH_READ_TEMP_RSP 5
00064 /*****************************************************************************/
00065 #define LENGTH_READ_OTTH_MSG 4
00066 #define LENGTH_READ_OTTH_RSP 7
00067 /*****************************************************************************/
00068 #define LENGTH_READ_COMSTATUS_MSG 4
00069 #define LENGTH_READ_COMSTATUS_RSP 5
00070 /*****************************************************************************/
00071 #define LENGTH_READ_STATUS_MSG 4
00072 #define LENGTH_READ_STATUS_RSP 5
00073 /*****************************************************************************/
00074 #define LENGTH_READ_LEDSTATUS_MSG 4
00075 #define LENGTH_READ_LEDSTATUS_RSP 5
00076
00077 /*****************************************************************************/
00078 #define LENGTH_P4ERROR_MSG 4
00079
00080 /*****************************************************************************/
00081 /*****************************************************************************/
00085 enum OSP_OSIRE_DEVICE_CMDS
00086 {
00087   OSP_OSIRE_P4ERROR_BIDIR = 0x08,
00088   OSP_OSIRE_CLR_ERROR_SR = 0x21,
00089   OSP_OSIRE_GO_SLEEP_SR = 0x24,
00090   OSP_OSIRE_GO_ACTIVE_SR = 0x25,
00091   OSP_OSIRE_GO_DEEP_SLEEP_SR = 0x26,
00092   OSP_OSIRE_READ_STATUS = 0x40,
00093   OSP_OSIRE_READ_TEMP_STATUS = 0x42,
00094   OSP_OSIRE_READ_COM_STATUS = 0x44,
00095   OSP_OSIRE_READ_LED_STATUS = 0x46,
00096   OSP_OSIRE_READ_TEMP = 0x48,
00097   OSP_OSIRE_READ_OTTH = 0x4A,
00098   OSP_OSIRE_SET_OTTH = 0x4B,
00099   OSP_OSIRE_SET_OTTH_SR = 0x6B,
00100   OSP_OSIRE_READ_SETUP = 0x4C,
00101   OSP_OSIRE_SET_SETUP = 0x4D,
00102   OSP_OSIRE_SET_SETUP_SR = 0x6D,
00103   OSP_OSIRE_READ_PWM = 0x4E,
00104   OSP_OSIRE_SET_PWM = 0x4F,
00105   OSP_OSIRE_SET_PWM_SR = 0x6F,
00106   OSP_OSIRE_READ_OTP = 0x58,
00108   OSP_OSIRE_P4ERROR_LOOP = 0x09
00109 };
00110
00111 /*****************************************************************************/
00112 /*****************************************************************************/
00113 typedef struct SetSetupData_t
00114 {
00115   union
00116   {
00117     uint8_t setupData;
```

```
00118     struct
00119     {
00120       uint8_t uv_fsave :1;
00121       uint8_t ot_fsave :1;
00122       uint8_t los_fsave :1;
00123       uint8_t ce_fsave :1;
00124       uint8_t tempck_sel :1;
00125       uint8_t crc_en :1;
00126       uint8_t com_inv :1;
00127       uint8_t fast_pwm :1;
00128     } bit;
00129   } data;
00130   uint16_t address :10;
00131 } osireSetSetupData_t;
00133 /*****************************************************************************/
00134 /*****************************************************************************/
00135 typedef struct PwmData_t
00136 {
00137   union
00138   {
00139     uint8_t pwmData[6];
00140     struct
00141     {
00142       uint16_t blue_pwm :15;
00143       uint16_t blue_curr :1;
00144       uint16_t green_pwm :15;
00145       uint16_t green_curr :1;
00146       uint16_t red_pwm :15;
00147       uint16_t red_curr :1;
00148     } bit;
00149   } data;
00150   uint16_t address :10;
00151 } osirePwmData_t;
00152
00153 /*****************************************************************************/
00154 /*****************************************************************************/
00155 typedef struct OtpData_t
00156 {
00157   union
00158   {
00159     uint8_t byte[8];
00160   } data;
00161   uint16_t address :10;
00162 } osireOtpData_t;
00164 /*****************************************************************************/
00165 /*****************************************************************************/
00166 typedef struct OtpDataComplete_t
00167 {
00168   union
00169   {
00170     uint8_t byte[32];
00171   } data;
00172   uint16_t address :10;
00173 } osireOtpDataComplete_t;
00174
00175 /*****************************************************************************/
00176 /*****************************************************************************/
00177 typedef struct LedStatus_t
00178 {
00179   union
00180   {
00181     uint8_t ledStatus;
00182     struct
00183     {
00184       uint8_t blue_short :1;
00185       uint8_t green_short :1;
00186       uint8_t red_short :1;
00187       uint8_t ledStatus_reserved_1 :1;
00188       uint8_t blue_open :1;
00189       uint8_t green_open :1;
00190       uint8_t red_open :1;
00191       uint8_t ledStatus_reserved_2 :1;
00192     } bit;
00193   } data;
00194   uint16_t address :10;
00195 } osireLedStatus_t;
00197 /*****************************************************************************/
00198 /*****************************************************************************/
00199 typedef struct osireTemp_t
00200 {
00201   union
00202   {
00203     uint8_t temp_value;
00204   } data;
00205   uint16_t address :10;
00206 } osireTemp_t;
00208 /*****************************************************************************/
```

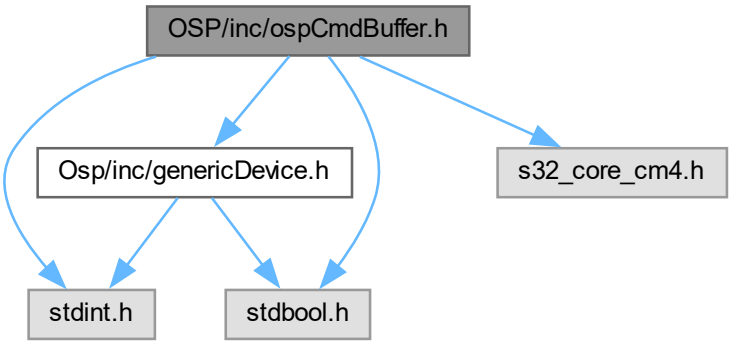
```
00209 /*****************************************************************************/
00210 typedef struct ComStatus_t
00211 {
00212   union
00213   {
00214     uint8_t comStatus;
00215     struct
00216     {
00217       uint8_t sio1_state :2;
00218       uint8_t sio2_state :2;
00219       uint8_t reserved :4;
00220     } bit;
00221   } data;
00222   uint16_t address :10;
00223 } osireComStatus_t;
00225 /*****************************************************************************/
00226 /*****************************************************************************/
00227 typedef struct Status_t
00228 {
00229   union
00230   {
00231     uint8_t status;
00232     struct
00233     {
00234       uint8_t uv_flag :1;
00235       uint8_t ot_flag :1;
00236       uint8_t los_flag :1;
00237       uint8_t ce_flag :1;
00238       uint8_t com_mode :1;
00239       uint8_t otpcrc_flag :1;
00240       uint8_t state :2;
00241     } bit;
00242   } data;
00243   uint16_t address :10;
00244 } osireStatus_t;
00246 /*****************************************************************************/
00247 /*****************************************************************************/
00248 typedef struct TempStatus_t
00249 {
00250   union
00251   {
00252     uint8_t tempStatus[2];
00253     struct
00254     {
00255       uint8_t Status;
00256       uint8_t Temp;
00257     } byte;
00258   } data;
00259   uint16_t address :10;
00260 } osireTempStatus_t;
00261 /*****************************************************************************/
00262 /*****************************************************************************/
00263 typedef struct OtthData_t
00264 {
00265   union
00266   {
00267     uint8_t otthData[3];
00268     struct
00269     {
00270       uint8_t ot_high_value :8;
00271       uint8_t ot_low_value :8;
00272       uint8_t or_cycle :2;
00273       uint8_t otth_reserved :6;
00274     } bit;
00275   } data;
00276   uint16_t address :10;
00277 } osireOtthData_t;
00278 /*****************************************************************************/
00279 /*****************************************************************************/
00280
00293 enum OSP_ERROR_CODE osp_osire_set_setup (uint16_t deviceAddress,
00294                                          osireSetSetupData_t data);
00295
00310 enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (uint16_t deviceAddress,
00311                                                 osireSetSetupData_t data,
00312                                                 osireTempStatus_t *p_data);
00313
00326 enum OSP_ERROR_CODE osp_osire_set_pwm (uint16_t deviceAddress,
00327                                        osirePwmData_t data);
00328
00343 enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (uint16_t deviceAddress,
00344                                               osirePwmData_t data,
00345                                               osireTempStatus_t *p_data);
00346
00359 enum OSP_ERROR_CODE osp_osire_read_pwm (uint16_t deviceAddress,
00360                                         osirePwmData_t *p_data);
00361
```

```
00376 enum OSP_ERROR_CODE osp_read_otp (uint16_t deviceAddress, uint8_t otpAddress,
00377                                   osireOtpData_t *p_data);
00378
00391 enum OSP_ERROR_CODE osp_osire_read_otp_complete (uint16_t deviceAddress,
00392                                                  osireOtpDataComplete_t *p_data);
00393
00405 enum OSP_ERROR_CODE osp_osire_read_ledstatus (uint16_t deviceAddress,
00406                                               osireLedStatus_t *p_data);
00407
00420 enum OSP_ERROR_CODE osp_osire_read_tempstatus (uint16_t deviceAddress,
00421                                                osireTempStatus_t *p_data);
00422
00434 enum OSP_ERROR_CODE osp_osire_read_temp (uint16_t deviceAddress,
00435                                          osireTemp_t *p_data);
00436
00449 enum OSP_ERROR_CODE osp_osire_set_otth (uint16_t deviceAddress,
00450                                         osireOtthData_t data);
00451
00466 enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (uint16_t deviceAddress,
00467                                                osireOtthData_t data,
00468                                                osireTempStatus_t *p_data);
00469
00482 enum OSP_ERROR_CODE osp_osire_read_otth (uint16_t deviceAddress,
00483                                          osireOtthData_t *p_data);
00484
00498 enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (uint16_t deviceAddress,
00499                                                osireTempStatus_t *p_data);
00500
00514 enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (uint16_t deviceAddress,
00515                                                     osireTempStatus_t *p_data);
00516
00527 enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (uint16_t deviceAddress,
00528                                                 osireTempStatus_t *p_data);
00529
00547 enum OSP_ERROR_CODE osp_osire_p4error_bidir (uint16_t deviceAddress,
00548                                              osireTempStatus_t *p_data);
00549
00567 enum OSP_ERROR_CODE osp_osire_p4error_loop (uint16_t deviceAddress,
00568                                             osireTempStatus_t *p_data);
00569
00584 enum OSP_ERROR_CODE osp_go_active_and_sr (uint16_t deviceAddress,
00585                                           osireTempStatus_t *p_rsp);
00586
00597 enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (uint16_t deviceAddress,
00598                                                 osireTempStatus_t *p_data);
00599
00617 enum OSP_ERROR_CODE osp_osire_p4error_bidir (uint16_t deviceAddress,
00618                                              osireTempStatus_t *p_data);
00619
00631 enum OSP_ERROR_CODE osp_osire_read_setup (uint16_t deviceAddress,
00632                                           osireSetSetupData_t *p_data);
00633
00645 enum OSP_ERROR_CODE osp_osire_read_comstatus (uint16_t deviceAddress,
00646                                               osireComStatus_t *p_data);
00647
00659 enum OSP_ERROR_CODE osp_osire_read_status (uint16_t deviceAddress,
00660                                            osireStatus_t *p_data);
00661
00662 #ifdef __cplusplus
00663 }
00664 #endif
00665
00666 #endif  // OSP_INC_OSIRE_DEVICE_H_
```

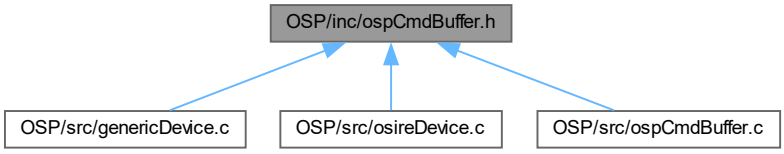
5.6 OSP/inc/ospCmdBuffer.h File Reference

```
#include <stdint.h>
#include <stdbool.h>
#include <Osp/inc/genericDevice.h>
#include <s32_core_cm4.h>
```

Include dependency graph for ospCmdBuffer.h:



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



Data Structures

- struct ospCmd_t

Typedefs

- typedef struct ospCmd_t ospCmdBuffer_t

5.6.1 Typedef Documentation

5.6.1.1 ospCmdBuffer_t

```
typedef struct ospCmd_t ospCmdBuffer_t
```

5.7 ospCmdBuffer.h

Go to the documentation of this file.

```
00001 /*****************************************************************************
00002 * Copyright 2022 by ams OSRAM AG                                             *
00003 * All rights are reserved.                                                   *
      *
00004 *                                                                            *
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00006 * THE SOFTWARE.                                                              *
```

```
00007 *                                                                             *
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00014 * LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,       *
00015 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY       *
00016 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT         *
00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE       *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.        *
00019 *******************************************************************************/
00020 #ifndef OSP_INC_OSPCMDBUFFER_H_
00021 #define OSP_INC_OSPCMDBUFFER_H_
00022
00023 #include <stdint.h>
00024 #include <stdbool.h>
00025 #include <Osp/inc/genericDevice.h>
00026 #include <s32_core_cm4.h>
00027
00028 /*******************************************************************************/
00029 /*******************************************************************************/
00030
00031 /*******************************************************************************/
00032 /*******************************************************************************/
00033 typedef struct ospCmd_t
00034 {
00035   uint16_t inDeviceAddress;
00036   uint8_t inCmdId;
00037   void *p_inParameter;
00038   uint8_t *p_outCmdBuffer;
00039   uint8_t outCmdBufferLength;
00040   uint8_t outResponseLength;
00041   bool outResponseMsg;
00042 } ospCmdBuffer_t;
00044 /*******************************************************************************/
00045 /*******************************************************************************/
00046 START_FUNCTION_DECLARATION_RAMSECTION
00047 enum OSP_ERROR_CODE osp_cmd_buffer (ospCmdBuffer_t *p_cmdInfo)
00048 END_FUNCTION_DECLARATION_RAMSECTION
00049
00050 #endif /* OSP_INC_OSPCMDBUFFER_H_ */
```
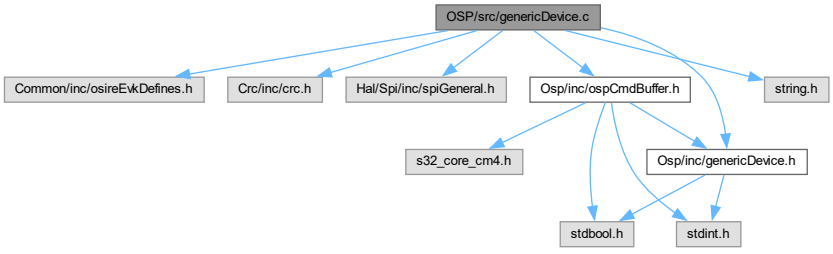

5.8 OSP/src/genericDevice.c File Reference

```
#include <Common/inc/osireEvkDefines.h>
#include <Crc/inc/crc.h>
#include <Hal/Spi/inc/spiGeneral.h>
#include <Osp/inc/genericDevice.h>
#include <Osp/inc/ospCmdBuffer.h>
#include <string.h>
```

Include dependency graph for genericDevice.c:



Functions

- enum OSP_ERROR_CODE osp_init_bidir (uint16_t deviceAddress, ospInitRsp_t *p_rsp)

  OSP_INIT_BIDIR command Initiates the automatic addressing of the chain and sets the communication direction to bidirectional. The command shall be addressed to the first unit in the chain always with address 0x001. The last unit

in the chain (indicated by the EOL mode) returns its address to the master.

- enum OSP_ERROR_CODE osp_init_loop (uint16_t deviceAddress, ospInitRsp_t *p_rsp)

  OSP_INIT_LOOP command Same as INITBIDIR but sets the communication mode to loop-back. The response to the master is sent in the forward direction.

- enum OSP_ERROR_CODE osp_reset (uint16_t deviceAddress)

  OSP_RESET command Performs a complete reset of one or all devices. The effect is identical to a power cycle. All register values are set to their default values, all error flags are cleared, the communication mode detection is restarted, LED drivers are turned off, and the address is set to 0x3ff. The device enters the UNINITIALIZED mode.

- enum OSP_ERROR_CODE osp_go_active (uint16_t deviceAddress)

  OSP_GO_ACTIVE command. Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.

- enum OSP_ERROR_CODE osp_go_sleep (uint16_t deviceAddress)

  OSP_GO_SLEEP command Sends one or all devices into SLEEP state.

- enum OSP_ERROR_CODE osp_go_deep_sleep (uint16_t deviceAddress)

  OSP_GO_DEEP_SLEEP command Sends one or all devices into DEEPSLEEP state.

- enum OSP_ERROR_CODE osp_osire_clr_error (uint16_t deviceAddress)

  OSP_CLEAR_ERROR command This function will clear all error flags, if an error still exists for example short/open the error flag is set again.

- void build_header (uint8_t *p_msg, uint16_t deviceAddress, uint8_t command, uint8_t lengthMsg)

  Internal function for OSP header creation.

5.8.1 Function Documentation

5.8.1.1 build_header()

```
void build_header (
            uint8_t * p_msg,
            uint16_t deviceAddress,
            uint8_t command,
            uint8_t lengthMsg )
```

Internal function for OSP header creation.

Parameters

p_msg	message buffer to create the OSP header
deviceAddress	0..1000 RGBi device address (0: broadcast)
command	OSP or OSP_OSIRE command
lengthMsg	length of the buffer that is used lengthMsg

Returns

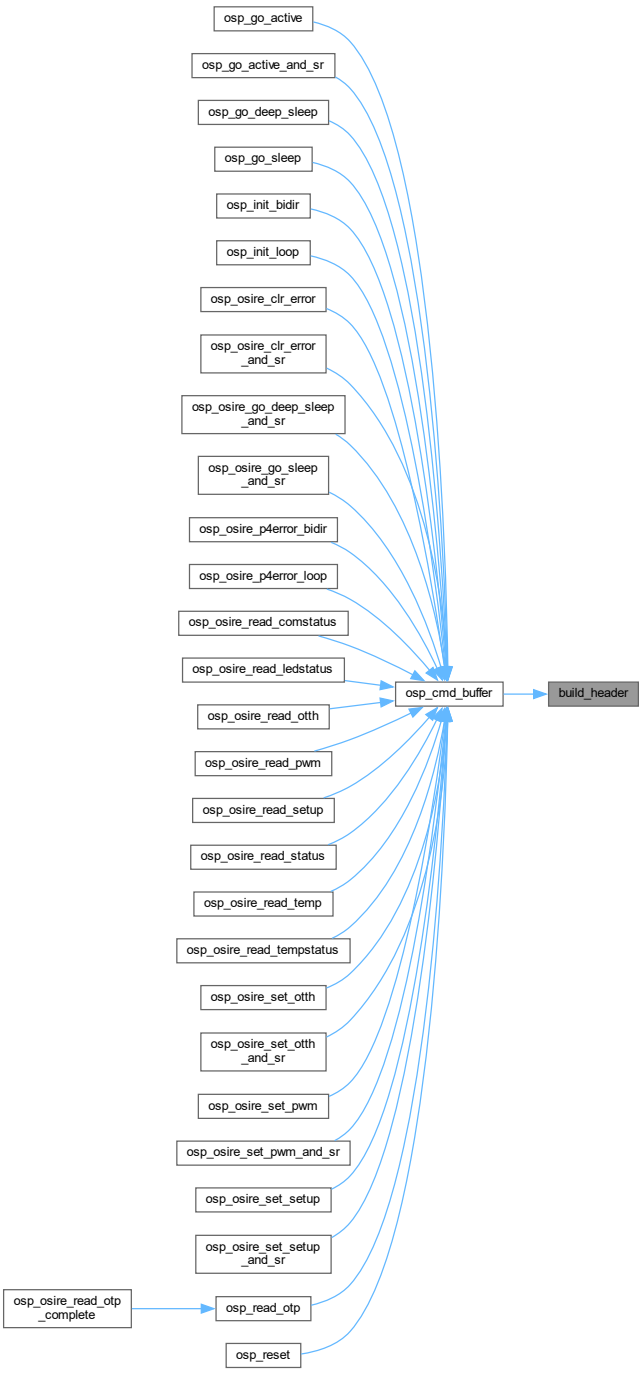
error communication or command parameter error

Definition at line 269 of file genericDevice.c.

```
00271 {
00272   ospHeader_t hdr;
00273
00274   hdr.bit.preample = OSP_PROTOCOL_PREAMPLE;
00275   hdr.bit.address = deviceAddress;
00276
00277   if (lengthMsg == 12)
00278     {
00279       hdr.bit.psi = 7;
00280     }
00281   else
00282     {
00283       hdr.bit.psi = lengthMsg - 4;
00284     }
```

```
00285   hdr.bit.command = command;
00286
00287   for (uint8_t i = 0; i < 3; i++)
00288     {
00289       *p_msg = hdr.buf[3 - i];
00290       p_msg++;
00291     }
00292 }
```

Here is the caller graph for this function:



5.8.1.2 osp_go_active()

```
enum OSP_ERROR_CODE osp_go_active (
            uint16_t deviceAddress )
```

OSP_GO_ACTIVE command. Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

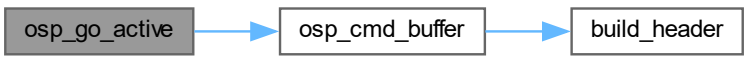
Returns

error communication or command parameter error

Definition at line 150 of file genericDevice.c.

```
00151 {
00152   ospCmdBuffer_t ospCmd;
00153   enum OSP_ERROR_CODE ospErrorCode;
00154   errorSpi_t spiError;
00155
00156   ospCmd.inCmdId = OSP_GO_ACTIVE;
00157   ospCmd.inDeviceAddress = deviceAddress;
00158   ospCmd.p_inParameter = NULL;
00159
00160   ospErrorCode = osp_cmd_buffer (&ospCmd);
00161   if (ospErrorCode != OSP_NO_ERROR)
00162     {
00163       return ospErrorCode;
00164     }
00165
00166   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00167                                           ospCmd.outCmdBufferLength);
00168
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173
00174   return OSP_NO_ERROR;
00175 }
```

Here is the call graph for this function:



5.8.1.3 osp_go_deep_sleep()

```
enum OSP_ERROR_CODE osp_go_deep_sleep (
            uint16_t deviceAddress )
```

OSP_GO_DEEP_SLEEP command Sends one or all devices into DEEPSLEEP state.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

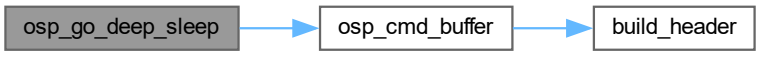
Returns

error communication or command parameter error

Definition at line 209 of file genericDevice.c.

```
00210 {
00211   ospCmdBuffer_t ospCmd;
00212   enum OSP_ERROR_CODE ospErrorCode;
00213   errorSpi_t spiError;
00214
00215   ospCmd.inCmdId = OSP_GO_DEEP_SLEEP;
00216   ospCmd.inDeviceAddress = deviceAddress;
00217   ospCmd.p_inParameter = NULL;
00218
00219   ospErrorCode = osp_cmd_buffer (&ospCmd);
00220   if (ospErrorCode != OSP_NO_ERROR)
00221     {
00222       return ospErrorCode;
00223     }
00224
00225   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00226                                           ospCmd.outCmdBufferLength);
00227
00228   if (spiError != NO_ERROR_SPI)
00229     {
00230       return OSP_ERROR_SPI;
00231     }
00232
00233   return OSP_NO_ERROR;
00234
00235 }
```

Here is the call graph for this function:



5.8.1.4 osp_go_sleep()

```
enum OSP_ERROR_CODE osp_go_sleep (
            uint16_t deviceAddress )
```

OSP_GO_SLEEP command Sends one or all devices into SLEEP state.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

Returns

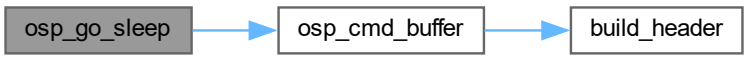
error communication or command parameter error

Definition at line 179 of file genericDevice.c.

```
00180 {
00181   ospCmdBuffer_t ospCmd;
00182   enum OSP_ERROR_CODE ospErrorCode;
00183   errorSpi_t spiError;
00184
00185   ospCmd.inCmdId = OSP_GO_SLEEP;
00186   ospCmd.inDeviceAddress = deviceAddress;
00187   ospCmd.p_inParameter = NULL;
00188
00189   ospErrorCode = osp_cmd_buffer (&ospCmd);
00190   if (ospErrorCode != OSP_NO_ERROR)
00191     {
```

```
00192       return ospErrorCode;
00193     }
00194
00195   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00196                                           ospCmd.outCmdBufferLength);
00197
00198   if (spiError != NO_ERROR_SPI)
00199     {
00200       return OSP_ERROR_SPI;
00201     }
00202
00203   return OSP_NO_ERROR;
00204
00205 }
```

Here is the call graph for this function:



5.8.1.5 osp_init_bidir()

```
enum OSP_ERROR_CODE osp_init_bidir (
            uint16_t deviceAddress,
            ospInitRsp_t * p_rsp )
```

OSP_INIT_BIDIR command Initiates the automatic addressing of the chain and sets the communication direction to bidirectional. The command shall be addressed to the first unit in the chain always with address 0x001. The last unit in the chain (indicated by the EOL mode) returns its address to the master.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	start address of 1st device, shall be 1
p_rsp	response data from device

Returns

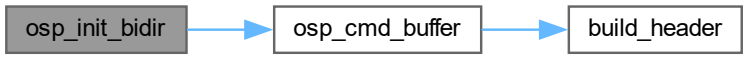
error communication or command parameter error

Definition at line 30 of file genericDevice.c.

```
00031 {
00032   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00033   ospCmdBuffer_t ospCmd;
00034   enum OSP_ERROR_CODE ospErrorCode;
00035   errorSpi_t spiError;
00036
00037   // clear response buffer
00038   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00039
00040   ospCmd.inCmdId = OSP_INIT_BIDIR;
00041   ospCmd.inDeviceAddress = deviceAddress;
00042   ospCmd.p_inParameter = NULL;
00043
00044   ospErrorCode = osp_cmd_buffer (&ospCmd);
00045   if (ospErrorCode != OSP_NO_ERROR)
00046     {
00047       return ospErrorCode;
00048     }
00049
00050   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00051                                                       rspBuffer,
00052                                                       ospCmd.outCmdBufferLength,
00053                                                       ospCmd.outResponseLength);
```

```
00054
00055   if (spiError != NO_ERROR_SPI)
00056     {
00057       return OSP_ERROR_SPI;
00058     }
00059
00060   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00061     {
00062       return OSP_ERROR_CRC;
00063     }
00064
00065   p_rsp->data.bit.temp = rspBuffer[3];
00066   p_rsp->data.bit.status = rspBuffer[4];
00067   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00068       | ((rspBuffer[1] » 2) & 0x3F);
00069
00070   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00071   return OSP_NO_ERROR;
00072 }
```

Here is the call graph for this function:



5.8.1.6 osp_init_loop()

```
enum OSP_ERROR_CODE osp_init_loop (
            uint16_t deviceAddress,
            ospInitRsp_t * p_rsp )
```

OSP_INIT_LOOP command Same as INITBIDIR but sets the communication mode to loop-back. The response to the master is sent in the forward direction.
For further details refer to "OSIRE_E3731i_Start_Up_Guide"

Parameters

deviceAddress	start address of 1st device, shall be 1
p_rsp	response data from device

Returns

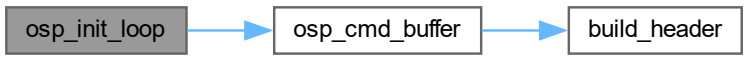
error communication or command parameter error

Definition at line 76 of file genericDevice.c.

```
00077 {
00078   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00079   ospCmdBuffer_t ospCmd;
00080   enum OSP_ERROR_CODE ospErrorCode;
00081   errorSpi_t spiError;
00082
00083   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00084
00085   ospCmd.inCmdId = OSP_INIT_LOOP;
00086   ospCmd.inDeviceAddress = deviceAddress;
00087   ospCmd.p_inParameter = NULL;
00088
00089   ospErrorCode = osp_cmd_buffer (&ospCmd);
00090   if (ospErrorCode != OSP_NO_ERROR)
00091     {
00092       return ospErrorCode;
00093     }
00094
00095   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
```

```
00096                                                   rspBuffer,
00097                                                   ospCmd.outCmdBufferLength,
00098                                                   ospCmd.outResponseLength);
00099
00100   if (spiError != NO_ERROR_SPI)
00101     {
00102       return OSP_ERROR_SPI;
00103     }
00104
00105   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00106     {
00107       return OSP_ERROR_CRC;
00108     }
00109
00110   p_rsp->data.bit.temp = rspBuffer[3];
00111   p_rsp->data.bit.status = rspBuffer[4];
00112   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00113       | ((rspBuffer[1] » 2) & 0x3F);
00114
00115   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00116   return OSP_NO_ERROR;
00117 }
```

Here is the call graph for this function:



5.8.1.7 osp_osire_clr_error()

```
enum OSP_ERROR_CODE osp_osire_clr_error (
            uint16_t deviceAddress )
```

OSP_CLEAR_ERROR command This function will clear all error flags, if an error still exists for example short/open the error flag is set again.

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)

Returns

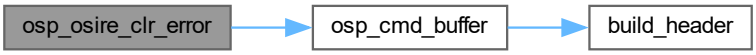
error communication or command parameter error

Definition at line 239 of file genericDevice.c.

```
00240 {
00241   ospCmdBuffer_t ospCmd;
00242   enum OSP_ERROR_CODE ospErrorCode;
00243   errorSpi_t spiError;
00244
00245   ospCmd.inCmdId = OSP_CLR_ERROR;
00246   ospCmd.inDeviceAddress = deviceAddress;
00247   ospCmd.p_inParameter = NULL;
00248
00249   ospErrorCode = osp_cmd_buffer (&ospCmd);
00250   if (ospErrorCode != OSP_NO_ERROR)
00251     {
00252       return ospErrorCode;
00253     }
00254
00255   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00256                                           ospCmd.outCmdBufferLength);
00257
00258   if (spiError != NO_ERROR_SPI)
00259     {
00260       return OSP_ERROR_SPI;
```

```
00261     }
00262
00263   return OSP_NO_ERROR;
00264
00265 }
```

Here is the call graph for this function:



5.8.1.8 osp_reset()

```
enum OSP_ERROR_CODE osp_reset (
            uint16_t deviceAddress )
```

OSP_RESET command Performs a complete reset of one or all devices. The effect is identical to a power cycle. All register values are set to their default values, all error flags are cleared, the communication mode detection is restarted, LED drivers are turned off, and the address is set to 0x3ff. The device enters the UNINITIALIZED mode. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceId	0..1000 RGBi device address (0: broadcast)

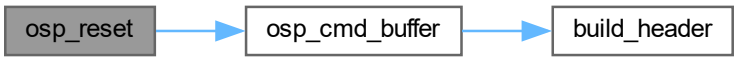
Returns

error communication or command parameter error

Definition at line 121 of file genericDevice.c.

```
00122 {
00123   ospCmdBuffer_t ospCmd;
00124   enum OSP_ERROR_CODE ospErrorCode;
00125   errorSpi_t spiError;
00126
00127   ospCmd.inCmdId = OSP_RESET;
00128   ospCmd.inDeviceAddress = deviceAddress;
00129   ospCmd.p_inParameter = NULL;
00130
00131   ospErrorCode = osp_cmd_buffer (&ospCmd);
00132   if (ospErrorCode != OSP_NO_ERROR)
00133     {
00134       return ospErrorCode;
00135     }
00136
00137   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00138                                           ospCmd.outCmdBufferLength);
00139
00140   if (spiError != NO_ERROR_SPI)
00141     {
00142       return OSP_ERROR_SPI;
00143     }
00144
00145   return OSP_NO_ERROR;
00146 }
```

Here is the call graph for this function:



5.9 genericDevice.c

Go to the documentation of this file.

```
00001 /*****************************************************************************
00002 * Copyright 2022 by ams OSRAM AG                                             *
00003 * All rights are reserved.                                                   *
      *
00004 *                                                                            *
00005 * IMPORTANT - PLEASE READ CAREFULLY BEFORE COPYING, INSTALLING OR USING      *
00006 * THE SOFTWARE.                                                              *
00007 *                                                                            *
00008 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS        *
00009 * "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT          *
00010 * LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS          *
00011 * FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT   *
00012 * OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,      *
00013 * SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT           *
00014 * LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,      *
00015 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY      *
00016 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT        *
00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE      *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.       *
00019 *****************************************************************************/
00020
00021 #include <Common/inc/osireEvkDefines.h>
00022 #include <Crc/inc/crc.h>
00023 #include <Hal/Spi/inc/spiGeneral.h>
00024 #include <Osp/inc/genericDevice.h>
00025 #include <Osp/inc/ospCmdBuffer.h>
00026 #include <string.h>
00027
00028 /*****************************************************************************/
00029 /*****************************************************************************/
00030 enum OSP_ERROR_CODE osp_init_bidir (uint16_t deviceAddress, ospInitRsp_t *p_rsp)
00031 {
00032   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00033   ospCmdBuffer_t ospCmd;
00034   enum OSP_ERROR_CODE ospErrorCode;
00035   errorSpi_t spiError;
00036
00037   // clear response buffer
00038   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00039
00040   ospCmd.inCmdId = OSP_INIT_BIDIR;
00041   ospCmd.inDeviceAddress = deviceAddress;
00042   ospCmd.p_inParameter = NULL;
00043
00044   ospErrorCode = osp_cmd_buffer (&ospCmd);
00045   if (ospErrorCode != OSP_NO_ERROR)
00046     {
00047       return ospErrorCode;
00048     }
00049
00050   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00051                                                       rspBuffer,
00052                                                       ospCmd.outCmdBufferLength,
00053                                                       ospCmd.outResponseLength);
00054
00055   if (spiError != NO_ERROR_SPI)
00056     {
00057       return OSP_ERROR_SPI;
00058     }
00059
00060   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00061     {
00062       return OSP_ERROR_CRC;
00063     }
```

```
00064
00065   p_rsp->data.bit.temp = rspBuffer[3];
00066   p_rsp->data.bit.status = rspBuffer[4];
00067   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00068       | ((rspBuffer[1] » 2) & 0x3F);
00069
00070   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00071   return OSP_NO_ERROR;
00072 }
00073
00074 /*****************************************************************************/
00075 /*****************************************************************************/
00076 enum OSP_ERROR_CODE osp_init_loop (uint16_t deviceAddress, ospInitRsp_t *p_rsp)
00077 {
00078   uint8_t rspBuffer[LENGTH_INIT_RSP]; // response buffer
00079   ospCmdBuffer_t ospCmd;
00080   enum OSP_ERROR_CODE ospErrorCode;
00081   errorSpi_t spiError;
00082
00083   memset (rspBuffer, 0, LENGTH_INIT_RSP);
00084
00085   ospCmd.inCmdId = OSP_INIT_LOOP;
00086   ospCmd.inDeviceAddress = deviceAddress;
00087   ospCmd.p_inParameter = NULL;
00088
00089   ospErrorCode = osp_cmd_buffer (&ospCmd);
00090   if (ospErrorCode != OSP_NO_ERROR)
00091     {
00092       return ospErrorCode;
00093     }
00094
00095   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00096                                                       rspBuffer,
00097                                                       ospCmd.outCmdBufferLength,
00098                                                       ospCmd.outResponseLength);
00099
00100   if (spiError != NO_ERROR_SPI)
00101     {
00102       return OSP_ERROR_SPI;
00103     }
00104
00105   if (crc (rspBuffer, LENGTH_INIT_RSP) != 0)
00106     {
00107       return OSP_ERROR_CRC;
00108     }
00109
00110   p_rsp->data.bit.temp = rspBuffer[3];
00111   p_rsp->data.bit.status = rspBuffer[4];
00112   p_rsp->data.bit.address = ((rspBuffer[0] & 0x0F) « 6)
00113       | ((rspBuffer[1] » 2) & 0x3F);
00114
00115   p_rsp->address = p_rsp->data.bit.address; // return address for all cmds with rsp
00116   return OSP_NO_ERROR;
00117 }
00118
00119 /*****************************************************************************/
00120 /*****************************************************************************/
00121 enum OSP_ERROR_CODE osp_reset (uint16_t deviceAddress)
00122 {
00123   ospCmdBuffer_t ospCmd;
00124   enum OSP_ERROR_CODE ospErrorCode;
00125   errorSpi_t spiError;
00126
00127   ospCmd.inCmdId = OSP_RESET;
00128   ospCmd.inDeviceAddress = deviceAddress;
00129   ospCmd.p_inParameter = NULL;
00130
00131   ospErrorCode = osp_cmd_buffer (&ospCmd);
00132   if (ospErrorCode != OSP_NO_ERROR)
00133     {
00134       return ospErrorCode;
00135     }
00136
00137   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00138                                           ospCmd.outCmdBufferLength);
00139
00140   if (spiError != NO_ERROR_SPI)
00141     {
00142       return OSP_ERROR_SPI;
00143     }
00144
00145   return OSP_NO_ERROR;
00146 }
00147
00148 /*****************************************************************************/
00149 /*****************************************************************************/
00150 enum OSP_ERROR_CODE osp_go_active (uint16_t deviceAddress)
```

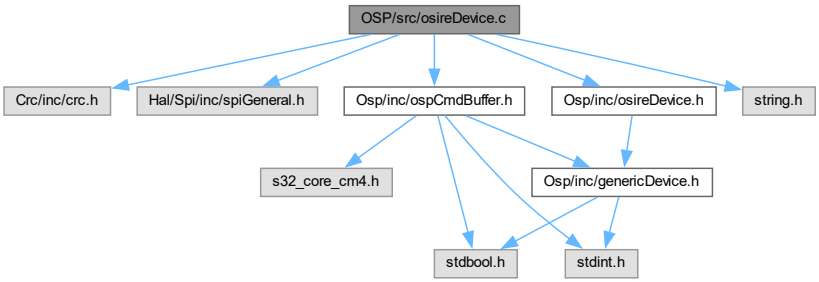
```
00151 {
00152   ospCmdBuffer_t ospCmd;
00153   enum OSP_ERROR_CODE ospErrorCode;
00154   errorSpi_t spiError;
00155 
00156   ospCmd.inCmdId = OSP_GO_ACTIVE;
00157   ospCmd.inDeviceAddress = deviceAddress;
00158   ospCmd.p_inParameter = NULL;
00159 
00160   ospErrorCode = osp_cmd_buffer (&ospCmd);
00161   if (ospErrorCode != OSP_NO_ERROR)
00162     {
00163       return ospErrorCode;
00164     }
00165 
00166   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00167                                           ospCmd.outCmdBufferLength);
00168 
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173 
00174   return OSP_NO_ERROR;
00175 }
00176 
00177 /*****************************************************************************/
00178 /*****************************************************************************/
00179 enum OSP_ERROR_CODE osp_go_sleep (uint16_t deviceAddress)
00180 {
00181   ospCmdBuffer_t ospCmd;
00182   enum OSP_ERROR_CODE ospErrorCode;
00183   errorSpi_t spiError;
00184 
00185   ospCmd.inCmdId = OSP_GO_SLEEP;
00186   ospCmd.inDeviceAddress = deviceAddress;
00187   ospCmd.p_inParameter = NULL;
00188 
00189   ospErrorCode = osp_cmd_buffer (&ospCmd);
00190   if (ospErrorCode != OSP_NO_ERROR)
00191     {
00192       return ospErrorCode;
00193     }
00194 
00195   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00196                                           ospCmd.outCmdBufferLength);
00197 
00198   if (spiError != NO_ERROR_SPI)
00199     {
00200       return OSP_ERROR_SPI;
00201     }
00202 
00203   return OSP_NO_ERROR;
00204 
00205 }
00206 
00207 /*****************************************************************************/
00208 /*****************************************************************************/
00209 enum OSP_ERROR_CODE osp_go_deep_sleep (uint16_t deviceAddress)
00210 {
00211   ospCmdBuffer_t ospCmd;
00212   enum OSP_ERROR_CODE ospErrorCode;
00213   errorSpi_t spiError;
00214 
00215   ospCmd.inCmdId = OSP_GO_DEEP_SLEEP;
00216   ospCmd.inDeviceAddress = deviceAddress;
00217   ospCmd.p_inParameter = NULL;
00218 
00219   ospErrorCode = osp_cmd_buffer (&ospCmd);
00220   if (ospErrorCode != OSP_NO_ERROR)
00221     {
00222       return ospErrorCode;
00223     }
00224 
00225   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00226                                           ospCmd.outCmdBufferLength);
00227 
00228   if (spiError != NO_ERROR_SPI)
00229     {
00230       return OSP_ERROR_SPI;
00231     }
00232 
00233   return OSP_NO_ERROR;
00234 
00235 }
00236 
00237 /*****************************************************************************/
```

```
00238 /*****************************************************************************/
00239 enum OSP_ERROR_CODE osp_osire_clr_error (uint16_t deviceAddress)
00240 {
00241   ospCmdBuffer_t ospCmd;
00242   enum OSP_ERROR_CODE ospErrorCode;
00243   errorSpi_t spiError;
00244
00245   ospCmd.inCmdId = OSP_CLR_ERROR;
00246   ospCmd.inDeviceAddress = deviceAddress;
00247   ospCmd.p_inParameter = NULL;
00248
00249   ospErrorCode = osp_cmd_buffer (&ospCmd);
00250   if (ospErrorCode != OSP_NO_ERROR)
00251     {
00252       return ospErrorCode;
00253     }
00254
00255   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00256                                           ospCmd.outCmdBufferLength);
00257
00258   if (spiError != NO_ERROR_SPI)
00259     {
00260       return OSP_ERROR_SPI;
00261     }
00262
00263   return OSP_NO_ERROR;
00264
00265 }
00266
00267 /*****************************************************************************/
00268 /*****************************************************************************/
00269 void build_header (uint8_t *p_msg, uint16_t deviceAddress, uint8_t command,
00270                    uint8_t lengthMsg)
00271 {
00272   ospHeader_t hdr;
00273
00274   hdr.bit.preample = OSP_PROTOCOL_PREAMPLE;
00275   hdr.bit.address = deviceAddress;
00276
00277   if (lengthMsg == 12)
00278     {
00279       hdr.bit.psi = 7;
00280     }
00281   else
00282     {
00283       hdr.bit.psi = lengthMsg - 4;
00284     }
00285   hdr.bit.command = command;
00286
00287   for (uint8_t i = 0; i < 3; i++)
00288     {
00289       *p_msg = hdr.buf[3 - i];
00290       p_msg++;
00291     }
00292 }
```

5.10 OSP/src/osireDevice.c File Reference

```
#include <Crc/inc/crc.h>
#include <Hal/Spi/inc/spiGeneral.h>
#include <Osp/inc/osireDevice.h>
#include <Osp/inc/ospCmdBuffer.h>
#include <string.h>
```

Include dependency graph for osireDevice.c:



Functions

- enum OSP_ERROR_CODE osp_osire_set_setup (uint16_t deviceAddress, osireSetSetupData_t data)

  OSP_OSIRE_SET_SETUP command.
- enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (uint16_t deviceAddress, osireSetSetupData_t data, osireTempStatus_t *p_rsp)

  OSP_OSIRE_SET_SETUP_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_set_pwm (uint16_t deviceAddress, osirePwmData_t data)

  OSP_OSIRE_SET_PWM command.
- enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (uint16_t deviceAddress, osirePwmData_t data, osireTempStatus_t *p_rsp)

  OSP_OSIRE_SET_PWM_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_read_pwm (uint16_t deviceAddress, osirePwmData_t *p_rsp)

  OSP_OSIRE_READ_PWM command.
- enum OSP_ERROR_CODE osp_read_otp (uint16_t deviceAddress, uint8_t otpAddress, osireOtpData_t *p_rsp)

  OSP_OSIRE_READ_OTP command Reads 8 bytes from OTP memory, from otpAddress. If readout address is beyond OTP address range, 0x00 will be delivered for these addresses.
- enum OSP_ERROR_CODE osp_osire_read_otp_complete (uint16_t deviceAddress, osireOtpDataComplete_t *p_rsp)

  Read complete OTP memory command Reads all bytes from OTP memory. By use of several consecutive OSP_OSIRE_READ_OTP commands.
- enum OSP_ERROR_CODE osp_osire_read_ledstatus (uint16_t deviceAddress, osireLedStatus_t *p_rsp)

  OSP_OSIRE_READ_LED_STATUS command This function reads the LED STATUS register of the device.
- enum OSP_ERROR_CODE osp_osire_read_tempstatus (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_OSIRE_READ_TEMP_STATUS command This function reads the STATUS and TEMP register in a single 2-byte payload of the device.
- enum OSP_ERROR_CODE osp_osire_read_temp (uint16_t deviceAddress, osireTemp_t *p_rsp)

  OSP_OSIRE_READ_TEMP command This function reads LED TEMP register of the device.
- enum OSP_ERROR_CODE osp_osire_set_otth (uint16_t deviceAddress, osireOtthData_t data)

  OSP_OSIRE_SET_OTTH command.
- enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (uint16_t deviceAddress, osireOtthData_t data, osireTempStatus_t *p_rsp)

  OSP_OSIRE_SET_OTTH_SR command and reads status and temperature.
- enum OSP_ERROR_CODE osp_osire_read_otth (uint16_t deviceAddress, osireOtthData_t *p_rsp)

  OSP_OSIRE_READ_OTTH command.
- enum OSP_ERROR_CODE osp_go_active_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

OSP_GO_ACTIVE command and read status and temperature Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.

- enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_OSIRE_GO_SLEEP_SR command and read status and temperature This function sends one or all devices into SLEEP state Additionally the STATUS and TEMP register is read.
- enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_OSIRE_GO_DEEP_SLEEP_SR command and read status and temperature This function sends one or all devices into DEEP_SLEEP state Additionally the STATUS and TEMP register is read.
- enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_CLEAR_ERROR command and read status and temperature This function will clear all error flags, if an error still exists for example short/open the error flag is set again and LED TEMPSTAT Register will be sent.
- enum OSP_ERROR_CODE osp_osire_p4error_bidir (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_PING_FOR_ERROR_BIDIR command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).
- enum OSP_ERROR_CODE osp_osire_p4error_loop (uint16_t deviceAddress, osireTempStatus_t *p_rsp)

  OSP_PING_FOR_ERROR_LOOP command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).
- enum OSP_ERROR_CODE osp_osire_read_setup (uint16_t deviceAddress, osireSetSetupData_t *p_rsp)

  OSP_OSIRE_READ_SETUP command This function reads SETUP register of the device.
- enum OSP_ERROR_CODE osp_osire_read_comstatus (uint16_t deviceAddress, osireComStatus_t *p_rsp)

  OSP_OSIRE_READ_COM_STATUS command This function reads COM STATUS register of the device.
- enum OSP_ERROR_CODE osp_osire_read_status (uint16_t deviceAddress, osireStatus_t *p_rsp)

  OSP_OSIRE_READ_STATUS command This function reads STATUS register of the device.

5.10.1 Function Documentation

5.10.1.1 osp_go_active_and_sr()

```
enum OSP_ERROR_CODE osp_go_active_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_rsp )
```

OSP_GO_ACTIVE command and read status and temperature Puts device into ACTIVE state: The LED drivers are enabled. The last PWM parameters are used to create LED PWM signals. An PWM parameter update via SETPWM() command is possible. During ACTIVE mode, diagnostic is possible and readable.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

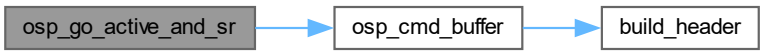
Returns

error communication or command parameter error

Definition at line 563 of file osireDevice.c.

```
00565 {
00566   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00567   ospCmdBuffer_t ospCmd;
00568   enum OSP_ERROR_CODE ospErrorCode;
00569   errorSpi_t spiError;
00570
00571   ospCmd.inCmdId = OSP_OSIRE_GO_ACTIVE_SR;
00572   ospCmd.inDeviceAddress = deviceAddress;
00573   ospCmd.p_inParameter = NULL;
00574
00575   ospErrorCode = osp_cmd_buffer (&ospCmd);
00576   if (ospErrorCode != OSP_NO_ERROR)
00577     {
00578       return ospErrorCode;
00579     }
00580
00581   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00582                                                       rspBuffer,
00583                                                       ospCmd.outCmdBufferLength,
00584                                                       ospCmd.outResponseLength);
00585
00586   if (spiError != NO_ERROR_SPI)
00587     {
00588       return OSP_ERROR_SPI;
00589     }
00590
00591   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00592     {
00593       return OSP_ERROR_CRC;
00594     }
00595
00596   for (uint8_t i = 0; i < 2; i++)
00597     {
00598       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00599     }
00600
00601   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00602   return OSP_NO_ERROR;
00603 }
```

Here is the call graph for this function:



5.10.1.2 osp_osire_clr_error_and_sr()

```
enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_CLEAR_ERROR command and read status and temperature This function will clear all error flags, if an error still exists for example short/open the error flag is set again and LED TEMPSTAT Register will be sent.

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

Returns

error communication or command parameter error

Parameters

deviceAddress	1..1000 RGBi device address
p_data,pointer	to response data from RGBi LED

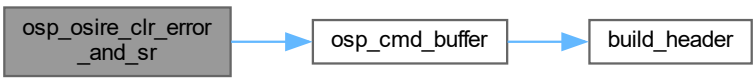
Returns

error communication or command parameter error

Definition at line 699 of file osireDevice.c.

```
00701 {
00702   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00703   ospCmdBuffer_t ospCmd;
00704   enum OSP_ERROR_CODE ospErrorCode;
00705   errorSpi_t spiError;
00706
00707   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00708
00709   ospCmd.inCmdId = OSP_OSIRE_CLR_ERROR_SR;
00710   ospCmd.inDeviceAddress = deviceAddress;
00711   ospCmd.p_inParameter = NULL;
00712
00713   ospErrorCode = osp_cmd_buffer (&ospCmd);
00714   if (ospErrorCode != OSP_NO_ERROR)
00715     {
00716       return ospErrorCode;
00717     }
00718
00719   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00720                                                       rspBuffer,
00721                                                       ospCmd.outCmdBufferLength,
00722                                                       ospCmd.outResponseLength);
00723
00724   if (spiError != NO_ERROR_SPI)
00725     {
00726       return OSP_ERROR_SPI;
00727     }
00728
00729   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00730     {
00731       return OSP_ERROR_CRC;
00732     }
00733
00734   for (uint8_t i = 0; i < 2; i++)
00735     {
00736       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00737     }
00738
00739   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00740   return OSP_NO_ERROR;
00741 }
```

Here is the call graph for this function:



5.10.1.3 osp_osire_go_deep_sleep_and_sr()

```
enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (
```

```
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_GO_DEEP_SLEEP_SR command and read status and temperature This function sends one or all devices into DEEP_SLEEP state Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

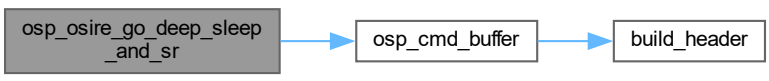
Returns

error communication or command parameter error

Definition at line 653 of file osireDevice.c.

```
00655 {
00656   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00657   ospCmdBuffer_t ospCmd;
00658   enum OSP_ERROR_CODE ospErrorCode;
00659   errorSpi_t spiError;
00660
00661   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00662
00663   ospCmd.inCmdId = OSP_OSIRE_GO_DEEP_SLEEP_SR;
00664   ospCmd.inDeviceAddress = deviceAddress;
00665   ospCmd.p_inParameter = NULL;
00666
00667   ospErrorCode = osp_cmd_buffer (&ospCmd);
00668   if (ospErrorCode != OSP_NO_ERROR)
00669     {
00670       return ospErrorCode;
00671     }
00672
00673   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00674                                                       rspBuffer,
00675                                                       ospCmd.outCmdBufferLength,
00676                                                       ospCmd.outResponseLength);
00677
00678   if (spiError != NO_ERROR_SPI)
00679     {
00680       return OSP_ERROR_SPI;
00681     }
00682
00683   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00684     {
00685       return OSP_ERROR_CRC;
00686     }
00687
00688   for (uint8_t i = 0; i < 2; i++)
00689     {
00690       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00691     }
00692
00693   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00694   return OSP_NO_ERROR;
00695 }
```

Here is the call graph for this function:



5.10.1.4 osp_osire_go_sleep_and_sr()

```
enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (
```

```
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_GO_SLEEP_SR command and read status and temperature This function sends one or all devices into SLEEP state Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

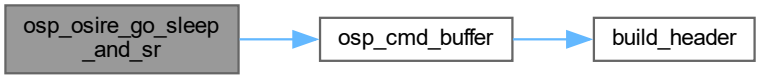
Returns

error communication or command parameter error

Definition at line 607 of file osireDevice.c.

```
00609 {
00610   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00611   ospCmdBuffer_t ospCmd;
00612   enum OSP_ERROR_CODE ospErrorCode;
00613   errorSpi_t spiError;
00614
00615   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00616
00617   ospCmd.inCmdId = OSP_OSIRE_GO_SLEEP_SR;
00618   ospCmd.inDeviceAddress = deviceAddress;
00619   ospCmd.p_inParameter = NULL;
00620
00621   ospErrorCode = osp_cmd_buffer (&ospCmd);
00622   if (ospErrorCode != OSP_NO_ERROR)
00623     {
00624       return ospErrorCode;
00625     }
00626
00627   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00628                                                       rspBuffer,
00629                                                       ospCmd.outCmdBufferLength,
00630                                                       ospCmd.outResponseLength);
00631
00632   if (spiError != NO_ERROR_SPI)
00633     {
00634       return OSP_ERROR_SPI;
00635     }
00636
00637   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00638     {
00639       return OSP_ERROR_CRC;
00640     }
00641
00642   for (uint8_t i = 0; i < 2; i++)
00643     {
00644       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00645     }
00646
00647   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00648   return OSP_NO_ERROR;
00649 }
```

Here is the call graph for this function:



5.10.1.5 osp_osire_p4error_bidir()

```
enum OSP_ERROR_CODE osp_osire_p4error_bidir (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_PING_FOR_ERROR_BIDIR command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

Returns

error communication or command parameter error

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

Returns

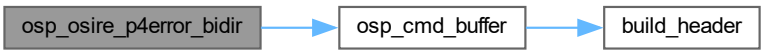
error communication or command parameter error

Definition at line 745 of file osireDevice.c.

```
00747 {
00748   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00749   ospCmdBuffer_t ospCmd;
00750   enum OSP_ERROR_CODE ospErrorCode;
00751   errorSpi_t spiError;
00752
00753   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00754
00755   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_BIDIR;
00756   ospCmd.inDeviceAddress = deviceAddress;
00757   ospCmd.p_inParameter = NULL;
00758
00759   ospErrorCode = osp_cmd_buffer (&ospCmd);
00760   if (ospErrorCode != OSP_NO_ERROR)
00761     {
00762       return ospErrorCode;
00763     }
00764
00765   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00766                                                       rspBuffer,
00767                                                       ospCmd.outCmdBufferLength,
00768                                                       ospCmd.outResponseLength);
00769
00770   if (spiError != NO_ERROR_SPI)
00771     {
00772       return OSP_ERROR_SPI;
00773     }
00774
00775   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00776     {
00777       return OSP_ERROR_CRC;
00778     }
00779
00780   for (uint8_t i = 0; i < 2; i++)
00781     {
00782       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00783     }
00784
00785   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00786   return OSP_NO_ERROR;
```

```
00787 }
```

Here is the call graph for this function:



5.10.1.6 osp_osire_p4error_loop()

```
enum OSP_ERROR_CODE osp_osire_p4error_loop (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_PING_FOR_ERROR_LOOP command Addressed or initialized device (typ. 1st.), checks if error flag occurs. It will check only the selected flag bits which leads to SLEEP state (setup register). If yes: answer to master (state + temperature) if not: same command will be forward to next device with a new address field (STARTADDRESS+1). If no error flag bit in chain. Last device sends status + temperature register. Note: The command shall use the address of the first device only. Using an address from a unit in the middle of the chain might lead to unpredictable behavior of the chain if another unit saw a reset condition (e.g. power loss).

Parameters

deviceAddress	of first RGBi device (typ. 1)
p_data,pointer	to response data from RGBi LED

Returns

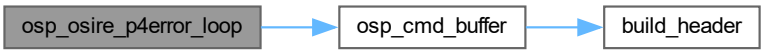
error communication or command parameter error

Definition at line 790 of file osireDevice.c.

```
00792 {
00793   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00794   ospCmdBuffer_t ospCmd;
00795   enum OSP_ERROR_CODE ospErrorCode;
00796   errorSpi_t spiError;
00797
00798   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00799
00800   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_LOOP;
00801   ospCmd.inDeviceAddress = deviceAddress;
00802   ospCmd.p_inParameter = NULL;
00803
00804   ospErrorCode = osp_cmd_buffer (&ospCmd);
00805   if (ospErrorCode != OSP_NO_ERROR)
00806     {
00807       return ospErrorCode;
00808     }
00809
00810   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00811                                                       rspBuffer,
00812                                                       ospCmd.outCmdBufferLength,
00813                                                       ospCmd.outResponseLength);
00814
00815   if (spiError != NO_ERROR_SPI)
00816     {
00817       return OSP_ERROR_SPI;
00818     }
00819
00820   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00821     {
00822       return OSP_ERROR_CRC;
00823     }
00824
00825   for (uint8_t i = 0; i < 2; i++)
```

```
00826     {
00827       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00828     }
00829
00830   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00831   return OSP_NO_ERROR;
00832 }
```

Here is the call graph for this function:



5.10.1.7 osp_osire_read_comstatus()

```
enum OSP_ERROR_CODE osp_osire_read_comstatus (
            uint16_t deviceAddress,
            osireComStatus_t * p_data )
```

OSP_OSIRE_READ_COM_STATUS command This function reads COM STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	pointer to response data from RGBi LED

Returns

error COM STATUS register response data

Definition at line 878 of file osireDevice.c.

```
00880 {
00881   uint8_t rspBuffer[LENGTH_READ_COMSTATUS_RSP]; // response buffer
00882   ospCmdBuffer_t ospCmd;
00883   enum OSP_ERROR_CODE ospErrorCode;
00884   errorSpi_t spiError;
00885
00886   memset (rspBuffer, 0, LENGTH_READ_COMSTATUS_RSP);
00887
00888   ospCmd.inCmdId = OSP_OSIRE_READ_COM_STATUS;
00889   ospCmd.inDeviceAddress = deviceAddress;
00890   ospCmd.p_inParameter = NULL;
00891
00892   ospErrorCode = osp_cmd_buffer (&ospCmd);
00893   if (ospErrorCode != OSP_NO_ERROR)
00894     {
00895       return ospErrorCode;
00896     }
00897
00898   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00899                                                       rspBuffer,
00900                                                       ospCmd.outCmdBufferLength,
00901                                                       ospCmd.outResponseLength);
00902
00903   if (spiError != NO_ERROR_SPI)
00904     {
00905       return OSP_ERROR_SPI;
00906     }
00907
00908   if (crc (rspBuffer, LENGTH_READ_COMSTATUS_RSP) != 0)
00909     {
00910       return OSP_ERROR_CRC;
00911     }
00912
00913   p_rsp->data.comStatus = rspBuffer[FIRST_BYTE_PAYLOAD];
```

```
00914
00915   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00916   return OSP_NO_ERROR;
00917 }
```

Here is the call graph for this function:

5.10.1.8 osp_osire_read_ledstatus()

```
enum OSP_ERROR_CODE osp_osire_read_ledstatus (
            uint16_t deviceAddress,
            osireLedStatus_t * p_data )
```

OSP_OSIRE_READ_LED_STATUS command This function reads the LED STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	LED STATUS register response data

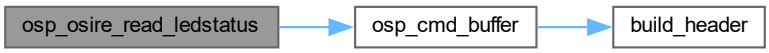
Returns

error communication or command parameter error

Definition at line 308 of file osireDevice.c.

```
00310 {
00311   uint8_t rspBuffer[LENGTH_READ_LEDSTATUS_RSP]; // response buffer
00312   ospCmdBuffer_t ospCmd;
00313   enum OSP_ERROR_CODE ospErrorCode;
00314   errorSpi_t spiError;
00315
00316   memset (rspBuffer, 0, LENGTH_READ_LEDSTATUS_RSP);
00317
00318   ospCmd.inCmdId = OSP_OSIRE_READ_LED_STATUS;
00319   ospCmd.inDeviceAddress = deviceAddress;
00320   ospCmd.p_inParameter = NULL;
00321
00322   ospErrorCode = osp_cmd_buffer (&ospCmd);
00323   if (ospErrorCode != OSP_NO_ERROR)
00324     {
00325       return ospErrorCode;
00326     }
00327
00328   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00329                                                       rspBuffer,
00330                                                       ospCmd.outCmdBufferLength,
00331                                                       ospCmd.outResponseLength);
00332
00333   if (spiError != NO_ERROR_SPI)
00334     {
00335       return OSP_ERROR_SPI;
00336     }
00337
00338   if (crc (rspBuffer, LENGTH_READ_LEDSTATUS_RSP) != 0)
00339     {
00340       return OSP_ERROR_CRC;
00341     }
00342
00343   p_rsp->data.ledStatus = rspBuffer[3];
00344
00345   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00346   return OSP_NO_ERROR;
00347 }
```

Here is the call graph for this function:



5.10.1.9 osp_osire_read_otp_complete()

```
enum OSP_ERROR_CODE osp_osire_read_otp_complete (
            uint16_t deviceAddress,
            osireOtpDataComplete_t * p_data )
```

Read complete OTP memory command Reads all bytes from OTP memory. By use of several consecutive OSP↩ _OSIRE_READ_OTP commands.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	full OTP memory data

Returns

error communication or command parameter error

Definition at line 282 of file osireDevice.c.

```
00284 {
00285   osireOtpData_t opt; // OTP buffer
00286
00287   for (uint8_t i = 0; i < 0x1F; i = i + 8)
00288     {
00289       enum OSP_ERROR_CODE errorCode = osp_read_otp (deviceAddress, i, &opt);
00290
00291       if (errorCode != OSP_NO_ERROR)
00292         {
00293           return errorCode;
00294         }
00295
00296       for (uint8_t j = 0; j < 8; j++)
00297         {
00298           p_rsp->data.byte[i + j] = opt.data.byte[j];
00299         }
00300     }
00301
00302   p_rsp->address = opt.address;
00303   return OSP_NO_ERROR;
00304 }
```

Here is the call graph for this function:

5.10.1.10 osp_osire_read_otth()

```
enum OSP_ERROR_CODE osp_osire_read_otth (
            uint16_t deviceAddress,
            osireOtthData_t * p_data )
```

OSP_OSIRE_READ_OTTH command.
This function reads the OTTH register of the device
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	PWM register response data

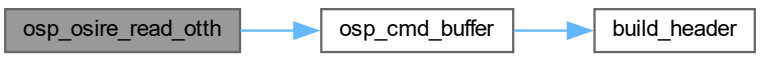
Returns

error communication or command parameter error

Definition at line 517 of file osireDevice.c.

```
00519 {
00520   uint8_t rspBuffer[LENGTH_READ_OTTH_RSP]; // response buffer
00521   ospCmdBuffer_t ospCmd;
00522   enum OSP_ERROR_CODE ospErrorCode;
00523   errorSpi_t spiError;
00524
00525   memset (rspBuffer, 0, LENGTH_READ_OTTH_RSP);
00526
00527   ospCmd.inCmdId = OSP_OSIRE_READ_OTTH;
00528   ospCmd.inDeviceAddress = deviceAddress;
00529   ospCmd.p_inParameter = NULL;
00530
00531   ospErrorCode = osp_cmd_buffer (&ospCmd);
00532   if (ospErrorCode != OSP_NO_ERROR)
00533     {
00534       return ospErrorCode;
00535     }
00536
00537   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00538                                                       rspBuffer,
00539                                                       ospCmd.outCmdBufferLength,
00540                                                       ospCmd.outResponseLength);
00541
00542   if (spiError != NO_ERROR_SPI)
00543     {
00544       return OSP_ERROR_SPI;
00545     }
00546
00547   if (crc (rspBuffer, LENGTH_READ_OTTH_RSP) != 0)
00548     {
00549       return OSP_ERROR_CRC;
00550     }
00551
00552   for (uint8_t i = 0; i < 3; i++)
00553     {
00554       p_rsp->data.otthData[i] = rspBuffer[5 - i];
00555     }
00556
00557   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00558   return OSP_NO_ERROR;
00559 }
```

Here is the call graph for this function:



5.10.1.11 osp_osire_read_pwm()

```
enum OSP_ERROR_CODE osp_osire_read_pwm (
            uint16_t deviceAddress,
            osirePwmData_t * p_data )
```

OSP_OSIRE_READ_PWM command.
This function reads the PWM register of the device
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	PWM register response data

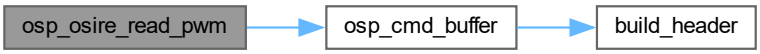
Returns

error communication or command parameter error

Definition at line 190 of file osireDevice.c.

```
00192 {
00193   uint8_t rspBuffer[LENGTH_READ_PWM_RSP]; // response buffer
00194   ospCmdBuffer_t ospCmd;
00195   enum OSP_ERROR_CODE ospErrorCode;
00196   errorSpi_t spiError;
00197
00198   memset (rspBuffer, 0, LENGTH_READ_PWM_RSP);
00199
00200   ospCmd.inCmdId = OSP_OSIRE_READ_PWM;
00201   ospCmd.inDeviceAddress = deviceAddress;
00202   ospCmd.p_inParameter = NULL;
00203
00204   ospErrorCode = osp_cmd_buffer (&ospCmd);
00205   if (ospErrorCode != OSP_NO_ERROR)
00206     {
00207       return ospErrorCode;
00208     }
00209
00210   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00211                                                       rspBuffer,
00212                                                       ospCmd.outCmdBufferLength,
00213                                                       ospCmd.outResponseLength);
00214
00215   if (spiError != NO_ERROR_SPI)
00216     {
00217       return OSP_ERROR_SPI;
00218     }
00219
00220   if (crc (rspBuffer, LENGTH_READ_PWM_RSP) != 0)
00221     {
00222       return OSP_ERROR_CRC;
00223     }
00224
00225   for (uint8_t i = 0; i < 6; i++)
00226     {
00227       p_rsp->data.pwmData[i] = rspBuffer[8 - i];
00228     }
00229
00230   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00231   return OSP_NO_ERROR;
00232 }
```

Here is the call graph for this function:



5.10.1.12 osp_osire_read_setup()

```
enum OSP_ERROR_CODE osp_osire_read_setup (
            uint16_t deviceAddress,
            osireSetSetupData_t * p_data )
```

OSP_OSIRE_READ_SETUP command This function reads SETUP register of the device.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	SETUP register response data

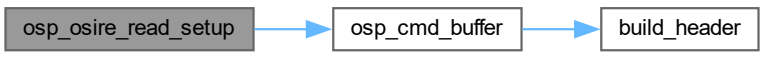
Returns

error communication or command parameter error

Definition at line 835 of file osireDevice.c.

```
00837 {
00838   uint8_t rspBuffer[LENGTH_READ_SETUP_RSP]; // response buffer
00839   ospCmdBuffer_t ospCmd;
00840   enum OSP_ERROR_CODE ospErrorCode;
00841   errorSpi_t spiError;
00842
00843   memset (rspBuffer, 0, LENGTH_READ_SETUP_RSP);
00844
00845   ospCmd.inCmdId = OSP_OSIRE_READ_SETUP;
00846   ospCmd.inDeviceAddress = deviceAddress;
00847   ospCmd.p_inParameter = NULL;
00848
00849   ospErrorCode = osp_cmd_buffer (&ospCmd);
00850   if (ospErrorCode != OSP_NO_ERROR)
00851     {
00852       return ospErrorCode;
00853     }
00854
00855   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00856                                                       rspBuffer,
00857                                                       ospCmd.outCmdBufferLength,
00858                                                       ospCmd.outResponseLength);
00859
00860   if (spiError != NO_ERROR_SPI)
00861     {
00862       return OSP_ERROR_SPI;
00863     }
00864
00865   if (crc (rspBuffer, LENGTH_READ_SETUP_RSP) != 0)
00866     {
00867       return OSP_ERROR_CRC;
00868     }
00869
00870   p_rsp->data.setupData = rspBuffer[FIRST_BYTE_PAYLOAD];
00871
00872   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00873   return OSP_NO_ERROR;
00874 }
```

Here is the call graph for this function:



5.10.1.13 osp_osire_read_status()

```
enum OSP_ERROR_CODE osp_osire_read_status (
```

```
            uint16_t deviceAddress,
            osireStatus_t * p_data )
```

OSP_OSIRE_READ_STATUS command This function reads STATUS register of the device. For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS register response data

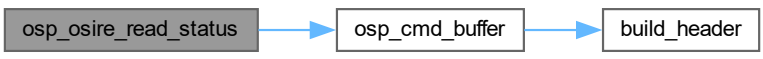
Returns

error communication or command parameter error

Definition at line 921 of file osireDevice.c.

```
00923 {
00924   uint8_t rspBuffer[LENGTH_READ_STATUS_RSP]; // response buffer
00925   ospCmdBuffer_t ospCmd;
00926   enum OSP_ERROR_CODE ospErrorCode;
00927   errorSpi_t spiError;
00928
00929   memset (rspBuffer, 0, LENGTH_READ_STATUS_RSP);
00930
00931   ospCmd.inCmdId = OSP_OSIRE_READ_STATUS;
00932   ospCmd.inDeviceAddress = deviceAddress;
00933   ospCmd.p_inParameter = NULL;
00934
00935   ospErrorCode = osp_cmd_buffer (&ospCmd);
00936   if (ospErrorCode != OSP_NO_ERROR)
00937     {
00938       return ospErrorCode;
00939     }
00940
00941   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00942                                                       rspBuffer,
00943                                                       ospCmd.outCmdBufferLength,
00944                                                       ospCmd.outResponseLength);
00945
00946   if (spiError != NO_ERROR_SPI)
00947     {
00948       return OSP_ERROR_SPI;
00949     }
00950
00951   if (crc (rspBuffer, LENGTH_READ_STATUS_RSP) != 0)
00952     {
00953       return OSP_ERROR_CRC;
00954     }
00955
00956   p_rsp->data.status = rspBuffer[FIRST_BYTE_PAYLOAD];
00957
00958   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00959   return OSP_NO_ERROR;
00960 }
```

Here is the call graph for this function:



5.10.1.14 osp_osire_read_temp()

```
enum OSP_ERROR_CODE osp_osire_read_temp (
            uint16_t deviceAddress,
            osireTemp_t * p_data )
```

OSP_OSIRE_READ_TEMP command This function reads LED TEMP register of the device.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	LED TEMP register response data

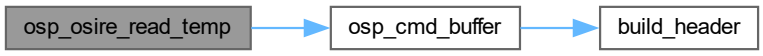
Returns

error communication or command parameter error

Definition at line 397 of file osireDevice.c.

```
00399 {
00400   uint8_t rspBuffer[LENGTH_READ_TEMP_RSP]; // response buffer
00401   ospCmdBuffer_t ospCmd;
00402   enum OSP_ERROR_CODE ospErrorCode;
00403   errorSpi_t spiError;
00404
00405   memset (rspBuffer, 0, LENGTH_READ_TEMP_RSP);
00406
00407   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP;
00408   ospCmd.inDeviceAddress = deviceAddress;
00409   ospCmd.p_inParameter = NULL;
00410
00411   ospErrorCode = osp_cmd_buffer (&ospCmd);
00412   if (ospErrorCode != OSP_NO_ERROR)
00413     {
00414       return ospErrorCode;
00415     }
00416
00417   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00418                                                       rspBuffer,
00419                                                       ospCmd.outCmdBufferLength,
00420                                                       ospCmd.outResponseLength);
00421
00422   if (spiError != NO_ERROR_SPI)
00423     {
00424       return OSP_ERROR_SPI;
00425     }
00426
00427   if (crc (rspBuffer, LENGTH_READ_TEMP_RSP) != 0)
00428     {
00429       return OSP_ERROR_CRC;
00430     }
00431
00432   p_rsp->data.temp_value = rspBuffer[FIRST_BYTE_PAYLOAD];
00433
00434   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00435   return OSP_NO_ERROR;
00436 }
```

Here is the call graph for this function:



5.10.1.15 osp_osire_read_tempstatus()

```
enum OSP_ERROR_CODE osp_osire_read_tempstatus (
            uint16_t deviceAddress,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_READ_TEMP_STATUS command This function reads the STATUS and TEMP register in a single 2-byte payload of the device.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
p_data	STATUS and TEMP register response data

Returns

error communication or command parameter error

Definition at line 351 of file osireDevice.c.

```
00353 {
00354   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00355   ospCmdBuffer_t ospCmd;
00356   enum OSP_ERROR_CODE ospErrorCode;
00357   errorSpi_t spiError;
00358
00359   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00360
00361   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP_STATUS;
00362   ospCmd.inDeviceAddress = deviceAddress;
00363   ospCmd.p_inParameter = NULL;
00364
00365   ospErrorCode = osp_cmd_buffer (&ospCmd);
00366   if (ospErrorCode != OSP_NO_ERROR)
00367     {
00368       return ospErrorCode;
00369     }
00370
00371   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00372                                                       rspBuffer,
00373                                                       ospCmd.outCmdBufferLength,
00374                                                       ospCmd.outResponseLength);
00375
00376   if (spiError != NO_ERROR_SPI)
00377     {
00378       return OSP_ERROR_SPI;
00379     }
00380
00381   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00382     {
00383       return OSP_ERROR_CRC;
00384     }
00385
00386   for (uint8_t i = 0; i < 2; i++)
00387     {
00388       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00389     }
00390
00391   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00392   return OSP_NO_ERROR;
00393 }
```

Here is the call graph for this function:

5.10.1.16 osp_osire_set_otth()

```
enum OSP_ERROR_CODE osp_osire_set_otth (
            uint16_t deviceAddress,
            osireOtthData_t data )
```

OSP_OSIRE_SET_OTTH command.
Writes the OTTH register. See READOTTH for the payload format.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value

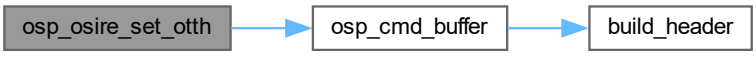
Returns

error, communication or command parameter error

Definition at line 440 of file osireDevice.c.

```
00442 {
00443   ospCmdBuffer_t ospCmd;
00444   enum OSP_ERROR_CODE ospErrorCode;
00445   errorSpi_t spiError;
00446
00447   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH;
00448   ospCmd.inDeviceAddress = deviceAddress;
00449   ospCmd.p_inParameter = &data.data.otthData;
00450
00451   ospErrorCode = osp_cmd_buffer (&ospCmd);
00452   if (ospErrorCode != OSP_NO_ERROR)
00453     {
00454       return ospErrorCode;
00455     }
00456
00457   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00458                                           ospCmd.outCmdBufferLength);
00459
00460   if (spiError != NO_ERROR_SPI)
00461     {
00462       return OSP_ERROR_SPI;
00463     }
00464
00465   return OSP_NO_ERROR;
00466 }
```

Here is the call graph for this function:



5.10.1.17 osp_osire_set_otth_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (
            uint16_t deviceAddress,
            osireOtthData_t data,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_OTTH_SR command and reads status and temperature.
Writes the OTTH register. See READOTTH for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
data	PWM register value
p_data	STATUS and TEMP register response data

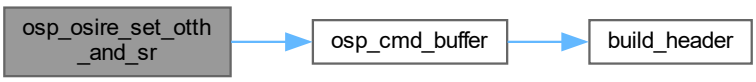
Returns

error communication or command parameter error

Definition at line 470 of file osireDevice.c.

```
00473 {
00474   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00475   ospCmdBuffer_t ospCmd;
00476   enum OSP_ERROR_CODE ospErrorCode;
00477   errorSpi_t spiError;
00478
00479   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00480
00481   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH_SR;
00482   ospCmd.inDeviceAddress = deviceAddress;
00483   ospCmd.p_inParameter = &data.data.otthData;
00484
00485   ospErrorCode = osp_cmd_buffer (&ospCmd);
00486   if (ospErrorCode != OSP_NO_ERROR)
00487     {
00488       return ospErrorCode;
00489     }
00490
00491   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00492                                                       rspBuffer,
00493                                                       ospCmd.outCmdBufferLength,
00494                                                       ospCmd.outResponseLength);
00495
00496   if (spiError != NO_ERROR_SPI)
00497     {
00498       return OSP_ERROR_SPI;
00499     }
00500
00501   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00502     {
00503       return OSP_ERROR_CRC;
00504     }
00505
00506   for (uint8_t i = 0; i < 2; i++)
00507     {
00508       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00509     }
00510
00511   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00512   return OSP_NO_ERROR;
00513 }
```

Here is the call graph for this function:



5.10.1.18 osp_osire_set_pwm()

```
enum OSP_ERROR_CODE osp_osire_set_pwm (
            uint16_t deviceAddress,
            osirePwmData_t data )
```

OSP_OSIRE_SET_PWM command.
Writes the PWM register. See READPWM for the payload format.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value

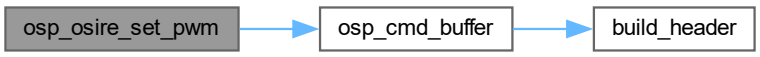
Returns

error, communication or command parameter error

Definition at line 112 of file osireDevice.c.

```
00114 {
00115   ospCmdBuffer_t ospCmd;
00116   enum OSP_ERROR_CODE ospErrorCode;
00117   errorSpi_t spiError;
00118
00119   ospCmd.inCmdId = OSP_OSIRE_SET_PWM;
00120   ospCmd.inDeviceAddress = deviceAddress;
00121   ospCmd.p_inParameter = &data.data.pwmData;
00122
00123   ospErrorCode = osp_cmd_buffer (&ospCmd);
00124   if (ospErrorCode != OSP_NO_ERROR)
00125     {
00126       return ospErrorCode;
00127     }
00128
00129   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00130                                           ospCmd.outCmdBufferLength);
00131
00132   if (spiError != NO_ERROR_SPI)
00133     {
00134       return OSP_ERROR_SPI;
00135     }
00136
00137   return OSP_NO_ERROR;
00138 }
```

Here is the call graph for this function:



5.10.1.19 osp_osire_set_pwm_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (
            uint16_t deviceAddress,
            osirePwmData_t data,
            osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_PWM_SR command and reads status and temperature.
Writes the PWM register. See READPWM for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	0..1000 RGBi device address (0: broadcast)
data	PWM register value
p_data	STATUS and TEMP register response data

Returns

error communication or command parameter error

Definition at line 143 of file osireDevice.c.

```
00146 {
00147   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00148   ospCmdBuffer_t ospCmd;
00149   enum OSP_ERROR_CODE ospErrorCode;
```

```
00150   errorSpi_t spiError;
00151
00152   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00153
00154   ospCmd.inCmdId = OSP_OSIRE_SET_PWM_SR;
00155   ospCmd.inDeviceAddress = deviceAddress;
00156   ospCmd.p_inParameter = &data.data.pwmData;
00157
00158   ospErrorCode = osp_cmd_buffer (&ospCmd);
00159   if (ospErrorCode != OSP_NO_ERROR)
00160     {
00161       return ospErrorCode;
00162     }
00163
00164   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00165                                                       rspBuffer,
00166                                                       ospCmd.outCmdBufferLength,
00167                                                       ospCmd.outResponseLength);
00168
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173
00174   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00175     {
00176       return OSP_ERROR_CRC;
00177     }
00178
00179   for (uint8_t i = 0; i < 2; i++)
00180     {
00181       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00182     }
00183
00184   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00185   return OSP_NO_ERROR;
00186 }
```

Here is the call graph for this function:

5.10.1.20 osp_osire_set_setup()

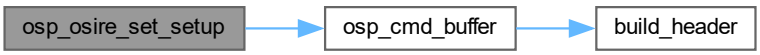
```
enum OSP_ERROR_CODE osp_osire_set_setup (
            uint16_t deviceAddress,
            osireSetSetupData_t data )
```

OSP_OSIRE_SET_SETUP command.
Include OSP Led Definitions and Data structures
Definition at line 36 of file osireDevice.c.

```
00038 {
00039   ospCmdBuffer_t ospCmd;
00040   enum OSP_ERROR_CODE ospErrorCode;
00041   errorSpi_t spiError;
00042
00043   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP;
00044   ospCmd.inDeviceAddress = deviceAddress;
00045   ospCmd.p_inParameter = &data.data.setupData;
00046
00047   ospErrorCode = osp_cmd_buffer (&ospCmd);
00048   if (ospErrorCode != OSP_NO_ERROR)
00049     {
00050       return ospErrorCode;
00051     }
00052
00053   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00054                                           ospCmd.outCmdBufferLength);
00055
00056   if (spiError != NO_ERROR_SPI)
00057     {
```

```
00058       return OSP_ERROR_SPI;
00059     }
00060
00061   return OSP_NO_ERROR;
00062 }
```

Here is the call graph for this function:



5.10.1.21 osp_osire_set_setup_and_sr()

```
enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (
              uint16_t deviceAddress,
              osireSetSetupData_t data,
              osireTempStatus_t * p_data )
```

OSP_OSIRE_SET_SETUP_SR command and reads status and temperature.
Writes the SETUP register. See READSETUP for the payload format. Additionally the STATUS and TEMP register is read.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress,0..1000	RGBi device address (0: broadcast)
data	SETUP register values
p_data	STATUS and TEMP register response data

Returns

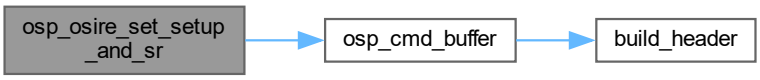
error communication or command parameter error

Definition at line 66 of file osireDevice.c.

```
00069 {
00070   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00071   ospCmdBuffer_t ospCmd;
00072   enum OSP_ERROR_CODE ospErrorCode;
00073   errorSpi_t spiError;
00074
00075   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00076
00077   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP_SR;
00078   ospCmd.inDeviceAddress = deviceAddress;
00079   ospCmd.p_inParameter = &data.data.setupData;
00080
00081   ospErrorCode = osp_cmd_buffer (&ospCmd);
00082   if (ospErrorCode != OSP_NO_ERROR)
00083     {
00084       return ospErrorCode;
00085     }
00086
00087   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00088                                                       rspBuffer,
00089                                                       ospCmd.outCmdBufferLength,
00090                                                       ospCmd.outResponseLength);
00091
00092   if (spiError != NO_ERROR_SPI)
00093     {
00094       return OSP_ERROR_SPI;
00095     }
00096
00097   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
```

```
00098     {
00099       return OSP_ERROR_CRC;
00100     }
00101
00102   for (uint8_t i = 0; i < 2; i++)
00103     {
00104       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00105     }
00106   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00107   return OSP_NO_ERROR;
00108 }
```

Here is the call graph for this function:



5.10.1.22 osp_read_otp()

```
enum OSP_ERROR_CODE osp_read_otp (
            uint16_t deviceAddress,
            uint8_t otpAddress,
            osireOtpData_t * p_data )
```

OSP_OSIRE_READ_OTP command Reads 8 bytes from OTP memory, from otpAddress. If readout address is beyond OTP address range, 0x00 will be delivered for these addresses.
For further details refer to "OSIRE_E3731i_Start_Up_Guide.pdf"

Parameters

deviceAddress	1..1000 RGBi device address
otpAddress	address of the first read byte of OTP
p_data	OTP response data

Returns

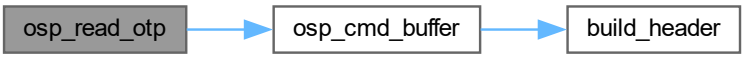
error communication or command parameter error

Definition at line 236 of file osireDevice.c.

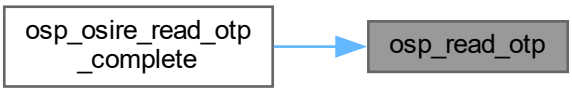
```
00238 {
00239   uint8_t rspBuffer[LENGTH_READ_OTP_RSP]; // response buffer
00240   ospCmdBuffer_t ospCmd;
00241   enum OSP_ERROR_CODE ospErrorCode;
00242   errorSpi_t spiError;
00243
00244   memset (rspBuffer, 0, LENGTH_READ_OTP_RSP);
00245
00246   ospCmd.inCmdId = OSP_OSIRE_READ_OTP;
00247   ospCmd.inDeviceAddress = deviceAddress;
00248   ospCmd.p_inParameter = &otpAddress;
00249
00250   ospErrorCode = osp_cmd_buffer (&ospCmd);
00251   if (ospErrorCode != OSP_NO_ERROR)
00252     {
00253       return ospErrorCode;
00254     }
00255
00256   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00257                                                       rspBuffer,
00258                                                       ospCmd.outCmdBufferLength,
00259                                                       ospCmd.outResponseLength);
00260
00261   if (spiError != NO_ERROR_SPI)
```

```
00262     {
00263       return OSP_ERROR_SPI;
00264     }
00265
00266   if (crc (rspBuffer, LENGTH_READ_OTP_RSP) != 0)
00267     {
00268       return OSP_ERROR_CRC;
00269     }
00270
00271   for (uint8_t i = 0; i < 8; i++)
00272     {
00273       p_rsp->data.byte[i] = rspBuffer[10 - i];
00274     }
00275
00276   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00277   return OSP_NO_ERROR;
00278 }
```

Here is the call graph for this function:



Here is the caller graph for this function:



5.11 osireDevice.c

Go to the documentation of this file.

```
00001 /*****************************************************************************
00002 * Copyright 2022 by ams OSRAM AG                                             *
00003 * All rights are reserved.                                                   *
      *
00004 *                                                                            *
00005 * IMPORTANT - PLEASE READ CAREFULLY BEFORE COPYING, INSTALLING OR USING      *
00006 * THE SOFTWARE.                                                              *
00007 *                                                                            *
00008 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS        *
00009 * "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT          *
00010 * LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS          *
00011 * FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT   *
00012 * OWNER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL,      *
00013 * SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT           *
00014 * LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,      *
00015 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY      *
00016 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT        *
00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE      *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.       *
00019 *****************************************************************************/
00020
00025 //#noch keine Antwort-IDs implementiert
00026 #include <Crc/inc/crc.h>
00027 #include <Hal/Spi/inc/spiGeneral.h>
00028 #include <Osp/inc/osireDevice.h>
00029 #include <Osp/inc/ospCmdBuffer.h>
00030 #include <string.h>
00031
```

```
00032 #include <Hal/Spi/inc/spiGeneral.h>
00033
00034 /*****************************************************************************/
00035 /*****************************************************************************/
00036 enum OSP_ERROR_CODE osp_osire_set_setup (uint16_t deviceAddress,
00037                                          osireSetSetupData_t data)
00038 {
00039   ospCmdBuffer_t ospCmd;
00040   enum OSP_ERROR_CODE ospErrorCode;
00041   errorSpi_t spiError;
00042
00043   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP;
00044   ospCmd.inDeviceAddress = deviceAddress;
00045   ospCmd.p_inParameter = &data.data.setupData;
00046
00047   ospErrorCode = osp_cmd_buffer (&ospCmd);
00048   if (ospErrorCode != OSP_NO_ERROR)
00049     {
00050       return ospErrorCode;
00051     }
00052
00053   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00054                                           ospCmd.outCmdBufferLength);
00055
00056   if (spiError != NO_ERROR_SPI)
00057     {
00058       return OSP_ERROR_SPI;
00059     }
00060
00061   return OSP_NO_ERROR;
00062 }
00063
00064 /*****************************************************************************/
00065 /*****************************************************************************/
00066 enum OSP_ERROR_CODE osp_osire_set_setup_and_sr (uint16_t deviceAddress,
00067                                                 osireSetSetupData_t data,
00068                                                 osireTempStatus_t *p_rsp)
00069 {
00070   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00071   ospCmdBuffer_t ospCmd;
00072   enum OSP_ERROR_CODE ospErrorCode;
00073   errorSpi_t spiError;
00074
00075   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00076
00077   ospCmd.inCmdId = OSP_OSIRE_SET_SETUP_SR;
00078   ospCmd.inDeviceAddress = deviceAddress;
00079   ospCmd.p_inParameter = &data.data.setupData;
00080
00081   ospErrorCode = osp_cmd_buffer (&ospCmd);
00082   if (ospErrorCode != OSP_NO_ERROR)
00083     {
00084       return ospErrorCode;
00085     }
00086
00087   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00088                                                       rspBuffer,
00089                                                       ospCmd.outCmdBufferLength,
00090                                                       ospCmd.outResponseLength);
00091
00092   if (spiError != NO_ERROR_SPI)
00093     {
00094       return OSP_ERROR_SPI;
00095     }
00096
00097   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00098     {
00099       return OSP_ERROR_CRC;
00100     }
00101
00102   for (uint8_t i = 0; i < 2; i++)
00103     {
00104       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00105     }
00106   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00107   return OSP_NO_ERROR;
00108 }
00109
00110 /*****************************************************************************/
00111 /*****************************************************************************/
00112 enum OSP_ERROR_CODE osp_osire_set_pwm (uint16_t deviceAddress,
00113                                        osirePwmData_t data)
00114 {
00115   ospCmdBuffer_t ospCmd;
00116   enum OSP_ERROR_CODE ospErrorCode;
00117   errorSpi_t spiError;
00118
```

```
00119   ospCmd.inCmdId = OSP_OSIRE_SET_PWM;
00120   ospCmd.inDeviceAddress = deviceAddress;
00121   ospCmd.p_inParameter = &data.data.pwmData;
00122
00123   ospErrorCode = osp_cmd_buffer (&ospCmd);
00124   if (ospErrorCode != OSP_NO_ERROR)
00125     {
00126       return ospErrorCode;
00127     }
00128
00129   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00130                                           ospCmd.outCmdBufferLength);
00131
00132   if (spiError != NO_ERROR_SPI)
00133     {
00134       return OSP_ERROR_SPI;
00135     }
00136
00137   return OSP_NO_ERROR;
00138 }
00139
00140 /*****************************************************************************/
00141 /*****************************************************************************/
00142
00143 enum OSP_ERROR_CODE osp_osire_set_pwm_and_sr (uint16_t deviceAddress,
00144                                               osirePwmData_t data,
00145                                               osireTempStatus_t *p_rsp)
00146 {
00147   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00148   ospCmdBuffer_t ospCmd;
00149   enum OSP_ERROR_CODE ospErrorCode;
00150   errorSpi_t spiError;
00151
00152   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00153
00154   ospCmd.inCmdId = OSP_OSIRE_SET_PWM_SR;
00155   ospCmd.inDeviceAddress = deviceAddress;
00156   ospCmd.p_inParameter = &data.data.pwmData;
00157
00158   ospErrorCode = osp_cmd_buffer (&ospCmd);
00159   if (ospErrorCode != OSP_NO_ERROR)
00160     {
00161       return ospErrorCode;
00162     }
00163
00164   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00165                                                       rspBuffer,
00166                                                       ospCmd.outCmdBufferLength,
00167                                                       ospCmd.outResponseLength);
00168
00169   if (spiError != NO_ERROR_SPI)
00170     {
00171       return OSP_ERROR_SPI;
00172     }
00173
00174   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00175     {
00176       return OSP_ERROR_CRC;
00177     }
00178
00179   for (uint8_t i = 0; i < 2; i++)
00180     {
00181       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00182     }
00183
00184   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00185   return OSP_NO_ERROR;
00186 }
00187
00188 /*****************************************************************************/
00189 /*****************************************************************************/
00190 enum OSP_ERROR_CODE osp_osire_read_pwm (uint16_t deviceAddress,
00191                                         osirePwmData_t *p_rsp)
00192 {
00193   uint8_t rspBuffer[LENGTH_READ_PWM_RSP]; // response buffer
00194   ospCmdBuffer_t ospCmd;
00195   enum OSP_ERROR_CODE ospErrorCode;
00196   errorSpi_t spiError;
00197
00198   memset (rspBuffer, 0, LENGTH_READ_PWM_RSP);
00199
00200   ospCmd.inCmdId = OSP_OSIRE_READ_PWM;
00201   ospCmd.inDeviceAddress = deviceAddress;
00202   ospCmd.p_inParameter = NULL;
00203
00204   ospErrorCode = osp_cmd_buffer (&ospCmd);
00205   if (ospErrorCode != OSP_NO_ERROR)
```

```
00206     {
00207       return ospErrorCode;
00208     }
00209
00210   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00211                                                       rspBuffer,
00212                                                       ospCmd.outCmdBufferLength,
00213                                                       ospCmd.outResponseLength);
00214
00215   if (spiError != NO_ERROR_SPI)
00216     {
00217       return OSP_ERROR_SPI;
00218     }
00219
00220   if (crc (rspBuffer, LENGTH_READ_PWM_RSP) != 0)
00221     {
00222       return OSP_ERROR_CRC;
00223     }
00224
00225   for (uint8_t i = 0; i < 6; i++)
00226     {
00227       p_rsp->data.pwmData[i] = rspBuffer[8 - i];
00228     }
00229
00230   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00231   return OSP_NO_ERROR;
00232 }
00233
00234 /*****************************************************************************/
00235 /*****************************************************************************/
00236 enum OSP_ERROR_CODE osp_read_otp (uint16_t deviceAddress, uint8_t otpAddress,
00237                                   osireOtpData_t *p_rsp)
00238 {
00239   uint8_t rspBuffer[LENGTH_READ_OTP_RSP]; // response buffer
00240   ospCmdBuffer_t ospCmd;
00241   enum OSP_ERROR_CODE ospErrorCode;
00242   errorSpi_t spiError;
00243
00244   memset (rspBuffer, 0, LENGTH_READ_OTP_RSP);
00245
00246   ospCmd.inCmdId = OSP_OSIRE_READ_OTP;
00247   ospCmd.inDeviceAddress = deviceAddress;
00248   ospCmd.p_inParameter = &otpAddress;
00249
00250   ospErrorCode = osp_cmd_buffer (&ospCmd);
00251   if (ospErrorCode != OSP_NO_ERROR)
00252     {
00253       return ospErrorCode;
00254     }
00255
00256   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00257                                                       rspBuffer,
00258                                                       ospCmd.outCmdBufferLength,
00259                                                       ospCmd.outResponseLength);
00260
00261   if (spiError != NO_ERROR_SPI)
00262     {
00263       return OSP_ERROR_SPI;
00264     }
00265
00266   if (crc (rspBuffer, LENGTH_READ_OTP_RSP) != 0)
00267     {
00268       return OSP_ERROR_CRC;
00269     }
00270
00271   for (uint8_t i = 0; i < 8; i++)
00272     {
00273       p_rsp->data.byte[i] = rspBuffer[10 - i];
00274     }
00275
00276   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00277   return OSP_NO_ERROR;
00278 }
00279
00280 /*****************************************************************************/
00281 /*****************************************************************************/
00282 enum OSP_ERROR_CODE osp_osire_read_otp_complete (uint16_t deviceAddress,
00283                                                  osireOtpDataComplete_t *p_rsp)
00284 {
00285   osireOtpData_t opt; // OTP buffer
00286
00287   for (uint8_t i = 0; i < 0x1F; i = i + 8)
00288     {
00289       enum OSP_ERROR_CODE errorCode = osp_read_otp (deviceAddress, i, &opt);
00290
00291       if (errorCode != OSP_NO_ERROR)
00292         {
```

```
00293           return errorCode;
00294         }
00295
00296       for (uint8_t j = 0; j < 8; j++)
00297         {
00298           p_rsp->data.byte[i + j] = opt.data.byte[j];
00299         }
00300     }
00301
00302   p_rsp->address = opt.address;
00303   return OSP_NO_ERROR;
00304 }
00305
00306 /*****************************************************************************/
00307 /*****************************************************************************/
00308 enum OSP_ERROR_CODE osp_osire_read_ledstatus (uint16_t deviceAddress,
00309                                               osireLedStatus_t *p_rsp)
00310 {
00311   uint8_t rspBuffer[LENGTH_READ_LEDSTATUS_RSP]; // response buffer
00312   ospCmdBuffer_t ospCmd;
00313   enum OSP_ERROR_CODE ospErrorCode;
00314   errorSpi_t spiError;
00315
00316   memset (rspBuffer, 0, LENGTH_READ_LEDSTATUS_RSP);
00317
00318   ospCmd.inCmdId = OSP_OSIRE_READ_LED_STATUS;
00319   ospCmd.inDeviceAddress = deviceAddress;
00320   ospCmd.p_inParameter = NULL;
00321
00322   ospErrorCode = osp_cmd_buffer (&ospCmd);
00323   if (ospErrorCode != OSP_NO_ERROR)
00324     {
00325       return ospErrorCode;
00326     }
00327
00328   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00329                                                       rspBuffer,
00330                                                       ospCmd.outCmdBufferLength,
00331                                                       ospCmd.outResponseLength);
00332
00333   if (spiError != NO_ERROR_SPI)
00334     {
00335       return OSP_ERROR_SPI;
00336     }
00337
00338   if (crc (rspBuffer, LENGTH_READ_LEDSTATUS_RSP) != 0)
00339     {
00340       return OSP_ERROR_CRC;
00341     }
00342
00343   p_rsp->data.ledStatus = rspBuffer[3];
00344
00345   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00346   return OSP_NO_ERROR;
00347 }
00348
00349 /*****************************************************************************/
00350 /*****************************************************************************/
00351 enum OSP_ERROR_CODE osp_osire_read_tempstatus (uint16_t deviceAddress,
00352                                                osireTempStatus_t *p_rsp)
00353 {
00354   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00355   ospCmdBuffer_t ospCmd;
00356   enum OSP_ERROR_CODE ospErrorCode;
00357   errorSpi_t spiError;
00358
00359   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00360
00361   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP_STATUS;
00362   ospCmd.inDeviceAddress = deviceAddress;
00363   ospCmd.p_inParameter = NULL;
00364
00365   ospErrorCode = osp_cmd_buffer (&ospCmd);
00366   if (ospErrorCode != OSP_NO_ERROR)
00367     {
00368       return ospErrorCode;
00369     }
00370
00371   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00372                                                       rspBuffer,
00373                                                       ospCmd.outCmdBufferLength,
00374                                                       ospCmd.outResponseLength);
00375
00376   if (spiError != NO_ERROR_SPI)
00377     {
00378       return OSP_ERROR_SPI;
00379     }
```

```
00380
00381   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00382     {
00383       return OSP_ERROR_CRC;
00384     }
00385
00386   for (uint8_t i = 0; i < 2; i++)
00387     {
00388       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00389     }
00390
00391   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00392   return OSP_NO_ERROR;
00393 }
00394
00395 /*****************************************************************************/
00396 /*****************************************************************************/
00397 enum OSP_ERROR_CODE osp_osire_read_temp (uint16_t deviceAddress,
00398                                          osireTemp_t *p_rsp)
00399 {
00400   uint8_t rspBuffer[LENGTH_READ_TEMP_RSP]; // response buffer
00401   ospCmdBuffer_t ospCmd;
00402   enum OSP_ERROR_CODE ospErrorCode;
00403   errorSpi_t spiError;
00404
00405   memset (rspBuffer, 0, LENGTH_READ_TEMP_RSP);
00406
00407   ospCmd.inCmdId = OSP_OSIRE_READ_TEMP;
00408   ospCmd.inDeviceAddress = deviceAddress;
00409   ospCmd.p_inParameter = NULL;
00410
00411   ospErrorCode = osp_cmd_buffer (&ospCmd);
00412   if (ospErrorCode != OSP_NO_ERROR)
00413     {
00414       return ospErrorCode;
00415     }
00416
00417   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00418                                                       rspBuffer,
00419                                                       ospCmd.outCmdBufferLength,
00420                                                       ospCmd.outResponseLength);
00421
00422   if (spiError != NO_ERROR_SPI)
00423     {
00424       return OSP_ERROR_SPI;
00425     }
00426
00427   if (crc (rspBuffer, LENGTH_READ_TEMP_RSP) != 0)
00428     {
00429       return OSP_ERROR_CRC;
00430     }
00431
00432   p_rsp->data.temp_value = rspBuffer[FIRST_BYTE_PAYLOAD];
00433
00434   p_rsp->address = ((rspBuffer[0] & 0x0F) << 6) | ((rspBuffer[1] >> 2) & 0x3F);
00435   return OSP_NO_ERROR;
00436 }
00437
00438 /*****************************************************************************/
00439 /*****************************************************************************/
00440 enum OSP_ERROR_CODE osp_osire_set_otth (uint16_t deviceAddress,
00441                                         osireOtthData_t data)
00442 {
00443   ospCmdBuffer_t ospCmd;
00444   enum OSP_ERROR_CODE ospErrorCode;
00445   errorSpi_t spiError;
00446
00447   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH;
00448   ospCmd.inDeviceAddress = deviceAddress;
00449   ospCmd.p_inParameter = &data.data.otthData;
00450
00451   ospErrorCode = osp_cmd_buffer (&ospCmd);
00452   if (ospErrorCode != OSP_NO_ERROR)
00453     {
00454       return ospErrorCode;
00455     }
00456
00457   spiError = send_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00458                                           ospCmd.outCmdBufferLength);
00459
00460   if (spiError != NO_ERROR_SPI)
00461     {
00462       return OSP_ERROR_SPI;
00463     }
00464
00465   return OSP_NO_ERROR;
00466 }
```

```
00467
00468 /*****************************************************************************/
00469 /*****************************************************************************/
00470 enum OSP_ERROR_CODE osp_osire_set_otth_and_sr (uint16_t deviceAddress,
00471                                                osireOtthData_t data,
00472                                                osireTempStatus_t *p_rsp)
00473 {
00474   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00475   ospCmdBuffer_t ospCmd;
00476   enum OSP_ERROR_CODE ospErrorCode;
00477   errorSpi_t spiError;
00478
00479   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00480
00481   ospCmd.inCmdId = OSP_OSIRE_SET_OTTH_SR;
00482   ospCmd.inDeviceAddress = deviceAddress;
00483   ospCmd.p_inParameter = &data.data.otthData;
00484
00485   ospErrorCode = osp_cmd_buffer (&ospCmd);
00486   if (ospErrorCode != OSP_NO_ERROR)
00487     {
00488       return ospErrorCode;
00489     }
00490
00491   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00492                                                       rspBuffer,
00493                                                       ospCmd.outCmdBufferLength,
00494                                                       ospCmd.outResponseLength);
00495
00496   if (spiError != NO_ERROR_SPI)
00497     {
00498       return OSP_ERROR_SPI;
00499     }
00500
00501   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00502     {
00503       return OSP_ERROR_CRC;
00504     }
00505
00506   for (uint8_t i = 0; i < 2; i++)
00507     {
00508       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00509     }
00510
00511   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00512   return OSP_NO_ERROR;
00513 }
00514
00515 /*****************************************************************************/
00516 /*****************************************************************************/
00517 enum OSP_ERROR_CODE osp_osire_read_otth (uint16_t deviceAddress,
00518                                          osireOtthData_t *p_rsp)
00519 {
00520   uint8_t rspBuffer[LENGTH_READ_OTTH_RSP]; // response buffer
00521   ospCmdBuffer_t ospCmd;
00522   enum OSP_ERROR_CODE ospErrorCode;
00523   errorSpi_t spiError;
00524
00525   memset (rspBuffer, 0, LENGTH_READ_OTTH_RSP);
00526
00527   ospCmd.inCmdId = OSP_OSIRE_READ_OTTH;
00528   ospCmd.inDeviceAddress = deviceAddress;
00529   ospCmd.p_inParameter = NULL;
00530
00531   ospErrorCode = osp_cmd_buffer (&ospCmd);
00532   if (ospErrorCode != OSP_NO_ERROR)
00533     {
00534       return ospErrorCode;
00535     }
00536
00537   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00538                                                       rspBuffer,
00539                                                       ospCmd.outCmdBufferLength,
00540                                                       ospCmd.outResponseLength);
00541
00542   if (spiError != NO_ERROR_SPI)
00543     {
00544       return OSP_ERROR_SPI;
00545     }
00546
00547   if (crc (rspBuffer, LENGTH_READ_OTTH_RSP) != 0)
00548     {
00549       return OSP_ERROR_CRC;
00550     }
00551
00552   for (uint8_t i = 0; i < 3; i++)
00553     {
```

```
00554       p_rsp->data.otthData[i] = rspBuffer[5 - i];
00555     }
00556
00557   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00558   return OSP_NO_ERROR;
00559 }
00560
00561 /*****************************************************************************/
00562 /*****************************************************************************/
00563 enum OSP_ERROR_CODE osp_go_active_and_sr (uint16_t deviceAddress,
00564                                           osireTempStatus_t *p_rsp)
00565 {
00566   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00567   ospCmdBuffer_t ospCmd;
00568   enum OSP_ERROR_CODE ospErrorCode;
00569   errorSpi_t spiError;
00570
00571   ospCmd.inCmdId = OSP_OSIRE_GO_ACTIVE_SR;
00572   ospCmd.inDeviceAddress = deviceAddress;
00573   ospCmd.p_inParameter = NULL;
00574
00575   ospErrorCode = osp_cmd_buffer (&ospCmd);
00576   if (ospErrorCode != OSP_NO_ERROR)
00577     {
00578       return ospErrorCode;
00579     }
00580
00581   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00582                                                       rspBuffer,
00583                                                       ospCmd.outCmdBufferLength,
00584                                                       ospCmd.outResponseLength);
00585
00586   if (spiError != NO_ERROR_SPI)
00587     {
00588       return OSP_ERROR_SPI;
00589     }
00590
00591   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00592     {
00593       return OSP_ERROR_CRC;
00594     }
00595
00596   for (uint8_t i = 0; i < 2; i++)
00597     {
00598       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00599     }
00600
00601   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00602   return OSP_NO_ERROR;
00603 }
00604
00605 /*****************************************************************************/
00606 /*****************************************************************************/
00607 enum OSP_ERROR_CODE osp_osire_go_sleep_and_sr (uint16_t deviceAddress,
00608                                                osireTempStatus_t *p_rsp)
00609 {
00610   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00611   ospCmdBuffer_t ospCmd;
00612   enum OSP_ERROR_CODE ospErrorCode;
00613   errorSpi_t spiError;
00614
00615   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00616
00617   ospCmd.inCmdId = OSP_OSIRE_GO_SLEEP_SR;
00618   ospCmd.inDeviceAddress = deviceAddress;
00619   ospCmd.p_inParameter = NULL;
00620
00621   ospErrorCode = osp_cmd_buffer (&ospCmd);
00622   if (ospErrorCode != OSP_NO_ERROR)
00623     {
00624       return ospErrorCode;
00625     }
00626
00627   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00628                                                       rspBuffer,
00629                                                       ospCmd.outCmdBufferLength,
00630                                                       ospCmd.outResponseLength);
00631
00632   if (spiError != NO_ERROR_SPI)
00633     {
00634       return OSP_ERROR_SPI;
00635     }
00636
00637   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00638     {
00639       return OSP_ERROR_CRC;
00640     }
```

```
00641
00642   for (uint8_t i = 0; i < 2; i++)
00643     {
00644       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00645     }
00646
00647   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00648   return OSP_NO_ERROR;
00649 }
00650
00651 /*****************************************************************************/
00652 /*****************************************************************************/
00653 enum OSP_ERROR_CODE osp_osire_go_deep_sleep_and_sr (uint16_t deviceAddress,
00654                                                     osireTempStatus_t *p_rsp)
00655 {
00656   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // response buffer
00657   ospCmdBuffer_t ospCmd;
00658   enum OSP_ERROR_CODE ospErrorCode;
00659   errorSpi_t spiError;
00660
00661   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00662
00663   ospCmd.inCmdId = OSP_OSIRE_GO_DEEP_SLEEP_SR;
00664   ospCmd.inDeviceAddress = deviceAddress;
00665   ospCmd.p_inParameter = NULL;
00666
00667   ospErrorCode = osp_cmd_buffer (&ospCmd);
00668   if (ospErrorCode != OSP_NO_ERROR)
00669     {
00670       return ospErrorCode;
00671     }
00672
00673   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00674                                                       rspBuffer,
00675                                                       ospCmd.outCmdBufferLength,
00676                                                       ospCmd.outResponseLength);
00677
00678   if (spiError != NO_ERROR_SPI)
00679     {
00680       return OSP_ERROR_SPI;
00681     }
00682
00683   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00684     {
00685       return OSP_ERROR_CRC;
00686     }
00687
00688   for (uint8_t i = 0; i < 2; i++)
00689     {
00690       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00691     }
00692
00693   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00694   return OSP_NO_ERROR;
00695 }
00696
00697 /*****************************************************************************/
00698 /*****************************************************************************/
00699 enum OSP_ERROR_CODE osp_osire_clr_error_and_sr (uint16_t deviceAddress,
00700                                                 osireTempStatus_t *p_rsp)
00701 {
00702   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00703   ospCmdBuffer_t ospCmd;
00704   enum OSP_ERROR_CODE ospErrorCode;
00705   errorSpi_t spiError;
00706
00707   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00708
00709   ospCmd.inCmdId = OSP_OSIRE_CLR_ERROR_SR;
00710   ospCmd.inDeviceAddress = deviceAddress;
00711   ospCmd.p_inParameter = NULL;
00712
00713   ospErrorCode = osp_cmd_buffer (&ospCmd);
00714   if (ospErrorCode != OSP_NO_ERROR)
00715     {
00716       return ospErrorCode;
00717     }
00718
00719   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00720                                                       rspBuffer,
00721                                                       ospCmd.outCmdBufferLength,
00722                                                       ospCmd.outResponseLength);
00723
00724   if (spiError != NO_ERROR_SPI)
00725     {
00726       return OSP_ERROR_SPI;
00727     }
```

```
00728
00729   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00730     {
00731       return OSP_ERROR_CRC;
00732     }
00733
00734   for (uint8_t i = 0; i < 2; i++)
00735     {
00736       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00737     }
00738
00739   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00740   return OSP_NO_ERROR;
00741 }
00742
00743 /*****************************************************************************/
00744 /*****************************************************************************/
00745 enum OSP_ERROR_CODE osp_osire_p4error_bidir (uint16_t deviceAddress,
00746                                              osireTempStatus_t *p_rsp)
00747 {
00748   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00749   ospCmdBuffer_t ospCmd;
00750   enum OSP_ERROR_CODE ospErrorCode;
00751   errorSpi_t spiError;
00752
00753   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00754
00755   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_BIDIR;
00756   ospCmd.inDeviceAddress = deviceAddress;
00757   ospCmd.p_inParameter = NULL;
00758
00759   ospErrorCode = osp_cmd_buffer (&ospCmd);
00760   if (ospErrorCode != OSP_NO_ERROR)
00761     {
00762       return ospErrorCode;
00763     }
00764
00765   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00766                                                       rspBuffer,
00767                                                       ospCmd.outCmdBufferLength,
00768                                                       ospCmd.outResponseLength);
00769
00770   if (spiError != NO_ERROR_SPI)
00771     {
00772       return OSP_ERROR_SPI;
00773     }
00774
00775   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00776     {
00777       return OSP_ERROR_CRC;
00778     }
00779
00780   for (uint8_t i = 0; i < 2; i++)
00781     {
00782       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00783     }
00784
00785   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00786   return OSP_NO_ERROR;
00787 }
00788 /*****************************************************************************/
00789 /*****************************************************************************/
00790 enum OSP_ERROR_CODE osp_osire_p4error_loop (uint16_t deviceAddress,
00791                                             osireTempStatus_t *p_rsp)
00792 {
00793   uint8_t rspBuffer[LENGTH_READ_TEMPSTATUS_RSP]; // message buffer
00794   ospCmdBuffer_t ospCmd;
00795   enum OSP_ERROR_CODE ospErrorCode;
00796   errorSpi_t spiError;
00797
00798   memset (rspBuffer, 0, LENGTH_READ_TEMPSTATUS_RSP);
00799
00800   ospCmd.inCmdId = OSP_OSIRE_P4ERROR_LOOP;
00801   ospCmd.inDeviceAddress = deviceAddress;
00802   ospCmd.p_inParameter = NULL;
00803
00804   ospErrorCode = osp_cmd_buffer (&ospCmd);
00805   if (ospErrorCode != OSP_NO_ERROR)
00806     {
00807       return ospErrorCode;
00808     }
00809
00810   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00811                                                       rspBuffer,
00812                                                       ospCmd.outCmdBufferLength,
00813                                                       ospCmd.outResponseLength);
00814
```

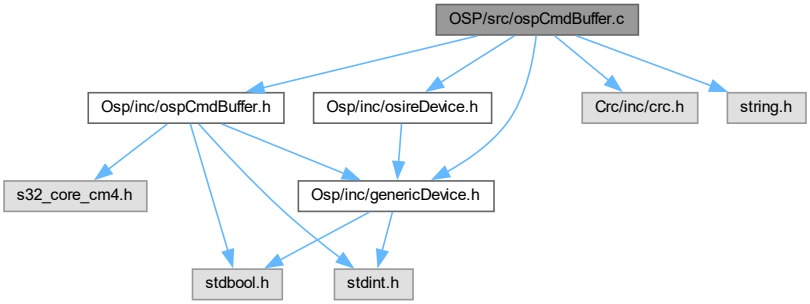
```
00815   if (spiError != NO_ERROR_SPI)
00816     {
00817       return OSP_ERROR_SPI;
00818     }
00819
00820   if (crc (rspBuffer, LENGTH_READ_TEMPSTATUS_RSP) != 0)
00821     {
00822       return OSP_ERROR_CRC;
00823     }
00824
00825   for (uint8_t i = 0; i < 2; i++)
00826     {
00827       p_rsp->data.tempStatus[i] = rspBuffer[4 - i];
00828     }
00829
00830   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00831   return OSP_NO_ERROR;
00832 }
00833 /*****************************************************************************/
00834 /*****************************************************************************/
00835 enum OSP_ERROR_CODE osp_osire_read_setup (uint16_t deviceAddress,
00836                                           osireSetSetupData_t *p_rsp)
00837 {
00838   uint8_t rspBuffer[LENGTH_READ_SETUP_RSP]; // response buffer
00839   ospCmdBuffer_t ospCmd;
00840   enum OSP_ERROR_CODE ospErrorCode;
00841   errorSpi_t spiError;
00842
00843   memset (rspBuffer, 0, LENGTH_READ_SETUP_RSP);
00844
00845   ospCmd.inCmdId = OSP_OSIRE_READ_SETUP;
00846   ospCmd.inDeviceAddress = deviceAddress;
00847   ospCmd.p_inParameter = NULL;
00848
00849   ospErrorCode = osp_cmd_buffer (&ospCmd);
00850   if (ospErrorCode != OSP_NO_ERROR)
00851     {
00852       return ospErrorCode;
00853     }
00854
00855   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00856                                                       rspBuffer,
00857                                                       ospCmd.outCmdBufferLength,
00858                                                       ospCmd.outResponseLength);
00859
00860   if (spiError != NO_ERROR_SPI)
00861     {
00862       return OSP_ERROR_SPI;
00863     }
00864
00865   if (crc (rspBuffer, LENGTH_READ_SETUP_RSP) != 0)
00866     {
00867       return OSP_ERROR_CRC;
00868     }
00869
00870   p_rsp->data.setupData = rspBuffer[FIRST_BYTE_PAYLOAD];
00871
00872   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00873   return OSP_NO_ERROR;
00874 }
00875
00876 /*****************************************************************************/
00877 /*****************************************************************************/
00878 enum OSP_ERROR_CODE osp_osire_read_comstatus (uint16_t deviceAddress,
00879                                               osireComStatus_t *p_rsp)
00880 {
00881   uint8_t rspBuffer[LENGTH_READ_COMSTATUS_RSP]; // response buffer
00882   ospCmdBuffer_t ospCmd;
00883   enum OSP_ERROR_CODE ospErrorCode;
00884   errorSpi_t spiError;
00885
00886   memset (rspBuffer, 0, LENGTH_READ_COMSTATUS_RSP);
00887
00888   ospCmd.inCmdId = OSP_OSIRE_READ_COM_STATUS;
00889   ospCmd.inDeviceAddress = deviceAddress;
00890   ospCmd.p_inParameter = NULL;
00891
00892   ospErrorCode = osp_cmd_buffer (&ospCmd);
00893   if (ospErrorCode != OSP_NO_ERROR)
00894     {
00895       return ospErrorCode;
00896     }
00897
00898   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00899                                                       rspBuffer,
00900                                                       ospCmd.outCmdBufferLength,
00901                                                       ospCmd.outResponseLength);
```

```
00902
00903   if (spiError != NO_ERROR_SPI)
00904     {
00905       return OSP_ERROR_SPI;
00906     }
00907
00908   if (crc (rspBuffer, LENGTH_READ_COMSTATUS_RSP) != 0)
00909     {
00910       return OSP_ERROR_CRC;
00911     }
00912
00913   p_rsp->data.comStatus = rspBuffer[FIRST_BYTE_PAYLOAD];
00914
00915   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00916   return OSP_NO_ERROR;
00917 }
00918
00919 /*****************************************************************************/
00920 /*****************************************************************************/
00921 enum OSP_ERROR_CODE osp_osire_read_status (uint16_t deviceAddress,
00922                                            osireStatus_t *p_rsp)
00923 {
00924   uint8_t rspBuffer[LENGTH_READ_STATUS_RSP]; // response buffer
00925   ospCmdBuffer_t ospCmd;
00926   enum OSP_ERROR_CODE ospErrorCode;
00927   errorSpi_t spiError;
00928
00929   memset (rspBuffer, 0, LENGTH_READ_STATUS_RSP);
00930
00931   ospCmd.inCmdId = OSP_OSIRE_READ_STATUS;
00932   ospCmd.inDeviceAddress = deviceAddress;
00933   ospCmd.p_inParameter = NULL;
00934
00935   ospErrorCode = osp_cmd_buffer (&ospCmd);
00936   if (ospErrorCode != OSP_NO_ERROR)
00937     {
00938       return ospErrorCode;
00939     }
00940
00941   spiError = send_and_receive_data_over_spi_blocking (ospCmd.p_outCmdBuffer,
00942                                                       rspBuffer,
00943                                                       ospCmd.outCmdBufferLength,
00944                                                       ospCmd.outResponseLength);
00945
00946   if (spiError != NO_ERROR_SPI)
00947     {
00948       return OSP_ERROR_SPI;
00949     }
00950
00951   if (crc (rspBuffer, LENGTH_READ_STATUS_RSP) != 0)
00952     {
00953       return OSP_ERROR_CRC;
00954     }
00955
00956   p_rsp->data.status = rspBuffer[FIRST_BYTE_PAYLOAD];
00957
00958   p_rsp->address = ((rspBuffer[0] & 0x0F) « 6) | ((rspBuffer[1] » 2) & 0x3F);
00959   return OSP_NO_ERROR;
00960 }
00961
```

5.12 OSP/src/ospCmdBuffer.c File Reference

```
#include <Osp/inc/genericDevice.h>
#include <Osp/inc/osireDevice.h>
#include <Crc/inc/crc.h>
#include <Osp/inc/ospCmdBuffer.h>
#include <string.h>
```

Include dependency graph for ospCmdBuffer.c:



Macros

- #define MAX_CMD_BUFFER_SIZE 16

Functions

- START_FUNCTION_DEFINITION_RAMSECTION enum OSP_ERROR_CODE osp_cmd_buffer (ospCmdBuffer_t *p_cmdInfo)

5.12.1 Macro Definition Documentation

5.12.1.1 MAX_CMD_BUFFER_SIZE

```
#define MAX_CMD_BUFFER_SIZE 16
```

Definition at line 27 of file ospCmdBuffer.c.

5.12.2 Function Documentation

5.12.2.1 osp_cmd_buffer()

```
START_FUNCTION_DEFINITION_RAMSECTION enum OSP_ERROR_CODE osp_cmd_buffer (
            ospCmdBuffer_t * p_cmdInfo )
```

Definition at line 33 of file ospCmdBuffer.c.

```
00034 {
00035   memset (cmdBuffer, 0, MAX_CMD_BUFFER_SIZE);
00036
00037   switch (p_cmdInfo->inCmdId)
00038     {
00039 /*****************************************************************************/
00040 // for genericDevice.c
00041 /*****************************************************************************/
00042     case (OSP_INIT_BIDIR):
00043       {
00044         if (p_cmdInfo->p_inParameter != NULL)
00045           {
00046             return OSP_ERROR_PARAMETER;
00047           }
00048         if (p_cmdInfo->inDeviceAddress != 1)
00049           {
00050             return OSP_ADDRESS_ERROR;
00051           }
00052
00053         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00054         LENGTH_INIT_MSG);
00055
```

```
00056         cmdBuffer[LENGTH_INIT_MSG - 1] = crc (cmdBuffer,
00057         LENGTH_INIT_MSG - 1);
00058
00059         p_cmdInfo->outCmdBufferLength = LENGTH_INIT_MSG;
00060         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00061         p_cmdInfo->outResponseLength = LENGTH_INIT_RSP; // response expected
00062         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00063         break;
00064       }
00065
00066     case (OSP_INIT_LOOP):
00067       {
00068
00069         if (p_cmdInfo->p_inParameter != NULL)
00070           {
00071             return OSP_ERROR_PARAMETER;
00072           }
00073         if (p_cmdInfo->inDeviceAddress != 1)
00074           {
00075             return OSP_ADDRESS_ERROR;
00076           }
00077
00078         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00079         LENGTH_INIT_MSG);
00080
00081         cmdBuffer[LENGTH_INIT_MSG - 1] = crc (cmdBuffer,
00082         LENGTH_INIT_MSG - 1);
00083
00084         p_cmdInfo->outCmdBufferLength = LENGTH_INIT_MSG;
00085         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00086         p_cmdInfo->outResponseLength = LENGTH_INIT_RSP; // response expected
00087         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00088
00089         break;
00090       }
00091
00092     case (OSP_RESET):
00093       {
00094
00095         if (p_cmdInfo->p_inParameter != NULL)
00096           {
00097             return OSP_ERROR_PARAMETER;
00098           }
00099         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00100           {
00101             return OSP_ADDRESS_ERROR;
00102           }
00103
00104         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00105         LENGTH_RESET_MSG);
00106
00107         cmdBuffer[LENGTH_RESET_MSG - 1] = crc (cmdBuffer,
00108         LENGTH_RESET_MSG - 1);
00109
00110         p_cmdInfo->outCmdBufferLength = LENGTH_RESET_MSG;
00111         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00112         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00113         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00114
00115         break;
00116       }
00117
00118     case (OSP_GO_ACTIVE):
00119       {
00120
00121         if (p_cmdInfo->p_inParameter != NULL)
00122           {
00123             return OSP_ERROR_PARAMETER;
00124           }
00125         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00126           {
00127             return OSP_ADDRESS_ERROR;
00128           }
00129
00130         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00131         LENGTH_GO_ACTIVE_MSG);
00132
00133         cmdBuffer[LENGTH_GO_ACTIVE_MSG - 1] = crc (cmdBuffer,
00134         LENGTH_GO_ACTIVE_MSG - 1);
00135
00136         p_cmdInfo->outCmdBufferLength = LENGTH_GO_ACTIVE_MSG;
00137         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00138         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00139         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00140
00141         break;
00142       }
```

```
00143
00144     case (OSP_GO_SLEEP):
00145       {
00146
00147         if (p_cmdInfo->p_inParameter != NULL)
00148           {
00149             return OSP_ERROR_PARAMETER;
00150           }
00151         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00152           {
00153             return OSP_ADDRESS_ERROR;
00154           }
00155
00156         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00157         LENGTH_GO_SLEEP_MSG);
00158
00159         cmdBuffer[LENGTH_GO_SLEEP_MSG - 1] = crc (cmdBuffer,
00160         LENGTH_GO_SLEEP_MSG - 1);
00161
00162         p_cmdInfo->outCmdBufferLength = LENGTH_GO_SLEEP_MSG;
00163         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00164         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00165         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00166
00167         break;
00168       }
00169
00170     case (OSP_GO_DEEP_SLEEP):
00171       {
00172
00173         if (p_cmdInfo->p_inParameter != NULL)
00174           {
00175             return OSP_ERROR_PARAMETER;
00176           }
00177         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00178           {
00179             return OSP_ADDRESS_ERROR;
00180           }
00181
00182         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00183         LENGTH_GO_DEEP_SLEEP_MSG);
00184
00185         cmdBuffer[LENGTH_GO_DEEP_SLEEP_MSG - 1] = crc (cmdBuffer,
00186         LENGTH_GO_DEEP_SLEEP_MSG - 1);
00187
00188         p_cmdInfo->outCmdBufferLength = LENGTH_GO_DEEP_SLEEP_MSG;
00189         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00190         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00191         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00192
00193         break;
00194       }
00195
00196     case (OSP_CLR_ERROR):
00197       {
00198
00199         if (p_cmdInfo->p_inParameter != NULL)
00200           {
00201             return OSP_ERROR_PARAMETER;
00202           }
00203         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00204           {
00205             return OSP_ADDRESS_ERROR;
00206           }
00207
00208         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00209         LENGTH_CLR_ERROR_MSG);
00210
00211         cmdBuffer[LENGTH_CLR_ERROR_MSG - 1] = crc (cmdBuffer,
00212         LENGTH_CLR_ERROR_MSG - 1);
00213
00214         p_cmdInfo->outCmdBufferLength = LENGTH_CLR_ERROR_MSG;
00215         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00216         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00217         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00218
00219         break;
00220       }
00221     END_FUNCTION_DEFINITION_RAMSECTION
00222 /*****************************************************************************/
00223 // for osireDevice.c
00224 /*****************************************************************************/
00225
00226     case (OSP_OSIRE_SET_SETUP):
00227       {
00228
00229         if (p_cmdInfo->p_inParameter == NULL)
```

```
00230           {
00231             return OSP_ERROR_PARAMETER;
00232           }
00233         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00234           {
00235             return OSP_ADDRESS_ERROR;
00236           }
00237
00238         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00239         LENGTH_SET_SETUP_MSG);
00240
00241         osireSetSetupData_t *p_data;
00242         p_data = (osireSetSetupData_t*) p_cmdInfo->p_inParameter;
00243         cmdBuffer[3] = p_data->data.setupData;
00244
00245         cmdBuffer[LENGTH_SET_SETUP_MSG - 1] = crc (cmdBuffer,
00246         LENGTH_SET_SETUP_MSG - 1);
00247
00248         p_cmdInfo->outCmdBufferLength = LENGTH_SET_SETUP_MSG;
00249         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00250         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00251         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00252
00253         break;
00254       }
00255
00256     case (OSP_OSIRE_SET_SETUP_SR):
00257       {
00258
00259         if (p_cmdInfo->p_inParameter == NULL)
00260           {
00261             return OSP_ERROR_PARAMETER;
00262           }
00263         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00264             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00265           {
00266             return OSP_ADDRESS_ERROR;
00267           }
00268
00269         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00270         LENGTH_SET_SETUP_MSG);
00271
00272         osireSetSetupData_t *p_data;
00273         p_data = (osireSetSetupData_t*) p_cmdInfo->p_inParameter;
00274         cmdBuffer[3] = p_data->data.setupData;
00275
00276         cmdBuffer[LENGTH_SET_SETUP_MSG - 1] = crc (cmdBuffer,
00277         LENGTH_SET_SETUP_MSG - 1);
00278
00279         p_cmdInfo->outCmdBufferLength = LENGTH_SET_SETUP_MSG;
00280         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00281         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00282         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00283
00284         break;
00285       }
00286
00287     case (OSP_OSIRE_SET_PWM):
00288       {
00289
00290         if (p_cmdInfo->p_inParameter == NULL)
00291           {
00292             return OSP_ERROR_PARAMETER;
00293           }
00294         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00295           {
00296             return OSP_ADDRESS_ERROR;
00297           }
00298
00299         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00300         LENGTH_SET_PWM_MSG);
00301
00302         osirePwmData_t *p_data;
00303         p_data = (osirePwmData_t*) p_cmdInfo->p_inParameter;
00304         cmdBuffer[8] = p_data->data.pwmData[0];
00305         cmdBuffer[7] = p_data->data.pwmData[1];
00306         cmdBuffer[6] = p_data->data.pwmData[2];
00307         cmdBuffer[5] = p_data->data.pwmData[3];
00308         cmdBuffer[4] = p_data->data.pwmData[4];
00309         cmdBuffer[3] = p_data->data.pwmData[5];
00310
00311         cmdBuffer[LENGTH_SET_PWM_MSG - 1] = crc (cmdBuffer,
00312         LENGTH_SET_PWM_MSG - 1);
00313
00314         p_cmdInfo->outCmdBufferLength = LENGTH_SET_PWM_MSG;
00315         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00316         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
```

```
00317         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00318
00319         break;
00320       }
00321
00322     case (OSP_OSIRE_SET_PWM_SR):
00323       {
00324
00325         if (p_cmdInfo->p_inParameter == NULL)
00326           {
00327             return OSP_ERROR_PARAMETER;
00328           }
00329         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00330             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00331           {
00332             return OSP_ADDRESS_ERROR;
00333           }
00334
00335         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00336         LENGTH_SET_PWM_MSG);
00337
00338         osirePwmData_t *p_data;
00339         p_data = (osirePwmData_t*) p_cmdInfo->p_inParameter;
00340         cmdBuffer[8] = p_data->data.pwmData[0];
00341         cmdBuffer[7] = p_data->data.pwmData[1];
00342         cmdBuffer[6] = p_data->data.pwmData[2];
00343         cmdBuffer[5] = p_data->data.pwmData[3];
00344         cmdBuffer[4] = p_data->data.pwmData[4];
00345         cmdBuffer[3] = p_data->data.pwmData[5];
00346
00347         cmdBuffer[LENGTH_SET_PWM_MSG - 1] = crc (cmdBuffer,
00348         LENGTH_SET_PWM_MSG - 1);
00349
00350         p_cmdInfo->outCmdBufferLength = LENGTH_SET_PWM_MSG;
00351         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00352         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00353         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00354
00355         break;
00356       }
00357
00358     case (OSP_OSIRE_READ_PWM):
00359       {
00360
00361         if (p_cmdInfo->p_inParameter != NULL)
00362           {
00363             return OSP_ERROR_PARAMETER;
00364           }
00365         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00366             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00367           {
00368             return OSP_ADDRESS_ERROR;
00369           }
00370
00371         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00372         LENGTH_READ_PWM_MSG);
00373
00374         cmdBuffer[LENGTH_READ_PWM_MSG - 1] = crc (cmdBuffer,
00375         LENGTH_READ_PWM_MSG - 1);
00376
00377         p_cmdInfo->outCmdBufferLength = LENGTH_READ_PWM_MSG;
00378         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00379         p_cmdInfo->outResponseLength = LENGTH_READ_PWM_RSP; // response expected
00380         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00381
00382         break;
00383       }
00384
00385     case (OSP_OSIRE_READ_OTP):
00386       {
00387
00388         if (p_cmdInfo->p_inParameter == NULL)
00389           {
00390             return OSP_ERROR_PARAMETER;
00391           }
00392         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00393             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00394           {
00395             return OSP_ADDRESS_ERROR;
00396           }
00397
00398         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00399         LENGTH_READ_OTP_MSG);
00400
00401         //Offset in OTP memory
00402         cmdBuffer[3] = (*((uint8_t*) p_cmdInfo->p_inParameter));
00403
```

```
00404         cmdBuffer[LENGTH_READ_OTP_MSG - 1] = crc (cmdBuffer,
00405         LENGTH_READ_OTP_MSG - 1);
00406
00407         p_cmdInfo->outCmdBufferLength = LENGTH_READ_OTP_MSG;
00408         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00409         p_cmdInfo->outResponseLength = LENGTH_READ_OTP_RSP; // response expected
00410         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00411
00412         break;
00413       }
00414
00415     case (OSP_OSIRE_READ_LED_STATUS):
00416       {
00417
00418         if (p_cmdInfo->p_inParameter != NULL)
00419           {
00420             return OSP_ERROR_PARAMETER;
00421           }
00422         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00423             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00424           {
00425             return OSP_ADDRESS_ERROR;
00426           }
00427
00428         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00429         LENGTH_READ_LEDSTATUS_MSG);
00430
00431         cmdBuffer[LENGTH_READ_LEDSTATUS_MSG - 1] = crc (cmdBuffer,
00432         LENGTH_READ_LEDSTATUS_MSG - 1);
00433
00434         p_cmdInfo->outCmdBufferLength = LENGTH_READ_LEDSTATUS_MSG;
00435         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00436         p_cmdInfo->outResponseLength = LENGTH_READ_LEDSTATUS_RSP; // response expected
00437         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00438
00439         break;
00440       }
00441
00442     case (OSP_OSIRE_READ_TEMP_STATUS):
00443       {
00444
00445         if (p_cmdInfo->p_inParameter != NULL)
00446           {
00447             return OSP_ERROR_PARAMETER;
00448           }
00449         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00450             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00451           {
00452             return OSP_ADDRESS_ERROR;
00453           }
00454
00455         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00456         LENGTH_READ_TEMPSTATUS_MSG);
00457
00458         cmdBuffer[LENGTH_READ_TEMPSTATUS_MSG - 1] = crc (cmdBuffer,
00459         LENGTH_READ_TEMPSTATUS_MSG - 1);
00460
00461         p_cmdInfo->outCmdBufferLength = LENGTH_READ_TEMPSTATUS_MSG;
00462         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00463         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00464         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00465
00466         break;
00467       }
00468
00469     case (OSP_OSIRE_READ_TEMP):
00470       {
00471
00472         if (p_cmdInfo->p_inParameter != NULL)
00473           {
00474             return OSP_ERROR_PARAMETER;
00475           }
00476         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00477             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00478           {
00479             return OSP_ADDRESS_ERROR;
00480           }
00481
00482         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00483         LENGTH_READ_TEMP_MSG);
00484
00485         cmdBuffer[LENGTH_READ_TEMP_MSG - 1] = crc (cmdBuffer,
00486         LENGTH_READ_TEMP_MSG - 1);
00487
00488         p_cmdInfo->outCmdBufferLength = LENGTH_READ_TEMP_MSG;
00489         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00490         p_cmdInfo->outResponseLength = LENGTH_READ_TEMP_RSP; // response expected
```

```
00491         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00492
00493         break;
00494       }
00495
00496     case (OSP_OSIRE_SET_OTTH):
00497       {
00498
00499         if (p_cmdInfo->p_inParameter == NULL)
00500           {
00501             return OSP_ERROR_PARAMETER;
00502           }
00503         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00504           {
00505             return OSP_ADDRESS_ERROR;
00506           }
00507
00508         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00509         LENGTH_SET_OTTH_MSG);
00510
00511         osireOtthData_t *p_data;
00512         p_data = (osireOtthData_t*) p_cmdInfo->p_inParameter;
00513         cmdBuffer[5] = p_data->data.otthData[0];
00514         cmdBuffer[4] = p_data->data.otthData[1];
00515         cmdBuffer[3] = p_data->data.otthData[2];
00516
00517         cmdBuffer[LENGTH_SET_OTTH_MSG - 1] = crc (cmdBuffer,
00518         LENGTH_SET_OTTH_MSG - 1);
00519
00520         p_cmdInfo->outCmdBufferLength = LENGTH_SET_OTTH_MSG;
00521         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00522         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00523         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00524
00525         break;
00526       }
00527
00528     case (OSP_OSIRE_SET_OTTH_SR):
00529       {
00530
00531         if (p_cmdInfo->p_inParameter == NULL)
00532           {
00533             return OSP_ERROR_PARAMETER;
00534           }
00535         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00536             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00537           {
00538             return OSP_ADDRESS_ERROR;
00539           }
00540
00541         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00542         LENGTH_SET_OTTH_MSG);
00543
00544         osireOtthData_t *p_data;
00545         p_data = (osireOtthData_t*) p_cmdInfo->p_inParameter;
00546         cmdBuffer[5] = p_data->data.otthData[0];
00547         cmdBuffer[4] = p_data->data.otthData[1];
00548         cmdBuffer[3] = p_data->data.otthData[2];
00549
00550         cmdBuffer[LENGTH_SET_OTTH_MSG - 1] = crc (cmdBuffer,
00551         LENGTH_SET_OTTH_MSG - 1);
00552
00553         p_cmdInfo->outCmdBufferLength = LENGTH_SET_OTTH_MSG;
00554         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00555         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00556         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00557
00558         break;
00559       }
00560
00561     case (OSP_OSIRE_READ_OTTH):
00562       {
00563
00564         if (p_cmdInfo->p_inParameter != NULL)
00565           {
00566             return OSP_ERROR_PARAMETER;
00567           }
00568         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00569             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00570           {
00571             return OSP_ADDRESS_ERROR;
00572           }
00573
00574         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00575         LENGTH_READ_OTTH_MSG);
00576
00577         cmdBuffer[LENGTH_READ_OTTH_MSG - 1] = crc (cmdBuffer,
```

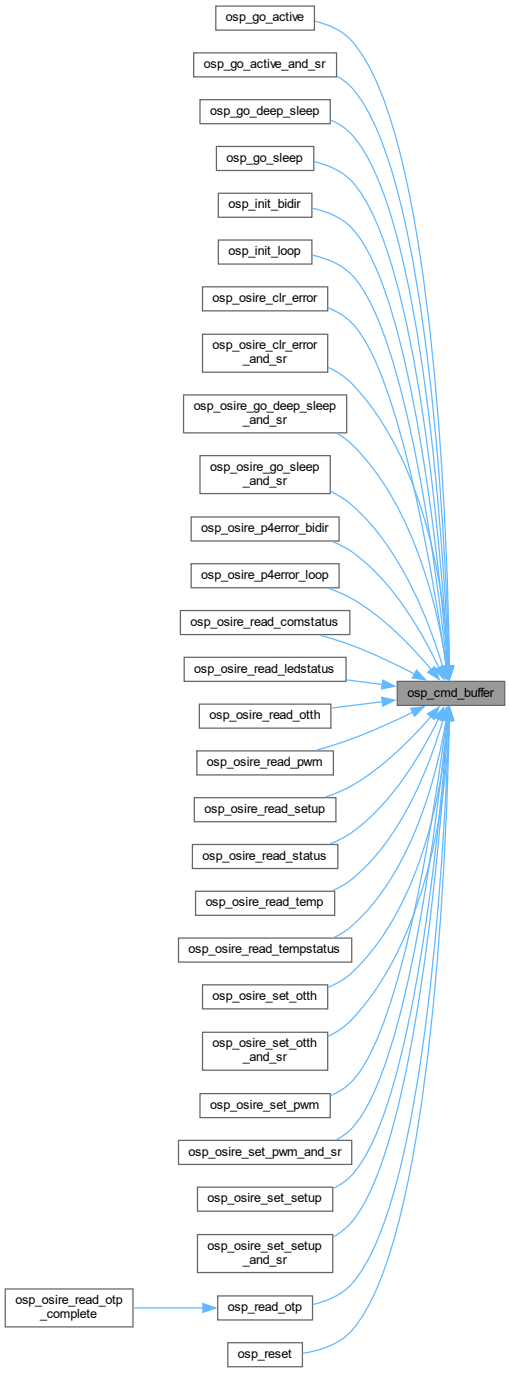
```
00578         LENGTH_READ_OTTH_MSG - 1);
00579
00580         p_cmdInfo->outCmdBufferLength = LENGTH_READ_OTTH_MSG;
00581         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00582         p_cmdInfo->outResponseLength = LENGTH_READ_OTTH_RSP; // response expected
00583         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00584
00585         break;
00586       }
00587
00588     case (OSP_OSIRE_GO_ACTIVE_SR):
00589       {
00590
00591         if (p_cmdInfo->p_inParameter != NULL)
00592           {
00593             return OSP_ERROR_PARAMETER;
00594           }
00595         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00596           {
00597             return OSP_ADDRESS_ERROR;
00598           }
00599
00600         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00601         LENGTH_GO_ACTIVE_MSG);
00602
00603         cmdBuffer[LENGTH_GO_ACTIVE_MSG - 1] = crc (cmdBuffer,
00604         LENGTH_GO_ACTIVE_MSG - 1);
00605
00606         p_cmdInfo->outCmdBufferLength = LENGTH_GO_ACTIVE_MSG;
00607         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00608         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00609         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00610
00611         break;
00612       }
00613
00614     case (OSP_OSIRE_GO_SLEEP_SR):
00615       {
00616
00617         if (p_cmdInfo->p_inParameter != NULL)
00618           {
00619             return OSP_ERROR_PARAMETER;
00620           }
00621         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00622             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00623           {
00624             return OSP_ADDRESS_ERROR;
00625           }
00626
00627         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00628         LENGTH_GO_SLEEP_MSG);
00629
00630         cmdBuffer[LENGTH_GO_SLEEP_MSG - 1] = crc (cmdBuffer,
00631         LENGTH_GO_SLEEP_MSG - 1);
00632
00633         p_cmdInfo->outCmdBufferLength = LENGTH_GO_SLEEP_MSG;
00634         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00635         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00636         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00637
00638         break;
00639       }
00640
00641     case (OSP_OSIRE_GO_DEEP_SLEEP_SR):
00642       {
00643
00644         if (p_cmdInfo->p_inParameter != NULL)
00645           {
00646             return OSP_ERROR_PARAMETER;
00647           }
00648         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00649             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00650           {
00651             return OSP_ADDRESS_ERROR;
00652           }
00653
00654         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00655         LENGTH_GO_DEEP_SLEEP_MSG);
00656
00657         cmdBuffer[LENGTH_GO_DEEP_SLEEP_MSG - 1] = crc (cmdBuffer,
00658         LENGTH_GO_DEEP_SLEEP_MSG - 1);
00659
00660         p_cmdInfo->outCmdBufferLength = LENGTH_GO_DEEP_SLEEP_MSG;
00661         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00662         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00663         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00664
```

```
00665         break;
00666       }
00667
00668     case (OSP_OSIRE_CLR_ERROR_SR):
00669       {
00670
00671         if (p_cmdInfo->p_inParameter != NULL)
00672           {
00673             return OSP_ERROR_PARAMETER;
00674           }
00675         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00676             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00677           {
00678             return OSP_ADDRESS_ERROR;
00679           }
00680
00681         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00682         LENGTH_CLR_ERROR_MSG);
00683
00684         cmdBuffer[LENGTH_CLR_ERROR_MSG - 1] = crc (cmdBuffer,
00685         LENGTH_CLR_ERROR_MSG - 1);
00686
00687         p_cmdInfo->outCmdBufferLength = LENGTH_CLR_ERROR_MSG;
00688         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00689         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00690         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00691
00692         break;
00693       }
00694
00695     case (OSP_OSIRE_P4ERROR_BIDIR):
00696       {
00697
00698         if (p_cmdInfo->p_inParameter != NULL)
00699           {
00700             return OSP_ERROR_PARAMETER;
00701           }
00702         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00703             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00704           {
00705             return OSP_ADDRESS_ERROR;
00706           }
00707
00708         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00709         LENGTH_P4ERROR_MSG);
00710
00711         cmdBuffer[LENGTH_P4ERROR_MSG - 1] = crc (cmdBuffer,
00712         LENGTH_P4ERROR_MSG - 1);
00713
00714         p_cmdInfo->outCmdBufferLength = LENGTH_P4ERROR_MSG;
00715         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00716         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00717         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00718
00719         break;
00720       }
00721
00722     case (OSP_OSIRE_P4ERROR_LOOP):
00723       {
00724
00725         if (p_cmdInfo->p_inParameter != NULL)
00726           {
00727             return OSP_ERROR_PARAMETER;
00728           }
00729         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00730             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00731           {
00732             return OSP_ADDRESS_ERROR;
00733           }
00734
00735         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00736         LENGTH_P4ERROR_MSG);
00737
00738         cmdBuffer[LENGTH_P4ERROR_MSG - 1] = crc (cmdBuffer,
00739         LENGTH_P4ERROR_MSG - 1);
00740
00741         p_cmdInfo->outCmdBufferLength = LENGTH_P4ERROR_MSG;
00742         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00743         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00744         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00745
00746         break;
00747       }
00748
00749     case (OSP_OSIRE_READ_SETUP):
00750       {
00751
```

```
00752         if (p_cmdInfo->p_inParameter != NULL)
00753           {
00754             return OSP_ERROR_PARAMETER;
00755           }
00756         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00757             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00758           {
00759             return OSP_ADDRESS_ERROR;
00760           }
00761
00762         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00763         LENGTH_READ_SETUP_MSG);
00764
00765         cmdBuffer[LENGTH_READ_SETUP_MSG - 1] = crc (cmdBuffer,
00766         LENGTH_READ_SETUP_MSG - 1);
00767
00768         p_cmdInfo->outCmdBufferLength = LENGTH_READ_SETUP_MSG;
00769         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00770         p_cmdInfo->outResponseLength = LENGTH_READ_SETUP_RSP; // response expected
00771         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00772
00773         break;
00774       }
00775
00776     case (OSP_OSIRE_READ_COM_STATUS):
00777       {
00778
00779         if (p_cmdInfo->p_inParameter != NULL)
00780           {
00781             return OSP_ERROR_PARAMETER;
00782           }
00783         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00784             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00785           {
00786             return OSP_ADDRESS_ERROR;
00787           }
00788
00789         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00790         LENGTH_READ_COMSTATUS_MSG);
00791
00792         cmdBuffer[LENGTH_READ_COMSTATUS_MSG - 1] = crc (cmdBuffer,
00793         LENGTH_READ_COMSTATUS_MSG - 1);
00794
00795         p_cmdInfo->outCmdBufferLength = LENGTH_READ_COMSTATUS_MSG;
00796         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00797         p_cmdInfo->outResponseLength = LENGTH_READ_COMSTATUS_RSP; // response expected
00798         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00799
00800         break;
00801       }
00802
00803     case (OSP_OSIRE_READ_STATUS):
00804       {
00805
00806         if (p_cmdInfo->p_inParameter != NULL)
00807           {
00808             return OSP_ERROR_PARAMETER;
00809           }
00810         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00811             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00812           {
00813             return OSP_ADDRESS_ERROR;
00814           }
00815
00816         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00817         LENGTH_READ_STATUS_MSG);
00818
00819         cmdBuffer[LENGTH_READ_STATUS_MSG - 1] = crc (cmdBuffer,
00820         LENGTH_READ_STATUS_MSG - 1);
00821
00822         p_cmdInfo->outCmdBufferLength = LENGTH_READ_STATUS_MSG;
00823         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00824         p_cmdInfo->outResponseLength = LENGTH_READ_STATUS_RSP; // response expected
00825         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00826
00827         break;
00828       }
00829
00830     default:
00831       {
00832         return OSP_ERROR_NOT_IMPLEMENTED;
00833       }
00834
00835     }
00836
00837   return OSP_NO_ERROR;
00838 }
```

Here is the call graph for this function:

Here is the caller graph for this function:



5.13 ospCmdBuffer.c

Go to the documentation of this file.

```
00001 /*****************************************************************************
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      *
00004 *                                                                            *
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```

```
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00015 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY    *
00016 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT      *
00017 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE    *
00018 * OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.     *
00019 ****************************************************************************/
00020
00021 #include <Osp/inc/genericDevice.h>
00022 #include <Osp/inc/osireDevice.h>
00023 #include <Crc/inc/crc.h>
00024 #include <Osp/inc/ospCmdBuffer.h>
00025 #include <string.h>
00026
00027 #define MAX_CMD_BUFFER_SIZE 16
00028 static uint8_t cmdBuffer[MAX_CMD_BUFFER_SIZE];
00029
00030 /*****************************************************************************/
00031 /*****************************************************************************/
00032 START_FUNCTION_DEFINITION_RAMSECTION
00033 enum OSP_ERROR_CODE osp_cmd_buffer (ospCmdBuffer_t *p_cmdInfo)
00034 {
00035   memset (cmdBuffer, 0, MAX_CMD_BUFFER_SIZE);
00036
00037   switch (p_cmdInfo->inCmdId)
00038     {
00039 /*****************************************************************************/
00040 // for genericDevice.c
00041 /*****************************************************************************/
00042     case (OSP_INIT_BIDIR):
00043       {
00044         if (p_cmdInfo->p_inParameter != NULL)
00045           {
00046             return OSP_ERROR_PARAMETER;
00047           }
00048         if (p_cmdInfo->inDeviceAddress != 1)
00049           {
00050             return OSP_ADDRESS_ERROR;
00051           }
00052
00053         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00054         LENGTH_INIT_MSG);
00055
00056         cmdBuffer[LENGTH_INIT_MSG - 1] = crc (cmdBuffer,
00057         LENGTH_INIT_MSG - 1);
00058
00059         p_cmdInfo->outCmdBufferLength = LENGTH_INIT_MSG;
00060         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00061         p_cmdInfo->outResponseLength = LENGTH_INIT_RSP; // response expected
00062         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00063         break;
00064       }
00065
00066     case (OSP_INIT_LOOP):
00067       {
00068
00069         if (p_cmdInfo->p_inParameter != NULL)
00070           {
00071             return OSP_ERROR_PARAMETER;
00072           }
00073         if (p_cmdInfo->inDeviceAddress != 1)
00074           {
00075             return OSP_ADDRESS_ERROR;
00076           }
00077
00078         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00079         LENGTH_INIT_MSG);
00080
00081         cmdBuffer[LENGTH_INIT_MSG - 1] = crc (cmdBuffer,
00082         LENGTH_INIT_MSG - 1);
00083
00084         p_cmdInfo->outCmdBufferLength = LENGTH_INIT_MSG;
00085         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00086         p_cmdInfo->outResponseLength = LENGTH_INIT_RSP; // response expected
00087         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00088
00089         break;
00090       }
00091
00092     case (OSP_RESET):
00093       {
```

```
00094
00095         if (p_cmdInfo->p_inParameter != NULL)
00096           {
00097             return OSP_ERROR_PARAMETER;
00098           }
00099         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00100           {
00101             return OSP_ADDRESS_ERROR;
00102           }
00103
00104         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00105         LENGTH_RESET_MSG);
00106
00107         cmdBuffer[LENGTH_RESET_MSG - 1] = crc (cmdBuffer,
00108         LENGTH_RESET_MSG - 1);
00109
00110         p_cmdInfo->outCmdBufferLength = LENGTH_RESET_MSG;
00111         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00112         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00113         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00114
00115         break;
00116       }
00117
00118     case (OSP_GO_ACTIVE):
00119       {
00120
00121         if (p_cmdInfo->p_inParameter != NULL)
00122           {
00123             return OSP_ERROR_PARAMETER;
00124           }
00125         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00126           {
00127             return OSP_ADDRESS_ERROR;
00128           }
00129
00130         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00131         LENGTH_GO_ACTIVE_MSG);
00132
00133         cmdBuffer[LENGTH_GO_ACTIVE_MSG - 1] = crc (cmdBuffer,
00134         LENGTH_GO_ACTIVE_MSG - 1);
00135
00136         p_cmdInfo->outCmdBufferLength = LENGTH_GO_ACTIVE_MSG;
00137         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00138         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00139         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00140
00141         break;
00142       }
00143
00144     case (OSP_GO_SLEEP):
00145       {
00146
00147         if (p_cmdInfo->p_inParameter != NULL)
00148           {
00149             return OSP_ERROR_PARAMETER;
00150           }
00151         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00152           {
00153             return OSP_ADDRESS_ERROR;
00154           }
00155
00156         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00157         LENGTH_GO_SLEEP_MSG);
00158
00159         cmdBuffer[LENGTH_GO_SLEEP_MSG - 1] = crc (cmdBuffer,
00160         LENGTH_GO_SLEEP_MSG - 1);
00161
00162         p_cmdInfo->outCmdBufferLength = LENGTH_GO_SLEEP_MSG;
00163         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00164         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00165         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00166
00167         break;
00168       }
00169
00170     case (OSP_GO_DEEP_SLEEP):
00171       {
00172
00173         if (p_cmdInfo->p_inParameter != NULL)
00174           {
00175             return OSP_ERROR_PARAMETER;
00176           }
00177         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00178           {
00179             return OSP_ADDRESS_ERROR;
00180           }
```

```
00181
00182         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00183         LENGTH_GO_DEEP_SLEEP_MSG);
00184
00185         cmdBuffer[LENGTH_GO_DEEP_SLEEP_MSG - 1] = crc (cmdBuffer,
00186         LENGTH_GO_DEEP_SLEEP_MSG - 1);
00187
00188         p_cmdInfo->outCmdBufferLength = LENGTH_GO_DEEP_SLEEP_MSG;
00189         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00190         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00191         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00192
00193         break;
00194       }
00195
00196     case (OSP_CLR_ERROR):
00197       {
00198
00199         if (p_cmdInfo->p_inParameter != NULL)
00200           {
00201             return OSP_ERROR_PARAMETER;
00202           }
00203         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00204           {
00205             return OSP_ADDRESS_ERROR;
00206           }
00207
00208         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00209         LENGTH_CLR_ERROR_MSG);
00210
00211         cmdBuffer[LENGTH_CLR_ERROR_MSG - 1] = crc (cmdBuffer,
00212         LENGTH_CLR_ERROR_MSG - 1);
00213
00214         p_cmdInfo->outCmdBufferLength = LENGTH_CLR_ERROR_MSG;
00215         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00216         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00217         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00218
00219         break;
00220       }
00221     END_FUNCTION_DEFINITION_RAMSECTION
00222 /*****************************************************************************/
00223 // for osireDevice.c
00224 /*****************************************************************************/
00225
00226     case (OSP_OSIRE_SET_SETUP):
00227       {
00228
00229         if (p_cmdInfo->p_inParameter == NULL)
00230           {
00231             return OSP_ERROR_PARAMETER;
00232           }
00233         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00234           {
00235             return OSP_ADDRESS_ERROR;
00236           }
00237
00238         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00239         LENGTH_SET_SETUP_MSG);
00240
00241         osireSetSetupData_t *p_data;
00242         p_data = (osireSetSetupData_t*) p_cmdInfo->p_inParameter;
00243         cmdBuffer[3] = p_data->data.setupData;
00244
00245         cmdBuffer[LENGTH_SET_SETUP_MSG - 1] = crc (cmdBuffer,
00246         LENGTH_SET_SETUP_MSG - 1);
00247
00248         p_cmdInfo->outCmdBufferLength = LENGTH_SET_SETUP_MSG;
00249         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00250         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00251         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00252
00253         break;
00254       }
00255
00256     case (OSP_OSIRE_SET_SETUP_SR):
00257       {
00258
00259         if (p_cmdInfo->p_inParameter == NULL)
00260           {
00261             return OSP_ERROR_PARAMETER;
00262           }
00263         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00264             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00265           {
00266             return OSP_ADDRESS_ERROR;
00267           }
```

```
00268
00269         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00270         LENGTH_SET_SETUP_MSG);
00271
00272         osireSetSetupData_t *p_data;
00273         p_data = (osireSetSetupData_t*) p_cmdInfo->p_inParameter;
00274         cmdBuffer[3] = p_data->data.setupData;
00275
00276         cmdBuffer[LENGTH_SET_SETUP_MSG - 1] = crc (cmdBuffer,
00277         LENGTH_SET_SETUP_MSG - 1);
00278
00279         p_cmdInfo->outCmdBufferLength = LENGTH_SET_SETUP_MSG;
00280         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00281         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00282         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00283
00284         break;
00285       }
00286
00287     case (OSP_OSIRE_SET_PWM):
00288       {
00289
00290         if (p_cmdInfo->p_inParameter == NULL)
00291           {
00292             return OSP_ERROR_PARAMETER;
00293           }
00294         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00295           {
00296             return OSP_ADDRESS_ERROR;
00297           }
00298
00299         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00300         LENGTH_SET_PWM_MSG);
00301
00302         osirePwmData_t *p_data;
00303         p_data = (osirePwmData_t*) p_cmdInfo->p_inParameter;
00304         cmdBuffer[8] = p_data->data.pwmData[0];
00305         cmdBuffer[7] = p_data->data.pwmData[1];
00306         cmdBuffer[6] = p_data->data.pwmData[2];
00307         cmdBuffer[5] = p_data->data.pwmData[3];
00308         cmdBuffer[4] = p_data->data.pwmData[4];
00309         cmdBuffer[3] = p_data->data.pwmData[5];
00310
00311         cmdBuffer[LENGTH_SET_PWM_MSG - 1] = crc (cmdBuffer,
00312         LENGTH_SET_PWM_MSG - 1);
00313
00314         p_cmdInfo->outCmdBufferLength = LENGTH_SET_PWM_MSG;
00315         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00316         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00317         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00318
00319         break;
00320       }
00321
00322     case (OSP_OSIRE_SET_PWM_SR):
00323       {
00324
00325         if (p_cmdInfo->p_inParameter == NULL)
00326           {
00327             return OSP_ERROR_PARAMETER;
00328           }
00329         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00330             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00331           {
00332             return OSP_ADDRESS_ERROR;
00333           }
00334
00335         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00336         LENGTH_SET_PWM_MSG);
00337
00338         osirePwmData_t *p_data;
00339         p_data = (osirePwmData_t*) p_cmdInfo->p_inParameter;
00340         cmdBuffer[8] = p_data->data.pwmData[0];
00341         cmdBuffer[7] = p_data->data.pwmData[1];
00342         cmdBuffer[6] = p_data->data.pwmData[2];
00343         cmdBuffer[5] = p_data->data.pwmData[3];
00344         cmdBuffer[4] = p_data->data.pwmData[4];
00345         cmdBuffer[3] = p_data->data.pwmData[5];
00346
00347         cmdBuffer[LENGTH_SET_PWM_MSG - 1] = crc (cmdBuffer,
00348         LENGTH_SET_PWM_MSG - 1);
00349
00350         p_cmdInfo->outCmdBufferLength = LENGTH_SET_PWM_MSG;
00351         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00352         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00353         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00354
```

```
00355         break;
00356       }
00357
00358     case (OSP_OSIRE_READ_PWM):
00359       {
00360
00361         if (p_cmdInfo->p_inParameter != NULL)
00362           {
00363             return OSP_ERROR_PARAMETER;
00364           }
00365         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00366             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00367           {
00368             return OSP_ADDRESS_ERROR;
00369           }
00370
00371         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00372         LENGTH_READ_PWM_MSG);
00373
00374         cmdBuffer[LENGTH_READ_PWM_MSG - 1] = crc (cmdBuffer,
00375         LENGTH_READ_PWM_MSG - 1);
00376
00377         p_cmdInfo->outCmdBufferLength = LENGTH_READ_PWM_MSG;
00378         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00379         p_cmdInfo->outResponseLength = LENGTH_READ_PWM_RSP; // response expected
00380         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00381
00382         break;
00383       }
00384
00385     case (OSP_OSIRE_READ_OTP):
00386       {
00387
00388         if (p_cmdInfo->p_inParameter == NULL)
00389           {
00390             return OSP_ERROR_PARAMETER;
00391           }
00392         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00393             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00394           {
00395             return OSP_ADDRESS_ERROR;
00396           }
00397
00398         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00399         LENGTH_READ_OTP_MSG);
00400
00401         //Offset in OTP memory
00402         cmdBuffer[3] = (*((uint8_t*) p_cmdInfo->p_inParameter));
00403
00404         cmdBuffer[LENGTH_READ_OTP_MSG - 1] = crc (cmdBuffer,
00405         LENGTH_READ_OTP_MSG - 1);
00406
00407         p_cmdInfo->outCmdBufferLength = LENGTH_READ_OTP_MSG;
00408         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00409         p_cmdInfo->outResponseLength = LENGTH_READ_OTP_RSP; // response expected
00410         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00411
00412         break;
00413       }
00414
00415     case (OSP_OSIRE_READ_LED_STATUS):
00416       {
00417
00418         if (p_cmdInfo->p_inParameter != NULL)
00419           {
00420             return OSP_ERROR_PARAMETER;
00421           }
00422         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00423             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00424           {
00425             return OSP_ADDRESS_ERROR;
00426           }
00427
00428         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00429         LENGTH_READ_LEDSTATUS_MSG);
00430
00431         cmdBuffer[LENGTH_READ_LEDSTATUS_MSG - 1] = crc (cmdBuffer,
00432         LENGTH_READ_LEDSTATUS_MSG - 1);
00433
00434         p_cmdInfo->outCmdBufferLength = LENGTH_READ_LEDSTATUS_MSG;
00435         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00436         p_cmdInfo->outResponseLength = LENGTH_READ_LEDSTATUS_RSP; // response expected
00437         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00438
00439         break;
00440       }
00441
```

```
00442     case (OSP_OSIRE_READ_TEMP_STATUS):
00443       {
00444
00445         if (p_cmdInfo->p_inParameter != NULL)
00446           {
00447             return OSP_ERROR_PARAMETER;
00448           }
00449         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00450             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00451           {
00452             return OSP_ADDRESS_ERROR;
00453           }
00454
00455         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00456         LENGTH_READ_TEMPSTATUS_MSG);
00457
00458         cmdBuffer[LENGTH_READ_TEMPSTATUS_MSG - 1] = crc (cmdBuffer,
00459         LENGTH_READ_TEMPSTATUS_MSG - 1);
00460
00461         p_cmdInfo->outCmdBufferLength = LENGTH_READ_TEMPSTATUS_MSG;
00462         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00463         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00464         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00465
00466         break;
00467       }
00468
00469     case (OSP_OSIRE_READ_TEMP):
00470       {
00471
00472         if (p_cmdInfo->p_inParameter != NULL)
00473           {
00474             return OSP_ERROR_PARAMETER;
00475           }
00476         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00477             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00478           {
00479             return OSP_ADDRESS_ERROR;
00480           }
00481
00482         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00483         LENGTH_READ_TEMP_MSG);
00484
00485         cmdBuffer[LENGTH_READ_TEMP_MSG - 1] = crc (cmdBuffer,
00486         LENGTH_READ_TEMP_MSG - 1);
00487
00488         p_cmdInfo->outCmdBufferLength = LENGTH_READ_TEMP_MSG;
00489         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00490         p_cmdInfo->outResponseLength = LENGTH_READ_TEMP_RSP; // response expected
00491         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00492
00493         break;
00494       }
00495
00496     case (OSP_OSIRE_SET_OTTH):
00497       {
00498
00499         if (p_cmdInfo->p_inParameter == NULL)
00500           {
00501             return OSP_ERROR_PARAMETER;
00502           }
00503         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00504           {
00505             return OSP_ADDRESS_ERROR;
00506           }
00507
00508         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00509         LENGTH_SET_OTTH_MSG);
00510
00511         osireOtthData_t *p_data;
00512         p_data = (osireOtthData_t*) p_cmdInfo->p_inParameter;
00513         cmdBuffer[5] = p_data->data.otthData[0];
00514         cmdBuffer[4] = p_data->data.otthData[1];
00515         cmdBuffer[3] = p_data->data.otthData[2];
00516
00517         cmdBuffer[LENGTH_SET_OTTH_MSG - 1] = crc (cmdBuffer,
00518         LENGTH_SET_OTTH_MSG - 1);
00519
00520         p_cmdInfo->outCmdBufferLength = LENGTH_SET_OTTH_MSG;
00521         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00522         p_cmdInfo->outResponseLength = LENGTH_NO_OSP_RSP; // no response expected
00523         p_cmdInfo->outResponseMsg = NO_OSP_RSP; // no response expected
00524
00525         break;
00526       }
00527
00528     case (OSP_OSIRE_SET_OTTH_SR):
```

```
00529       {
00530
00531         if (p_cmdInfo->p_inParameter == NULL)
00532           {
00533             return OSP_ERROR_PARAMETER;
00534           }
00535         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00536             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00537           {
00538             return OSP_ADDRESS_ERROR;
00539           }
00540
00541         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00542         LENGTH_SET_OTTH_MSG);
00543
00544         osireOtthData_t *p_data;
00545         p_data = (osireOtthData_t*) p_cmdInfo->p_inParameter;
00546         cmdBuffer[5] = p_data->data.otthData[0];
00547         cmdBuffer[4] = p_data->data.otthData[1];
00548         cmdBuffer[3] = p_data->data.otthData[2];
00549
00550         cmdBuffer[LENGTH_SET_OTTH_MSG - 1] = crc (cmdBuffer,
00551         LENGTH_SET_OTTH_MSG - 1);
00552
00553         p_cmdInfo->outCmdBufferLength = LENGTH_SET_OTTH_MSG;
00554         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00555         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00556         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00557
00558         break;
00559       }
00560
00561     case (OSP_OSIRE_READ_OTTH):
00562       {
00563
00564         if (p_cmdInfo->p_inParameter != NULL)
00565           {
00566             return OSP_ERROR_PARAMETER;
00567           }
00568         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00569             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00570           {
00571             return OSP_ADDRESS_ERROR;
00572           }
00573
00574         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00575         LENGTH_READ_OTTH_MSG);
00576
00577         cmdBuffer[LENGTH_READ_OTTH_MSG - 1] = crc (cmdBuffer,
00578         LENGTH_READ_OTTH_MSG - 1);
00579
00580         p_cmdInfo->outCmdBufferLength = LENGTH_READ_OTTH_MSG;
00581         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00582         p_cmdInfo->outResponseLength = LENGTH_READ_OTTH_RSP; // response expected
00583         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00584
00585         break;
00586       }
00587
00588     case (OSP_OSIRE_GO_ACTIVE_SR):
00589       {
00590
00591         if (p_cmdInfo->p_inParameter != NULL)
00592           {
00593             return OSP_ERROR_PARAMETER;
00594           }
00595         if (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS)
00596           {
00597             return OSP_ADDRESS_ERROR;
00598           }
00599
00600         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00601         LENGTH_GO_ACTIVE_MSG);
00602
00603         cmdBuffer[LENGTH_GO_ACTIVE_MSG - 1] = crc (cmdBuffer,
00604         LENGTH_GO_ACTIVE_MSG - 1);
00605
00606         p_cmdInfo->outCmdBufferLength = LENGTH_GO_ACTIVE_MSG;
00607         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00608         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00609         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00610
00611         break;
00612       }
00613
00614     case (OSP_OSIRE_GO_SLEEP_SR):
00615       {
```

```
00616
00617         if (p_cmdInfo->p_inParameter != NULL)
00618           {
00619             return OSP_ERROR_PARAMETER;
00620           }
00621         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00622             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00623           {
00624             return OSP_ADDRESS_ERROR;
00625           }
00626
00627         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00628         LENGTH_GO_SLEEP_MSG);
00629
00630         cmdBuffer[LENGTH_GO_SLEEP_MSG - 1] = crc (cmdBuffer,
00631         LENGTH_GO_SLEEP_MSG - 1);
00632
00633         p_cmdInfo->outCmdBufferLength = LENGTH_GO_SLEEP_MSG;
00634         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00635         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00636         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00637
00638         break;
00639       }
00640
00641     case (OSP_OSIRE_GO_DEEP_SLEEP_SR):
00642       {
00643
00644         if (p_cmdInfo->p_inParameter != NULL)
00645           {
00646             return OSP_ERROR_PARAMETER;
00647           }
00648         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00649             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00650           {
00651             return OSP_ADDRESS_ERROR;
00652           }
00653
00654         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00655         LENGTH_GO_DEEP_SLEEP_MSG);
00656
00657         cmdBuffer[LENGTH_GO_DEEP_SLEEP_MSG - 1] = crc (cmdBuffer,
00658         LENGTH_GO_DEEP_SLEEP_MSG - 1);
00659
00660         p_cmdInfo->outCmdBufferLength = LENGTH_GO_DEEP_SLEEP_MSG;
00661         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00662         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00663         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00664
00665         break;
00666       }
00667
00668     case (OSP_OSIRE_CLR_ERROR_SR):
00669       {
00670
00671         if (p_cmdInfo->p_inParameter != NULL)
00672           {
00673             return OSP_ERROR_PARAMETER;
00674           }
00675         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00676             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00677           {
00678             return OSP_ADDRESS_ERROR;
00679           }
00680
00681         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00682         LENGTH_CLR_ERROR_MSG);
00683
00684         cmdBuffer[LENGTH_CLR_ERROR_MSG - 1] = crc (cmdBuffer,
00685         LENGTH_CLR_ERROR_MSG - 1);
00686
00687         p_cmdInfo->outCmdBufferLength = LENGTH_CLR_ERROR_MSG;
00688         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00689         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00690         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00691
00692         break;
00693       }
00694
00695     case (OSP_OSIRE_P4ERROR_BIDIR):
00696       {
00697
00698         if (p_cmdInfo->p_inParameter != NULL)
00699           {
00700             return OSP_ERROR_PARAMETER;
00701           }
00702         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
```

```
00703             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00704           {
00705             return OSP_ADDRESS_ERROR;
00706           }
00707
00708         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00709         LENGTH_P4ERROR_MSG);
00710
00711         cmdBuffer[LENGTH_P4ERROR_MSG - 1] = crc (cmdBuffer,
00712         LENGTH_P4ERROR_MSG - 1);
00713
00714         p_cmdInfo->outCmdBufferLength = LENGTH_P4ERROR_MSG;
00715         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00716         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00717         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00718
00719         break;
00720       }
00721
00722     case (OSP_OSIRE_P4ERROR_LOOP):
00723       {
00724
00725         if (p_cmdInfo->p_inParameter != NULL)
00726           {
00727             return OSP_ERROR_PARAMETER;
00728           }
00729         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00730             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00731           {
00732             return OSP_ADDRESS_ERROR;
00733           }
00734
00735         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00736         LENGTH_P4ERROR_MSG);
00737
00738         cmdBuffer[LENGTH_P4ERROR_MSG - 1] = crc (cmdBuffer,
00739         LENGTH_P4ERROR_MSG - 1);
00740
00741         p_cmdInfo->outCmdBufferLength = LENGTH_P4ERROR_MSG;
00742         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00743         p_cmdInfo->outResponseLength = LENGTH_READ_TEMPSTATUS_RSP; // response expected
00744         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00745
00746         break;
00747       }
00748
00749     case (OSP_OSIRE_READ_SETUP):
00750       {
00751
00752         if (p_cmdInfo->p_inParameter != NULL)
00753           {
00754             return OSP_ERROR_PARAMETER;
00755           }
00756         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00757             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00758           {
00759             return OSP_ADDRESS_ERROR;
00760           }
00761
00762         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00763         LENGTH_READ_SETUP_MSG);
00764
00765         cmdBuffer[LENGTH_READ_SETUP_MSG - 1] = crc (cmdBuffer,
00766         LENGTH_READ_SETUP_MSG - 1);
00767
00768         p_cmdInfo->outCmdBufferLength = LENGTH_READ_SETUP_MSG;
00769         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00770         p_cmdInfo->outResponseLength = LENGTH_READ_SETUP_RSP; // response expected
00771         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00772
00773         break;
00774       }
00775
00776     case (OSP_OSIRE_READ_COM_STATUS):
00777       {
00778
00779         if (p_cmdInfo->p_inParameter != NULL)
00780           {
00781             return OSP_ERROR_PARAMETER;
00782           }
00783         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00784             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00785           {
00786             return OSP_ADDRESS_ERROR;
00787           }
00788
00789         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
```

```
00790         LENGTH_READ_COMSTATUS_MSG);
00791
00792         cmdBuffer[LENGTH_READ_COMSTATUS_MSG - 1] = crc (cmdBuffer,
00793         LENGTH_READ_COMSTATUS_MSG - 1);
00794
00795         p_cmdInfo->outCmdBufferLength = LENGTH_READ_COMSTATUS_MSG;
00796         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00797         p_cmdInfo->outResponseLength = LENGTH_READ_COMSTATUS_RSP; // response expected
00798         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00799
00800         break;
00801       }
00802
00803     case (OSP_OSIRE_READ_STATUS):
00804       {
00805
00806         if (p_cmdInfo->p_inParameter != NULL)
00807           {
00808             return OSP_ERROR_PARAMETER;
00809           }
00810         if ((p_cmdInfo->inDeviceAddress == BROADCAST_ADDRESS)
00811             || (p_cmdInfo->inDeviceAddress > MAXIMUM_ADDRESS))
00812           {
00813             return OSP_ADDRESS_ERROR;
00814           }
00815
00816         build_header (cmdBuffer, p_cmdInfo->inDeviceAddress, p_cmdInfo->inCmdId,
00817         LENGTH_READ_STATUS_MSG);
00818
00819         cmdBuffer[LENGTH_READ_STATUS_MSG - 1] = crc (cmdBuffer,
00820         LENGTH_READ_STATUS_MSG - 1);
00821
00822         p_cmdInfo->outCmdBufferLength = LENGTH_READ_STATUS_MSG;
00823         p_cmdInfo->p_outCmdBuffer = (uint8_t*) cmdBuffer;
00824         p_cmdInfo->outResponseLength = LENGTH_READ_STATUS_RSP; // response expected
00825         p_cmdInfo->outResponseMsg = OSP_RSP; // response expected
00826
00827         break;
00828       }
00829
00830     default:
00831       {
00832         return OSP_ERROR_NOT_IMPLEMENTED;
00833       }
00834
00835     }
00836
00837   return OSP_NO_ERROR;
00838 }
```

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