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CY8CMBR3106S-LQXI

CY8CMBR3102, CY8CMBR3106S,
CY8CMBR3108, CY8CMBR3110, CY8CMBR3116

CapSense® Express™ Controllers Registers TRM
(Technical Reference Manual)

Document No. 001-91082 Rev. *E

June 5, 2017

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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		
SCRATCHPAD0					-							0				
SCRATCHPAD1					-							0				
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				

1.4.1　CY8CMBR3102 (continued)

Register	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DEBUG_DIFFERENCE_COUNT0	None															
DEBUG_BASELINE0	None															
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			
SCRATCHPAD0					-								0			
SCRATCHPAD1					-								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			

1.4.2   **CY8CMBR3106S** (continued)

Register	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
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							
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							

1.4.2 CY8CMBR3106S (continued)

Register	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DEBUG_DIFFERENCE_COUNT0	None															
DEBUG_BASELINE0	None															
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			
SCRATCHPAD0	-												0			
SCRATCHPAD1	-												0			
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															

1.4.3 CY8CMBR3108 (continued)

Register	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
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															
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			
SCRATCHPAD0					-								0			
SCRATCHPAD1					-								0			
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			

1.4.4   **CY8CMBR3110** (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						
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			
SCRATCHPAD0	-								0							
SCRATCHPAD1	-								0							
CONFIG_CRC	None															
GPO_OUTPUT_STATE	-								None							
SENSOR_ID	-								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					-								None			
CTRL_CMD_STATUS					-								None			
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								

1.4.5   CY8CMBR3116 (continued)

Register	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
DIFFERENCE_COUNT_SENSOR15								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					

1.5 Register Map

The CY8CMBR3xxx family features an I^{2}C configurable register map. The CY8CMBR3xxx registers are divided into three categories, as the following table shows.

CY8CMBR3xxx Registers

Register Category	Register Map Address range	Description
Configuration Registers	0x00-0x7E	These registers contain the configuration data for the CY8CMBR3xxx controllers. A host can write into these registers and save the data to non-volatile memory by writing to CTRL_CMD command register. Note that the new configuration takes effect only after the configuration is saved to non-volatile memory and the device is reset.
Command Registers	0x80-0x87	These registers accept commands from host. Any command written to these register is executed within T$_{I2C\_LATENCY\_MAX}$ from the I^{2}C acknowledgement of the command. Refer to CY8CMBR3xxx datasheet for value of TI2C_LATENCY_ MAX.
Status Registers	0x88-0xFB	These are read only registers and indicate the status of command execution, system diagnostics and sensor data.

The CY8CMBR3xxx devices feature a safe register map update mechanism to overcome configuration data corruption, which can occur due to power failure during execution of "Save" command or any other spurious events.

If the configuration data is corrupted when the device is saving data, on the next reset, the devices reconfigure themselves to the last known valid configuration. If there is no valid configuration saved by user, the devices load the factory default configuration.

The following table provides all registers available in CY8CMBR3xxx family. Refer to Factory Default Values on page 6 for details on which register is applicable to which 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

Register Name	Address
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
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

Register Name	Address
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
SCRATCHPAD0	0x7a
SCRATCHPAD1	0x7b
CONFIG_CRC	0x7e
GPO_OUTPUT_STATE	0x80
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

Register Name	Address
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
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. **0:** Sensor is disabled **1:** Sensor is enabled
14	CS14	Capacitive sensor 14 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is disabled **1:** Sensor is enabled
13	CS13	Capacitive sensor 13 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is disabled **1:** Sensor is enabled
12	CS12	Capacitive sensor 12 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is disabled **1:** Sensor is enabled
11	CS11	Capacitive sensor 11 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is disabled **1:** Sensor is enabled
10	CS10	Capacitive sensor 10 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is disabled **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
		1: Sensor is enabled
8	CS8	Capacitive sensor 8 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.
		0: Sensor is disabled
		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.
		0: Sensor is disabled
		1: Sensor is enabled
6	CS6	Capacitive sensor 6 enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		0: Sensor is disabled
		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.
		0: Sensor is disabled
		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.
		0: Sensor is disabled
		1: Sensor is enabled
3	CS3	Capacitive sensor 3 enable. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is disabled
		1: Sensor is enabled
2	CS2	Capacitive sensor 2 enable. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is disabled
		1: Sensor is enabled
1	CS1	Capacitive sensor 1 enable. Note that CS1 is SPO0 in part CY8CMBR3102.
		0: Sensor is disabled
		1: Sensor is enabled
0	CS0	Capacitive sensor 0 enable
		0: Sensor is disabled
		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. **0:** Sensor button status is excluded from FSS processing **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. **0:** Sensor button status is excluded from FSS processing **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. **0:** Sensor button status is excluded from FSS processing **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. **0:** Sensor button status is excluded from FSS processing **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. **0:** Sensor button status is excluded from FSS processing **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. **0:** Sensor button status is excluded from FSS processing **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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		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.
		0: Sensor button status is excluded from FSS processing
		1: Sensor button status is included in FSS processing
1	CS1	Sensor 1 button FSS inclusion
		0: Sensor button status is excluded from FSS processing
		1: Sensor button status is included in FSS processing
0	CS0	Sensor 0 button FSS inclusion
		0: Sensor button status is excluded from FSS processing
		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.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
6	GPO6	GPO6 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
5	GPO5	GPO5 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
4	GPO4	GPO4 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
3	GPO3	GPO3 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
2	GPO2	GPO2 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		0: GPO toggle is disabled
		1: GPO toggle is enabled
1	GPO1	GPO1 toggle enable. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		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.
		0: GPO toggle is disabled
		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. **0:** GPO extended LED ON duration is disabled **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. **0:** GPO extended LED ON duration is disabled **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. **0:** GPO extended LED ON duration is disabled **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. **0:** GPO extended LED ON duration is disabled **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. **0:** GPO extended LED ON duration is disabled **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. **0:** GPO extended LED ON duration is disabled **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.

0: GPO extended LED ON duration is disabled

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.

0: GPO extended LED ON duration is disabled

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.
		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	CS10_SENSITIVITY	Sensor 10 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.
		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	CS9_SENSITIVITY	Sensor 9 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.
		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	CS8_SENSITIVITY	Sensor 8 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.
		0: 50 counts/0.1 pF
		1: 50 counts/0.2 pF
		2: 50 counts/0.3 pF
		3: 50 counts/0.4 pF

1.5.8   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.
		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	CS14_SENSITIVITY	Sensor 14 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.
		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	CS13_SENSITIVITY	Sensor 13 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.
		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	CS12_SENSITIVITY	Sensor 12 sensitivity. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110.
		0: 50 counts/0.1 pF
		1: 50 counts/0.2 pF
		2: 50 counts/0.3 pF
		3: 50 counts/0.4 pF

1.5.9 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. **0:** Hysteresis override disabled **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. **0:** Button low baseline reset threshold override disabled **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. **0:** Button negative noise threshold override disabled **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. **0:** Button noise threshold override disabled **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_FILTE R_EN	RESERVED					PS1_WAKE _ON_APPR OACH	PS0_WAKE _ON_APPR OACH

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_APPRO ACH	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_APPRO ACH	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. **4:** Low noise attenuation **5:** Medium noise attenuation **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. **0:** Proximity hysteresis override disabled **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. **0:** Proximity low baseline reset threshold override disabled **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. **0:** Proximity negative noise threshold override disabled **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. **0:** Proximity noise threshold override disabled **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.
		0: Buzzer disabled
		1: Buzzer enabled
6 : 3	RESERVED	Reserved
2 : 0	BUZZ_FREQ	Buzzer frequency selection. This bit field is not applicable for part CY8CMBR3102.
		1: 4 kHz
		2: 2.67 kHz
		3: 2 kHz
		4: 1.6 kHz
		5: 1.33 kHz
		6: 1.14 kHz
		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.
		0: Pin function disabled
		1: Pin used as capacitive sensor
		2: Pin used as shield electrode
		3: Pin used as buzzer output
		4: Pin used as host interrupt
		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.
		0: Pin function disabled
		1: Pin used as capacitive sensor
		2: Pin used as shield electrode
		3: Pin used as buzzer output
		4: Pin used as host interrupt
		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. **0:** Filter disabled **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. **0:** Filter disabled **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
		0: System diagnostics disabled
		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 **0:** Auto-reset disabled **1:** Auto-reset enabled; timeout = 5 seconds **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. **0:** Auto-reset disabled **1:** Auto-reset enabled; timeout = 5 seconds **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. **0:** Automatic thresholds are disabled i.e. finger thresholds identified in BASE_THRESHOLDx/ FINGER_THRESHOLDx registers will be used for determining sensors' status. **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. **0:** EMC solution disabled **1:** EMC solution enabled
1	GUARD_EN	Capacitive sensing guard sensor function enable. This bit field is not applicable for part CY8CMBR3102. **0:** Guard sensor function disabled **1:** Guard sensor function enabled
0	SHIELD_EN	Capacitive sensing driven shield enable **0:** Driven shield disabled **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 - 5.5V 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.
		0: Slider 1 is enabled. Slider 2 is disabled, and its sensors are available for button sensing.
		1: Slider 1 and Slider 2 are enabled as separate sliders
		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. **0:** Linear slider (linear position indication) **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. **0:** 50 counts/0.1 pF **1:** 50 counts/0.2 pF **2:** 50 counts/0.3 pF **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. **0:** Linear slider (linear position indication) **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. **0:** 50 counts/0.1 pF **1:** 50 counts/0.2 pF **2:** 50 counts/0.3 pF **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.

0: Slider low baseline reset threshold override disabled

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. **0:** Slider negative noise threshold override disabled **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. **0:** Slider noise threshold override disabled **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   SCRATCHPAD0

Address: 0x7a

Bits	7	6	5	4	3	2	1	0
Host Access	RW							
Device Access	RW							
Bit Name	SCRATCHPAD0							

Scratchpad data. User can write to and read from this register for general purposes like maintaining revision history of the configuration etc.

Bits	Name	Description
7 : 0	SCRATCHPAD0	User data. The valid value of this bit field ranges from 0 to 255.

1.5.76   SCRATCHPAD1

Address: 0x7b

Bits	7	6	5	4	3	2	1	0
Host Access	RW							
Device Access	RW							
Bit Name	SCRATCHPAD1							

Scratchpad data. User can write to and read from this register for general purposes like maintaining revision history of the configuration etc.

Bits	Name	Description
7 : 0	SCRATCHPAD1	User data. The valid value of this bit field ranges from 0 to 255.

1.5.77   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.

1.5.78   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. **0:** GPO is low **1:** GPO is high
6	GPO6	GPO6 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** GPO is low **1:** GPO is high
5	GPO5	GPO5 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** GPO is low **1:** GPO is high
4	GPO4	GPO4 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. **0:** GPO is low **1:** GPO is high
3	GPO3	GPO3 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. **0:** GPO is low **1:** GPO is high
2	GPO2	GPO2 state setting. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. **0:** GPO is low **1:** GPO is high
1	GPO1	GPO1 state setting. This bit field is not applicable for part CY8CMBR3106S. **0:** GPO is low **1:** GPO is high
0	GPO0	GPO0 state setting. This bit field is not applicable for part CY8CMBR3106S. **0:** GPO is low **1:** GPO is high

1.5.79 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. The register's default value is an invalid value which is 255. The valid value of this bit field ranges from 0 to 15.

1.5.80   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

0: There is no command currently executing. The device writes this value at startup and upon completion of any command.

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.

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.

7: The device discontinues scanning and enters the low power mode. The device will exit this mode upon an I2C address match event.

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.

9: The device resets the Advanced Low Pass filter for proximity sensor PS0

10: The device resets the Advanced Low Pass filter for proximity sensor PS1

255: The device resets itself

1.5.81   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
		0: There is no error
		1: An error occurred

1.5.82   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.
		0: Command was successful
		253: Write to flash failed
		254: Stored configuration CRC checksum (in CONFIG_CRC register) did not match calculated configuration CRC checksum
		255: Invalid command

1.5.83   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
		0: A configuration other than the factory default configuration is loaded
		1: The factory default configuration is loaded

1.5.84 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.

1.5.85   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.

1.5.86   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.

1.5.87   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.

1.5.88   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.

1.5.89   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 **0:** No error was detected **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.

1.5.90   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. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
14	CS14	Sensor 14 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
13	CS13	Sensor 13 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
12	CS12	Sensor 12 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
11	CS11	Sensor 11 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
10	CS10	Sensor 10 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Cp is less than or equal to 45 pF or sensor not tested **1:** Cp is greater than 45 pF
9	CS9	Sensor 9 Cp indication. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.

1.5.90   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

1.5.91   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. **0:** No short circuit to Vdd or sensor not tested **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. **0:** No short circuit to Vdd or sensor not tested **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. **0:** No short circuit to Vdd or sensor not tested **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. **0:** No short circuit to Vdd or sensor not tested **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. **0:** No short circuit to Vdd or sensor not tested **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. **0:** No short circuit to Vdd or sensor not tested **1:** Short circuit to Vdd detected
9	CS9	Sensor 9 short to Vdd indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.

1.5.91   **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

1.5.92   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. **0:** No short circuit to GND or sensor not tested **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. **0:** No short circuit to GND or sensor not tested **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. **0:** No short circuit to GND or sensor not tested **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. **0:** No short circuit to GND or sensor not tested **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. **0:** No short circuit to GND or sensor not tested **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. **0:** No short circuit to GND or sensor not tested **1:** Short circuit to GND detected
9	CS9	Sensor 9 short to GND indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108.

1.5.92   **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

1.5.93   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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.

1.5.93   **SNS_SNS_SHORT** (continued)

		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		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.
		0: No short circuit to another sensor or shield, or sensor not tested
		1: Short circuit to another sensor or shield detected
1	CS1	Sensor 1 short to another sensor indicator
		0: No short circuit to another sensor or shield, or sensor not tested
		1: Short circuit to another sensor or shield detected
0	CS0	Sensor 0 short to another sensor indicator
		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.)
		1: Short circuit to another sensor or shield detected

1.5.94　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

1.5.95   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. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
14	CS14	Sensor 14 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
13	CS13	Sensor 13 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
12	CS12	Sensor 12 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
11	CS11	Sensor 11 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
10	CS10	Sensor 10 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** Sensor is inactive (not touched) **1:** Sensor is active (touched)
9	CS9	Sensor 9 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.

1.5.95 BUTTON_STAT (continued)

		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
8	CS8	Sensor 8 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
7	CS7	Sensor 7 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
6	CS6	Sensor 6 button status indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
5	CS5	Sensor 5 button status indicator. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
4	CS4	Sensor 4 button status indicator. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
3	CS3	Sensor 3 button status indicator. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)
2	CS2	Sensor 2 button status indicator. This bit field is not applicable for part CY8CMBR3102.
		0: Sensor is inactive (not touched)
		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.
		0: Sensor is inactive (not touched)
		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.
		0: Sensor is inactive (not touched)
		1: Sensor is active (touched)

1.5.96 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. **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared **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. **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared **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. **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared **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. **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared **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. **0:** Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared **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.

1.5.96   LATCHED_BUTTON_STAT (continued)

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

1.5.96 LATCHED_BUTTON_STAT (continued)

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

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.

0: Sensor has been inactive (not touched) since the last time LATCHED_BUTTON_STAT was cleared

1: Sensor has been active (touched) since the last time LATCHED_BUTTON_STAT was cleared

1.5.97   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)

1.5.98   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

1.5.99　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.

1.5.100   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.

1.5.101 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.

1.5.102 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.

1.5.103 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.

1.5.104   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.

1.5.105   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.

1.5.106 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.

1.5.107 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.

1.5.108   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 un-defined, 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_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 un-defined, 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_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 un-defined, and should be ignored. The value of this bit field ranges from 0 to 255. This bit field is not applicable for part CY8CMBR3102.

1.5.111   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.

1.5.112 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 un-defined, 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.

1.5.113   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 un-defined, 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.

1.5.114　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.

1.5.115 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.

1.5.116 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 un-defined, 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_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 un-defined, 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 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 un-defined, 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.

1.5.119   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.

1.5.120 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. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
6	GPO6	GPO6 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
5	GPO5	GPO5 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108, CY8CMBR3110. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
4	GPO4	GPO4 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S, CY8CMBR3108. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
3	GPO3	GPO3 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
2	GPO2	GPO2 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
1	GPO1	GPO1 value indicator. This bit field is not applicable for parts CY8CMBR3102, CY8CMBR3106S. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle
0	GPO0	GPO0 value indicator. This bit field is not applicable for part CY8CMBR3106S. **0:** Low DC output/PWM duty cycle **1:** High DC output/PWM duty cycle

1.5.121   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.

1.5.122   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.

1.5.123 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.

1.5.124   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.

1.5.125 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.

1.5.126   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.

1.5.127   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.

1.5.128 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)				
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
*C	4659649	02/12/2015	PRIA	Added Register category details to "Register Map" on page 24
*D	5183492	03/21/2016	PRIA	Added Scratchpad registers SCRATCHPAD0 and SCRATCHPAD1 for general purpose use.
*E	5761355	06/05/2017	SHEA	Updated logo and copyright information.