# CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116

# CapSense® Express™ Controllers Registers TRM

(Technical Reference Manual)

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# Register Mapping

Register Mapping discusses the registers of the CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116 CapSense® Express™ Controllers. It lists all the registers in mapping tables, in address order.

## 1.1 Maneuvering Around the Registers

For ease-of-use, this chapter is formatted so that there is one register per page, although some registers use two pages. On each page, from top to bottom, there are four sections:

1. Register name and address (from lowest to highest).
2. Register table showing the bit organization.
3. Written description of register specifics or links to additional register information.
4. Detailed register bit descriptions.

## 1.2 Register Conventions

The following table lists the register conventions.

| Convention | Example | Description |
|---|---|---|
| 'x' in a register name | ACBxxCR1 | Multiple instances/address ranges of the same register |
| R | R | Read register or bit(s) |
| W | W | Write register or bit(s) |
| NA | NA | Reserved |
| None | None | Not defined |
| register MSB | PROX_TOUCH_TH0 MSB | Most significant byte of the register |
| register LSB | PROX_TOUCH_TH0 LSB | Least significant byte of the register |
| - | - | Byte does not exist |

## 1.3 Endianness

All registers mentioned in the document are little endian.

## 1.4 Factory Default Values

The following tables list the registers applicable to each device and provide the factory default values for configuration registers.

### 1.4.1 CY8CMBR3102

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SENSOR_EN | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1 | 1 |
| FSS_EN | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 |
| TOGGLE_EN | NA | | | | | | | | NA | NA | NA | NA | NA | NA | NA | 0 |
| LED_ON_EN | NA | | | | | | | | NA | NA | NA | NA | NA | NA | NA | 0 |
| SENSITIVITY0 | - | | | | | | | | NA | | NA | | 0 | | 0 | |
| BASE_THRESHOLD0 | - | | | | | | | | 128 | | | | | | | |
| BASE_THRESHOLD1 | - | | | | | | | | 128 | | | | | | | |
| SENSOR_DEBOUNCE | - | | | | | | | | NA | | | | 3 | | | |
| BUTTON_HYS | - | | | | | | | | 0 | NA | | | 12 | | | |
| BUTTON_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| BUTTON_NNT | - | | | | | | | | 0 | 51 | | | | | | |
| BUTTON_NT | - | | | | | | | | 0 | 51 | | | | | | |
| PROX_EN | - | | | | | | | | NA | | | | | | 0 | 0 |
| PROX_CFG | - | | | | | | | | 1 | NA | | | | | 0 | 0 |
| PROX_CFG2 | - | | | | | | | | NA | | | | | 5 | | |
| PROX_TOUCH_TH0 | 512 | | | | | | | | | | | | | | | |
| PROX_TOUCH_TH1 | 512 | | | | | | | | | | | | | | | |
| PROX_RESOLUTION0 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_RESOLUTION1 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_HYS | - | | | | | | | | 0 | 5 | | | | | | |
| PROX_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| PROX_NNT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_NT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_POSITIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_POSITIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| LED_ON_TIME | - | | | | | | | | NA | 0 | | | | | | |
| GPO_CFG | - | | | | | | | | NA | | | | 0 | 0 | 0 | 0 |
| PWM_DUTYCYCLE_CFG0 | - | | | | | | | | 0 | | | | 15 | | | |
| SPO_CFG | - | | | | | | | | NA | NA | | | NA | 1 | | |
| DEVICE_CFG0 | - | | | | | | | | NA | | | | | | 1 | 1 |
| DEVICE_CFG1 | - | | | | | | | | NA | | | | | | | 1 |
| DEVICE_CFG2 | - | | | | | | | | 0 | | 0 | | 1 | 0 | NA | 0 |

## 1.4.1 CY8CMBR3102 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEVICE_CFG3 | - | | | | | | | | NA | | | | | | | 0 |
| I2C_ADDR | - | | | | | | | | NA | 55 | | | | | | |
| REFRESH_CTRL | - | | | | | | | | NA | 6 | | | | | | |
| STATE_TIMEOUT | - | | | | | | | | NA | 10 | | | | | | |
| CONFIG_CRC | None | | | | | | | | | | | | | | | |
| GPO_OUTPUT_STATE | - | | | | | | | | None | | | | | | | |
| SENSOR_ID | - | | | | | | | | None | | | | | | | |
| CTRL_CMD | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_STATUS | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_ERR | - | | | | | | | | None | | | | | | | |
| SYSTEM_STATUS | - | | | | | | | | None | | | | | | | |
| PREV_CTRL_CMD_CODE | - | | | | | | | | None | | | | | | | |
| FAMILY_ID | - | | | | | | | | 154 | | | | | | | |
| DEVICE_ID | 2561 | | | | | | | | | | | | | | | |
| DEVICE_REV | NA | | | | | | | | 1 | | | | | | | |
| CALC_CRC | None | | | | | | | | | | | | | | | |
| TOTAL_WORKING_SNS | - | | | | | | | | None | | | | | | | |
| SNS_CP_HIGH | None | | | | | | | | | | | | | | | |
| SNS_VDD_SHORT | None | | | | | | | | | | | | | | | |
| SNS_GND_SHORT | None | | | | | | | | | | | | | | | |
| SNS_SNS_SHORT | None | | | | | | | | | | | | | | | |
| CMOD_SHIELD_TEST | - | | | | | | | | None | | | | | | | |
| BUTTON_STAT | None | | | | | | | | | | | | | | | |
| LATCHED_BUTTON_STAT | None | | | | | | | | | | | | | | | |
| PROX_STAT | - | | | | | | | | None | | | | | | | |
| LATCHED_PROX_STAT | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER0 | - | | | | | | | | None | | | | | | | |
| DIFFERENCE_COUNT_SENSOR0 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR1 | None | | | | | | | | | | | | | | | |
| GPO_DATA | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER1 | - | | | | | | | | None | | | | | | | |
| DEBUG_SENSOR_ID | - | | | | | | | | None | | | | | | | |
| DEBUG_CP | - | | | | | | | | None | | | | | | | |
| DEBUG_DIFFERENCE_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_BASELINE0 | None | | | | | | | | | | | | | | | |

### 1.4.1 CY8CMBR3102 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEBUG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_AVG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER2 | - | | | | | | | | None | | | | | | | |

## 1.4.2 CY8CMBR3106S

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SENSOR_EN | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | NA | 1 | 1 | 1 | 1 | 1 | 1 |
| FSS_EN | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| SENSITIVITY0 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY1 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY2 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY3 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| BASE_THRESHOLD0 | - | | | | | | | | 128 | | | | | | | |
| BASE_THRESHOLD1 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD2 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD3 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD4 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD5 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD6 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD7 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD8 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD9 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD10 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD11 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD12 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD13 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD14 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD15 | - | | | | | | | | 128 | | | | | | | |
| SENSOR_DEBOUNCE | - | | | | | | | | NA | | | | 3 | | | |
| BUTTON_HYS | - | | | | | | | | 0 | NA | | | 12 | | | |
| BUTTON_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| BUTTON_NNT | - | | | | | | | | 0 | 51 | | | | | | |
| BUTTON_NT | - | | | | | | | | 0 | 51 | | | | | | |
| PROX_EN | - | | | | | | | | NA | | | | | | 0 | 0 |
| PROX_CFG | - | | | | | | | | NA | NA | | | | | 0 | 0 |
| PROX_TOUCH_TH0 | 512 | | | | | | | | | | | | | | | |
| PROX_TOUCH_TH1 | 512 | | | | | | | | | | | | | | | |
| PROX_RESOLUTION0 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_RESOLUTION1 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_HYS | - | | | | | | | | 0 | 5 | | | | | | |

## 1.4.2 CY8CMBR3106S (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROX_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| PROX_NNT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_NT | - | | | | | | | | 0 | 20 | | | | | | |
| BUZZER_CFG | - | | | | | | | | 0 | NA | | | | 1 | | |
| BUZZER_ON_TIME | - | | | | | | | | 1 | | | | | | | |
| SPO_CFG | - | | | | | | | | NA | 1 | | | NA | 4 | | |
| DEVICE_CFG0 | - | | | | | | | | NA | | | | | | 1 | 1 |
| DEVICE_CFG1 | - | | | | | | | | NA | | | | | | | 1 |
| DEVICE_CFG2 | - | | | | | | | | 0 | | 0 | | 1 | 0 | 0 | 0 |
| DEVICE_CFG3 | - | | | | | | | | NA | | | | | | | 0 |
| I2C_ADDR | - | | | | | | | | NA | 55 | | | | | | |
| REFRESH_CTRL | - | | | | | | | | NA | 6 | | | | | | |
| STATE_TIMEOUT | - | | | | | | | | NA | 10 | | | | | | |
| SLIDER_CFG | - | | | | | | | | NA | | | | | | 1 | |
| SLIDER1_CFG | - | | | | | | | | NA | | 0 | 0 | 5 | | | |
| SLIDER1_RESOLUTION | - | | | | | | | | 45 | | | | | | | |
| SLIDER1_THRESHOLD | - | | | | | | | | 128 | | | | | | | |
| SLIDER2_CFG | - | | | | | | | | NA | | 0 | 0 | 5 | | | |
| SLIDER2_RESOLUTION | - | | | | | | | | 45 | | | | | | | |
| SLIDER2_THRESHOLD | - | | | | | | | | 128 | | | | | | | |
| SLIDER_LBR | - | | | | | | | | 0 | 0 | | | | | | |
| SLIDER_NNT | - | | | | | | | | 0 | 0 | | | | | | |
| SLIDER_NT | - | | | | | | | | 0 | 0 | | | | | | |
| CONFIG_CRC | None | | | | | | | | | | | | | | | |
| SENSOR_ID | - | | | | | | | | None | | | | | | | |
| CTRL_CMD | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_STATUS | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_ERR | - | | | | | | | | None | | | | | | | |
| SYSTEM_STATUS | - | | | | | | | | None | | | | | | | |
| PREV_CTRL_CMD_CODE | - | | | | | | | | None | | | | | | | |
| FAMILY_ID | - | | | | | | | | 154 | | | | | | | |
| DEVICE_ID | 2566 | | | | | | | | | | | | | | | |
| DEVICE_REV | NA | | | | | | | | 1 | | | | | | | |
| CALC_CRC | None | | | | | | | | | | | | | | | |
| TOTAL_WORKING_SNS | - | | | | | | | | None | | | | | | | |

## 1.4.2 CY8CMBR3106S (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNS_CP_HIGH | None | | | | | | | | | | | | | | | |
| SNS_VDD_SHORT | None | | | | | | | | | | | | | | | |
| SNS_GND_SHORT | None | | | | | | | | | | | | | | | |
| SNS_SNS_SHORT | None | | | | | | | | | | | | | | | |
| CMOD_SHIELD_TEST | - | | | | | | | | None | | | | | | | |
| BUTTON_STAT | None | | | | | | | | | | | | | | | |
| LATCHED_BUTTON_STAT | None | | | | | | | | | | | | | | | |
| PROX_STAT | - | | | | | | | | None | | | | | | | |
| LATCHED_PROX_STAT | - | | | | | | | | None | | | | | | | |
| SLIDER1_POSITION | - | | | | | | | | None | | | | | | | |
| LIFTOFF_SLIDER1_POSITION | - | | | | | | | | None | | | | | | | |
| SLIDER2_POSITION | - | | | | | | | | None | | | | | | | |
| LIFTOFF_SLIDER2_POSITION | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER0 | - | | | | | | | | None | | | | | | | |
| DIFFERENCE_COUNT_SENSOR0 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR1 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR2 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR3 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR4 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR5 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR6 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR7 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR8 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR9 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR10 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR11 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR12 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR13 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR14 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR15 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER1 | - | | | | | | | | None | | | | | | | |
| DEBUG_SENSOR_ID | - | | | | | | | | None | | | | | | | |
| DEBUG_CP | - | | | | | | | | None | | | | | | | |
| DEBUG_DIFFERENCE_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_BASELINE0 | None | | | | | | | | | | | | | | | |

## 1.4.2 CY8CMBR3106S (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEBUG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_AVG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER2 | - | | | | | | | | None | | | | | | | |

### 1.4.3 CY8CMBR3108

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SENSOR_EN | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| FSS_EN | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOGGLE_EN | NA | | | | | | | | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| LED_ON_EN | NA | | | | | | | | NA | NA | NA | NA | 0 | 0 | 0 | 0 |
| SENSITIVITY0 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY1 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| BASE_THRESHOLD0 | - | | | | | | | | 128 | | | | | | | |
| BASE_THRESHOLD1 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD2 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD3 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD4 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD5 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD6 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD7 | - | | | | | | | | 128 | | | | | | | |
| SENSOR_DEBOUNCE | - | | | | | | | | NA | | | | 3 | | | |
| BUTTON_HYS | - | | | | | | | | 0 | NA | | | 12 | | | |
| BUTTON_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| BUTTON_NNT | - | | | | | | | | 0 | 51 | | | | | | |
| BUTTON_NT | - | | | | | | | | 0 | 51 | | | | | | |
| PROX_EN | - | | | | | | | | NA | | | | | | 0 | 0 |
| PROX_CFG | - | | | | | | | | 1 | NA | | | | | 0 | 0 |
| PROX_CFG2 | - | | | | | | | | NA | | | | 5 | | | |
| PROX_TOUCH_TH0 | 512 | | | | | | | | | | | | | | | |
| PROX_TOUCH_TH1 | 512 | | | | | | | | | | | | | | | |
| PROX_RESOLUTION0 | - | | | | | | | | NA | | | | 0 | | | |
| PROX_RESOLUTION1 | - | | | | | | | | NA | | | | 0 | | | |
| PROX_HYS | - | | | | | | | | 0 | 5 | | | | | | |
| PROX_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| PROX_NNT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_NT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_POSITIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_POSITIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH1 | - | | | | | | | | 30 | | | | | | | |

## 1.4.3 CY8CMBR3108 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LED_ON_TIME | - | | | | | | | | NA | 0 | | | | | | |
| BUZZER_CFG | - | | | | | | | | 0 | NA | | | | 1 | | |
| BUZZER_ON_TIME | - | | | | | | | | 1 | | | | | | | |
| GPO_CFG | - | | | | | | | | NA | | | | 0 | 0 | 0 | 0 |
| PWM_DUTYCYCLE_CFG0 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG1 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG2 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG3 | - | | | | | | | | 0 | | | | 15 | | | |
| SPO_CFG | - | | | | | | | | NA | 5 | | | NA | 4 | | |
| DEVICE_CFG0 | - | | | | | | | | NA | | | | | | 1 | 1 |
| DEVICE_CFG1 | - | | | | | | | | NA | | | | | | | 1 |
| DEVICE_CFG2 | - | | | | | | | | 0 | | 0 | | 1 | 0 | 0 | 0 |
| DEVICE_CFG3 | - | | | | | | | | NA | | | | | | | 0 |
| I2C_ADDR | - | | | | | | | | NA | 55 | | | | | | |
| REFRESH_CTRL | - | | | | | | | | NA | 6 | | | | | | |
| STATE_TIMEOUT | - | | | | | | | | NA | 10 | | | | | | |
| CONFIG_CRC | None | | | | | | | | | | | | | | | |
| GPO_OUTPUT_STATE | - | | | | | | | | None | | | | | | | |
| SENSOR_ID | - | | | | | | | | None | | | | | | | |
| CTRL_CMD | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_STATUS | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_ERR | - | | | | | | | | None | | | | | | | |
| SYSTEM_STATUS | - | | | | | | | | None | | | | | | | |
| PREV_CTRL_CMD_CODE | - | | | | | | | | None | | | | | | | |
| FAMILY_ID | - | | | | | | | | 154 | | | | | | | |
| DEVICE_ID | 2563 | | | | | | | | | | | | | | | |
| DEVICE_REV | NA | | | | | | | | 1 | | | | | | | |
| CALC_CRC | None | | | | | | | | | | | | | | | |
| TOTAL_WORKING_SNS | - | | | | | | | | None | | | | | | | |
| SNS_CP_HIGH | None | | | | | | | | | | | | | | | |
| SNS_VDD_SHORT | None | | | | | | | | | | | | | | | |
| SNS_GND_SHORT | None | | | | | | | | | | | | | | | |
| SNS_SNS_SHORT | None | | | | | | | | | | | | | | | |
| CMOD_SHIELD_TEST | - | | | | | | | | None | | | | | | | |
| BUTTON_STAT | None | | | | | | | | | | | | | | | |

### 1.4.3 CY8CMBR3108 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LATCHED_BUTTON_STAT | None | | | | | | | | | | | | | | | |
| PROX_STAT | - | | | | | | | | None | | | | | | | |
| LATCHED_PROX_STAT | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER0 | - | | | | | | | | None | | | | | | | |
| DIFFERENCE_COUNT_SENSOR0 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR1 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR2 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR3 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR4 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR5 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR6 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR7 | None | | | | | | | | | | | | | | | |
| GPO_DATA | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER1 | - | | | | | | | | None | | | | | | | |
| DEBUG_SENSOR_ID | - | | | | | | | | None | | | | | | | |
| DEBUG_CP | - | | | | | | | | None | | | | | | | |
| DEBUG_DIFFERENCE_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_BASELINE0 | None | | | | | | | | | | | | | | | |
| DEBUG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_AVG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER2 | - | | | | | | | | None | | | | | | | |

## 1.4.4 CY8CMBR3110

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SENSOR_EN | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| FSS_EN | NA | NA | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOGGLE_EN | NA | | | | | | | | NA | NA | NA | 0 | 0 | 0 | 0 | 0 |
| LED_ON_EN | NA | | | | | | | | NA | NA | NA | 0 | 0 | 0 | 0 | 0 |
| SENSITIVITY0 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY1 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY2 | - | | | | | | | | NA | | NA | | 0 | | 0 | |
| BASE_THRESHOLD0 | - | | | | | | | | 128 | | | | | | | |
| BASE_THRESHOLD1 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD2 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD3 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD4 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD5 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD6 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD7 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD8 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD9 | - | | | | | | | | 128 | | | | | | | |
| SENSOR_DEBOUNCE | - | | | | | | | | NA | | | | 3 | | | |
| BUTTON_HYS | - | | | | | | | | 0 | NA | | | 12 | | | |
| BUTTON_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| BUTTON_NNT | - | | | | | | | | 0 | 51 | | | | | | |
| BUTTON_NT | - | | | | | | | | 0 | 51 | | | | | | |
| PROX_EN | - | | | | | | | | NA | | | | | | 0 | 0 |
| PROX_CFG | - | | | | | | | | 1 | NA | | | | | 0 | 0 |
| PROX_CFG2 | - | | | | | | | | NA | | | | | 5 | | |
| PROX_TOUCH_TH0 | 512 | | | | | | | | | | | | | | | |
| PROX_TOUCH_TH1 | 512 | | | | | | | | | | | | | | | |
| PROX_RESOLUTION0 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_RESOLUTION1 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_HYS | - | | | | | | | | 0 | 5 | | | | | | |
| PROX_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| PROX_NNT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_NT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_POSITIVE_TH0 | - | | | | | | | | 30 | | | | | | | |

## 1.4.4 CY8CMBR3110 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROX_POSITIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| LED_ON_TIME | - | | | | | | | | NA | 0 | | | | | | |
| BUZZER_CFG | - | | | | | | | | 0 | NA | | | | 1 | | |
| BUZZER_ON_TIME | - | | | | | | | | 1 | | | | | | | |
| GPO_CFG | - | | | | | | | | NA | | | | 0 | 0 | 0 | 0 |
| PWM_DUTYCYCLE_CFG0 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG1 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG2 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG3 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG4 | - | | | | | | | | 0 | | | | 15 | | | |
| SPO_CFG | - | | | | | | | | NA | 5 | | | NA | 1 | | |
| DEVICE_CFG0 | - | | | | | | | | NA | | | | | | 1 | 1 |
| DEVICE_CFG1 | - | | | | | | | | NA | | | | | | | 1 |
| DEVICE_CFG2 | - | | | | | | | | 0 | 0 | | | 1 | 0 | 0 | 0 |
| DEVICE_CFG3 | - | | | | | | | | NA | | | | | | | 0 |
| I2C_ADDR | - | | | | | | | | NA | 55 | | | | | | |
| REFRESH_CTRL | - | | | | | | | | NA | 6 | | | | | | |
| STATE_TIMEOUT | - | | | | | | | | NA | 10 | | | | | | |
| CONFIG_CRC | None | | | | | | | | | | | | | | | |
| GPO_OUTPUT_STATE | - | | | | | | | | None | | | | | | | |
| SENSOR_ID | - | | | | | | | | None | | | | | | | |
| CTRL_CMD | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_STATUS | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_ERR | - | | | | | | | | None | | | | | | | |
| SYSTEM_STATUS | - | | | | | | | | None | | | | | | | |
| PREV_CTRL_CMD_CODE | - | | | | | | | | None | | | | | | | |
| FAMILY_ID | - | | | | | | | | 154 | | | | | | | |
| DEVICE_ID | 2562 | | | | | | | | | | | | | | | |
| DEVICE_REV | NA | | | | | | | | 1 | | | | | | | |
| CALC_CRC | None | | | | | | | | | | | | | | | |
| TOTAL_WORKING_SNS | - | | | | | | | | None | | | | | | | |
| SNS_CP_HIGH | None | | | | | | | | | | | | | | | |
| SNS_VDD_SHORT | None | | | | | | | | | | | | | | | |

### 1.4.4 CY8CMBR3110 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SNS_GND_SHORT | None | | | | | | | | | | | | | | | |
| SNS_SNS_SHORT | None | | | | | | | | | | | | | | | |
| CMOD_SHIELD_TEST | - | | | | | | | | None | | | | | | | |
| BUTTON_STAT | None | | | | | | | | | | | | | | | |
| LATCHED_BUTTON_STAT | None | | | | | | | | | | | | | | | |
| PROX_STAT | - | | | | | | | | None | | | | | | | |
| LATCHED_PROX_STAT | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER0 | - | | | | | | | | None | | | | | | | |
| DIFFERENCE_COUNT_SENSOR0 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR1 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR2 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR3 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR4 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR5 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR6 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR7 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR8 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR9 | None | | | | | | | | | | | | | | | |
| GPO_DATA | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER1 | - | | | | | | | | None | | | | | | | |
| DEBUG_SENSOR_ID | - | | | | | | | | None | | | | | | | |
| DEBUG_CP | - | | | | | | | | None | | | | | | | |
| DEBUG_DIFFERENCE_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_BASELINE0 | None | | | | | | | | | | | | | | | |
| DEBUG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_AVG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER2 | - | | | | | | | | None | | | | | | | |

## 1.4.5 CY8CMBR3116

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SENSOR_EN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| FSS_EN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOGGLE_EN | NA | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LED_ON_EN | NA | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SENSITIVITY0 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY1 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY2 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| SENSITIVITY3 | - | | | | | | | | 0 | | 0 | | 0 | | 0 | |
| BASE_THRESHOLD0 | - | | | | | | | | 128 | | | | | | | |
| BASE_THRESHOLD1 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD2 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD3 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD4 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD5 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD6 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD7 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD8 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD9 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD10 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD11 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD12 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD13 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD14 | - | | | | | | | | 128 | | | | | | | |
| FINGER_THRESHOLD15 | - | | | | | | | | 128 | | | | | | | |
| SENSOR_DEBOUNCE | - | | | | | | | | NA | | | | 3 | | | |
| BUTTON_HYS | - | | | | | | | | 0 | NA | | | | 12 | | |
| BUTTON_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| BUTTON_NNT | - | | | | | | | | 0 | 51 | | | | | | |
| BUTTON_NT | - | | | | | | | | 0 | 51 | | | | | | |
| PROX_EN | - | | | | | | | | NA | | | | | | 0 | 0 |
| PROX_CFG | - | | | | | | | | 1 | NA | | | | | 0 | 0 |
| PROX_CFG2 | - | | | | | | | | NA | | | | | 5 | | |
| PROX_TOUCH_TH0 | 512 | | | | | | | | | | | | | | | |
| PROX_TOUCH_TH1 | 512 | | | | | | | | | | | | | | | |

## 1.4.5 CY8CMBR3116 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROX_RESOLUTION0 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_RESOLUTION1 | - | | | | | | | | NA | | | | | 0 | | |
| PROX_HYS | - | | | | | | | | 0 | 5 | | | | | | |
| PROX_LBR | - | | | | | | | | 0 | 50 | | | | | | |
| PROX_NNT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_NT | - | | | | | | | | 0 | 20 | | | | | | |
| PROX_POSITIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_POSITIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH0 | - | | | | | | | | 30 | | | | | | | |
| PROX_NEGATIVE_TH1 | - | | | | | | | | 30 | | | | | | | |
| LED_ON_TIME | - | | | | | | | | NA | 0 | | | | | | |
| BUZZER_CFG | - | | | | | | | | 0 | NA | | | | 1 | | |
| BUZZER_ON_TIME | - | | | | | | | | 1 | | | | | | | |
| GPO_CFG | - | | | | | | | | NA | | | | 0 | 0 | 0 | 0 |
| PWM_DUTYCYCLE_CFG0 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG1 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG2 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG3 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG4 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG5 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG6 | - | | | | | | | | 0 | | | | 15 | | | |
| PWM_DUTYCYCLE_CFG7 | - | | | | | | | | 0 | | | | 15 | | | |
| SPO_CFG | - | | | | | | | | NA | 4 | | | NA | 5 | | |
| DEVICE_CFG0 | - | | | | | | | | NA | | | | | | 1 | 1 |
| DEVICE_CFG1 | - | | | | | | | | NA | | | | | | | 1 |
| DEVICE_CFG2 | - | | | | | | | | 0 | | 0 | | 1 | 0 | 0 | 0 |
| DEVICE_CFG3 | - | | | | | | | | NA | | | | | | | 0 |
| I2C_ADDR | - | | | | | | | | NA | 55 | | | | | | |
| REFRESH_CTRL | - | | | | | | | | NA | | 6 | | | | | |
| STATE_TIMEOUT | - | | | | | | | | NA | | 10 | | | | | |
| CONFIG_CRC | None | | | | | | | | | | | | | | | |
| GPO_OUTPUT_STATE | - | | | | | | | | None | | | | | | | |
| SENSOR_ID | - | | | | | | | | None | | | | | | | |
| CTRL_CMD | - | | | | | | | | None | | | | | | | |
| CTRL_CMD_STATUS | - | | | | | | | | None | | | | | | | |

## 1.4.5 CY8CMBR3116 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CTRL_CMD_ERR | - | | | | | | | | None | | | | | | | |
| SYSTEM_STATUS | - | | | | | | | | None | | | | | | | |
| PREV_CTRL_CMD_CODE | - | | | | | | | | None | | | | | | | |
| FAMILY_ID | - | | | | | | | | 154 | | | | | | | |
| DEVICE_ID | 2565 | | | | | | | | | | | | | | | |
| DEVICE_REV | NA | | | | | | | | 1 | | | | | | | |
| CALC_CRC | None | | | | | | | | | | | | | | | |
| TOTAL_WORKING_SNS | - | | | | | | | | None | | | | | | | |
| SNS_CP_HIGH | None | | | | | | | | | | | | | | | |
| SNS_VDD_SHORT | None | | | | | | | | | | | | | | | |
| SNS_GND_SHORT | None | | | | | | | | | | | | | | | |
| SNS_SNS_SHORT | None | | | | | | | | | | | | | | | |
| CMOD_SHIELD_TEST | - | | | | | | | | None | | | | | | | |
| BUTTON_STAT | None | | | | | | | | | | | | | | | |
| LATCHED_BUTTON_STAT | None | | | | | | | | | | | | | | | |
| PROX_STAT | - | | | | | | | | None | | | | | | | |
| LATCHED_PROX_STAT | - | | | | | | | | None | | | | | | | |
| SYNC_COUNTER0 | - | | | | | | | | None | | | | | | | |
| DIFFERENCE_COUNT_SENSOR0 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR1 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR2 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR3 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR4 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR5 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR6 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR7 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR8 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR9 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR10 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR11 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR12 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR13 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR14 | None | | | | | | | | | | | | | | | |
| DIFFERENCE_COUNT_SENSOR15 | None | | | | | | | | | | | | | | | |
| GPO_DATA | - | | | | | | | | None | | | | | | | |

### 1.4.5 CY8CMBR3116 (continued)

| Register | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SYNC_COUNTER1 | - | | | | | | | | None | | | | | | | |
| DEBUG_SENSOR_ID | - | | | | | | | | None | | | | | | | |
| DEBUG_CP | - | | | | | | | | None | | | | | | | |
| DEBUG_DIFFERENCE_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_BASELINE0 | None | | | | | | | | | | | | | | | |
| DEBUG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| DEBUG_AVG_RAW_COUNT0 | None | | | | | | | | | | | | | | | |
| SYNC_COUNTER2 | - | | | | | | | | None | | | | | | | |

## 1.5 Register Map

The following table provides all registers available in CY8CMBR3xxx family. Refer to see “Factory Default Values” on page 6 for details about registers for a particular device.

| Register Name | Address |
|---|---|
| SENSOR_EN | 0x00 |
| FSS_EN | 0x02 |
| TOGGLE_EN | 0x04 |
| LED_ON_EN | 0x06 |
| SENSITIVITY0 | 0x08 |
| SENSITIVITY1 | 0x09 |
| SENSITIVITY2 | 0x0a |
| SENSITIVITY3 | 0x0b |
| BASE_THRESHOLD0 | 0x0c |
| BASE_THRESHOLD1 | 0x0d |
| FINGER_THRESHOLD2 | 0x0e |
| FINGER_THRESHOLD3 | 0x0f |
| FINGER_THRESHOLD4 | 0x10 |
| FINGER_THRESHOLD5 | 0x11 |
| FINGER_THRESHOLD6 | 0x12 |
| FINGER_THRESHOLD7 | 0x13 |
| FINGER_THRESHOLD8 | 0x14 |
| FINGER_THRESHOLD9 | 0x15 |
| FINGER_THRESHOLD10 | 0x16 |
| FINGER_THRESHOLD11 | 0x17 |
| FINGER_THRESHOLD12 | 0x18 |
| FINGER_THRESHOLD13 | 0x19 |
| FINGER_THRESHOLD14 | 0x1a |
| FINGER_THRESHOLD15 | 0x1b |
| SENSOR_DEBOUNCE | 0x1c |
| BUTTON_HYS | 0x1d |
| BUTTON_LBR | 0x1f |
| BUTTON_NNT | 0x20 |
| BUTTON_NT | 0x21 |
| PROX_EN | 0x26 |
| PROX_CFG | 0x27 |
| PROX_CFG2 | 0x28 |
| PROX_TOUCH_TH0 | 0x2a |
| PROX_TOUCH_TH1 | 0x2c |
| PROX_RESOLUTION0 | 0x2e |
| PROX_RESOLUTION1 | 0x2f |

| Register Name | Address |
|---|---|
| PROX_HYS | 0x30 |
| PROX_LBR | 0x32 |
| PROX_NNT | 0x33 |
| PROX_NT | 0x34 |
| PROX_POSITIVE_TH0 | 0x35 |
| PROX_POSITIVE_TH1 | 0x36 |
| PROX_NEGATIVE_TH0 | 0x39 |
| PROX_NEGATIVE_TH1 | 0x3a |
| LED_ON_TIME | 0x3d |
| BUZZER_CFG | 0x3e |
| BUZZER_ON_TIME | 0x3f |
| GPO_CFG | 0x40 |
| PWM_DUTYCYCLE_CFG0 | 0x41 |
| PWM_DUTYCYCLE_CFG1 | 0x42 |
| PWM_DUTYCYCLE_CFG2 | 0x43 |
| PWM_DUTYCYCLE_CFG3 | 0x44 |
| PWM_DUTYCYCLE_CFG4 | 0x45 |
| PWM_DUTYCYCLE_CFG5 | 0x46 |
| PWM_DUTYCYCLE_CFG6 | 0x47 |
| PWM_DUTYCYCLE_CFG7 | 0x48 |
| SPO_CFG | 0x4c |
| DEVICE_CFG0 | 0x4d |
| DEVICE_CFG1 | 0x4e |
| DEVICE_CFG2 | 0x4f |
| DEVICE_CFG3 | 0x50 |
| I2C_ADDR | 0x51 |
| REFRESH_CTRL | 0x52 |
| STATE_TIMEOUT | 0x55 |
| SLIDER_CFG | 0x5d |
| SLIDER1_CFG | 0x61 |
| SLIDER1_RESOLUTION | 0x62 |
| SLIDER1_THRESHOLD | 0x63 |
| SLIDER2_CFG | 0x67 |
| SLIDER2_RESOLUTION | 0x68 |
| SLIDER2_THRESHOLD | 0x69 |
| SLIDER_LBR | 0x71 |
| SLIDER_NNT | 0x72 |
| SLIDER_NT | 0x73 |
| CONFIG_CRC | 0x7e |
| GPO_OUTPUT_STATE | 0x80 |

| Register Name | Address |
|---|---|
| SENSOR_ID | 0x82 |
| CTRL_CMD | 0x86 |
| CTRL_CMD_STATUS | 0x88 |
| CTRL_CMD_ERR | 0x89 |
| SYSTEM_STATUS | 0x8a |
| PREV_CTRL_CMD_CODE | 0x8c |
| FAMILY_ID | 0x8f |
| DEVICE_ID | 0x90 |
| DEVICE_REV | 0x92 |
| CALC_CRC | 0x94 |
| TOTAL_WORKING_SNS | 0x97 |
| SNS_CP_HIGH | 0x98 |
| SNS_VDD_SHORT | 0x9a |
| SNS_GND_SHORT | 0x9c |
| SNS_SNS_SHORT | 0x9e |
| CMOD_SHIELD_TEST | 0xa0 |
| BUTTON_STAT | 0xaa |
| LATCHED_BUTTON_STAT | 0xac |
| PROX_STAT | 0xae |
| LATCHED_PROX_STAT | 0xaf |
| SLIDER1_POSITION | 0xb0 |
| LIFTOFF_SLIDER1_POSITION | 0xb1 |
| SLIDER2_POSITION | 0xb2 |
| LIFTOFF_SLIDER2_POSITION | 0xb3 |
| SYNC_COUNTER0 | 0xb9 |
| DIFFERENCE_COUNT_SENSOR0 | 0xba |
| DIFFERENCE_COUNT_SENSOR1 | 0xbc |
| DIFFERENCE_COUNT_SENSOR2 | 0xbe |
| DIFFERENCE_COUNT_SENSOR3 | 0xc0 |
| DIFFERENCE_COUNT_SENSOR4 | 0xc2 |
| DIFFERENCE_COUNT_SENSOR5 | 0xc4 |
| DIFFERENCE_COUNT_SENSOR6 | 0xc6 |
| DIFFERENCE_COUNT_SENSOR7 | 0xc8 |
| DIFFERENCE_COUNT_SENSOR8 | 0xca |
| DIFFERENCE_COUNT_SENSOR9 | 0xcc |
| DIFFERENCE_COUNT_SENSOR10 | 0xce |
| DIFFERENCE_COUNT_SENSOR11 | 0xd0 |
| DIFFERENCE_COUNT_SENSOR12 | 0xd2 |
| DIFFERENCE_COUNT_SENSOR13 | 0xd4 |
| DIFFERENCE_COUNT_SENSOR14 | 0xd6 |

| Register Name | Address |
|---|---|
| DIFFERENCE_COUNT_SENSOR15 | 0xd8 |
| GPO_DATA | 0xda |
| SYNC_COUNTER1 | 0xdb |
| DEBUG_SENSOR_ID | 0xdc |
| DEBUG_CP | 0xdd |
| DEBUG_DIFFERENCE_COUNT0 | 0xde |
| DEBUG_BASELINE0 | 0xe0 |
| DEBUG_RAW_COUNT0 | 0xe2 |
| DEBUG_AVG_RAW_COUNT0 | 0xe4 |
| SYNC_COUNTER2 | 0xe7 |

## 1.5.1 SENSOR_EN

Address: 0x00

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Capacitive sensor enable/disable configuration. To configure Special Purpose Output pins (marked as SPOx in datasheet pin-outs) as sensors, the pin should be configured as sensor in SPO_CFG and enabled in SENSOR_EN register..

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Capacitive sensor 15 enable. Note that CS15 is SPO1 in part CY8CMBR3116. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 14 | CS14 | Capacitive sensor 14 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 13 | CS13 | Capacitive sensor 13 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 12 | CS12 | Capacitive sensor 12 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 11 | CS11 | Capacitive sensor 11 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 10 | CS10 | Capacitive sensor 10 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 9 | CS9 | Capacitive sensor 9 enable. Note that CS9 is SPO1 in part CY8CMBR3110. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. |

## 1.5.1 SENSOR_EN (continued)

| | | |
|---|---|---|
| | | **0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 8 | CS8 | Capacitive sensor 8 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 7 | CS7 | Capacitive sensor 7 enable. Note that CS7 is SPO1 in part CY8CMBR3108. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 6 | CS6 | Capacitive sensor 6 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 5 | CS5 | Capacitive sensor 5 enable. Note that CS5 is SPO1 in part CY8CMBR3106S. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 4 | CS4 | Capacitive sensor 4 enable. Note that CS4 is SPO0 in part CY8CMBR3110. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 3 | CS3 | Capacitive sensor 3 enable. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 2 | CS2 | Capacitive sensor 2 enable. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 1 | CS1 | Capacitive sensor 1 enable. Note that CS1 is SPO0 in part CY8CMBR3102.<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |
| 0 | CS0 | Capacitive sensor 0 enable<br>**0:** Sensor is disabled<br>**1:** Sensor is enabled |

## 1.5.2 FSS_EN

Address: 0x02

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

This register configures inclusion of sensors in the group undergoing Flanking Sensor Suppression (FSS) processing. FSS should only be enabled on button sensors. If a sensor is configured as proximity, guard or slider sensor, FSS_EN bits corresponding to that sensor should be set to 0.

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 14 | CS14 | Sensor 14 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 13 | CS13 | Sensor 13 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 12 | CS12 | Sensor 12 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 11 | CS11 | Sensor 11 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 10 | CS10 | Sensor 10 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |

## 1.5.2 FSS_EN (continued)

| | | |
|---|---|---|
| 9 | CS9 | Sensor 9 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 8 | CS8 | Sensor 8 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 7 | CS7 | Sensor 7 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 6 | CS6 | Sensor 6 button FSS inclusion. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 5 | CS5 | Sensor 5 button FSS inclusion. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 4 | CS4 | Sensor 4 button FSS inclusion. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 3 | CS3 | Sensor 3 button FSS inclusion. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 2 | CS2 | Sensor 2 button FSS inclusion. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 1 | CS1 | Sensor 1 button FSS inclusion<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |
| 0 | CS0 | Sensor 0 button FSS inclusion<br>**0:** Sensor button status is excluded from FSS processing<br>**1:** Sensor button status is included in FSS processing |

## 1.5.3 TOGGLE_EN

Address: 0x04

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | GPO7 | GPO6 | GPO5 | GPO4 | GPO3 | GPO2 | GPO1 | GPO0 |

GPO toggle enable/disable. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 | GPO7 | GPO7 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 6 | GPO6 | GPO6 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 5 | GPO5 | GPO5 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 4 | GPO4 | GPO4 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 3 | GPO3 | GPO3 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 2 | GPO2 | GPO2 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |
| 1 | GPO1 | GPO1 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO toggle is disabled |

## 1.5.3 TOGGLE_EN (continued)

| | | |
|---|---|---|
| | | **1:** GPO toggle is enabled |
| 0 | GPO0 | GPO0 toggle enable. This bit field is not applicable for part CY8CMBR3106S.<br>**0:** GPO toggle is disabled<br>**1:** GPO toggle is enabled |

## 1.5.4 LED_ON_EN

Address: 0x06

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | GPO7 | GPO6 | GPO5 | GPO4 | GPO3 | GPO2 | GPO1 | GPO0 |

GPO extended LED ON duration enable/disable. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 | GPO7 | GPO7 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 6 | GPO6 | GPO6 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 5 | GPO5 | GPO5 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 4 | GPO4 | GPO4 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 3 | GPO3 | GPO3 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 2 | GPO2 | GPO2 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |

## 1.5.4 LED_ON_EN (continued)

| | | |
|---|---|---|
| 1 | GPO1 | GPO1 extended LED ON duration enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |
| 0 | GPO0 | GPO0 extended LED ON duration enable. This bit field is not applicable for part CY8CMBR3106S.<br>**0:** GPO extended LED ON duration is disabled<br>**1:** GPO extended LED ON duration is enabled |

## 1.5.5 SENSITIVITY0

Address: 0x08

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | RW | | RW | |
| Device Access | RW | | RW | | RW | | RW | |
| Bit Name | CS3_SENSITIVITY | | CS2_SENSITIVITY | | CS1_SENSITIVITY | | CS0_SENSITIVITY | |

Sensitivities (units: counts/pF) for button sensors 0 - 3

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | CS3_SENSITIVITY | Sensor 3 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 5 : 4 | CS2_SENSITIVITY | Sensor 2 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 3 : 2 | CS1_SENSITIVITY | Sensor 1 sensitivity |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 1 : 0 | CS0_SENSITIVITY | Sensor 0 sensitivity |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |

## 1.5.6 SENSITIVITY1

Address: 0x09

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | RW | | RW | |
| Device Access | RW | | RW | | RW | | RW | |
| Bit Name | CS7_SENSITIVITY | | CS6_SENSITIVITY | | CS5_SENSITIVITY | | CS4_SENSITIVITY | |

Sensitivities (units: counts/pF) for button sensors 4 - 7. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | CS7_SENSITIVITY | Sensor 7 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 5 : 4 | CS6_SENSITIVITY | Sensor 6 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 3 : 2 | CS5_SENSITIVITY | Sensor 5 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |
| 1 : 0 | CS4_SENSITIVITY | Sensor 4 sensitivity. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** 50 counts/0.1 pF |
| | | **1:** 50 counts/0.2 pF |
| | | **2:** 50 counts/0.3 pF |
| | | **3:** 50 counts/0.4 pF |

## 1.5.7 SENSITIVITY2

Address: 0x0a

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | RW | | RW | |
| Device Access | RW | | RW | | RW | | RW | |
| Bit Name | CS11_SENSITIVITY | | CS10_SENSITIVITY | | CS9_SENSITIVITY | | CS8_SENSITIVITY | |

Sensitivities (units: counts/pF) for button sensors 8 - 11. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | CS11_SENSITIVITY | Sensor 11 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 5 : 4 | CS10_SENSITIVITY | Sensor 10 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 3 : 2 | CS9_SENSITIVITY | Sensor 9 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 1 : 0 | CS8_SENSITIVITY | Sensor 8 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |

## 1.5.8 SENSITIVITY3

Address: 0x0b

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | RW | | RW | |
| Device Access | RW | | RW | | RW | | RW | |
| Bit Name | CS15_SENSITIVITY | | CS14_SENSITIVITY | | CS13_SENSITIVITY | | CS12_SENSITIVITY | |

Sensitivities (units: counts/pF) for button sensors 12 - 15. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | CS15_SENSITIVITY | Sensor 15 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 5 : 4 | CS14_SENSITIVITY | Sensor 14 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 3 : 2 | CS13_SENSITIVITY | Sensor 13 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 1 : 0 | CS12_SENSITIVITY | Sensor 12 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |

## 1.5.9 BASE_THRESHOLD0

Address: 0x0c

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | BASE_THRESHOLD0 | | | | | | | |

Finger threshold (units: counts) for sensor 0. This threshold is applied when sensor 0 is configured as a button sensor and automatic threshold mode is disabled. This threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This threshold is applied as proximity threshold when sensor 0 is configured as a proximity sensor. When sensor 0 is configured as a proximity sensor, the value of this register must be set lower than the value of PROX_TOUCH_TH0. If this rule is not followed, system behavior is undefined

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | BASE_THRESHOLD0 | Finger threshold (units: counts) for sensor 0. This threshold is applied when sensor 0 is configured as a button sensor and automatic threshold mode is disabled. This threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This threshold is applied as proximity threshold when sensor 0 is configured as a proximity sensor. When sensor 0 is configured as a proximity sensor, the value of this register must be set lower than the value of PROX_TOUCH_TH0. If this rule is not followed, system behavior is undefined. The valid value of this bit field ranges from 31 to 200. |

## 1.5.10 BASE_THRESHOLD1

Address: 0x0d

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | BASE_THRESHOLD1 | | | | | | | |

Finger threshold (units: counts) for sensor 1. This threshold is applied when sensor 1 is configured as a button sensor and automatic threshold mode is disabled. This threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This threshold is applied as proximity threshold for sensor 1 when it is configured as a proximity sensor. When sensor 1 is configured as a proximity sensor, the value of this register must be set lower than the value of PROX_TOUCH_TH1. If this rule is not followed, system behavior is undefined

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | BASE_THRESHOLD1 | Finger threshold (units: counts) for sensor 1. This threshold is applied when sensor 1 is configured as a button sensor and automatic threshold mode is disabled. This threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This threshold is applied as proximity threshold for sensor 1 when it is configured as a proximity sensor. When sensor 1 is configured as a proximity sensor, the value of this register must be set lower than the value of PROX_TOUCH_TH1. If this rule is not followed, system behavior is undefined. The valid value of this bit field ranges from 31 to 200. |

## 1.5.11 FINGER_THRESHOLD2

Address: 0x0e

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD2 | | | | | | | |

Finger threshold (units: counts) applied for sensor 2 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD2 | Finger threshold (units: counts) applied for sensor 2 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.12 FINGER_THRESHOLD3

Address: 0x0f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD3 | | | | | | | |

Finger threshold (units: counts) applied for sensor 3 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD3 | Finger threshold (units: counts) applied for sensor 3 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.13 FINGER_THRESHOLD4

Address: 0x10

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD4 | | | | | | | |

Finger threshold (units: counts) applied for sensor 4 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD4 | Finger threshold (units: counts) applied for sensor 4 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.14 FINGER_THRESHOLD5

Address: 0x11

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD5 | | | | | | | |

Finger threshold (units: counts) applied for sensor 5 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD5 | Finger threshold (units: counts) applied for sensor 5 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.15 FINGER_THRESHOLD6

Address: 0x12

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD6 | | | | | | | |

Finger threshold (units: counts) applied for sensor 6 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD6 | Finger threshold (units: counts) applied for sensor 6 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.16 FINGER_THRESHOLD7

Address: 0x13

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD7 | | | | | | | |

Finger threshold (units: counts) applied for sensor 7 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD7 | Finger threshold (units: counts) applied for sensor 7 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.17 FINGER_THRESHOLD8

Address: 0x14

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD8 | | | | | | | |

Finger threshold (units: counts) applied for sensor 8 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD8 | Finger threshold (units: counts) applied for sensor 8 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.18 FINGER_THRESHOLD9

Address: 0x15

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD9 | | | | | | | |

Finger threshold (units: counts) applied for sensor 9 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD9 | Finger threshold (units: counts) applied for sensor 9 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.19 FINGER_THRESHOLD10

Address: 0x16

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD10 | | | | | | | |

Finger threshold (units: counts) applied for sensor 10 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD10 | Finger threshold (units: counts) applied for sensor 10 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.20 FINGER_THRESHOLD11

Address: 0x17

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD11 | | | | | | | |

Finger threshold (units: counts) applied for sensor 11 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD11 | Finger threshold (units: counts) applied for sensor 11 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.21 FINGER_THRESHOLD12

Address: 0x18

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD12 | | | | | | | |

Finger threshold (units: counts) applied for sensor 12 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD12 | Finger threshold (units: counts) applied for sensor 12 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.22 FINGER_THRESHOLD13

Address: 0x19

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD13 | | | | | | | |

Finger threshold (units: counts) applied for sensor 13 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD13 | Finger threshold (units: counts) applied for sensor 13 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.23 FINGER_THRESHOLD14

Address: 0x1a

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD14 | | | | | | | |

Finger threshold (units: counts) applied for sensor 14 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD14 | Finger threshold (units: counts) applied for sensor 14 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.24 FINGER_THRESHOLD15

Address: 0x1b

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD15 | | | | | | | |

Finger threshold (units: counts) applied for sensor 15 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD15 | Finger threshold (units: counts) applied for sensor 15 when automatic threshold mode is disabled. Note that this threshold is also applied when EMC is enabled, as automatic threshold is disabled when EMC is enabled. The valid value of this bit field ranges from 31 to 200. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.25 SENSOR_DEBOUNCE

Address: 0x1c

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | RESERVED | | | | GLOBAL_DEBOUNCE | | | |

Sensor ON debounce configuration. This is applicable to button, guard and proximity sensors only, and not for sliders.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | RESERVED | Reserved |
| 3 : 0 | GLOBAL_DEBOUNCE | Number of consecutive scans for which a sensor's signal must be above the finger threshold plus hysteresis in order for the device to report an ON status. The valid value of this bit field ranges from 1 to 15. |

## 1.5.26 BUTTON_HYS

Address: 0x1d

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | RW | | | | |
| Device Access | RW | RW | | RW | | | | |
| Bit Name | OVERRIDE | RESERVED | | HYSTERESIS | | | | |

Button hysteresis override configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this bit allows overriding of the button hysteresis value set by SmartSense with that specified by the user in the bitfield HYSTERESIS in this register.<br>**0:** Hysteresis override disabled<br>**1:** Hysteresis override enabled |
| 6 : 5 | RESERVED | Reserved |
| 4 : 0 | HYSTERESIS | Hysteresis value (units: counts) to apply for button hysteresis override. The valid value of this bit field ranges from 0 to 31. |

## 1.5.27 BUTTON_LBR

Address: 0x1f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | LOW_BASELINE_RESET_THRESHOLD | | | | | | |

Low baseline reset parameter configuration for button sensor. Refer CY8CMBR3xxx CapSense Design Guide for more details.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of button low baseline reset parameter set by SmartSense with that specified by the user in the bitfield LOW_BASELINE_RESET_THRESHOLD in this register.<br>**0:** Button low baseline reset threshold override disabled<br>**1:** Button low baseline reset threshold override enabled |
| 6 : 0 | LOW_BASELINE_RESET_THRESHOLD | Threshold value (units: counts) to apply for button baseline update threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.28 BUTTON_NNT

Address: 0x20

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NEGATIVE_NOISE_THRESHOLD | | | | | | |

Button negative noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the button negative noise threshold set by SmartSense with that specified by the user in the bitfield NEGATIVE_NOISE_THRESHOLD in this register.<br>**0:** Button negative noise threshold override disabled<br>**1:** Button negative noise threshold override enabled |
| 6 : 0 | NEGATIVE_NOISE_THRESHOLD | Threshold value (units: counts) to apply for button negative noise threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.29 BUTTON_NT

Address: 0x21

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NOISE_THRESHOLD | | | | | | |

Button noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the button noise threshold set by SmartSense with that specified by the user in the bitfield NOISE_THRESHOLD in this register.<br>**0:** Button noise threshold override disabled<br>**1:** Button noise threshold override enabled |
| 6 : 0 | NOISE_THRESHOLD | Threshold value (units: counts) to apply for button noise threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.30 PROX_EN

Address: 0x26

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | RW | RW |
| Device Access | RW | | | | | | RW | RW |
| Bit Name | RESERVED | | | | | | PS1 | PS0 |

Proximity sensor enable register

| Bits | Name | Description |
|---|---|---|
| 7 : 2 | RESERVED | Reserved |
| 1 | PS1 | Proximity/button sensing configuration on sensor 1 |
| | | **0:** Sensor configured as button only |
| | | **1:** Sensor configured as proximity sensor |
| 0 | PS0 | Proximity/button sensing configuration on sensor 0 |
| | | **0:** Sensor configured as button only |
| | | **1:** Sensor configured as proximity sensor |

## 1.5.31 PROX_CFG

Address: 0x27

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | RW | RW |
| Device Access | RW | RW | | | | | RW | RW |
| Bit Name | ALP_FILTER_EN | RESERVED | | | | | PS1_WAKE_ON_APPROACH | PS0_WAKE_ON_APPROACH |

Proximity sensing configuration

| Bits | Name | Description |
|---|---|---|
| 7 | ALP_FILTER_EN | Enable for advanced low pass filter. This bit field is not applicable for part CY8CMBR3106S. |
| | | **0:** Advanced low pass filter disabled |
| | | **1:** Advanced low pass filter enabled |
| 6 : 2 | RESERVED | Reserved |
| 1 | PS1_WAKE_ON_APPROACH | Sensor 1 wake on proximity event (approach) enable |
| | | **0:** Sensor cannot generate wake on approach event |
| | | **1:** Sensor can generate wake on approach event |
| 0 | PS0_WAKE_ON_APPROACH | Sensor 0 wake on proximity event (approach) enable |
| | | **0:** Sensor cannot generate wake on approach event |
| | | **1:** Sensor can generate wake on approach event |

## 1.5.32 PROX_CFG2

Address: 0x28

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | RW | | |
| Device Access | RW | | | | | RW | | |
| Bit Name | RESERVED | | | | | ALP_FILTER_K | | |

Proximity sensing configuration. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 3 | RESERVED | Reserved |
| 2 : 0 | ALP_FILTER_K | ALP Filter K-Value. Refer Advanced Low-Pass (ALP) Filter section in CY8CMBR3xxx CapSense Design Guide for more information on this parameter. This bit field is not applicable for part CY8CMBR3106S.<br>**4:** Low noise attenuation<br>**5:** Medium noise attenuation<br>**6:** High noise attenuation |

## 1.5.33 PROX_TOUCH_TH0

Address: 0x2a

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_TOUCH_TH0 MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_TOUCH_TH0 LSB | | | | | | | |

Finger threshold (units: counts) for sensor 0 applied when this sensor is configured as a proximity sensor. This threshold controls the touch status (BUTTON_STAT) for sensor 0 when this sensor is configured as proximity sensor.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | PROX_TOUCH_TH0 | Finger threshold (units: counts) for sensor 0 applied when this sensor is configured as a proximity sensor. This threshold controls the touch status (BUTTON_STAT) for sensor 0 when this sensor is configured as proximity sensor. The valid value of this bit field ranges from 62 to 65000. |

## 1.5.34 PROX_TOUCH_TH1

Address: 0x2c

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_TOUCH_TH1 MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_TOUCH_TH1 LSB | | | | | | | |

Finger threshold (units: counts) for sensor 1 applied when this sensor is configured as a proximity sensor. This threshold controls the touch status (BUTTON_STAT) for sensor 1 when this sensor is configured as proximity sensor.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | PROX_TOUCH_TH1 | Finger threshold (units: counts) for sensor 1 applied when this sensor is configured as a proximity sensor. This threshold controls the touch status (BUTTON_STAT) for sensor 1 when this sensor is configured as proximity sensor. The valid value of this bit field ranges from 62 to 65000. |

## 1.5.35 PROX_RESOLUTION0

Address: 0x2e

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | RW | | |
| Device Access | RW | | | | | RW | | |
| Bit Name | RESERVED | | | | | PROX_RESOLUTION0 | | |

Scan resolution (units: bits) for sensor 0 when this sensor is configured as a proximity sensor

| Bits | Name | Description |
|---|---|---|
| 7 : 3 | RESERVED | Reserved |
| 2 : 0 | PROX_RESOLUTION0 | Scan resolution (units: bits) for sensor 0 when this sensor is configured as a proximity sensor |
| | | **0:** 16 bit |
| | | **1:** 15 bit |
| | | **2:** 14 bit |
| | | **3:** 13 bit |
| | | **4:** 12 bit |

## 1.5.36 PROX_RESOLUTION1

Address: 0x2f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | RW | | |
| Device Access | RW | | | | | RW | | |
| Bit Name | RESERVED | | | | | PROX_RESOLUTION1 | | |

Scan resolution (units: bits) for sensor 1 when this sensor is configured as a proximity sensor

| Bits | Name | Description |
|---|---|---|
| 7 : 3 | RESERVED | Reserved |
| 2 : 0 | PROX_RESOLUTION1 | Scan resolution (units: bits) for sensor 1 when this sensor is configured as a proximity sensor |
| | | **0:** 16 bit |
| | | **1:** 15 bit |
| | | **2:** 14 bit |
| | | **3:** 13 bit |
| | | **4:** 12 bit |

## 1.5.37 PROX_HYS

Address: 0x30

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | HYSTERSIS | | | | | | |

Proximity hysteresis configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details on this parameter

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this bit allows overriding of the proximity hysteresis value set by SmartSense with that specified by the user in the bitfield HYSTERESIS in this register.<br>**0:** Proximity hysteresis override disabled<br>**1:** Proximity hysteresis override enabled |
| 6 : 0 | HYSTERSIS | Hysteresis value (units: counts) to apply for proximity hysteresis override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.38 PROX_LBR

Address: 0x32

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | LOW_BASELINE_RESET_THRESHOLD | | | | | | |

Low baseline reset parameter configuration for proximity sensor. Refer CY8CMBR3xxx CapSense Design Guide for more details on this parameter.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this bit allows overriding of the proximity low baseline reset parameter set by SmartSense with that specified by the user in the bitfield LOW_BASELINE_RESET_THRESHOLD in this register.<br>**0:** Proximity low baseline reset threshold override disabled<br>**1:** Proximity low baseline reset threshold override enabled |
| 6 : 0 | LOW_BASELINE_RESET_THRESHOLD | Threshold value (units: counts) to apply for proximity low baseline reset threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.39 PROX_NNT

Address: 0x33

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NEGATIVE_NOISE_THRESHOLD | | | | | | |

Proximity negative noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details on this parameter.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the proximity negative noise threshold set by SmartSense with that specified by the user in the bitfield NEGATIVE_NOISE_THRESHOLD in this register.<br>**0:** Proximity negative noise threshold override disabled<br>**1:** Proximity negative noise threshold override enabled |
| 6 : 0 | NEGATIVE_NOISE_THRESHOLD | Threshold value (units: counts) to apply for proximity negative noise threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.40 PROX_NT

Address: 0x34

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NOISE_THRESHOLD | | | | | | |

Proximity noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for more details on this parameter.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the proximity noise threshold set by SmartSense with that specified by the user in the bitfield NOISE_THRESHOLD in this register.<br>**0:** Proximity noise threshold override disabled<br>**1:** Proxmity noise threshold override enabled |
| 6 : 0 | NOISE_THRESHOLD | Threshold value (units: counts) to apply for proximity noise threshold override. The valid value of this bit field ranges from 0 to 127. |

## 1.5.41 PROX_POSITIVE_TH0

Address: 0x35

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_POSITIVE_TH0 | | | | | | | |

Positive proximity-specific threshold value (units: counts) for sensor 0. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | PROX_POSITIVE_TH0 | Positive proximity-specific threshold value (units: counts) for sensor 0. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. The valid value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.42 PROX_POSITIVE_TH1

Address: 0x36

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_POSITIVE_TH1 | | | | | | | |

Positive proximity-specific threshold value (units: counts) for sensor 1. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | PROX_POSITIVE_TH1 | Positive proximity-specific threshold value (units: counts) for sensor 1. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. The valid value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.43 PROX_NEGATIVE_TH0

Address: 0x39

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_NEGATIVE_TH0 | | | | | | | |

Negative proximity-specific threshold value (units: counts) for sensor 0. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | PROX_NEGATIVE_TH0 | Negative proximity-specific threshold value (units: counts) for sensor 0. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. The valid value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.44 PROX_NEGATIVE_TH1

Address: 0x3a

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | PROX_NEGATIVE_TH1 | | | | | | | |

Negative proximity-specific threshold value (units: counts) for sensor 1. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | PROX_NEGATIVE_TH1 | Negative proximity-specific threshold value (units: counts) for sensor 1. Refer ALP Filter Parameters section in CY8CMBR3xxx CapSense Design Guide for more details on this parameter. The valid value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.45 LED_ON_TIME

Address: 0x3d

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | RESERVED | ON_TIME | | | | | | |

LED on time period extension in steps of 20 ms. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 | RESERVED | Reserved |
| 6 : 0 | ON_TIME | LED on time period extension in steps of 20 ms. The valid value of this bit field ranges from 0 to 100. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.46 BUZZER_CFG

Address: 0x3e

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | RW | | |
| Device Access | RW | RW | | | | RW | | |
| Bit Name | BUZZER_EN | RESERVED | | | | BUZZ_FREQ | | |

Buzzer configuration. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 | BUZZER_EN | Buzzer enable. Buzzer and EMC feature should not be simultaneously enabled (see DEVICE_CFG2.EMC_EN description). Operation is undefined when this combination is used. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Buzzer disabled<br>**1:** Buzzer enabled |
| 6 : 3 | RESERVED | Reserved |
| 2 : 0 | BUZZ_FREQ | Buzzer frequency selection. This bit field is not applicable for part CY8CMBR3102.<br>**1:** 4 kHz<br>**2:** 2.67 kHz<br>**3:** 2 kHz<br>**4:** 1.6 kHz<br>**5:** 1.33 kHz<br>**6:** 1.14 kHz<br>**7:** 1 kHz |

## 1.5.47 BUZZER_ON_TIME

Address: 0x3f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | BUZZ_ON_TIME | | | | | | | |

Buzzer duration in steps of 100 ms. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | BUZZ_ON_TIME | Buzzer duration in steps of 100 ms. The valid value of this bit field ranges from 1 to 127. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.48 GPO_CFG

Address: 0x40

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | RW | RW | RW |
| Device Access | RW | | | | RW | RW | RW | RW |
| Bit Name | RESERVED | | | | ACTIVE_STATE | DRIVE_MODE | GPO_PWM | GPO_CTL |

GPO Configuration. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | RESERVED | Reserved |
| 3 | ACTIVE_STATE | Active state for GPO Pins. This bit field is not applicable for part CY8CMBR3106S. |
| | | **0:** Active Low |
| | | **1:** Active High |
| 2 | DRIVE_MODE | GPO Pin Drive Mode. This bit field is not applicable for part CY8CMBR3106S. |
| | | **0:** Hi-Z for high level, strong drive for low level |
| | | **1:** Strong drive for low and high levels |
| 1 | GPO_PWM | PWM enable on GPO. This bit field is not applicable for part CY8CMBR3106S. |
| | | **0:** GPOs output DC voltage |
| | | **1:** GPOs output PWM |
| 0 | GPO_CTL | Select of host vs. sensor control of GPO. This bit field is not applicable for part CY8CMBR3106S. |
| | | **0:** GPOs are directly controlled by sensor status. Each GPOx will be controlled by status of corresponding sensor CSx. Here, x can range from 0 to (number of enabled sensors - 1) |
| | | **1:** Host can control GPOs by writing to GPO_OUTPUT_STATE register |

## 1.5.49 PWM_DUTYCYCLE_CFG0

Address: 0x41

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO0 PWM duty cycle configuration. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO0 when this GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for part CY8CMBR3106S. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO0 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.50 PWM_DUTYCYCLE_CFG1

Address: 0x42

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO1 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO1 when this GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO1 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |

## 1.5.51 PWM_DUTYCYCLE_CFG2

Address: 0x43

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO2 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO2 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO2 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |

## 1.5.52 PWM_DUTYCYCLE_CFG3

Address: 0x44

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO3 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO3 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO3 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. |

## 1.5.53 PWM_DUTYCYCLE_CFG4

Address: 0x45

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO4 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO4 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO4 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. |

## 1.5.54 PWM_DUTYCYCLE_CFG5

Address: 0x46

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO5 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO5 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO5 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |

## 1.5.55 PWM_DUTYCYCLE_CFG6

Address: 0x47

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO6 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO6 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO6 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |

## 1.5.56 PWM_DUTYCYCLE_CFG7

Address: 0x48

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | RW | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | LOW_DUTY_CYCLE | | | | HIGH_DUTY_CYCLE | | | |

GPO7 PWM duty cycle configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | LOW_DUTY_CYCLE | PWM duty cycle to be driven on GPO7 when GPO is in logic low state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |
| 3 : 0 | HIGH_DUTY_CYCLE | PWM duty cycle to be driven on GPO7 when GPO is in logic high state. This bitfield allows 16 settings for 0% to 100% duty cycle in steps of 6.67%. The valid value of this bit field ranges from 0 to 15. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |

## 1.5.57 SPO_CFG

Address: 0x4c

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | RW | RW | | |
| Device Access | RW | RW | | | RW | RW | | |
| Bit Name | RESERVED | SPO1 | | | RESERVED | SPO0 | | |

Special Purpose Output Pin Function Selection

| Bits | Name | Description |
|---|---|---|
| 7 | RESERVED | Reserved |
| 6 : 4 | SPO1 | Special purpose output 1 configuration. If this field contains an invalid value, the applicable pin (pin marked as SPO1 in the device datasheet) is disabled. If the value of this field is a duplicate of the value of SPO0 (except GPO), and SPO0 can support the selected function, pin marked as SPO1 in the device datasheet is disabled. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Pin function disabled<br>**1:** Pin used as capacitive sensor<br>**2:** Pin used as shield electrode<br>**3:** Pin used as buzzer output<br>**4:** Pin used as host interrupt<br>**5:** Pin used as general purpose output |
| 3 | RESERVED | Reserved |
| 2 : 0 | SPO0 | Special purpose output 0 configuration. If this field contains an invalid value, the applicable pin (pin marked as SPO0 in the device data sheet) is disabled.<br>**0:** Pin function disabled<br>**1:** Pin used as capacitive sensor<br>**2:** Pin used as shield electrode<br>**3:** Pin used as buzzer output<br>**4:** Pin used as host interrupt<br>**5:** Pin used as general purpose output |

## 1.5.58 DEVICE_CFG0

Address: 0x4d

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | RW | RW |
| Device Access | RW | | | | | | RW | RW |
| Bit Name | RESERVED | | | | | | IIR_EN | MED_EN |

Button sensing filter enable/disable

| Bits | Name | Description |
|---|---|---|
| 7 : 2 | RESERVED | Reserved |
| 1 | IIR_EN | IIR Filter Enable. For CY8CMBR3106S part, it is required that EMC_EN be disabled if IIR filter is enabled. EMC solution and IIR filter are mutually exclusive features for CY8CMBR3106S part.<br>**0:** Filter disabled<br>**1:** Filter enabled |
| 0 | MED_EN | Median Filter Enable. For CY8CMBR3106S part, it is required that EMC_EN be disabled if median filter is enabled. EMC solution and Median filter are mutually exclusive features for CY8CMBR3106S part.<br>**0:** Filter disabled<br>**1:** Filter enabled |

## 1.5.59 DEVICE_CFG1

Address: 0x4e

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | RW |
| Device Access | RW | | | | | | | RW |
| Bit Name | RESERVED | | | | | | | SYSD_EN |

System diagnostics enable/disable

| Bits | Name | Description |
|---|---|---|
| 7 : 1 | RESERVED | Reserved |
| 0 | SYSD_EN | System diagnostics enable<br>**0:** System diagnostics disabled<br>**1:** System diagnostics enabled |

## 1.5.60 DEVICE_CFG2

Address: 0x4f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | RW | RW | RW | RW |
| Device Access | RW | | RW | | RW | RW | RW | RW |
| Bit Name | PROXIMITY_ARST | | BUTTON_SLD_ARST | | ATH_EN | EMC_EN | GUARD_EN | SHIELD_EN |

Global sensing and processing configuration

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | PROXIMITY_ARST | Proximity auto-reset configuration<br>**0:** Auto-reset disabled<br>**1:** Auto-reset enabled; timeout = 5 seconds<br>**2:** Auto-reset enabled; timeout = 20 seconds |
| 5 : 4 | BUTTON_SLD_ARST | Button and slider auto-reset configuration. Refer CY8CMBR3xxx CapSense Design Guide for details on Auto-reset feature.<br>**0:** Auto-reset disabled<br>**1:** Auto-reset enabled; timeout = 5 seconds<br>**2:** Auto-reset enabled; timeout = 20 seconds |
| 3 | ATH_EN | Automatic threshold enable/disable configuration. Note that automatic thresholds can only be enabled if EMC solution is disabled. If EMC_EN bit is set, automatic thresholds get disabled.<br>**0:** Automatic thresholds are disabled i.e. finger thresholds identified in BASE_THRESHOLDx/ FINGER_THRESHOLDx registers will be used for determining sensors' status.<br>**1:** Automatic thresholds are enabled i.e. finger thresholds are automatically determined |
| 2 | EMC_EN | EMC solution enable (improves noise mitigation). This feature should not be simultaneously enabled along with buzzer (see BUZZER_CFG.BUZZER_EN). For CY8CMBR3116 this solution also requires that sensors CS10-CS15(as applicable) are disabled via the SENSOR_EN register. If any sensor in the range CS10-CS15 is enabled, the EMC solution is disabled regardless of the EMC_EN setting. For CY8CMBR3106S, any type of button filtering (IIR or Median Filter; see DEVICE_CFG0.MED_EN and DEVICE_CFG0.IIR_EN) should not be simultaneously enabled with the EMC solution. Operation is undefined when button filtering and EMC solution are simultaneously enabled on CY8CMBR3106S.For CY8CMBR3106S, EMC solution is applicable only to buttons and proximity sensors, not to slider segments.<br>**0:** EMC solution disabled<br>**1:** EMC solution enabled |
| 1 | GUARD_EN | Capacitive sensing guard sensor function enable. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Guard sensor function disabled<br>**1:** Guard sensor function enabled |
| 0 | SHIELD_EN | Capacitive sensing driven shield enable<br>**0:** Driven shield disabled<br>**1:** Driven shield enabled |

## 1.5.61 DEVICE_CFG3

Address: 0x50

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | RW |
| Device Access | RW | | | | | | | RW |
| Bit Name | RESERVED | | | | | | | SUPPLY_LOW_POWER |

Device Power Configuration

| Bits | Name | Description |
|---|---|---|
| 7 : 1 | RESERVED | Reserved |
| 0 | SUPPLY_LOW_POWER | Device power supply configuration |
| | | **0:** 1.8 V - 5.5 V internally regulated mode (VCC not connected to VDD) |
| | | **1:** 1.8 V +/-5% externally regulated mode (VDD and VCC connected together) |

## 1.5.62 I2C_ADDR

Address: 0x51

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | RESERVED | I2C_ADDRESS | | | | | | |

I2C slave address selection

| Bits | Name | Description |
|---|---|---|
| 7 | RESERVED | Reserved |
| 6 : 0 | I2C_ADDRESS | 7-bit I2C slave address. The valid value of this bit field ranges from 8 to 119. |

## 1.5.63 REFRESH_CTRL

Address: 0x52

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | | | | |
| Device Access | RW | | RW | | | | | |
| Bit Name | RESERVED | | REFRESH_INTERVAL | | | | | |

Look for Touch/Look for Prox scan refresh time selection

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | RESERVED | Reserved |
| 5 : 0 | REFRESH_INTERVAL | Refresh interval for Look for Touch and Look for Prox modes in units of 20 ms. The valid value of this bit field ranges from 1 to 25. |

## 1.5.64 STATE_TIMEOUT

Address: 0x55

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | | | | | |
| Device Access | RW | | RW | | | | | |
| Bit Name | RESERVED | | TIMEOUT | | | | | |

Timeout (units: seconds) of no touch activity in Active mode to trigger transition to Look for Touch mode and timeout of no touch activity in Look for Touch mode to trigger transition to Look for Prox mode

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | RESERVED | Reserved |
| 5 : 0 | TIMEOUT | Timeout (units: seconds) of no touch activity in Active mode to trigger transition to Look for Touch mode and timeout of no touch activity in Look for Touch mode to trigger transition to Look for Prox mode. The valid value of this bit field ranges from 0 to 63. |

## 1.5.65 SLIDER_CFG

Address: 0x5d

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | RW | |
| Device Access | RW | | | | | | RW | |
| Bit Name | RESERVED | | | | | | SELECT | |

Global slider configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 2 | RESERVED | Reserved |
| 1 : 0 | SELECT | Slider selection. If this field has an invalid selection, all slider pins are disabled. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Slider 1 is enabled. Slider 2 is disabled, and its sensors are available for button sensing.<br>**1:** Slider 1 and Slider 2 are enabled as separate sliders<br>**2:** Slider 1 and Slider 2 sensors are combined into a single high-resolution slider |

## 1.5.66 SLIDER1_CFG

Address: 0x61

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | RW | | RW | | |
| Device Access | RW | | RW | RW | | RW | | |
| Bit Name | RESERVED | | GEOME-TRY | SENSITIVITY | | SEGMENTS | | |

Slider 1 or high-resolution slider configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | RESERVED | Reserved |
| 5 | GEOMETRY | Slider 1 or high-resolution slider shape. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Linear slider (linear position indication)<br>**1:** Radial slider (angular position indication) |
| 4 : 3 | SENSITIVITY | Sensitivity of Slider 1 (units: counts/pF) or high-resolution slider sensors. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 2 : 0 | SEGMENTS | Number of sensors in Slider 1. The set of enabled slider sensors are contiguous sensor indexes SLD10, SLD11 to SLD1x (x ranges from 2 to 4). If Slider 1 is independent of Slider 2, the device will interpret an invalid value as equivalent to the closest bound. If Slider 1 and Slider 2 are combined into a single high-resolution slider, this field value is ignored, and the device automatically enables all 5 segments of Slider 1 to be part of the high-resolution slider. The valid value of this bit field ranges from 3 to 5. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.67 SLIDER1_RESOLUTION

Address: 0x62

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESOLUTION | | | | | | | |

Slider 1 or high-resolution slider maximum position value (units: counts). This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | RESOLUTION | Slider 1 or high-resolution slider maximum position value (units: counts). The valid value of this bit field ranges from 1 to 254. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.68 SLIDER1_THRESHOLD

Address: 0x63

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD | | | | | | | |

Slider 1 or high-resolution finger threshold (units: counts) configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD | Slider 1 or high-resolution finger threshold (units: counts) configuration. The valid value of this bit field ranges from 1 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.69 SLIDER2_CFG

Address: 0x67

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | RW | RW | | RW | | |
| Device Access | RW | | RW | RW | | RW | | |
| Bit Name | RESERVED | | GEOME-TRY | SENSITIVITY | | SEGMENTS | | |

Slider 2 configuration. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 6 | RESERVED | Reserved |
| 5 | GEOMETRY | Slider 2 shape. Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Linear slider (linear position indication)<br>**1:** Radial slider (angular position indication) |
| 4 : 3 | SENSITIVITY | Sensitivity of Slider 2 sensors (units: counts/pF). Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** 50 counts/0.1 pF<br>**1:** 50 counts/0.2 pF<br>**2:** 50 counts/0.3 pF<br>**3:** 50 counts/0.4 pF |
| 2 : 0 | SEGMENTS | Number of sensors in Slider 2. The set of enabled slider sensors are contiguous sensor indexes SLD20, SLD21 to SLD2x (x ranges from 2 to 4). Disabled Slider 2 pins are available for other functions. If Slider 2 is enabled independent of Slider 1, the minimum expected value is 3. If Slider 2 is combined with Slider 1 into a high resolution slider, the minimum expected value is 1, and the total number of pins in the combined slider is 5 + the value of this field. For any case enabling Slider 2, the device will interpret an out-of-range value as equivalent to the closest bound. The valid value of this bit field ranges from 1 to 5. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.70 SLIDER2_RESOLUTION

Address: 0x68

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESOLUTION | | | | | | | |

Slider 2 maximum position value (units: counts). Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | RESOLUTION | Slider 2 maximum position value (units: counts). Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. The valid value of this bit field ranges from 1 to 254. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.71 SLIDER2_THRESHOLD

Address: 0x69

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FINGER_THRESHOLD | | | | | | | |

Slider 2 finger threshold (units: counts) configuration. Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. Refer CY8CMBR3xxx CapSense Design Guide for information on tuning of this parameter. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FINGER_THRESHOLD | Slider 2 finger threshold (units: counts) configuration. Ignored if Slider 1 and Slider 2 are combined into a high-resolution slider. Refer CY8CMBR3xxx CapSense Design Guide for information on tuning of this parameter. The valid value of this bit field ranges from 1 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.72 SLIDER_LBR

Address: 0x71

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | LOW_BASELINE_RESET_THRESHOLD | | | | | | |

Low baseline reset parameter configuration for slider. Refer CY8CMBR3xxx CapSense Design Guide for definition of this parameter. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the slider low baseline reset parameter set by SmartSense with that specified by user in the bitfield LOW_BASELINE_RESET_THRESHOLD in this register. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Slider low baseline reset threshold override disabled<br>**1:** Slider low baseline reset threshold override enabled |
| 6 : 0 | LOW_BASELINE_RESET_THRESHOLD | Threshold value (units: counts) to apply for slider low baseline update reset threshold override. The valid value of this bit field ranges from 0 to 127. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.73 SLIDER_NNT

Address: 0x72

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NEGATIVE_NOISE_THRESHOLD | | | | | | |

Slider negative noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for definition of this parameter. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the slider negative noise threshold set by SmartSense with that specified by the user in the bitfield NEGATIVE_NOISE_THRESHOLD in this register. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Slider negative noise threshold override disabled<br>**1:** Slider negative noise threshold override enabled |
| 6 : 0 | NEGATIVE_NOISE_THRESHOLD | Threshold value (units: counts) to apply for slider negative noise threshold override. The valid value of this bit field ranges from 0 to 127. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.74 SLIDER_NT

Address: 0x73

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | | | | | | |
| Device Access | RW | RW | | | | | | |
| Bit Name | OVERRIDE | NOISE_THRESHOLD | | | | | | |

Slider noise threshold configuration. Refer CY8CMBR3xxx CapSense Design Guide for definition of this parameter. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 | OVERRIDE | Setting this parameter allows overriding of the slider noise threshold set by SmartSense with that specified by the user in the bitfield NOISE_THRESHOLD in this register. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.<br>**0:** Slider noise threshold override disabled<br>**1:** Slider noise threshold override enabled |
| 6 : 0 | NOISE_THRESHOLD | Threshold value (units: counts) to apply for slider noise threshold override. The valid value of this bit field ranges from 0 to 127. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.75 CONFIG_CRC

Address: 0x7e

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CRC MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CRC LSB | | | | | | | |

Configuration data CRC

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | CRC | CCITT CRC16 checksum for all data from offset 0 to 125. The valid value of this bit field ranges from 0 to 65535. |

## 1.5.76 GPO_OUTPUT_STATE

Address: 0x80

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | GPO7 | GPO6 | GPO5 | GPO4 | GPO3 | GPO2 | GPO1 | GPO0 |

Host controlled GPO state. The default value of each bit is the inactive state (0 for active high; 1 for active low) as configured by GPO_CFG.ACTIVE_STATE. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 | GPO7 | GPO7 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO is low<br>**1:** GPO is high |
| 6 | GPO6 | GPO6 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO is low<br>**1:** GPO is high |
| 5 | GPO5 | GPO5 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** GPO is low<br>**1:** GPO is high |
| 4 | GPO4 | GPO4 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** GPO is low<br>**1:** GPO is high |
| 3 | GPO3 | GPO3 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO is low<br>**1:** GPO is high |
| 2 | GPO2 | GPO2 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** GPO is low<br>**1:** GPO is high |
| 1 | GPO1 | GPO1 state setting. This bit field is not applicable for part CY8CMBR3106S.<br>**0:** GPO is low<br>**1:** GPO is high |
| 0 | GPO0 | GPO0 state setting. This bit field is not applicable for part CY8CMBR3106S.<br>**0:** GPO is low<br>**1:** GPO is high |

## 1.5.77 SENSOR_ID

Address: 0x82

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | SENSOR_ID | | | | | | | |

Sensor ID for which to report sensor debug data. The valid values of this register depend on the number of sensors in the part, valid values for a part are 0 to (number of sensors - 1).

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | SENSOR_ID | Sensor ID for which to report sensor debug data.<br>The register's default value is an invalid value which is 255. The valid value of this bit field ranges from 0 to 15. |

## 1.5.78 CTRL_CMD

Address: 0x86

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | RW | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CMD_OP_CODE | | | | | | | |

Command to execute. The device sets this register's value to 0 at startup and upon completion of any command. The host may write this register at any time that its value is 0. If the host writes to this register while its value is non-zero, device response to the newly requested command is undefined.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | CMD_OP_CODE | Op code for the command to execute<br><br>**0:** There is no command currently executing. The device writes this value at startup and upon completion of any command.<br><br>**2:** The device calculates a CRC checksum over the configuration data in this register map and compares the result with the content of CONFIG_CRC. If the two values match, the device saves the configuration and the CRC checksum to nonvolatile memory.<br><br>**3:** The device calculates a CRC checksum over the configuration data in this register map and places the result in the CALC_CRC register. Note that this command is only for test and debug, and its use is not recommended for production configurations. Use EzClick or Host APIs to calculate CRC for production configurations. Refer CY8CMBR3xxx Design Guide for more details.<br><br>**7:** The device discontinues scanning and enters the low power mode. The device will exit this mode upon an I2C address match event.<br><br>**8:** The device sets the contents of LATCHED_BUTTON_STAT and LATCHED_PROX_STAT to 0 and sets the contents of LIFTOFF_SLIDER1_POSITION and LIFTOFF_SLIDER2_POSITION to 0xFF.<br><br>**9:** The device resets the Advanced Low Pass filter for proximity sensor PS0<br><br>**10:** The device resets the Advanced Low Pass filter for proximity sensor PS1<br><br>**255:** The device resets itself |

## 1.5.79 CTRL_CMD_STATUS

Address: 0x88

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | R |
| Device Access | RW | | | | | | | RW |
| Bit Name | RESERVED | | | | | | | ERR |

Status returned by the most recently executed command

| Bits | Name | Description |
|---|---|---|
| 7 : 1 | RESERVED | Reserved |
| 0 | ERR | Indicator of any error<br>**0:** There is no error<br>**1:** An error occurred |

## 1.5.80 CTRL_CMD_ERR

Address: 0x89

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | ERROR_CODE | | | | | | | |

Error code returned from most recently executed command.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | ERROR_CODE | Error code returned from most recently executed command.<br>**0:** Command was successful<br>**253:** Write to flash failed<br>**254:** Stored configuration CRC checksum (in CONFIG_CRC register) did not match calculated configuration CRC checksum<br>**255:** Invalid command |

## 1.5.81 SYSTEM_STATUS

Address: 0x8a

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | R |
| Device Access | RW | | | | | | | RW |
| Bit Name | RESERVED | | | | | | | F_DEFAULT |

System configuration status indicators

| Bits | Name | Description |
|---|---|---|
| 7 : 1 | RESERVED | Reserved |
| 0 | F_DEFAULT | Indicator of whether factory default configuration is loaded<br>**0:** A configuration other than the factory default configuration is loaded<br>**1:** The factory default configuration is loaded |

## 1.5.82 PREV_CTRL_CMD_CODE

Address: 0x8c

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CMD_OP_CODE | | | | | | | |

Opcode of the previous command execution attempt

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | CMD_OP_CODE | Op code of the previous command execution attempt. See CTRL_CMD.CMD_OP_CODE definition for valid range definition. The value of this bit field ranges from 0 to 255. |

## 1.5.83 FAMILY_ID

Address: 0x8f

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FAMILY_ID | | | | | | | |

Device family ID

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | FAMILY_ID | Device family ID. The value of this bit field for CY8CMBR3xxx devices is 154. |

## 1.5.84 DEVICE_ID

Address: 0x90

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | SILICON_ID MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | SILICON_ID LSB | | | | | | | |

Device silicon ID

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | SILICON_ID | Device silicon ID. The value of this bit field ranges from 0 to 65535.To know device specific value, refer to Factory Default Values section. |

## 1.5.85 DEVICE_REV

Address: 0x92

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | FW_REVISION | | | | | | | |

Device revision number

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | FW_REVISION | Firmware revision number. The value of this bit field ranges from 0 to 255. |

## 1.5.86 CALC_CRC

Address: 0x94

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CRC MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CRC LSB | | | | | | | |

Configuration data CRC calculated by host command.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | CRC | Configuration data CRC calculated by host command op-code 0x03 (Refer to CTRL_CMD.CMD_OP_CODE). The value of this bit field ranges from 0 to 65535. |

## 1.5.87 TOTAL_WORKING_SNS

Address: 0x97

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | | R | | | | |
| Device Access | RW | RW | | RW | | | | |
| Bit Name | SYSD_ERR | RESERVED | | SENSOR_COUNT | | | | |

System diagnostics results summary. The range of SENSOR_COUNT values 0 to number of enabled sensors.

| Bits | Name | Description |
|---|---|---|
| 7 | SYSD_ERR | Indicator of whether any errors were detected during system diagnostic test<br>**0:** No error was detected<br>**1:** At least one error was detected during system diagnostic test |
| 6 : 5 | RESERVED | Reserved |
| 4 : 0 | SENSOR_COUNT | Number of sensors that passed system diagnostic test. This is zero if system diagnostics feature is disabled ( DEVICE_CFG1.SYSD_EN = 0 ) or if Cmod test or a Shield test failed in system diagnostics test. The value of this bit field ranges from 0 to 16. |

## 1.5.88 SNS_CP_HIGH

Address: 0x98

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Indicators of sensors whose parasitic capacitance Cp is greater than 45 pF. If modulating capacitance Cmod is out of its required range, or a shield failure is detected, or system diagnostics feature is disabled by making DEVICE_CFG1.SYSD_EN = 0, this register's content is invalid.

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 14 | CS14 | Sensor 14 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 13 | CS13 | Sensor 13 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 12 | CS12 | Sensor 12 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 11 | CS11 | Sensor 11 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 10 | CS10 | Sensor 10 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Cp is less than or equal to 45 pF or sensor not tested<br>**1:** Cp is greater than 45 pF |
| 9 | CS9 | Sensor 9 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.88 SNS_CP_HIGH (continued)

| | | |
|---|---|---|
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 8 | CS8 | Sensor 8 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 7 | CS7 | Sensor 7 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 6 | CS6 | Sensor 6 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 5 | CS5 | Sensor 5 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 4 | CS4 | Sensor 4 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 3 | CS3 | Sensor 3 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 2 | CS2 | Sensor 2 Cp indication. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 1 | CS1 | Sensor 1 Cp indication |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested |
| | | **1:** Cp is greater than 45 pF |
| 0 | CS0 | Sensor 0 Cp indication |
| | | **0:** Cp is less than or equal to 45 pF or sensor not tested (a sensor is not tested for high Cp, if a short is detected between two sensors, or between sensor and ground or Vdd, or if the sensor is disabled in the SENSOR_EN or SPO_CFG register) |
| | | **1:** Cp is greater than 45 pF |

## 1.5.89 SNS_VDD_SHORT

Address: 0x9a

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Indicators of sensors with short circuit to Vdd. If System diagnostics feature is disabled (DEVICE_CFG1.SYSD_EN = 0), this register's content is invalid.

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 14 | CS14 | Sensor 14 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 13 | CS13 | Sensor 13 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 12 | CS12 | Sensor 12 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 11 | CS11 | Sensor 11 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 10 | CS10 | Sensor 10 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to Vdd or sensor not tested<br>**1:** Short circuit to Vdd detected |
| 9 | CS9 | Sensor 9 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.89 SNS_VDD_SHORT (continued)

| | | |
|---|---|---|
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 8 | CS8 | Sensor 8 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 7 | CS7 | Sensor 7 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 6 | CS6 | Sensor 6 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 5 | CS5 | Sensor 5 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 4 | CS4 | Sensor 4 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 3 | CS3 | Sensor 3 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 2 | CS2 | Sensor 2 short to Vdd indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 1 | CS1 | Sensor 1 short to Vdd indicator |
| | | **0:** No short circuit to Vdd or sensor not tested |
| | | **1:** Short circuit to Vdd detected |
| 0 | CS0 | Sensor 0 short to Vdd indicator |
| | | **0:** No short circuit to Vdd or sensor not tested (A sensor to Vdd short test is not performed if this sensor is already detected as shorted to ground, or if the sensor is disabled in SENSOR_EN or SPO_CFG register) |
| | | **1:** Short circuit to Vdd detected |

## 1.5.90 SNS_GND_SHORT

Address: 0x9c

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Indicators of sensors with short circuit to GND. If System diagnostics feature is disabled (DEVICE_CFG1.SYSD_EN = 0), this register's content is invalid.

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 14 | CS14 | Sensor 14 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 13 | CS13 | Sensor 13 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 12 | CS12 | Sensor 12 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 11 | CS11 | Sensor 11 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 10 | CS10 | Sensor 10 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to GND or sensor not tested<br>**1:** Short circuit to GND detected |
| 9 | CS9 | Sensor 9 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.90 SNS_GND_SHORT (continued)

| | | |
|---|---|---|
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 8 | CS8 | Sensor 8 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 7 | CS7 | Sensor 7 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 6 | CS6 | Sensor 6 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 5 | CS5 | Sensor 5 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 4 | CS4 | Sensor 4 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 3 | CS3 | Sensor 3 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 2 | CS2 | Sensor 2 short to GND indicator. This bit field is not applicable for part CY8CMBR3102. |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 1 | CS1 | Sensor 1 short to GND indicator |
| | | **0:** No short circuit to GND or sensor not tested |
| | | **1:** Short circuit to GND detected |
| 0 | CS0 | Sensor 0 short to GND indicator |
| | | **0:** No short circuit to GND or sensor not tested (Sensor to ground test is not performed for a given sensor if this sensor is disabled through SENSOR_EN or SPO_CFG register) |
| | | **1:** Short circuit to GND detected |

## 1.5.91 SNS_SNS_SHORT

Address: 0x9e

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Indicators of sensors with short circuit to another sensor or shield. If System diagnostics feature is disabled (DEVICE_CFG1.SYSD_EN = 0), this register's content is invalid.

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 14 | CS14 | Sensor 14 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 13 | CS13 | Sensor 13 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 12 | CS12 | Sensor 12 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 11 | CS11 | Sensor 11 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 10 | CS10 | Sensor 10 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 9 | CS9 | Sensor 9 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.91 SNS_SNS_SHORT (continued)

| | | |
|---|---|---|
| | | **0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 8 | CS8 | Sensor 8 short to another sensor indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 7 | CS7 | Sensor 7 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 6 | CS6 | Sensor 6 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 5 | CS5 | Sensor 5 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 4 | CS4 | Sensor 4 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 3 | CS3 | Sensor 3 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 2 | CS2 | Sensor 2 short to another sensor indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 1 | CS1 | Sensor 1 short to another sensor indicator<br>**0:** No short circuit to another sensor or shield, or sensor not tested<br>**1:** Short circuit to another sensor or shield detected |
| 0 | CS0 | Sensor 0 short to another sensor indicator<br>**0:** No short circuit to another sensor or shield or sensor not tested (A sensor to sensor test is not performed on a given sensor if this sensor is already detected as shorted to ground or Vdd, or the sensor is disabled via SENSOR_EN or SPO_CFG register.)<br>**1:** Short circuit to another sensor or shield detected |

## 1.5.92 CMOD_SHIELD_TEST

Address: 0xa0

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | R | R | R | R | R |
| Device Access | RW | | | RW | RW | RW | RW | RW |
| Bit Name | RESERVED | | | SH_SNS | SH_GND | SH_VDD | CMOD_LOW | CMOD_HIGH |

Cmod capacitor and shield electrode test results. If System diagnostics feature is disabled (DEVICE_CFG1.SYSD_EN = 0), this register's content is invalid.

| Bits | Name | Description |
|---|---|---|
| 7 : 5 | RESERVED | Reserved |
| 4 | SH_SNS | Indicator of whether a short circuit between the shield and any sensor was detected |
| | | **0:** No short circuit between the shield and any sensor was detected or not tested |
| | | **1:** A short circuit between the shield and at least one sensor was detected |
| 3 | SH_GND | Indicator of whether a short circuit between the shield and GND was detected |
| | | **0:** No short circuit between the shield and GND was detected or not tested |
| | | **1:** A short circuit between the shield and GND was detected |
| 2 | SH_VDD | Indicator of whether a short circuit between the shield and Vdd was detected |
| | | **0:** No short circuit between the shield and Vdd was detected or not tested (A shield test is not performed if shield is disabled in the SPO_CFG register) |
| | | **1:** A short circuit between the shield and Vdd was detected |
| 1 | CMOD_LOW | Indicator of whether Cmod is less than the minimum allowed value |
| | | **0:** Cmod is not less than the minimum allowed value |
| | | **1:** Cmod is less than the minimum allowed value |
| 0 | CMOD_HIGH | Indicator of whether Cmod is greater than the maximum allowed value |
| | | **0:** Cmod is not greater than the maximum allowed value. |
| | | **1:** Cmod is greater than the maximum allowed value |

## 1.5.93 BUTTON_STAT

Address: 0xaa

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Button status indicators

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 14 | CS14 | Sensor 14 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 13 | CS13 | Sensor 13 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 12 | CS12 | Sensor 12 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 11 | CS11 | Sensor 11 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 10 | CS10 | Sensor 10 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 9 | CS9 | Sensor 9 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. |

## 1.5.93 BUTTON_STAT (continued)

| | | |
|---|---|---|
| | | **0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 8 | CS8 | Sensor 8 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 7 | CS7 | Sensor 7 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 6 | CS6 | Sensor 6 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 5 | CS5 | Sensor 5 button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 4 | CS4 | Sensor 4 button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 3 | CS3 | Sensor 3 button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 2 | CS2 | Sensor 2 button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 1 | CS1 | Button status indicator (touched/not touched) for Sensor 1. When Sensor 1 is configured as a button sensor, BASE_THRESHOLD1 is used to determine status. When Sensor 1 is configured as a proximity sensor, PROX_TOUCH_TH1 is applied to determine status.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |
| 0 | CS0 | Button status indicator (touched/not touched) for Sensor 0. When Sensor 0 is configured as a button sensor, BASE_THRESHOLD0 is used to determine status. When Sensor 0 is configured as a proximity sensor, PROX_TOUCH_TH0 is applied to determine status.<br>**0:** Sensor is inactive (not touched)<br>**1:** Sensor is active (touched) |

## 1.5.94 LATCHED_BUTTON_STAT

Address: 0xac

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS15 | CS14 | CS13 | CS12 | CS11 | CS10 | CS9 | CS8 |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | CS7 | CS6 | CS5 | CS4 | CS3 | CS2 | CS1 | CS0 |

Latched copies of set bits in BUTTON_STAT since the last time LATCHED_BUTTON_STAT was cleared

| Bits | Name | Description |
|---|---|---|
| 15 | CS15 | Sensor 15 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 14 | CS14 | Sensor 14 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 13 | CS13 | Sensor 13 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 12 | CS12 | Sensor 12 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 11 | CS11 | Sensor 11 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 10 | CS10 | Sensor 10 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. |

## 1.5.94 LATCHED_BUTTON_STAT (continued)

| | | |
|---|---|---|
| | | **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 9 | CS9 | Sensor 9 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 8 | CS8 | Sensor 8 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 7 | CS7 | Sensor 7 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 6 | CS6 | Sensor 6 latched button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 5 | CS5 | Sensor 5 latched button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 4 | CS4 | Sensor 4 latched button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 3 | CS3 | Sensor 3 latched button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 2 | CS2 | Sensor 2 latched button status indicator. This bit field is not applicable for part CY8CMBR3102.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 1 | CS1 | Sensor 1 latched button status indicator. When Sensor 1 is configured as a proximity sensor, PROX_TOUCH_TH1 is applied to determine status. |

## 1.5.94 LATCHED_BUTTON_STAT (continued)

| | | |
|---|---|---|
| | | **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |
| 0 | CS0 | Sensor 0 latched button status indicator. When Sensor 0 is configured as a proximity sensor, PROX_TOUCH_TH0 is applied to determine status.<br>**0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared<br>**1:** Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared |

## 1.5.95 PROX_STAT

Address: 0xae

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | R | R |
| Device Access | RW | | | | | | RW | RW |
| Bit Name | RESERVED | | | | | | PS1 | PS0 |

Proximity status indicators for sensors configured for proximity sensing. When a sensor is configured as a proximity sensor, BASE_THRESHOLDx is applied to determine proximity status

| Bits | Name | Description |
|---|---|---|
| 7 : 2 | RESERVED | Reserved |
| 1 | PS1 | Sensor 1 proximity status indicator |
| | | **0:** Sensor is inactive (no proximity) |
| | | **1:** Sensor is active (proximity) |
| 0 | PS0 | Sensor 0 proximity status indicator |
| | | **0:** Sensor is inactive (no proximity) |
| | | **1:** Sensor is active (proximity) |

## 1.5.96 LATCHED_PROX_STAT

Address: 0xaf

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | R | R |
| Device Access | RW | | | | | | RW | RW |
| Bit Name | RESERVED | | | | | | PS1 | PS0 |

Latched copies of set bits in PROX_STAT since the last time LATCHED_PROX_STAT was cleared

| Bits | Name | Description |
|---|---|---|
| 7 : 2 | RESERVED | Reserved |
| 1 | PS1 | Sensor 1 latched proximity status indicator |
| | | **0:** Sensor has been inactive (no proximity) since the last time LATCHED_PROX_STAT was cleared |
| | | **1:** Sensor has been active (proximity) since the last time LATCHED_PROX_STAT was cleared |
| 0 | PS0 | Sensor 0 latched proximity status indicator |
| | | **0:** Sensor has been inactive (no proximity) since the last time LATCHED_PROX_STAT was cleared |
| | | **1:** Sensor has been active (proximity) since the last time LATCHED_PROX_STAT was cleared |

## 1.5.97 SLIDER1_POSITION

Address: 0xb0

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | POSITION | | | | | | | |

Slider 1 or high-resolution slider (depending on configuration) position indicator (units: counts). 255 indicates no touch. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | POSITION | Slider 1 or high-resolution slider (depending on configuration) position indicator (units: counts). 255 indicates no touch. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.98 LIFTOFF_SLIDER1_POSITION

Address: 0xb1

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | POSITION | | | | | | | |

SLIDER1_POSITION value captured on the most recent Slider 1 or high-resolution slider (depending on configuration) liftoff. 255 indicates a slider touch hasn't been captured yet. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | POSITION | SLIDER1_POSITION value captured on the most recent Slider 1 or high-resolution slider (depending on configuration) liftoff. 255 indicates a slider touch hasn't been captured yet. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.99 SLIDER2_POSITION

Address: 0xb2

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | POSITION | | | | | | | |

Slider 2 position indicator (units: counts) 255 indicates no touch. This register has undefined content if Slider 1 and Slider 2 are combined into a high-resolution slider. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | POSITION | Slider 2 position indicator (units: counts) 255 indicates no touch. This register has undefined content if Slider 1 and Slider 2 are combined into a high-resolution slider. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.100 LIFTOFF_SLIDER2_POSITION

Address: 0xb3

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | POSITION | | | | | | | |

SLIDER2_POSITION value captured on the most recent slider 2 liftoff. 255 indicates a slider touch hasn't been captured yet. This register has undefined content if Slider 1 and Slider 2 are combined into a high-resolution slider. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | POSITION | SLIDER2_POSITION value captured on the most recent slider 2 liftoff. 255 indicates a slider touch hasn't been captured yet. This register has undefined content if Slider 1 and Slider 2 are combined into a high-resolution slider. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116. |

## 1.5.101 SYNC_COUNTER0

Address: 0xb9

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | R | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | RESERVED | | | | COUNTER | | | |

Synchronization counter for host validation of signal data reports

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | RESERVED | Reserved |
| 3 : 0 | COUNTER | Synchronization counter for host validation of signal data reports. The values of registers with addresses between the addresses of SYNC_COUNTER0 and SYNC_COUNTER1 are valid when the values of SYNC_COUNTER0 and SYNC_COUNTER1 are equal. Note that the host validation of the system diagnostics data is not compulsory, even though it is highly recommended. The value of this bit field ranges from 0 to 15. |

## 1.5.102 DIFFERENCE_COUNT_SENSOR0

Address: 0xba

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT LSB | | | | | | | |

Capacitive sensor 0 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | DIFFERENCE_COUNT | Capacitive sensor 0 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value ranges from 0-65535 for proximity sensor and ranges from 0-255 for button sensor. |

## 1.5.103 DIFFERENCE_COUNT_SENSOR1

Address: 0xbc

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT LSB | | | | | | | |

Capacitive sensor 1 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | DIFFERENCE_COUNT | Capacitive sensor 1 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value ranges from 0-65535 for proximity sensor and ranges from 0-255 for button sensor. |

## 1.5.104 DIFFERENCE_COUNT_SENSOR2

Address: 0xbe

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 2 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 2 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.105 DIFFERENCE_COUNT_SENSOR3

Address: 0xc0

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 3 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 3 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.106 DIFFERENCE_COUNT_SENSOR4

Address: 0xc2

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 4 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 4 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.107 DIFFERENCE_COUNT_SENSOR5

Address: 0xc4

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 5 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 5 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.108 DIFFERENCE_COUNT_SENSOR6

Address: 0xc6

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 6 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 6 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.109 DIFFERENCE_COUNT_SENSOR7

Address: 0xc8

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 7 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for part CY8CMBR3102.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 7 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102. |

## 1.5.110 DIFFERENCE_COUNT_SENSOR8

Address: 0xca

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 8 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 8 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.111 DIFFERENCE_COUNT_SENSOR9

Address: 0xcc

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 9 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 9 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108. |

## 1.5.112 DIFFERENCE_COUNT_SENSOR10

Address: 0xce

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 10 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 10 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.113 DIFFERENCE_COUNT_SENSOR11

Address: 0xd0

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 11 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 11 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.114 DIFFERENCE_COUNT_SENSOR12

Address: 0xd2

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 12 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 12 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.115 DIFFERENCE_COUNT_SENSOR13

Address: 0xd4

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 13 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 13 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.116 DIFFERENCE_COUNT_SENSOR14

Address: 0xd6

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 14 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 14 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.117 DIFFERENCE_COUNT_SENSOR15

Address: 0xd8

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RESERVED | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT | | | | | | | |

Capacitive sensor 15 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. This register is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.

| Bits | Name | Description |
|---|---|---|
| 15 : 8 | RESERVED | Reserved |
| 7 : 0 | DIFFERENCE_COUNT | Capacitive sensor 15 difference count signal. If this sensor is disabled, this register's value is undefined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. |

## 1.5.118 GPO_DATA

Address: 0xda

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | R | R | R | R | R | R | R |
| Device Access | RW | RW | RW | RW | RW | RW | RW | RW |
| Bit Name | GPO7 | GPO6 | GPO5 | GPO4 | GPO3 | GPO2 | GPO1 | GPO0 |

GPO state values that the device is outputting. If GPOs are outputting PWM, these bits reflect the duty cycle selection (LOW or HIGH). Bits corresponding to disabled GPO are 0. This register is not applicable for part CY8CMBR3106S.

| Bits | Name | Description |
|---|---|---|
| 7 | GPO7 | GPO7 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 6 | GPO6 | GPO6 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 5 | GPO5 | GPO5 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 4 | GPO4 | GPO4 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 3 | GPO3 | GPO3 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 2 | GPO2 | GPO2 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 1 | GPO1 | GPO1 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |
| 0 | GPO0 | GPO0 value indicator. This bit field is not applicable for part CY8CMBR3106S.<br>**0:** Low DC output/PWM duty cycle<br>**1:** High DC output/PWM duty cycle |

## 1.5.119 SYNC_COUNTER1

Address: 0xdb

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | R | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | RESERVED | | | | COUNTER | | | |

Synchronization counter for host validation of signal data reports

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | RESERVED | Reserved |
| 3 : 0 | COUNTER | Synchronization counter for host validation of signal data reports. The values of registers with addresses between the addresses of SYNC_COUNTER0 and SYNC_COUNTER1 are valid only when the values of SYNC_COUNTER0 and SYNC_COUNTER1 are equal. The value of this bit field ranges from 0 to 15. |

## 1.5.120 DEBUG_SENSOR_ID

Address: 0xdc

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | ID | | | | | | | |

ID of the capacitive sensor for which DEBUG_xxxxxx registers are reported. The register has the default value as 255 which is an invalid value. This register takes its value from SENSOR_ID register.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | ID | ID of the capacitive sensor for which DEBUG_xxxxxx registers are reported. The register has the default value as 255 which is an invalid value. This register takes its value from SENSOR_ID register. The value of this bit field ranges from 0 to 15. |

## 1.5.121 DEBUG_CP

Address: 0xdd

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | CP | | | | | | | |

Total capacitance (in pF) measured on the sensor specified in SENSOR_ID. This capacitance measurement is updated on each scan refresh. When there is no touch, this value represents sensor Cp, parasitic capacitance. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value.

| Bits | Name | Description |
|---|---|---|
| 7 : 0 | CP | Total capacitance (in pF) measured on the sensor specified in SENSOR_ID. This capacitance measurement is updated whenever there is a change in value of SENSOR_ID register. When there is no touch, this value represents sensor Cp, parasitic capacitance. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value. The value of this bit field ranges from 0 to 255. |

## 1.5.122 DEBUG_DIFFERENCE_COUNT0

Address: 0xde

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | DIFFERENCE_COUNT LSB | | | | | | | |

Debug difference count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | DIFFERENCE_COUNT | Debug difference count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value. The value of this bit field ranges from 0 to 65535. |

## 1.5.123 DEBUG_BASELINE0

Address: 0xe0

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | BASELINE MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | BASELINE LSB | | | | | | | |

Debug baseline count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | BASELINE | Debug baseline count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value. The value of this bit field ranges from 0 to 65535. |

## 1.5.124 DEBUG_RAW_COUNT0

Address: 0xe2

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RAW_COUNT MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RAW_COUNT LSB | | | | | | | |

Debug raw count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | RAW_COUNT | Debug raw count for the sensor specified in SENSOR_ID. If the sensor number mentioned in SENSOR_ID register is a disabled sensor, this register reports an undefined value. The value of this bit field ranges from 0 to 65535. |

## 1.5.125 DEBUG_AVG_RAW_COUNT0

Address: 0xe4

| Bits | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RAW_COUNT MSB | | | | | | | |

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | | | | |
| Device Access | RW | | | | | | | |
| Bit Name | RAW_COUNT LSB | | | | | | | |

Debug proximity sensor average filtered raw count for the advanced low pass filter for the sensor specified in SENSOR_ID. If the advanced low pass filter is disabled or the sensor number in SENSOR_ID corresponds to any sensor other than a proximity sensor or a disabled sensor, this value is undefined.

| Bits | Name | Description |
|---|---|---|
| 15 : 0 | RAW_COUNT | Debug proximity sensor average filtered raw count for the advanced low pass filter for the sensor specified in SENSOR_ID. If the advanced low pass filter is disabled or the sensor number in SENSOR_ID corresponds to any sensor other than a proximity sensor or a disabled sensor, this value is undefined. The value of this bit field ranges from 0 to 65535. This bit field is not applicable for part CY8CMBR3106S. |

## 1.5.126 SYNC_COUNTER2

Address: 0xe7

| Bits | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|---|---|---|---|---|---|---|---|---|
| Host Access | R | | | | R | | | |
| Device Access | RW | | | | RW | | | |
| Bit Name | RESERVED | | | | COUNTER | | | |

Synchronization counter for host validation of data reports

| Bits | Name | Description |
|---|---|---|
| 7 : 4 | RESERVED | Reserved |
| 3 : 0 | COUNTER | Synchronization counter for host validation of signal data reports. The values of registers with addresses between the addresses of SYNC_COUNTER1 and SYNC_COUNTER2 are valid when the values of SYNC_COUNTER1 and SYNC_COUNTER2 are equal. The value of this bit field ranges from 0 to 15. |

# Revision History

Revision History

| Document Title: CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110, CY8CMBR3116 CapSense® Express™ Controllers Registers TRM (TECHNICAL REFERENCE MANUAL)<br>Document Number: 001-91082 | | | | |
|---|---|---|---|---|
| **Revision** | **ECN#** | **Issue Date** | **Origin of Change** | **Description of Change** |
| ** | 4281266 | 02/24/2014 | PRIA | New Register TRM |
| *A | 4294597 | 02/28/2014 | PRIA | Updated DEVICE_CFG3 register |
| *B | 4374019 | 05/13/2014 | DCHE | Updated DIFFERENCE_COUNT0-DIFFERENCE_COUNT15 register range |