ICM-45687 Datasheet

High Performance Dual-Interface (UI + AUX) 6-Axis Device

ICM-45687 HIGHLIGHTS

The ICM-45687 is a high-performance dual interface (UI + AUX) 6-axis MEMS MotionTracking device. It has a configurable host interface that supports I3C^{SM}, I^{2}C and SPI serial communication, and an AUX interface that supports SPI slave mode for connection to OIS controllers or I^{2}C master mode for connection to external sensors. The device features up to 8Kbytes FIFO and 2 programmable interrupts.

The ICM-45687 supports the lowest gyro and accel sensor noise in this IMU class, and has the highest stability against temperature, shock (up to 20,000g) or SMT/bend induced offset as well as immunity against out-of-band vibration induced noise. Other industry-leading features include InvenSense on-chip APEX Motion Processing engine for gesture recognition, activity classification, along with programmable digital filters, and an embedded temperature sensor.

FEATURES

- Gyroscope Noise: 3.8 mdps/√Hz & Accelerometer Noise: 70 µg/√Hz
  - Low-Noise mode 6-axis current consumption of 0.42 mA at 1600Hz
- User selectable Gyro Full-scale range (dps): ±15.625/31.25/62.5/125/250/500/1000/2000/4000
- User selectable Accelerometer Full-scale range (g): ±2/4/8/16/32
- User configurable internal pull-up/pull-downs included on I/O interfaces to reduce system costs associated with external pull-ups/pull-downs
- User configurable Output Data Rate (ODR) and FIFO Data Rate (FDR)
- User-programmable digital filters for gyro, accel, and temp sensor
- APEX Motion Functions:
  - Single Tap / Double Tap / Triple Tap Detection, Wake on Motion, Freefall Detection, Low-G Detection, High-G Detection, Activity Inactivity Detection, Bring To See, Gyro Assisted Fusion, Sensor Inference Framework, Vocal Vibration Detection
- Host interface: 12.9 MHz I3C^{SM}, 1 MHz I^{2}C, 24 MHz SPI

APPLICATIONS

- Head Mounted Displays; AR/VR Controllers; Wearables; IoT Applications

BLOCK DIAGRAM

ORDERING INFORMATION

PART	TEMP RANGE	PACKAGE
ICM-45687†	−40°C to +85°C	2.5x3mm 14-Pin LGA

†Denotes RoHS and Green-Compliant Package

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document is a product specification, providing a description, specifications, and design related information on the ICM-45687 Dual-Interface MotionTracking device. The device is housed in a small 2.5x3x0.81 mm 14-pin LGA package.

1.2 PRODUCT OVERVIEW

The ICM-45687 is a 6-axis MotionTracking device with a main interface for UI and an AUX interface that supports SPI slave mode for connection to OIS controllers or I^2C master mode for connection to external sensors. It combines a 3-axis gyroscope, and a 3-axis accelerometer in a small 2.5x3x0.81 mm (14-pin LGA) package. The device supports independent data paths for UI and the auxiliary interface, with independent control for full-scale range (FSR) and output data rate (ODR).

ICM-45687 also features up to 8Kbytes FIFO that can lower the traffic on the serial bus interface, and reduce power consumption by allowing the system processor to burst read sensor data and then go into a low-power mode. ICM-45687, with its 6-axis integration, enables manufacturers to eliminate the costly and complex selection, qualification, and system level integration of discrete devices, guaranteeing optimal motion performance for consumers.

The gyroscope supports eight independently programmable full-scale range settings from ±15.625dps to ±4000dps for the UI path and the auxiliary path, and the accelerometer supports four independently programmable full-scale range settings from ±2g to ±32g for the UI path and the auxiliary path.

Other industry-leading features include on-chip 16-bit ADCs, programmable digital filters, an embedded temperature sensor, and programmable interrupts. The device features $I3C^{SM}$, I^2C and SPI serial interfaces, a VDD operating range of 1.71V to 3.6V, and a separate VDDIO operating range of 1.08V to 3.6V.

The host interface can be configured to support $I3C^{SM}$ slave, I^2C slave, or SPI slave modes. The $I3C^{SM}$ interface supports speeds up to 12.9MHz (data rates up to 12.9Mbps in SDR mode, 25.8Mbps in DDR mode), the I^2C interface supports speeds up to 1MHz, and the SPI interface supports speeds up to 24MHz.

User configurable internal pull-up/pull-downs are included on I/O interfaces to reduce system costs associated with external pull-ups/pull-downs.

By leveraging its patented and volume-proven CMOS-MEMS fabrication platform, which integrates MEMS wafers with companion CMOS electronics through wafer-level bonding, TDK InvenSense has driven the package size down to a footprint and thickness of 2.5x3x0.81 mm (14-pin LGA), to provide a very small yet high performance low cost package. The device provides high robustness by supporting 20,000*g* shock reliability.

1.3 APPLICATIONS

- Head Mounted Displays
- AR/VR Controllers
- Wearables
- IoT Applications

2 FEATURES

2.1 GYROSCOPE FEATURES

The triple-axis MEMS gyroscope in the ICM-45687 includes a wide range of features:

- Digital-output X-, Y-, and Z-axis angular rate sensors (gyroscopes) with independently programmable full-scale range of ±15.625, ±31.25, ±62.5, ±125, ±250, ±500, ±1000, ±2000 and ±4000 degrees/sec c for UI and auxiliary path
- Low Noise (LN) and Low Power (LP) power modes support
- Digitally-programmable low-pass filters
- Self-test

2.2 ACCELEROMETER FEATURES

The triple-axis MEMS accelerometer in ICM-45687 includes a wide range of features:

- Digital-output X-, Y-, and Z-axis accelerometer with independently programmable full-scale range of ±2*g*, ±4*g*, ±8*g,* ±16*g* and ±32*g* for UI and auxiliary path
- Low Noise (LN) and Low Power (LP) power modes support
- User-programmable interrupts
- Wake-on-motion interrupt for low power operation of applications processor
- Self-test

2.3 MOTION FEATURES

ICM-45687 includes the following motion features, also known as APEX:

- Single Tap / Double Tap / Triple Tap Detection: Issues an interrupt when a tap is detected, along with the tap type.
- Wake on Motion: Detects motion when accelerometer data exceeds a programmable threshold.
- Freefall Detection: Triggers an interrupt when device freefall is detected and outputs freefall duration.
- Low-G Detection: Triggers an interrupt when absolute value of accelerometer combined axes falls below a programmable threshold and stays below the threshold for a programmable time.
- High-G Detection: Triggers an interrupt when absolute value of accelerometer data goes above a programmable threshold and stays above the threshold for a programmable time.
- Activity Inactivity Detection: Triggers an interrupt when activity, inactivity or inactivity for a significantly longer time is detected.
- Bring To See: Triggers an interrupt when device is brought to user eyesight or when device is brought back to a resting position.
- Gyro Assisted Fusion: Provides calibrated gyroscope data and 6-axis fusion data computed from non-calibrated accelerometer and calibrated gyroscope data.
- Sensor Inference Framework: Triggers an interrupt when loaded customer algorithm model has finished classifying an activity and reports the identified activity.
- Vocal Vibration Detection: Triggers an interrupt when vocal cord vibration is detected.

2.4 ADDITIONAL FEATURES

ICM-45687 includes the following additional features:

- External clock input supports highly accurate clock input from 20kHz to 40kHz, helps to reduce system level sensitivity error, improve orientation measurement from gyroscope data, reduce ODR sensitivity to temperature and device to device variation
- Up to 8Kbytes FIFO buffer enables the applications processor to read the data in bursts, default FIFO size is 2Kbytes, user can extend it up to 8kByte by disabling APEX functions
- EDMP Enhanced Digital Motion Processor for implementing motion algorithms
- 20-bits data format support in FIFO for high-data resolution
- User-programmable digital filters for gyroscope, accelerometer, and temperature sensor
- Main interface: 12.9MHz I3C^{SM} (data rates up to 12.9Mbps in SDR mode, 25.8Mbps in DDR mode) / 1 MHz I^2C / 24 MHz SPI slave host interface
- Auxiliary interface: 400 kHz I^2C master
- User configurable internal pull-up/pull-downs included on I/O interfaces to reduce system costs associated with external pull-ups/pull-downs
- User configurable Output Data Rate (ODR) and FIFO Data Rate (FDR)
- Digital-output temperature sensor
- Smallest and thinnest LGA package for portable devices: 2.5x3x0.81 mm (14-pin LGA)
- 20,000 *g* shock tolerant
- MEMS structure hermetically sealed and bonded at wafer level
- RoHS and Green compliant

3 ELECTRICAL CHARACTERISTICS

3.1 GYROSCOPE SPECIFICATIONS

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	NOTES
GYROSCOPE SENSITIVITY						
Full-Scale Range	GYRO_UI_FS_SEL =0; GYRO_AUX1_FS_SEL =0		±4000		º/s	3
	GYRO_UI_FS_SEL =1; GYRO_AUX1_FS_SEL =1		±2000		º/s	3
	GYRO_UI_FS_SEL =2; GYRO_AUX1_FS_SEL =2		±1000		º/s	3
	GYRO_UI_FS_SEL =3; GYRO_AUX1_FS_SEL =3		±500		º/s	3
	GYRO_UI_FS_SEL =4; GYRO_AUX1_FS_SEL =4		±250		º/s	3
	GYRO_UI_FS_SEL =5; GYRO_AUX1_FS_SEL =5		±125		º/s	3
	GYRO_UI_FS_SEL =6; GYRO_AUX1_FS_SEL =6		±62.5		º/s	3
	GYRO_UI_FS_SEL =7; GYRO_AUX1_FS_SEL =7		±31.25		º/s	3
	GYRO_UI_FS_SEL =8; GYRO_AUX1_FS_SEL =8		±15.625		º/s	3
Gyroscope ADC Word Length	Output in two's complement format		16		bits	3, 6
Sensitivity Scale Factor	GYRO_UI_FS_SEL =0; GYRO_AUX1_FS_SEL =0		8.2		LSB/(º/s)	3
	GYRO_UI_FS_SEL =1; GYRO_AUX1_FS_SEL =1		16.4		LSB/(º/s)	3
	GYRO_UI_FS_SEL =2; GYRO_AUX1_FS_SEL =2		32.8		LSB/(º/s)	3
	GYRO_UI_FS_SEL =3; GYRO_AUX1_FS_SEL =3		65.5		LSB/(º/s)	3
	GYRO_UI_FS_SEL =4; GYRO_AUX1_FS_SEL =4		131		LSB/(º/s)	3
	GYRO_UI_FS_SEL =5; GYRO_AUX1_FS_SEL =5		262		LSB/(º/s)	3
	GYRO_UI_FS_SEL =6; GYRO_AUX1_FS_SEL =6		524.3		LSB/(º/s)	3
	GYRO_UI_FS_SEL =7; GYRO_AUX1_FS_SEL =7		1048.6		LSB/(º/s)	3
	GYRO_UI_FS_SEL =8; GYRO_AUX1_FS_SEL =8		2097.2		LSB/(º/s)	3
Sensitivity Scale Factor Initial Tolerance	Component-level, 25°C		±0.2		%	2
Sensitivity Change vs. Temperature	-40°C to +85°C, board-level		±0.01		%/ºC	1, 8
Nonlinearity	Best fit straight line; board-level, 25°C		±0.05		%	1, 8
Cross-Axis Sensitivity	Non-Orthogonality; Board-level		±0.2		%	1, 8
ZERO-RATE OUTPUT (ZRO)						
Initial ZRO Tolerance	Component-level, 25°C		±0.3		º/s	2
ZRO Change vs. Temperature	-40°C to +85°C, board-level		±0.005		º/s/ºC	1, 8
OTHER PARAMETERS						
Rate Noise Spectral Density	@ 10 Hz, 25°C		0.0038		º/s /√Hz	2, 4
Total RMS Noise	Bandwidth = 100 Hz		0.038		º/s-rms	4, 5
Gyroscope Mechanical Frequencies			29.7		kHz	2
Gyroscope Start-Up Time	Time from gyro enable to gyro drive ready		35		ms	1, 7
Output Data Rate	Low Noise Mode (LNM)	12.5		6400	Hz	3, 9
	Low Power Mode (LPM)	1.5625		400	Hz	3, 9

Table 1. Gyroscope Specifications

Notes:

1. Derived from validation or characterization of parts, not tested in production.
2. Tested in production.
3. Guaranteed by design.
4. Noise specifications shown are for low-noise mode.
5. Calculated from Rate Noise Spectral Density.
6. 20-bits data format supported in FIFO, see section 5.
7. Measurement conditions: Gyroscope ODR = 6400Hz; Register field GYRO_UI_LPFBW_SEL set to 000 (low pass filter bypassed.
8. Board-level specs performance depends on specific board design of TDK-InvenSense test boards and may not be directly reproducible with other board designs.
9. AUX1 output is fixed at 6.4kHz ODR LNM.

3.2 ACCELEROMETER SPECIFICATIONS

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	NOTES
ACCELEROMETER SENSITIVITY						
Full-Scale Range	ACCEL_UI_FS_SEL = 0; ACCEL_AUX1_FS_SEL = 0		±32		*g*	3
	ACCEL_UI_FS_SEL = 1; ACCEL_AUX1_FS_SEL = 1		±16		*g*	3
	ACCEL_UI_FS_SEL = 2; ACCEL_AUX1_FS_SEL = 2		±8		*g*	3
	ACCEL_UI_FS_SEL = 3; ACCEL_AUX1_FS_SEL = 3		±4		*g*	3
	ACCEL_UI_FS_SEL = 4; ACCEL_AUX1_FS_SEL = 4		±2		*g*	3
ADC Word Length	Output in two's complement format		16		bits	3, 6
Sensitivity Scale Factor	ACCEL_UI_FS_SEL = 0; ACCEL_AUX1_FS_SEL = 0		1,024		LSB/*g*	3
	ACCEL_UI_FS_SEL = 1; ACCEL_AUX1_FS_SEL = 1		2,048		LSB/*g*	3
	ACCEL_UI_FS_SEL = 2; ACCEL_AUX1_FS_SEL = 2		4,096		LSB/*g*	3
	ACCEL_UI_FS_SEL = 3; ACCEL_AUX1_FS_SEL = 3		8,192		LSB/*g*	3
	ACCEL_UI_FS_SEL = 4; ACCEL_AUX1_FS_SEL = 4		16,384		LSB/*g*	3
Sensitivity Scale Factor Initial Tolerance	Component-level, 25°C		±0.2		%	2
Sensitivity Change vs. Temperature	-40°C to +85°C, board-level		±0.01		%/ºC	1, 8
Nonlinearity	Best fit straight line, ±2g; board-level, 25°C		±0.05		%	1, 8
Cross-Axis Sensitivity	Non-Orthogonality; Board-level		±0.2		%	1, 8
ZERO-G OUTPUT						
Initial Tolerance	Component-level, 25°C		±10		m*g*	2
Zero-G Level Change vs. Temperature	-40°C to +85°C, board-level		±0.2		m*g*/ºC	1, 8
OTHER PARAMETERS						
Noise Spectral Density	@ 10 Hz; Up to ±8g FSR		70		µ*g*/√Hz	2, 4
	@ 10 Hz; ±16g FSR		80		µ*g*/√Hz	2, 4
	@ 10 Hz; ±32g FSR		110		µ*g*/√Hz	2, 4
RMS Noise	Bandwidth = 100 Hz; Up to ±8g FSR		0.7		mg-rms	4, 5
	Bandwidth = 100 Hz; ±16g FSR		0.8		mg-rms	4, 5
	Bandwidth = 100 Hz; ±32g FSR		1.1		mg-rms	4, 5
Accelerometer Startup Time	From sleep mode to valid data		10		ms	1, 7
Output Data Rate	Low Noise Mode (LNM)	12.5		6400	Hz	3, 9
	Low Power Mode (LPM)	1.5625		400	Hz	3, 9

Table 2. Accelerometer Specifications

Notes:

1. Derived from validation or characterization of parts, not tested in production.
2. Tested in production.
3. Guaranteed by design.
4. Noise specifications shown are for low-noise mode.
5. Calculated from Rate Noise Spectral Density.
6. 20-bits data format supported in FIFO, see section 5.
7. Measurement conditions: Gyroscope ODR = 6400Hz; Register field GYRO_UI_LPFBW_SEL set to 000 (low pass filter bypassed.
8. Board-level specs performance depends on specific board design of TDK-InvenSense test boards and may not be directly reproducible with other board designs.
9. AUX1 output is fixed at 6.4kHz ODR LNM.

3.3 ELECTRICAL SPECIFICATIONS

3.3.1 D.C. Electrical Characteristics

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	NOTES
SUPPLY VOLTAGES						
VDD		1.71	1.8	3.6	V	1
VDDIO		1.08*	1.8	3.6	V	1
SUPPLY CURRENTS						
Low-Noise Mode	6-Axis Gyroscope + Accelerometer (1600Hz ODR)		420		µA	2
	6-Axis Gyroscope + Accelerometer (6400Hz ODR)		440		µA	2
	3-Axis Accelerometer (1600Hz ODR)		125		µA	2
	3-Axis Accelerometer (6400Hz ODR)		130		µA	2
	3-Axis Gyroscope (1600Hz ODR)		365		µA	2
	3-Axis Gyroscope (6400Hz ODR)		375		µA	2
Low-Power Mode	6-Axis Gyroscope + Accelerometer (50Hz ODR; Gyro 10x AVG; Accel 4x AVG)		220		µA	2
	3-Axis Accelerometer (50Hz ODR; 4x AVG)		67		µA	2
	3-Axis Gyroscope (50Hz ODR; 10x AVG)		210		µA	2
Ultra Low-Power Mode	3-Axis Accelerometer (50Hz ODR; 1x AVG)		15		µA	2
Full-Chip Sleep Mode	At 25ºC		2.2		µA	2
TEMPERATURE RANGE						
Specified Temperature Range	Performance parameters are not applicable beyond Specified Temperature Range	-40		+85	°C	1

Table 3. D.C. Electrical Characteristics

Notes:

1. Guaranteed by design.
2. Derived from validation or characterization of parts, not tested in production.

* Important Note: When using I3C^{SM} interface the minimum VDDIO value is 1.1V.

3.3.2 A.C. Electrical Characteristics

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	NOTES
SUPPLIES						
Supply Ramp Time	Valid power-on RESET Monotonic ramp. Ramp rate is 10% to 90% of the final value	0.01		1	ms	1
Power Supply Noise	V_{DD}=1.8V or 3.6V, up to 1MHz		10	50	mV peak-peak	1
TEMPERATURE SENSOR						
Operating Range	Ambient	-40		85	°C	1
25°C Output	Output in two's complement format		0		LSB	3
ADC Resolution			16		bits	2
ODR	With Filter	1.5625		3200	Hz	2, 4
Room Temperature Offset	25°C	-5		5	°C	3
Stabilization Time (fixed number of clock cycles)				0.014	sec	2
Sensitivity	Trimmed		128		LSB/°C	1
Sensitivity for FIFO data	Trimmed		2		LSB/°C	1
POWER-ON RESET						
Start-up time for register read/write	From power-up			1	ms	1
I²C ADDRESS						
I²C ADDRESS	AP_AD0 = 0 AP_AD0 = 1		1101000 1101001			
DIGITAL INPUTS (FSYNC, SCLK, SDI, CS)						
V_{IH}, High Level Input Voltage		0.7*VDDIO		VDDIO + 0.5V	V	1
V_{IL}, Low Level Input Voltage		-0.5V		0.3*VDDIO	V	
C_I, Input Capacitance			<10		pF	
DIGITAL OUTPUT (SDO, INT1, INT2)						
V_{OH}, High Level Output Voltage	R_{LOAD}=1 MΩ;	0.9*VDDIO			V	1
V_{OL1}, LOW-Level Output Voltage	R_{LOAD}=1 MΩ;			0.1*VDDIO	V	
$V_{OL.INT}$, INT Low-Level Output Voltage	OPEN=1, 0.3 mA sink Current			0.1	V	
Output Leakage Current	OPEN=1		100		nA	
t_{INT}, INT Pulse Width	int0_tpulse_duration= 0 , 1 (100µs, 8µs) int1_tpulse_duration= 0 , 1 (100µs, 8µs)		100 or 8	100	µs	
I²C I/O (SCL, SDA)						
V_{IL}, LOW-Level Input Voltage		-0.5V		0.3*VDDIO	V	1
V_{IH}, HIGH-Level Input Voltage		0.7*VDDIO		VDDIO + 0.5V	V	
V_{hys}, Hysteresis			0.1*VDDIO		V	
V_{OL}, LOW-Level Output Voltage	3 mA sink current	0		0.4	V	
I_{OL}, LOW-Level Output Current	V_{OL}=0.4 V V_{OL}=0.6 V		3 6		mA mA	
Output Leakage Current			100		nA	
t_{of}, Output Fall Time from V_{IHmax} to V_{ILmax}	C_b bus capacitance in pf	20+0.1C_b		300	ns	
INTERNAL CLOCK SOURCE						
Clock Frequency Initial Tolerance	Gyro inactive; 25°C	-1.25		+1.25	%	1
	Gyro active; 25°C	-1.25		+1.25	%	1
Frequency Variation over Temperature	Gyro inactive; -40°C to +85°C			±3	%	1
	Gyro active; -40°C to +85°C			±1	%	1

Table 4. A.C. Electrical Characteristics

Notes:

1. Based on design. Not tested in production.
2. Guaranteed by design.
3. Production tested.
4. Temperature sensor ODR is the higher value between gyroscope and accelerometer ODR.

3.4 I²C TIMING CHARACTERIZATION

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

Parameters	Conditions	Min	Typical	Max	Units	Notes
I²C TIMING (Host Interface)	**I²C FAST-MODE PLUS**					
f_{SCL}, SCL Clock Frequency				1	MHz	1
$t_{HD.STA}$, (Repeated) START Condition Hold Time		0.26			µs	1
t_{LOW}, SCL Low Period		0.50			µs	1
t_{HIGH}, SCL High Period		0.26			µs	1
$t_{SU.STA}$, Repeated START Condition Setup Time		0.26			µs	1
$t_{HD.DAT}$, SDA Data Hold Time		0			µs	1
$t_{SU.DAT}$, SDA Data Setup Time		50			ns	1
t_r, SDA and SCL Rise Time	C_b bus cap. from 30 to 130 pF			120	ns	1, 2
t_f, SDA and SCL Fall Time	C_b bus cap. from 30 to 130 pF	20 x (VDD / 5.5 V)		120	ns	1, 2
$t_{SU.STO}$, STOP Condition Setup Time		0.26			µs	1
t_{BUF}, Bus Free Time Between STOP and START Condition		0.50			µs	1
C_b, Capacitive Load for each Bus Line		30		130	pF	1
$t_{VD.DAT}$, Data Valid Time				0.45	µs	1
$t_{VD.ACK}$, Data Valid Acknowledge Time				0.45	µs	1

Table 5. I²C Host Interface Timing Characteristics

Notes:

1. Based on characterization of 5 parts over temperature and voltage as mounted on evaluation board or in sockets.
2. Transition times are defined between thresholds: 0.3*VDDIO, 0.7*VDDIO.

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

Parameters	Conditions	Min	Typical	Max	Units	Notes
I²C TIMING (Master Interface)	**I²C FAST-MODE**					
f_{SCL}, SCL Clock Frequency				400	kHz	1
$t_{HD.STA}$, (Repeated) START Condition Hold Time		0.60			µs	1
t_{LOW}, SCL Low Period		1.30			µs	1
t_{HIGH}, SCL High Period		0.60			µs	1
$t_{SU.STA}$, Repeated START Condition Setup Time		0.60			µs	1
$t_{HD.DAT}$, SDA Data Hold Time		0			µs	1
$t_{SU.DAT}$, SDA Data Setup Time		100			ns	1
t_r, SDA and SCL Rise Time	C_b bus cap. from 30 to 200 pF	20		300	ns	1, 2
t_f, SDA and SCL Fall Time	C_b bus cap. from 30 to 200 pF	20 x (VDD / 5.5 V)		300	ns	1, 2
$t_{SU.STO}$, STOP Condition Setup Time				0.60	µs	1
t_{BUF}, Bus Free Time Between STOP and START Condition		1.30			µs	1
C_b, Capacitive Load for each Bus Line		30		200	pF	1
$t_{VD.DAT}$, Data Valid Time				0.90	µs	1
$t_{VD.ACK}$, Data Valid Acknowledge Time				0.90	µs	1

Table 6. I²C Master Interface Timing Characteristics

Notes:

1. Based on characterization of 5 parts over temperature and voltage as mounted on evaluation board or in sockets.
2. Transition times are defined between thresholds: 0.3*VDDIO, 0.7*VDDIO.

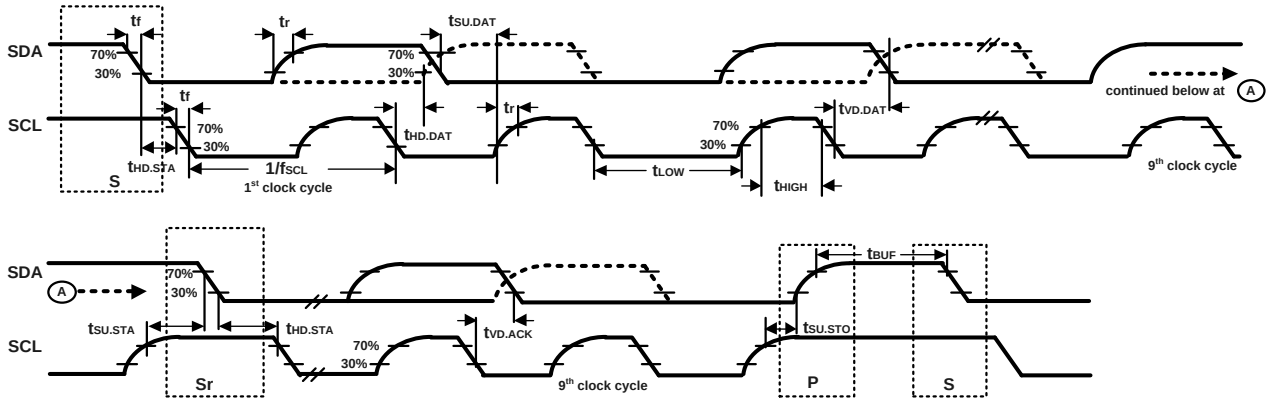

Figure 1. I²C Bus Timing Diagram

3.5 SPI TIMING CHARACTERIZATION – 4-WIRE SPI MODE

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETERS	CONDITIONS	VDDIO < 1.71V		VDDIO ≥ 1.71V			
		MIN	MAX	MIN	MAX	UNITS	NOTES
SPI TIMING							
f_{SPC}, SCLK Clock Frequency	Default		20		24	MHz	1
t_{LOW}, SCLK Low Period		23.5		17		ns	1
t_{HIGH}, SCLK High Period		22.5		17		ns	1
$t_{SU.CS}$, CS Setup Time		17		17		ns	1
$t_{HD.CS}$, CS Hold Time		5		5		ns	1
$t_{SU.SDI}$, SDI Setup Time		13		13		ns	1
$t_{HD.SDI}$, SDI Hold Time		8		8		ns	1
$t_{VD.SDO}$, SDO Valid Time	C_{load} = 20 pF		18.5		18.5	ns	1
$t_{HD.SDO}$, SDO Hold Time	C_{load} = 20 pF	3.5		3.5		ns	1
$t_{DIS.SDO}$, SDO Output Disable Time			28		28	ns	1

Table 7. 4-Wire SPI Timing Characteristics

Notes:

1. Based on characterization of 5 parts over temperature and voltage as mounted on evaluation board or in sockets

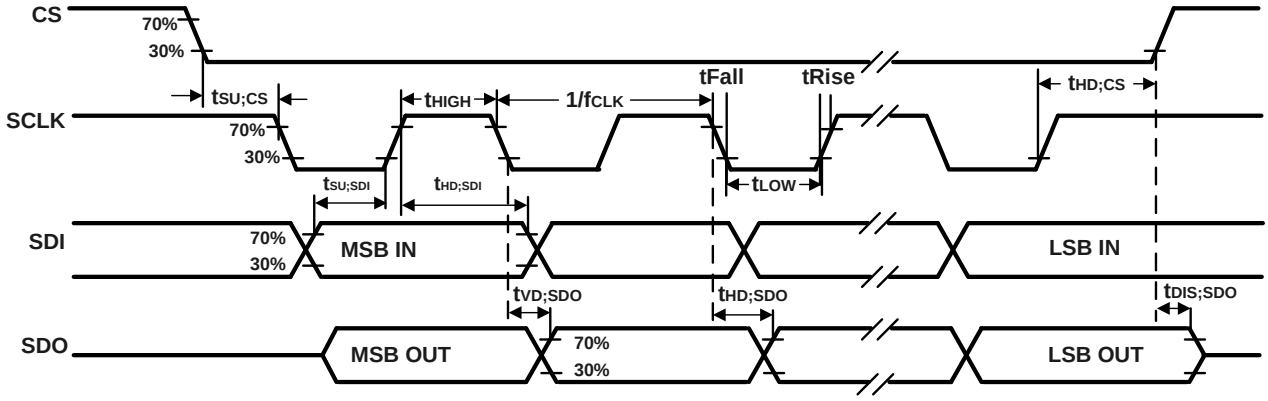

Figure 2. 4-Wire SPI Bus Timing Diagram

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3.6 SPI TIMING CHARACTERIZATION – 3-WIRE SPI MODE

Typical Operating Circuit of section 4.2, VDD = 1.8 V, VDDIO = 1.8V, T_A=25°C, unless otherwise noted.

PARAMETERS	CONDITIONS	VDDIO < 1.71V		VDDIO ≥ 1.71V			
		MIN	MAX	MIN	MAX	UNITS	NOTES
SPI TIMING							
f_{SPC}, SCLK Clock Frequency	Default		20		24	MHz	1
t_{LOW}, SCLK Low Period		23.5		17		ns	1
t_{HIGH}, SCLK High Period		22.5		17		ns	1
$t_{SU.CS}$, CS Setup Time		17		17		ns	1
$t_{HD.CS}$, CS Hold Time		5		5		ns	1
$t_{SU.SDIO}$, SDIO Input Setup Time		13		13		ns	1
$t_{HD.SDIO}$, SDIO Input Hold Time		8		8		ns	1
$t_{VD.SDIO}$, SDIO Output Valid Time	C_{load} = 20 pF		18.5		18.5	ns	1
$t_{HD.SDIO}$, SDIO Output Hold Time	C_{load} = 20 pF	3.5		3.5		ns	1
$t_{DIS.SDIO}$, SDIO Output Disable Time			28		28	ns	1

Table 8. 3-Wire SPI Timing Characteristics

Notes:

1. Based on characterization of 5 parts over temperature and voltage as mounted on evaluation board or in sockets

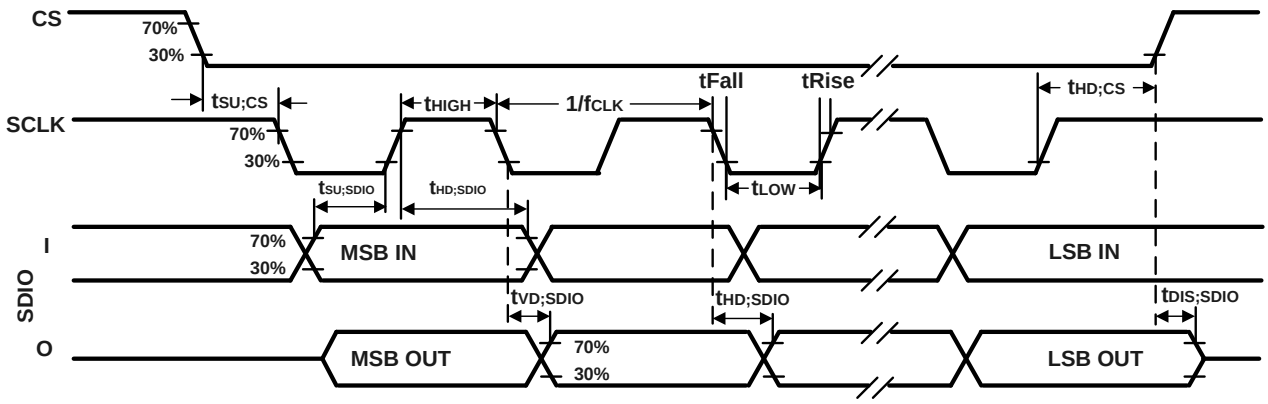

Figure 3. 3-Wire SPI Bus Timing Diagram

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3.7 ABSOLUTE MAXIMUM RATINGS

Stress above those listed as “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these conditions is not implied. Exposure to the absolute maximum ratings conditions for extended periods may affect device reliability.

Parameter	Rating
Supply Voltage, VDD	-0.5 V to +4 V
Supply Voltage, VDDIO	-0.5 V to +4 V
Input Voltage Level (FSYNC, SCL, SDA)	-0.5 V to VDDIO + 0.5 V
Acceleration (Any Axis, unpowered)	20,000g for 0.2 ms
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +125°C
Electrostatic Discharge (ESD) Protection	2 kV (HBM); 500 V (CDM)
Latch-up	JEDEC Class II (2), 125°C ±100 mA

Table 9. Absolute Maximum Ratings

4 APPLICATIONS INFORMATION

4.1 PIN OUT DIAGRAM AND SIGNAL DESCRIPTION

Pin Number	Pin Name	Single Interface Mode	Dual Interface OIS Mode	Dual Interface I²C Master Mode	Notes
1	AP_SDO / AP_AD0	AP_SDO: AP SPI serial data output (4-wire mode); AP_AD0: AP I3C^{SM} / I²C slave address LSB	AP_SDO: AP SPI serial data output (4-wire mode); AP_AD0: AP I3C^{SM} / I²C slave address LSB	AP_SDO: AP SPI serial data output (4-wire mode); AP_AD0: AP I3C^{SM} / I²C slave address LSB	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_ap_sdo_pe_trim_d2a[0] and pads_ap_sdo_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_ap_sdo_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_ap_sdo_pud_trim_d2a[0] = 0 (1). If the AP interface is active, the internal pull-up should be disabled by setting pads_ap_sdo_pe_trim_d2a[0] = 0.
2	RESV / AUX1_SDIO / AUX1_SDI / MAS_DA	RESV: No Connect or Connect to VDDIO or Connect to GND	AUX1_SDIO: AUX1 SPI serial data IO (3-wire mode); AUX1_SDI: AUX1 SPI serial data input (4-wire mode)	MAS_DA: I²C serial master data	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_aux_sdi_tp1_tp_pe_trim_d2a[0] and pads_aux_sdi_tp1_tp_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_aux_sdi_tp1_tp_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_aux_sdi_tp1_tp_pud_trim_d2a[0] = 0 (1). If the AUX1 interface is active, the internal pull-up should be disabled by setting pads_aux1_sdi_pe_trim_d2a[0] = 0. If pin2 is no connect, leave pads_aux1_sdi_pe_trim_d2a[0] = 1. If pin2 is connected to VDDIO or GND, disable internal pull-up by setting pads_aux1_sdi_pe_trim_d2a[0] = 0.
3	RESV AUX1_SCLK / MAS_CLK	RESV: No Connect or Connect to VDDIO or Connect to GND	AUX1_SCLK: AUX1 SPI serial clock	MAS_CLK: I²C serial master clock	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_aux_sclk_tp2_tp_pe_trim_d2a[0] and pads_aux_sclk_tp2_tp_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_aux_sclk_tp2_tp_pe_trim_d2a[0] = 0 (1) and internal pull direction down

					(up) can be set by pads_aux_sclk_tp2_tp_pud_trim_d2a[0] = 0 (1). If the AUX1 interface is active, the internal pull-up should be disabled by setting pads_aux1_sclk_pe_trim_d2a[0] = 0. If pin3 is no connect, leave pads_aux1_sclk_pe_trim_d2a[0] = 1. If pin3 is connected to VDDIO or GND, disable internal pull-up by setting pads_aux1_sclk_pe_trim_d2a[0] = 0.
4	INT1 / INT	INT1: Interrupt 1 (Note: INT1 can be push-pull or open drain); INT: All interrupts mapped to pin 4	INT1: Interrupt 1 (Note: INT1 can be push-pull or open drain); INT: All interrupts mapped to pin 4	INT1: Interrupt 1 (Note: INT1 can be push-pull or open drain); INT: All interrupts mapped to pin 4	By default, internal pull-up is disabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_int1_tp0_tp_pe_trim_d2a[0] and pads_int1_tp0_tp_pud_trim_d2a[0]. Internal pull can be disabled (enabled) by configuring pads_int1_tp0_tp_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_int1_tp0_tp_pud_trim_d2a[0] = 0 (1).
5	VDDIO	VDDIO: IO power supply voltage	VDDIO: IO power supply voltage	VDDIO: IO power supply voltage	
6	GND	GND: Power supply ground	GND: Power supply ground	GND: Power supply ground	
7	RESV	RESV: No Connect or Connect to VDDIO or Connect to GND	RESV: No Connect or Connect to VDDIO or Connect to GND	RESV: No Connect or Connect to VDDIO or Connect to GND	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_pin7_pe_trim_d2a[0] and pads_pin7_cs_pud_trim_d2a[0]. Internal pull can be disabled (enabled) by configuring pads_pin7_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_pin7_cs_pud_trim_d2a[0] = 0 (1). If pin7 is no connect, leave pads_pin7_pe_trim_d2a[0] = 1. If pin7 is connected to VDDIO or GND, disable internal pull-up by setting pads_pin7_pe_trim_d2a[0] = 0.
8	VDD	VDD: Power supply voltage	VDD: Power supply voltage	VDD: Power supply voltage	
9	INT2 / FSYNC / CLKIN	INT2: Interrupt 2 (Note: INT2 can be push-pull or open drain); FSYNC: Frame sync input; CLKIN: External clock input; If pin not used, can be No Connect or Connect to VDDIO	INT2: Interrupt 2 (Note: INT2 can be push-pull or open drain); FSYNC: Frame sync input; CLKIN: External clock input; If pin not used, can be No Connect or Connect to VDDIO	INT2: Interrupt 2 (Note: INT2 can be push-pull or open drain); FSYNC: Frame sync input; CLKIN: External clock input; If pin not used, can be No Connect or Connect to VDDIO	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_int2_pe_trim_d2a[0] and pads_int2_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_int2_pe_trim_d2a[0] = 0 (1) and internal pull direction down

					(up) can be set by pads_int2_pud_trim_d2a[0] = 0 (1). If pin9 is no connect, leave pads_int2_pe_trim_d2a[0] = 1. If pin9 is connected as an I/O, disable internal pull-up by setting pads_int2_pe_trim_d2a[0] = 0. Note: INT2 is available for AUX1 interrupt when AUX1 is enabled. INT2 is available for host interrupt only if AUX1 is disabled.
10	RESV / AUX1_CS	RESV: No Connect or Connect to VDDIO or Connect to GND	AUX1_CS: AUX1 SPI chip select	RESV: No Connect or Connect to VDDIO or Connect to GND	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_aux_cs_tp3_tp_pe_trim_d2a[0] and pads_aux_cs_tp3_tp_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_aux_cs_tp3_tp_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_aux_cs_tp3_tp_pud_trim_d2a[0] = 0 (1). If the AUX1 interface is active, the internal pull-up should be disabled by setting pads_aux1_cs_pe_trim_d2a[0] = 0. If pin10 is no connect, leave pads_aux1_cs_pe_trim_d2a[0] = 1. If pin10 is connected to VDDIO or GND, disable internal pull-up by setting pads_aux1_cs_pe_trim_d2a[0] = 0.
11	RESV / AUX1_SDO	RESV: No Connect or Connect to VDDIO or Connect to GND	AUX1_SDO: AUX1 SPI serial data output (4-wire mode); No Connect if pin not used	RESV: No Connect or Connect to VDDIO or Connect to GND	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_aux_sdo_pe_trim_d2a[0] and pads_aux_sdo_pud_trim_d2a[0]. Internal pull-up can be disabled (enabled) by configuring pads_aux_sdo_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_aux_sdo_pud_trim_d2a[0] = 0 (1). If AUX1 interface is active, the internal pull-up should be disabled by setting pads_aux1_sdo_pe_trim_d2a[0] = 0. If pin11 is no connect, leave pads_aux1_sdo_pe_trim_d2a[0] = 1. If pin11 is connected to VDDIO or GND, disable internal pull-up by setting pads_aux1_sdo_pe_trim_d2a[0] = 0.
12	AP_CS	AP_CS: AP SPI Chip select (AP SPI interface); Connect to VDDIO if using AP I3C^{SM} / I^{2}C interface	AP_CS: AP SPI Chip select (AP SPI interface); Connect to VDDIO if using AP I3C^{SM} / I^{2}C interface	AP_CS: AP SPI Chip select (AP SPI interface); Connect to VDDIO if using AP I3C^{SM} / I^{2}C interface	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull

					up/down is controlled by two registers pads_ap_cs_pe_trim_d2a[0] and pads_ap_cs_pud_trim_d2a[0]. Internal pull can be disabled (enabled) by configuring pads_ap_cs_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_ap_cs_pud_trim_d2a[0] = 0 (1). If the AP interface is active, the internal pull-up should be disabled by setting pads_ap_cs_pe_trim_d2a[0] = 0.
13	AP_SCL / AP_SCLK	AP_SCL: AP I3C^{SM} / I^{2}C serial clock; AP_SCLK: AP SPI serial clock	AP_SCL: AP I3C^{SM} / I^{2}C serial clock; AP_SCLK: AP SPI serial clock	AP_SCL: AP I3C^{SM} / I^{2}C serial clock; AP_SCLK: AP SPI serial clock	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_ap_sclk_pe_trim_d2a[0] and pads_ap_sclk_pud_trim_d2a[0]. Internal pull can be disabled (enabled) by configuring pads_ap_sclk_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_ap_sclk_pud_trim_d2a[0] = 0 (1). If the AP interface is active, the internal pull-up should be disabled by setting pads_ap_sclk_pe_trim_d2a[0] = 0.
14	AP_SDA / AP_SDIO / AP_SDI	AP_SDA: AP I3C^{SM} / I^{2}C serial data; AP_SDIO: AP SPI serial data I/O (3-wire mode); AP_SDI: AP SPI serial data input (4-wire mode)	AP_SDA: AP I3C^{SM} / I^{2}C serial data; AP_SDIO: AP SPI serial data I/O (3-wire mode); AP_SDI: AP SPI serial data input (4-wire mode)	AP_SDA: AP I3C^{SM} / I^{2}C serial data; AP_SDIO: AP SPI serial data I/O (3-wire mode); AP_SDI: AP SPI serial data input (4-wire mode)	By default, internal pull-up is enabled. The internal weak pull-up is not strong enough to replace a pull-up resistor usually used on an open-drain bus. This pin supports both internal pull up and pull-down functionality. Internal pull up/down is controlled by two registers pads_ap_sdi_pe_trim_d2a[0] and pads_ap_sdi_pud_trim_d2a[0]. Internal pull can be disabled (enabled) by configuring pads_ap_sdi_pe_trim_d2a[0] = 0 (1) and internal pull direction down (up) can be set by pads_ap_sdi_pud_trim_d2a[0] = 0 (1). If the AP interface is active, the internal pull-up should be disabled by setting pads_ap_sdi_pe_trim_d2a[0] = 0.

Table 10. Signal Descriptions

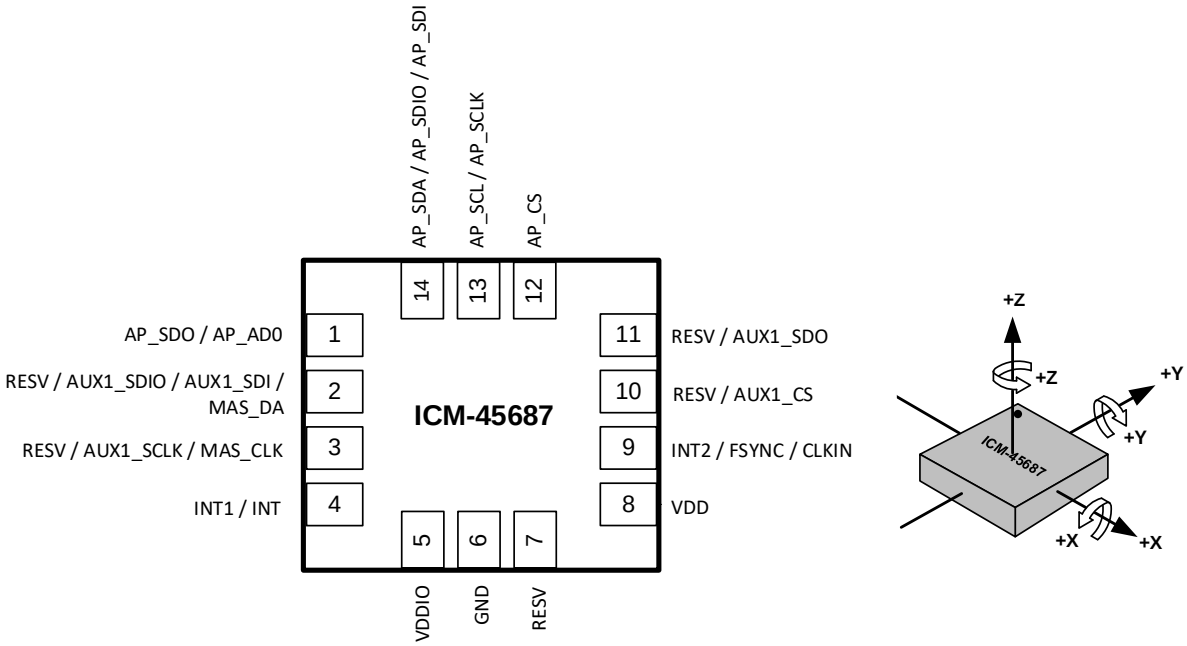
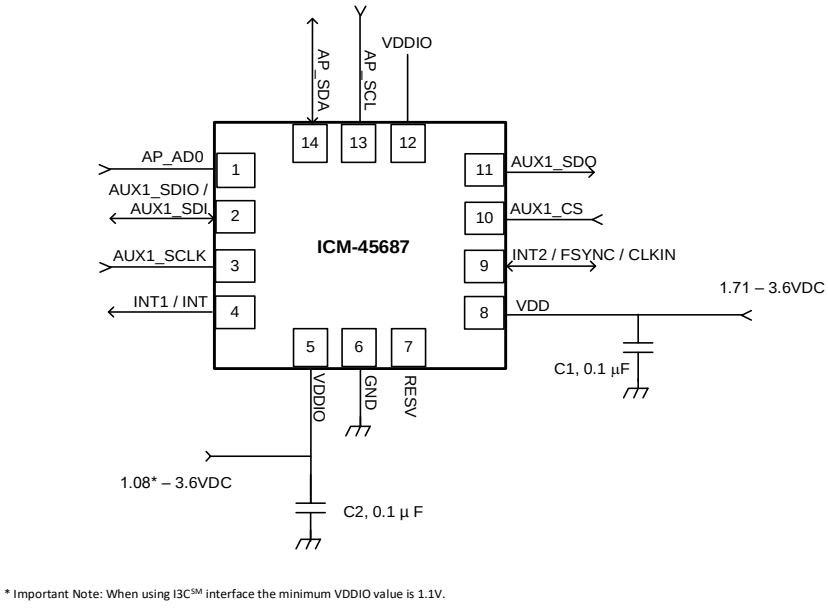


Figure 4. Pin Out Diagram for ICM-45687 2.5x3.0x0.81 mm LGA

4.2 TYPICAL OPERATING CIRCUIT (DUAL INTERFACE OIS MODE)



* Important Note: When using I3C^{SM} interface the minimum VDDIO value is 1.1V.

Figure 5. ICM-45687 Application Schematic Dual Interface OIS Mode (I3C^{SM} / I^{2}C Interface to Host)

Note: I^{2}C lines are open drain and pull-up resistors (e.g. 10 kΩ) are required.

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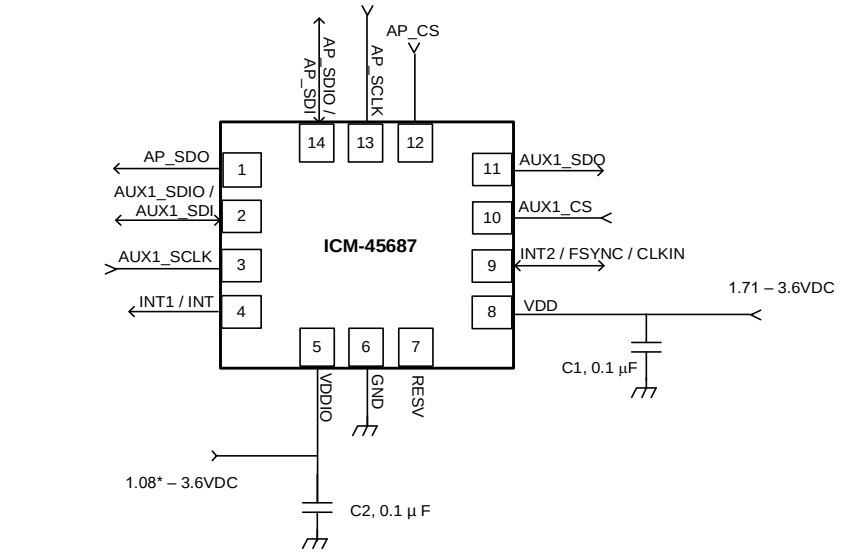
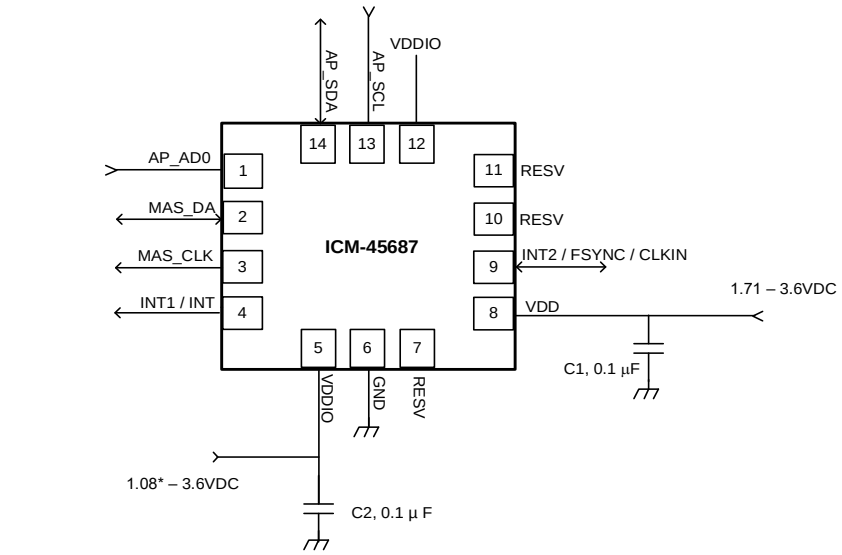


* Important Note: When using I3C[SM] interface the minimum VDDIO value is 1.1V.

Figure 6. ICM-45687 Application Schematic Dual Interface OIS Mode (SPI Interface to Host)

4.3 TYPICAL OPERATING CIRCUIT (DUAL INTERFACE I²C MASTER MODE)



* Important Note: When using I3C[SM] interface the minimum VDDIO value is 1.1V.

Figure 7. ICM-45687 Application Schematic Dual Interface I²C Master Mode (I3C[SM] / I²C Interface to Host)

Note: I²C lines are open drain and pull-up resistors (e.g. 10 kΩ) are required.

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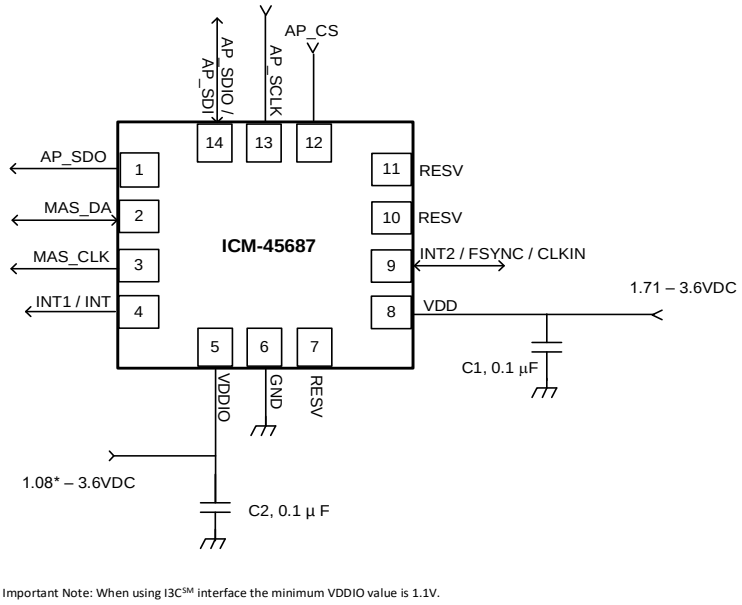

Figure 8. ICM-45687 Application Schematic Dual Interface I²C Master Mode (SPI Interface to Host)

4.4 TYPICAL OPERATING CIRCUIT (SINGLE INTERFACE MODE)

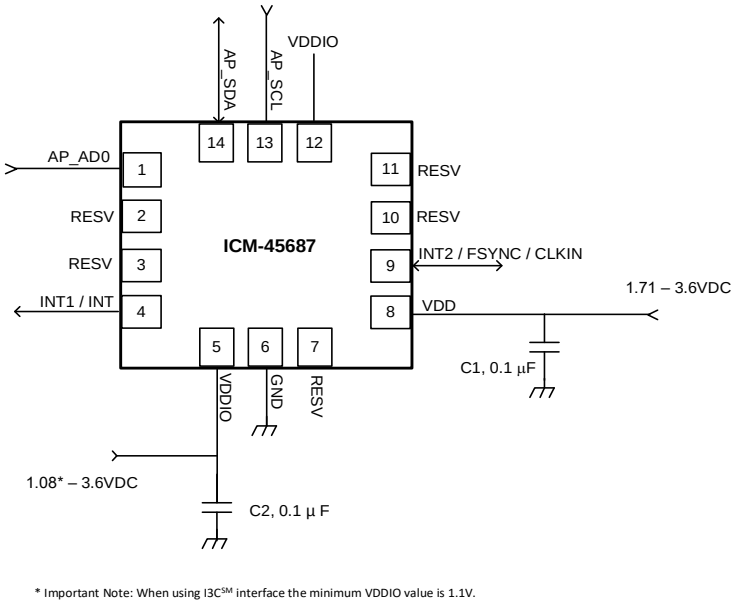

Figure 9. ICM-45687 Application Schematic Single Interface Mode (I3C℠ / I²C Interface to Host)

Note: I²C lines are open drain and pull-up resistors (e.g. 10 kΩ) are required.

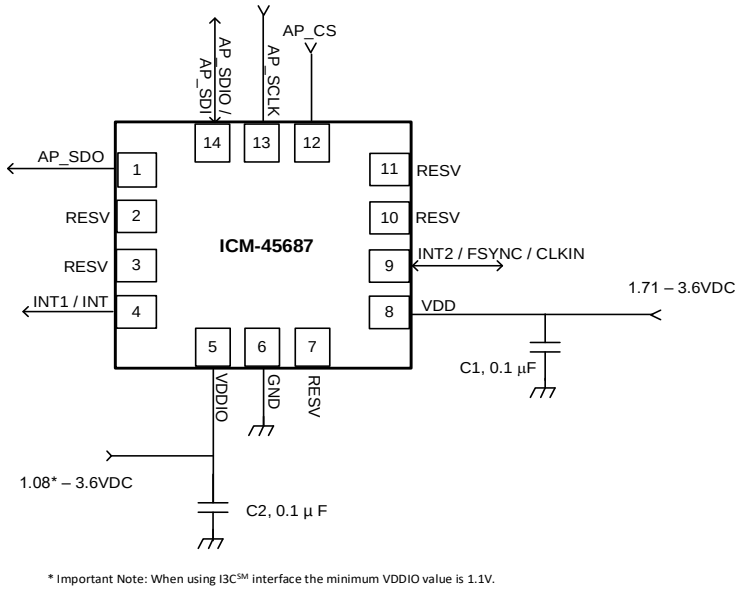

Figure 10. ICM-45687 Application Schematic Single Interface Mode (SPI Interface to Host)

4.5 BILL OF MATERIALS FOR EXTERNAL COMPONENTS

Component	Label	Specification	Quantity
VDD Bypass Capacitor	C1	X7R, 0.1µF ±10%	1
VDDIO Bypass Capacitor	C2	X7R, 0.1µF ±10%	1

Table 11. Bill of Materials

Note: Use larger bypass capacitor than 0.1µF if power supply ripple exceeds 50mV peak-to-peak.

4.6 SYSTEM BLOCK DIAGRAM

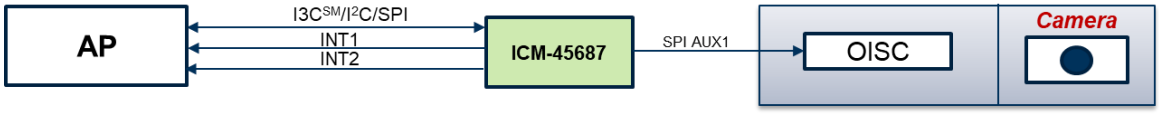

Figure 11. ICM-45687 System Block Diagram

Note: The above block diagram is an example. Please refer to the pin-out (section 4.1) for other configuration options.

4.7 OVERVIEW

The ICM-45687 is comprised of the following key blocks and functions:

- Three-axis MEMS rate gyroscope sensor with 16-bit ADCs and signal conditioning
  - 20-bits data format support in FIFO for high-data resolution (see section 5 for details)
- Three-axis MEMS accelerometer sensor with 16-bit ADCs and signal conditioning
  - 20-bits data format support in FIFO for high-data resolution (see section 5 for details)
- I3C^{SM}, I^{2}C and SPI Host Interface
- I^{2}C Master Interface for connection to external sensors
- SPI Auxiliary Interface for connection to OIS controllers
- Self-Test
- Clocking
- Sensor Data Registers
- FIFO
- Interrupts
- Digital-Output Temperature Sensor
- Bias and LDOs
- Charge Pump
- Standard Power Modes

4.8 THREE-AXIS MEMS GYROSCOPE WITH 16-BIT ADCS AND SIGNAL CONDITIONING

The ICM-45687 includes a vibratory MEMS rate gyroscope, which detects rotation about the X-, Y-, and Z- Axes. When the gyroscope is rotated about any of the sense axes, the Coriolis Effect causes a vibration that is detected by a capacitive pickoff. The resulting signal is amplified, demodulated, and filtered to produce a voltage that is proportional to the angular rate. This voltage is digitized using on-chip Analog-to-Digital Converters (ADCs) to sample each axis. The full-scale range of the gyro sensors may be digitally programmed to ±15.625, ±31.25, ±62.5, ±125, ±250, ±500, ±1000, ±2000 and ±4000degrees per second (dps).

4.9 THREE-AXIS MEMS ACCELEROMETER WITH 16-BIT ADCS AND SIGNAL CONDITIONING

The ICM-45687 includes a 3-Axis MEMS accelerometer. Acceleration along a particular axis induces displacement of a proof mass in the MEMS structure, and capacitive sensors detect the displacement. The ICM-45687 architecture reduces the accelerometers' susceptibility to fabrication variations as well as to thermal drift. When the device is placed on a flat surface, it will measure 0*g* on the X- and Y-axes and +1*g* on the Z-axis. The accelerometers' scale factor is calibrated at the factory and is nominally independent of supply voltage. The full-scale range of the digital output can be adjusted to ±2*g*, ±4*g*, ±8*g,* ±16*g* and ±32*g*.

4.10 I3C^{SM}, I^{2}C AND SPI HOST INTERFACE

The ICM-45687 communicates to the application processor using an I3C^{SM}, I^{2}C, or SPI serial interface. The ICM-45687 always acts as a slave when communicating to the application processor.

4.11 I^{2}C MASTER INTERFACE FOR CONNECTION TO EXTERNAL SENSORS

The ICM-45687 has an I^{2}C master interface for connection to external sensors. I^{2}C master pins are muxed with some of the pins used for SPI Auxiliary OIS interface, as described in section 4, so the device can be configured to support I^{2}C master mode or OIS mode.

Up to 2 external sensors can be connected on this interface and their data read into the ICM-45687. I^{2}C speed up to 400kHz is supported on the master interface. After I^{2}C master finishes reading sensor data from the external sensor(s), the received sensor data is then reformatted by the internal processor (eDMP). The reformatted external sensor data is then moved into FIFO along with other internal sensor data. The external host reads the FIFO to retrieve both the external sensor data and the internal sensor data.

- Independent of the number of external devices on the I^{2}C bus, the I^{2}C master automatically executes up to 4 I^{2}C transactions per trigger.
- The 4 I^{2}C transactions are fully independent to each other.
- Each I^{2}C transaction can be targeting any external I^{2}C device (capped at 2 external I^{2}C devices).
- Each I^{2}C transaction can be a read or a write access transaction.
- Each I^{2}C transaction can be a burst or a non-burst access transaction.
- A read transaction can be from an auto-incremented address location, or from a new address location.
- A read operation with a new address location consumes one of the 4 I^{2}C transactions per trigger.

4.12 SPI AUXILIARY INTERFACE FOR CONNECTION TO OIS CONTROLLERS

The ICM-45687 supports SPI slave and I3C^{SM} slave for connection to OIS controllers. Some pins of the SPI Auxiliary OIS interface are muxed with I^{2}C master pins, as described in Section 4. So the device can be configured to support I^{2}C master mode or OIS mode. The ICM-45687 always acts as a slave when communicating with OIS controller over this interface. The interface cannot access FIFO data.

The AUX1 interface default configuration can be checked by read only register IOC_PAD_SCENARIO through host interface. By default, AUX1 interface is enabled, and default interface for AUX1 is SPI3W or I3C^{SM}.

To change the auxiliary interface configuration, user must read/write register IOC_PAD_SCENARIO_AUX_OVRD through host interface. Note that such changes will not be reflected in the read only register IOC_PAD_SCENARIO.

4.13 SELF-TEST

Self-test allows for the testing of the mechanical and electrical portions of the sensors. The self-test for each measurement axis can be activated by means of the gyroscope and accelerometer self-test registers.

When the self-test is activated, the electronics cause the sensors to be actuated and produce an output signal. The output signal is used to observe the self-test response.

The self-test response is defined as follows:

Self-test response = Sensor output with self-test enabled – Sensor output with self-test disabled

When the value of the self-test response is within the specified min/max limits of the product specification, the part has passed self-test. When the self-test response exceeds the min/max values, the part is deemed to have failed self-test.

4.14 CLOCKING

The ICM-45687 has a flexible clocking scheme, allowing external or internal clock sources to be used for the internal synchronous circuitry. This synchronous circuitry includes the signal conditioning and ADCs, and various control circuits and registers.

The CLKIN pin on ICM-45687 provides the ability to input an external clock. A highly accurate external clock may be used rather than the internal clocks sources, if greater clock accuracy is desired. External clock input supports highly accurate clock input from 20kHz to 40kHz.

Allowable internal sources for generating the internal clock are:

a) An internal relaxation oscillator
b) Auto-select between internal relaxation oscillator and gyroscope MEMS oscillator to use the best available source

For internal sources, the only setting supporting specified performance in all modes is option b). It is recommended that option b) be used when using internal clock source.

4.15 SENSOR DATA REGISTERS

The sensor data registers contain the latest gyroscope, accelerometer, and temperature measurement data. They are read-only registers and are accessed via the serial interface. Data from these registers may be read anytime.

4.16 INTERRUPTS

Interrupt functionality is configured via the Interrupt Configuration register. Items that are configurable include the interrupt pins configuration, the interrupt latching and clearing method, and triggers for the interrupt. Items that can trigger an interrupt are (1) Clock generator locked to new reference oscillator (used when switching clock sources); (2) new data is available to be read (from the FIFO and Data registers); (3) accelerometer event interrupts; (4) FIFO watermark; (5) FIFO overflow. The interrupt status can be read from the Interrupt Status register.

4.17 DIGITAL-OUTPUT TEMPERATURE SENSOR

An on-chip temperature sensor and ADC are used to measure the ICM-45687 die temperature. The readings from the ADC can be read from the FIFO or the Sensor Data registers.

Temperature sensor register data TEMP_DATA is updated with new data at max (Accelerometer ODR, Gyroscope ODR).

4.18 BIAS AND LDOS

The bias and LDO section generates the internal supply and the reference voltages and currents required by the ICM-45687.

4.19 CHARGE PUMP

An on-chip charge pump generates the high voltage required for the MEMS oscillator.

4.20 STANDARD POWER MODES

The following table lists the user-accessible power modes for ICM-45687.

Name	Gyro	Accel
Sleep Mode	Off	Off
Standby Mode	Drive On	Off
Accelerometer Low-Power Mode	Off	Duty-Cycled
Accelerometer Ultra Low-Power Mode	Off	Duty-Cycled
Gyroscope Low-Power Mode	Duty-Cycled	Off
6-Axis Low-Power Mode	Duty-Cycled	Duty-Cycled
Accelerometer Low-Noise Mode	Off	On
Gyroscope Low-Noise Mode	On	Off
6-Axis Low-Noise Mode	On	On

Table 12. Standard Power Modes for ICM-45687

5 FIFO

The ICM-45687 contains up to 8Kbytes FIFO (default FIFO size is 2Kbytes, user can extend it up to 8Kbytes by disabling APEX functions) that is accessible via the serial interface. The FIFO configuration register determines which data is written into the FIFO. Possible choices include gyroscope data, accelerometer data, temperature readings, and FSYNC input. A FIFO counter keeps track of how many bytes of valid data are contained in the FIFO.

ICM-45687 includes FIFO Compression algorithm that allows storing compressed sensor data in FIFO frames, thus virtually providing more FIFO space. It allows to store up to 4 times the number of frames with respect to non-compressed data. Frame decompression must be performed on the Host which reads the FIFO. Compression algorithm uses a hardware lossless algorithm, based on data variation analysis of each axis. Compression ratios x2, x3, x4 are supported, providing up to 32kByte data storage capability.

A 20-bit data format support is included in one of the FIFO packets structures. When the 20-bit data format is used, the gyroscope data consists of 20-bit of actual data, the accelerometer data consists of 19-bit of actual data and the LSB is always set to 0. Irrespective of the user-full scale selection, this high-resolution 20-bit data format is always scaled to ±4000dps (131.1 LSB/dps) for gyroscope and ±32g (16384 LSB/g) for accelerometer.

FIFO packet decimation capability is provided for additional storage optimization. User can configure the FIFO Data Rate (FDR) to control the decimation rate for writing packets to the FIFO. User must disable sensors when initializing FDR control value or making changes to it.

5.1 PACKET STRUCTURE

FIFO packets are assembled in different packet sizes based on the enabled sensors. When internal sensors Accel and Gyro are enabled, the following packets are available:

- 8 bytes packet: Contains Accel-only or Gyro-only data and Temperature data (1 byte)
- 16 bytes packet: Contains Accel data, Gyro data, Temperature data (1 byte), Timestamp
- 20 bytes packet: Contains high-resolution Accel data, Gyro data, Temperature data (2 bytes), Timestamp

The following figure shows packets organization for each format (big endian mode).

Accel-only (8 bytes)

	7	0
0	Header	
1	Ax H	
2	Ax L	
3	Ay H	
4	Ay L	
5	Az H	
6	Az L	
7	Temp (1 byte)	

Gyro-only (8 bytes)

	7	0
0	Header	
1	Gx H	
2	Gx L	
3	Gy H	
4	Gy L	
5	Gz H	
6	Gz L	
7	Temp (1 byte)	

Accel+Gyro (16 bytes)

	7	0
0	Header	
1	Ax H	
2	Ax L	
3	Ay H	
4	Ay L	
5	Az H	
6	Az L	
7	Gx H	
8	Gx L	
9	Gy H	
10	Gy L	
11	Gz H	
12	Gz L	
13	Temp (1 byte)	
14	Timestamp H	
15	Timestamp L	

Accel+Gyro High Resolution (20 bytes)

	7	0
0	Header	
1	Ax H	
2	Ax L	
3	Ay H	
4	Ay L	
5	Az H	
6	Az L	
7	Gx H	
8	Gx L	
9	Gy H	
10	Gy L	
11	Gz H	
12	Gz L	
13	Temp H	
14	Temp L	
15	Timestamp H	
16	Timestamp L	
17	Ax LSB	Gx LSB
18	Ay LSB	Gy LSB
19	Az LSB	Gz LSB

When external sensors ES0 and ES1 are enabled, the following packets are available:

- 16 bytes packet: Contains 6/9 bytes ES0-only or ES1-only data
- 20 bytes frame: Contains 6/9 bytes ES0 data and ES1 data
- 32 bytes frame: Contains Accel data, Gyro data, 6/9 bytes ES0 data, ES1 data, Temperature data (1 byte), Timestamp. The 32 bytes format is always selected when at least one internal sensor and one external sensor are enabled

The following figure shows packets organization for each format (big endian mode).

5.2 FIFO HEADER

The following table shows the structure of the first byte of the FIFO header.

Bit Field	Item	Description
7	EXT_HEADER	1: FIFO header length is extended to 2 bytes. The second byte is used for compressed frame decoding fields or external sensors information 0: FIFO header length is 1 byte
6	ACCEL_EN	1: Accel is enabled or high resolution is enabled 0: Accel is not enabled and high resolution is not enabled
5	GYRO_EN	1: Gyro is enabled or high resolution is enabled 0: Gyro is not enabled and high resolution is not enabled
4	HIRES_EN	1: High-resolution is enabled (20-bytes format) 0: High-resolution is not enabled
3	TMST_FIELD_EN	1: Timestamp field is included in the packet. This requires that: a) high-resolution is enabled, or b) both Accel and Gyro are enabled, or c) either Accel or Gyro are enabled, and either ES0 or ES1 are enabled The timestamp field contains the timestamp value or FSYNC-ODR delay depending on configuration 0: Timestamp field is not included in the packet
2	FSYNC_TAG_EN	1: FSYNC is triggered and the Timestamp field contains the FSYNC-ODR delay 0: FSYNC is not triggered and the Timestamp field does not contain the FSYNC-ODR delay

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1	ACCEL_ODR	1: The ODR for accel is different for this accel data packet compared to the previous accel packet 0: The ODR for accel is the same as the previous packet with accel
0	GYRO_ODR	1: The ODR for gyro is different for this gyro data packet compared to the previous gyro packet 0: The ODR for gyro is the same as the previous packet with gyro

When External Sensors are enabled, an additional header byte is used. The second byte of the header is described below.

Bit Field	Item	Description
7:5	-	Reserved
4	ES0_6b_9b	Indicates how many bytes sensor ES0 provides 1: Sensor ES0 provides 9 bytes data 0: Sensor ES0 provides 6 bytes data
3	ES1_VLD	1: ES1 data is valid 0: ES1 data is not valid
2	ES0_VLD	1: ES0 data is valid 0: ES0 data is not valid
1	ES1_EN	1: Sensor ES1 is enabled 0: Sensor ES1 is not enabled
0	ES0_EN	1: Sensor ES0 is enabled 0: Sensor ES0 is not enabled

6 PROGRAMMABLE INTERRUPTS

The ICM-45687 has a programmable interrupt system that can generate an interrupt signal on the INT pins. Status flags indicate the source of an interrupt. Interrupt sources may be enabled and disabled individually. There are two interrupt outputs. Any interrupt may be mapped to either interrupt pin as explained in the register section. The following configuration options are available for the interrupts:

- INT1 and INT2 can be push-pull or open drain
- Level or pulse mode
- Active high or active low

Additionally, ICM-45687 includes In-band Interrupt (IBI) support for the I3C^{SM} interface.

7 EDMP

The on-chip Enhanced Digital Motion Processor (EDMP) is designed for motion processing of next-gen sensor products. It enables ultra-low power run-time and offloads computation of motion processing and sensor fusion algorithms from the host processor. It enables the host system to execute custom algorithms and issue software interrupts to the external environment. The EDMP can be deployed in the system to minimize system level power, simplify the software architecture, and save valuable MIPS on the host processor. The EDMP implements a motion sensor optimized custom ISA with special motion processing instructions.

8 APEX MOTION FUNCTIONS

The APEX features of ICM-45687 consist of:

- Single Tap / Double Tap / Triple Tap Detection: Issues an interrupt when a tap is detected, along with the tap type.
- Wake on Motion: Detects motion when accelerometer data exceeds a programmable threshold.
- Freefall Detection: Triggers an interrupt when device freefall is detected and outputs freefall duration.
- Low-G Detection: Triggers an interrupt when absolute value of accelerometer combined axes falls below a programmable threshold and stays below the threshold for a programmable time.
- High-G Detection: Triggers an interrupt when absolute value of accelerometer data goes above a programmable threshold and stays above the threshold for a programmable time.
- Activity Inactivity Detection: Triggers an interrupt when activity, inactivity or inactivity for a significantly longer time is detected.
- Bring To See: Triggers an interrupt when device is brought to user eyesight or when device is brought back to a resting position.
- Gyro Assisted Fusion: Provides calibrated gyroscope data and 6-axis fusion data computed from non-calibrated accelerometer and calibrated gyroscope data.
- Sensor Inference Framework: Triggers an interrupt when loaded customer algorithm model has finished classifying an activity and reports the identified activity.
- Vocal Vibration Detection: Triggers an interrupt when vocal cord vibration is detected.

These functions are run as software on EDMP.

9 DIGITAL INTERFACE

9.1 I3C^{SM}, I^{2}C AND SPI SERIAL INTERFACES

The internal registers and memory of the ICM-45687 can be accessed using I3C^{SM} at 12.9 MHz (data rates up to 12.9 Mbps in SDR mode, 25.8 Mbps in DDR mode), I^{2}C at 1 MHz or SPI at 24 MHz. SPI operates in 3-wire or 4-wire mode. Pin assignments for serial interfaces are described in section 4.

When the device is not in SPI mode, the default bus protocol is I^{2}C with the internal 50ns glitch filter enabled. The 1st transaction seen by the device with 0x7E as the device ID automatically turns off the internal 50ns glitch filter. This first 0x7E on the SCL/SDA bus can be at up to 2.5MHz in open-drain mode. Once the internal 50ns glitch filter is off, the device supports up to 12.9MHz bus speed.

9.2 I3C^{SM} INTERFACE

I3C^{SM} is a new 2-wire digital interface comprised of the signals serial data (SDA) and serial clock (SCLK). I3C^{SM} is intended to improve upon the I^{2}C interface, while preserving backward compatibility. The I3C^{SM} capability of this device is compliant with Version 1.0 of the MIPI Alliance Specification for I3C^{SM}. Please refer to the corresponding MIPI I3C^{SM} specification for I3C^{SM} timing information for this device.

I3C^{SM} carries the advantages of I²C in simplicity, low pin count, easy board design, and multi-drop (vs. point to point), but provides the higher data rates, simpler pads, and lower power of SPI. I3C^{SM} adds higher throughput for a given frequency, in-band interrupts (from slave to master), dynamic addressing.

ICM-45687 supports the following features of I3C^{SM}:

- SDR data rate up to 12.9 Mbps
- DDR data rate up to 25.8 Mbps
- Dynamic address allocation
- In-band Interrupt (IBI) support
- Support for asynchronous timing control mode 0
- Error detection (CRC and/or Parity)
- Common Command Code (CCC)

The ICM-45687 always operates as an I3C^{SM} slave device when communicating to the system processor, which thus acts as the I3C^{SM} master. I3C^{SM} master controls an active pullup resistance on SDA, which it can enable and disable. The pullup resistance may be a board level resistor controlled by a pin, or it may be internal to the I3C^{SM} master.

The following table shows I3C^{SM} Common Command Code (CCC) commands supported by the device.

CCC Description			Required or Optional per I3C v1.0	Supported by ICM-45687 Host Interface
	1	ENEC, broadcast mode. (Enable Events).	Required	Yes
	2	DISEC, broadcast mode. (Disable Events)	Required	Yes
	3	ENTAS0, broadcast mode. (Enter Activity State 0)	Required	Yes
	4	ENTAS1, broadcast mode. (Enter Activity State 1)	Optional	No
	5	ENTAS2, broadcast mode. (Enter Activity State 0)	Optional	No
	6	ENTAS3, broadcast mode. (Enter Activity State 0)	Optional	No

	7	RSTDAA, broadcast mode. (Reset dynamic address assignment).		Required	Yes
	8	ENTDAA, broadcast mode. (Enter dynamic address assignment).		Required	Yes
	9	DEFSLVS, broadcast mode. (Define list of slaves).		Optional	No
	10	SETMWL, broadcast mode. (Set Max Write Length).		Required	Yes
	11	SETMRL, broadcast mode. (Set Max Read Length).		Required	Yes
	12	ENTTM, broadcast mode. (Enter Test Mode).		Optional	No
	13	ENTHDR0, broadcast mode. (Enter HDR DDR mode)		Optional	Yes
	14	ENTHDR1, broadcast mode. (Enter HDR TSP mode)		Optional	No
	15	ENTHDR2, broadcast mode. (Enter HDR TSL mode)		Optional	No
	16	SETXTIME, broadcast mode. (Exchange Timing Information).			
		16.1	Defining byte = 0x7F (ST)	Optional	Yes
		16.2	Defining byte = 0xBF (DT)	Optional	Yes
		16.3	Defining byte = 0xDF (Enter Async Mode 0)	Optional	Yes
		16.4	Defining byte = 0xEF (Enter Async Mode 1)	Optional	No
		16.5	Defining byte = 0xF7 (Enter Async Mode 2)	Optional	No
		16.6	Defining byte = 0xFB (Enter Async Mode 3)	Optional	No
		16.7	Defining byte = 0xFD (Async Trigger for Async Mode 3).	Optional	No
		16.8	Defining byte = 0x3F (TPH)	Optional	Yes
		16.9	Defining byte = 0x9f (TU)	Optional	Yes
		16.10	Defining byte = 0x8F (ODR)	Optional	Yes
	17	ENEC, direct mode. (Enable Events).		Required	Yes
	18	DISEC, direct mode. (Disable Events).		Required	Yes
	19	ENTAS0, direct mode. (Enter Activity State 0).		Required	Yes
	20	ENTAS1, direct mode. (Enter Activity State 1).		Optional	No
	21	ENTAS2, direct mode. (Enter Activity State 2).		Optional	No
	22	ENTAS3, direct mode. (Enter Activity State 3).		Optional	No
	23	RSTDAA, direct mode. (Reset dynamic address assignment).		Required	Yes

	24	SETDASA, direct mode. (Set Dynamic address from static address).		Optional	Yes
	25	SETNEWDA, direct mode. (Set new dynamic address)		Required	Yes
	26	SETMWL, direct mode. (Set Max Write Length).		Required / Conditional	Yes
	27	SETMRL, direct mode. (Set Max Read length).		Required / Conditional	Yes
	28	GETMWL, direct mode. (Get Max write length).		Required / Conditional	Yes
	29	GETMRL, direct mode. (Get Max Read length).		Required / Conditional	Yes
	30	GETPID, direct mode. (Get provisional ID).		Required	Yes
	31	GETBCR, direct mode. (Get Bus Characteristics Register).		Required	Yes
	32	GETDCR, direct mode. (Get Device Characteristics Register).		Required	Yes
	33	GETSTATUS, direct mode. (Get Device Status).		Required	Yes
	34	GETACCMST, direct mode. (Get Accept Mastership).		Optional	No
	35	SETBRGTGT, direct mode. (Set Bridge Targets).		Optional	No
	36	GETMXDS, direct mod. (Get Max Data Speed).		Optional	Yes
	37	GETHDRCAP, direct mode. (Get HDR capability).		Optional	Yes
	38	SETXTIME, direct mode. (Set Exchange Timing information).			
		38.1	Defining byte = 0x7F (ST)	Optional	Yes
		38.2	Defining byte = 0xBF (DT)	Optional	Yes
		38.3	Defining byte = 0xDF (Enter Async Mode 0)	Optional	Yes
		38.4	Defining byte = 0xEF (Enter Async Mode 1)	Optional	No
		38.5	Defining byte = 0xF7 (Enter Async Mode 2)	Optional	No
		38.6	Defining byte = 0xFB (Enter Async Mode 3)	Optional	No
		38.7	Defining byte = 0xFD (Async Trigger for Async Mode 3).	Optional	No

		38.8	Defining byte = 0x3F (TPH)	Optional	Yes
		38.9	Defining byte = 0x9f (TU)	Optional	Yes
		38.10	Defining byte = 0x8F (ODR)	Optional	Yes
	39	GETXTIME, direct mode. (Get Exchange Timing Information).		Optional	Yes

Table 13. I3C^{SM} CCC Commands

9.3 I^{2}C INTERFACE

I^{2}C is a two-wire interface comprised of the signals serial data (SDA) and serial clock (SCL). In general, the lines are open-drain and bi-directional. In a generalized I^{2}C interface implementation, attached devices can be a master or a slave. The master device puts the slave address on the bus, and the slave device with the matching address acknowledges the master.

The ICM-45687 always operates as a slave device when communicating to the system processor, which thus acts as the master. SDA and SCL lines typically need pull-up resistors to VDDIO. The maximum bus speed is 1 MHz.

The slave address of the ICM-45687 is b110100X, which is 7 bits long. The LSB bit of the 7-bit address is determined by the logic level on pin AP_AD0. This allows two ICM-45687s to be connected to the same I^{2}C bus. When used in this configuration, the address of one of the devices should be b1101000 (pin AP_AD0 is logic low) and the address of the other should be b1101001 (pin AP_AD0 is logic high).

9.4 I^{2}C MASTER INTERFACE

I^{2}C master is compliant with the I^{2}C standard-Mode (max 100kbps), and I^{2}C Fast-Mode (max 400kbps). It supports 8-bit I^{2}C static address. It does not support multi-master on the I^{2}C bus. Clock-stretching by external I^{2}C devices is not supported.

9.5 SPI INTERFACE

The ICM-45687 supports 3-wire or 4-wire SPI for the host interface. The ICM-45687 always operates as a Slave device during standard Master-Slave SPI operation.

With respect to the Master, the Serial Clock output (SCLK), the Serial Data Output (SDO), the Serial Data Input (SDI), and the Serial Data IO (SDIO) are shared among the Slave devices. Each SPI slave device requires its own Chip Select (CS) line from the master.

CS goes low (active) at the start of transmission and goes back high (inactive) at the end. Only one CS line is active at a time, ensuring that only one slave is selected at any given time. The CS lines of the non-selected slave devices are held high, causing their SDO lines to remain in a high-impedance (high-z) state so that they do not interfere with any active devices.

SPI Operational Features

1. Data is delivered MSB first and LSB last
2. Data is latched on the rising edge of SCLK
3. Data should be transitioned on the falling edge of SCLK
4. The maximum frequency of SCLK is 24 MHz (it is 20MHz at VDDIO 1.2V)
5. SPI read and write operations are completed in 16 or more clock cycles (two or more bytes). The first byte contains the Register Address, and the following byte(s) contain(s) the SPI data. The first bit of the first byte contains the Read/Write bit and indicates the Read (1) operation. The following 7 bits contain the Register Address. In cases of multiple-byte Reads, data is two or more bytes:

Register Address format

MSB							**LSB**
R/W	A6	A5	A4	A3	A2	A1	A0

SPI Data format

MSB							**LSB**
D7	D6	D5	D4	D3	D2	D1	D0

6. Supports Single or Burst Read/Writes.

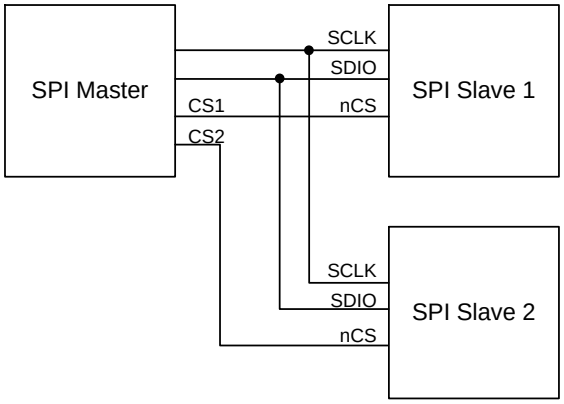

Figure 12. Typical SPI Master/Slave Configuration

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10 ASSEMBLY

This section provides general guidelines for assembling InvenSense Micro Electro-Mechanical Systems (MEMS) devices packaged in LGA package.

10.1 ORIENTATION OF AXES

The diagram below shows the orientation of the axes of sensitivity and the polarity of rotation. Note the pin 1 identifier (•) in the figure.

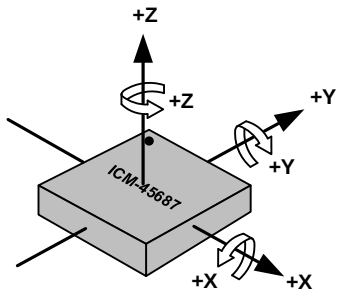

Figure 13. Orientation of Axes of Sensitivity and Polarity of Rotation

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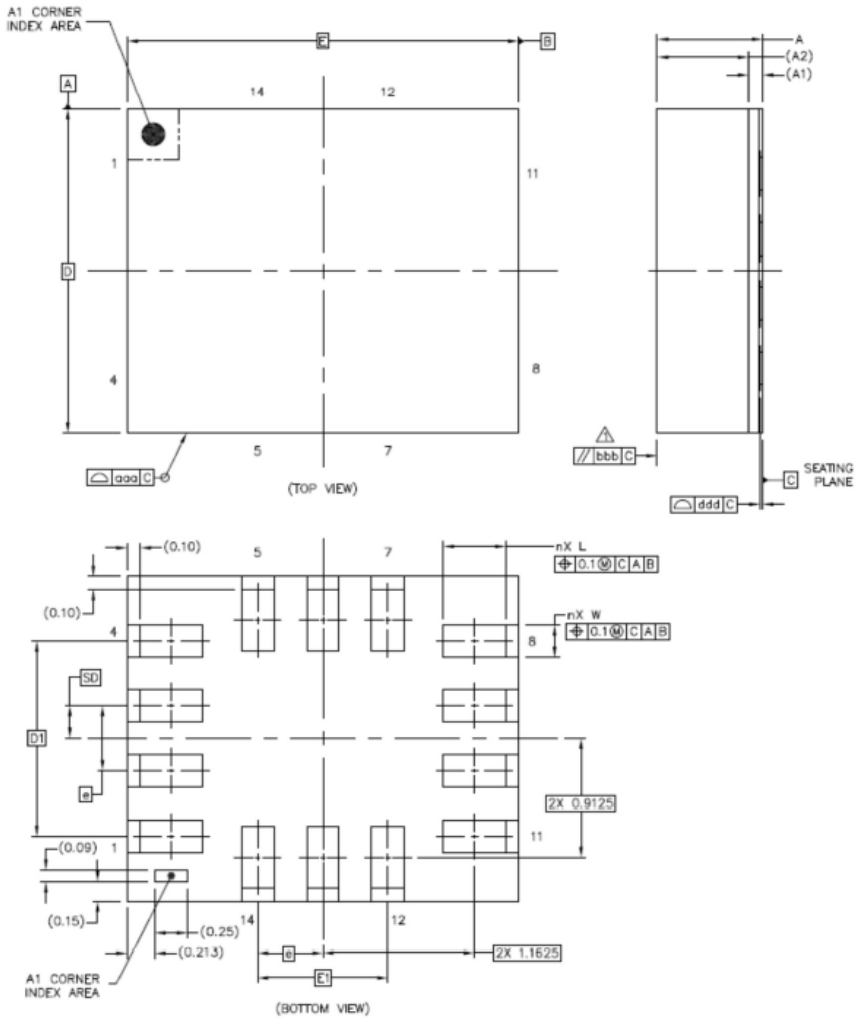
10.2 PACKAGE DIMENSIONS

14 Lead LGA (2.5x3x0.81) mm NiAu pad finish



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	SYMBOLS	DIMENSIONS IN MILLIMETERS		
		MIN	NOM	MAX
Total Thickness	A	0.76	0.81	0.86
Substrate Thickness	A1		0.105	REF
Mold Thickness	A2		0.7	REF
Body Size	D		2.5	BSC
	E		3	BSC
Lead Width	W	0.2	0.25	0.3
Lead Length	L	0.425	0.475	0.525
Lead Pitch	e		0.5	BSC
Lead Count	n		14	
Edge Ball Center to Center	D1		1.5	BSC
	E1		1	BSC
Body Center to Contact Ball	SD		0.25	BSC
	SE		---	BSC
Package Edge Tolerance	aaa		0.1	
Mold Flatness	bbb		0.2	
Coplanarity	ddd		0.08	

11 DEVICE PACKAGE IN TAPE AND REEL

ICM-45687 devices are packaged in the tape and reel as shown in the figures below.

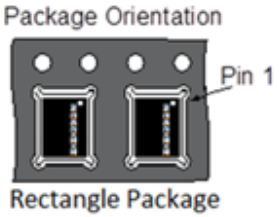

Figure 14. ICM-45687 Device Package in Tape and Reel

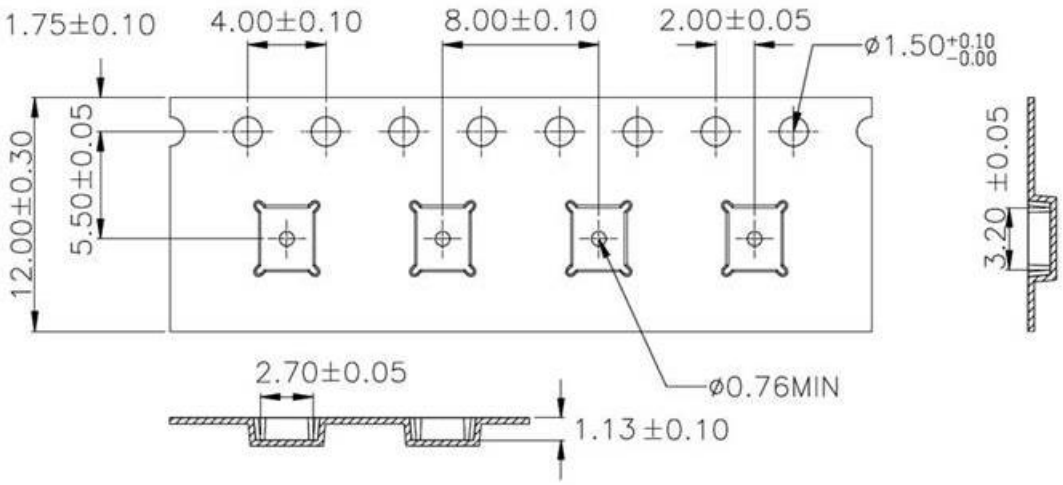

Figure 15. Tape Dimensions with ICM-45687 Device Package

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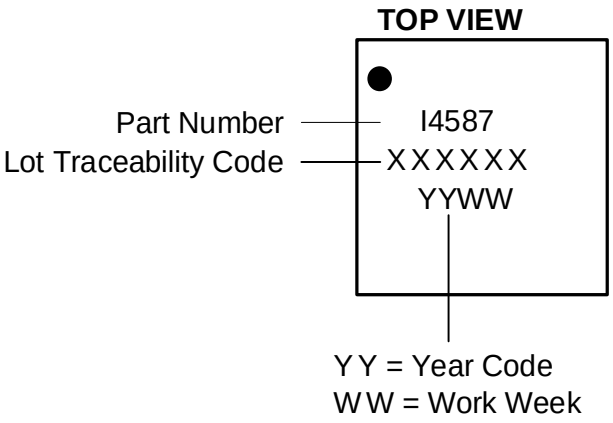
12 PART NUMBER PACKAGE MARKING

The part number package marking for ICM-45687 devices is summarized below:

Part Number	Part Number Package Marking
ICM-45687	I4587



13 INDIRECT REGISTER ACCESS

13.1 HOST INDIRECT ACCESS REGISTER (IREG)

An IREG is a register or a memory storage element that is not addressed directly by a 7-bit address. IREGs can only be addressed using an internal 16-bit address. Indirect register access procedures described in this section must be used to access all IREGs.

The host configures the internal 16-bit address by programming following registers:
{ireg_addr_15_8[7:0], ireg_addr_7_0[7:0]}.

13.2 GENERAL RULES FOR ACCESSING IREG

1. Burst-write and burst-read operations are not supported when accessing IREGs from the host.
2. Reading of an IREG is done on a read-pre-fetch basis (details in IREG READ section below).
3. A minimum wait time (refer to section MINIMUM WAIT TIME GAP below for details) is required between two consecutive read/write access to an IREG.

13.3 MINIMUM WAIT TIME-GAP

The minimum time gap between two consecutive IREG accesses for various IREG components is 4µs.

13.4 IREG WRITE

Procedure for writing to an IREG.

1. The host specifies the destination address of an IREG by programming IREG_ADDR_7_0, IREG_ADDR_15_8.
    a. If host wants to access a register in IMEM_SRAM, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    b. If host wants to access a register in IMEM_SRAM_APEX, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM_APEX registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    c. If host wants to access a register in IMEM_SRAM_STC, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM_STC registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    d. If host wants to access a register in IPREG_BAR, it should add base address 0xA000 to the address of that register shown in the IPREG_BAR registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    e. If host wants to access a register in IPREG_SYS1, it should add base address 0xA400 to the address of that register shown in the IPREG_SYS1 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    f. If host wants to access a register in IPREG_SYS2, it should add base address 0xA500 to the address of that register shown in the IPREG_SYS2 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    g. If host wants to access a register in IPREG_TOP1, it should add base address 0xA200 to the address of that register shown in the IPREG_TOP1 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
2. The host programs the write data to the IREG_DATA register.
3. The above programming steps must be performed in a single burst-write transaction to prevent an un-intended read-pre-fetch operation.
4. After the IREG_DATA register is written, an internal operation is triggered to pass the contents from the IREG_DATA register to a register pointed by {IREG_ADDR_7_0, IREG_ADDR_15_8}.
5. After the contents from the IREG_DATA register is written to the selected register, the internal 16-bit address is auto-incremented.

6. After a minimum wait time-gap, the host can write to the IREG_DATA register again, which is effectively writing to the register pointed by the post-auto-incremented address.
7. Or, after a minimum wait time-gap, the host can program a new destination address for the next write operation.

13.5 IREG READ

Procedure for reading from an IREG.

1. The host specifies the destination address of an IREG by programming IREG_ADDR_7_0, IREG_ADDR_15_8.
    a. If host wants to access a register in IMEM_SRAM, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    b. If host wants to access a register in IMEM_SRAM_APEX, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM_APEX registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    c. If host wants to access a register in IMEM_SRAM_STC, it should add base address 0x0000 to the address of that register shown in the IMEM_SRAM_STC registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    d. If host wants to access a register in IPREG_BAR, it should add base address 0xA000 to the address of that register shown in the IPREG_BAR registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    e. If host wants to access a register in IPREG_SYS1, it should add base address 0xA400 to the address of that register shown in the IPREG_SYS1 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    f. If host wants to access a register in IPREG_SYS2, it should add base address 0xA500 to the address of that register shown in the IPREG_SYS2 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
    g. If host wants to access a register in IPREG_TOP1, it should add base address 0xA200 to the address of that register shown in the IPREG_TOP1 registers section, and then use that resulting value in registers IREG_ADDR_7_0, IREG_ADDR_15_8.
2. Upon the CSB=1 (SPI) or STOP (I2C) after the above programming, an internal read-pre-fetch operation is triggered.
3. The internal read-pre-fetch operation returns the desired data, which is saved to the IREG_DATA register.
4. After a minimum wait time-gap, the host reads the IREG_DATA register to retrieve the read-data.
5. After the host reads the IREG_DATA register, the internal 16-bit address is auto-incremented, and another internal read-pre-fetch is automatically triggered, to fetch data from the IREG register pointed to by the post-auto-incremented address.
6. After a minimum wait time-gap, the host can either read the IREG_DATA register to get the read-data from the next address location, or it can program a new read address.

14 DEVICE CONFIGURATION FOR DATA ENDIANNESS

By default the device data endianness is Little Endian, for data in Sensor Data Registers and FIFO, and for FIFO Count. User must set register field SREG_DATA_ENDIAN_SEL in register SREG_CTRL to 1, to enable Big Endian data format for data in Sensor Data Registers and FIFO, and for FIFO Count.

Data descriptions in the register map for Sensor Data Registers, FIFO data, and FIFO Count are for the commonly used Big Endian format.

15 REGISTER MAP

This section lists the register map for the ICM-45687, for user bank 0, IMEM_SRAM, IPREG_BAR, IPREG_TOP1, IPREG_SYS1, IPREG_SYS2.

Please refer to the procedure in Section 14 for configuring device data endianness before using the register map.

15.1 USER BANK 0 REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
00	00	ACCEL_DATA_X1_UI	SYNCR	ACCEL_DATA_X_UI[15:8]							
01	01	ACCEL_DATA_X0_UI	SYNCR	ACCEL_DATA_X_UI[7:0]							
02	02	ACCEL_DATA_Y1_UI	SYNCR	ACCEL_DATA_Y_UI[15:8]							
03	03	ACCEL_DATA_Y0_UI	SYNCR	ACCEL_DATA_Y_UI[7:0]							
04	04	ACCEL_DATA_Z1_UI	SYNCR	ACCEL_DATA_Z_UI[15:8]							
05	05	ACCEL_DATA_Z0_UI	SYNCR	ACCEL_DATA_Z_UI[7:0]							
06	06	GYRO_DATA_X1_UI	SYNCR	GYRO _DATA_X_UI[15:8]							
07	07	GYRO _DATA_X0_UI	SYNCR	GYRO _DATA_X_UI[7:0]							
08	08	GYRO _DATA_Y1_UI	SYNCR	GYRO _DATA_Y_UI[15:8]							
09	09	GYRO _DATA_Y0_UI	SYNCR	GYRO _DATA_Y_UI[7:0]							
0A	10	GYRO _DATA_Z1_UI	SYNCR	GYRO_DATA_Z_UI[15:8]							
0B	11	GYRO _DATA_Z0_UI	SYNCR	GYRO_DATA_Z_UI[7:0]							
0C	12	TEMP_DATA1_UI	SYNCR	TEMP_DATA_UI[15:8]							
0D	13	TEMP_DATA0_UI	SYNCR	TEMP_DATA_UI[7:0]							
0E	14	TMST_FSYNCH	SYNCR	TMST_FSYNC_DATA_UI[15:8]							
0F	15	TMST_FSYNCL	SYNCR	TMST_FSYNC_DATA_UI[7:0]							
10	16	PWR_MGMT0	R/W	-				GYRO_MODE		ACCEL_MODE	
12	18	FIFO_COUNT_0	R	FIFO_DATA_CNT[15:8]							
13	19	FIFO_COUNT_1	R	FIFO_DATA_CNT[7:0]							
14	20	FIFO_DATA	R	FIFO_DATA							
16	22	INT1_CONFIG0	R/W	INT1_STATUS_EN_RESET_DONE	INT1_STATUS_EN_AUX1_AGC_RDY	INT1_STATUS_EN_AP_AGC_RDY	INT1_STATUS_EN_AP_FSYNC	INT1_STATUS_EN_AUX1_DRDY	INT1_STATUS_EN_DRDY	INT1_STATUS_EN_FIFO_THS	INT1_STATUS_EN_FIFO_FULL
17	23	INT1_CONFIG1	R/W	-	INT1_STATUS_EN_APEX_EVENT	INT1_STATUS_EN_I2CM_DONE	INT1_STATUS_EN_I3C_PROTOCOL_ERR	INT1_STATUS_EN_WOM_Z	INT1_STATUS_EN_WOM_Y	INT1_STATUS_EN_WOM_X	INT1_STATUS_EN_PLL_RDY
18	24	INT1_CONFIG2	R/W	-					INT1_DRIVE	INT1_MODE	INT1_POLARITY
19	25	INT1_STATUS0	R/C	INT1_STATUS_RESET_DONE	INT1_STATUS_AUX1_AGC_RDY	INT1_STATUS_AP_AGC_RDY	INT1_STATUS_AP_FSYNC	INT1_STATUS_AUX1_DRDY	INT1_STATUS_DRDY	INT1_STATUS_FIFO_THS	INT1_STATUS_FIFO_FULL
1A	26	INT1_STATUS1	R/C	-	INT1_STATUS_APEX_EVENT	INT1_STATUS_I2CM_DONE	INT1_STATUS_I3C_PROTOCOL_ERR	INT1_STATUS_WOM_Z	INT1_STATUS_WOM_Y	INT1_STATUS_WOM_X	INT1_STATUS_PLL_RDY
1B	27	ACCEL_CONFIG0	R/W	-	ACCEL_UI_FS_SEL			ACCEL_ODR			
1C	28	GYRO_CONFIG0	R/W	GYRO_UI_FS_SEL				GYRO_ODR			
1D	29	FIFO_CONFIG0	R/W	FIFO_MODE		FIFO_DEPTH					
1E	30	FIFO_CONFIG1_0	R/W	FIFO_WM_TH[7:0]							
1F	31	FIFO_CONFIG1_1	R/W	FIFO_WM_TH[15:8]							
20	32	FIFO_CONFIG2	R/W	FIFO_FLUSH	-			FIFO_WR_WM_GT_TH	-		
21	33	FIFO_CONFIG3	R/W	-		FIFO_ES1_EN	FIFO_ES0_EN	FIFO_HIRES_EN	FIFO_GYRO_EN	FIFO_ACCEL_EN	FIFO_IF_EN
22	34	FIFO_CONFIG4	R/W	-		FIFO_COMP_NC_FLOW_CFG			FIFO_COMP_EN	FIFO_TMST_FSYNC_EN	FIFO_ES0_6B_9B
23	35	TMST_WOM_CONFIG	R/W	-	TMST_DELTA_EN	TMST_RESOL	WOM_EN	WOM_MODE	WOM_INT_MODE	WOM_INT_DUR	

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
24	36	FSYNC_CONFIG0	R/W	-				AP_FSYNC_FLAG_CLEAR_SEL	AP_FSYNC_SEL		
25	37	FSYNC_CONFIG1	R/W	-				AUX1_FSYNC_FLAG_CLEAR_SEL	AUX1_FSYNC_SEL		
26	38	RTC_CONFIG	R/W	-	RTC_ALIGN	RTC_MODE	-				
27	39	DMP_EXT_SEN_ODR_CFG	R/W	-	EXT_SENSOR_EN	EXT_ODR			APEX_ODR		
28	40	ODR_DECIMATE_CONFIG	R/W	GYRO_FIFO_ODR_DEC				ACCEL_FIFO_ODR_DEC			
29	41	EDMP_APEX_EN0	R/W	-	B2S_EN	FF_EN	AID_EN	-	VVD_EN	SIF_EN	TAP_EN
2A	42	EDMP_APEX_EN1	R/W	-	EDMP_ENABLE	FEATURE3_EN	-		POWER_SAVE_EN	INIT_EN	-
2B	43	APEX_BUFFER_MGMT	R/W	FF_DURATION_HOST_RPTR		FF_DURATION_EDMP_WPTR		-			
2C	44	INTF_CONFIG0	R/W	-		VIRTUAL_ACCESS_AUX1_EN	-			AP_SPI_34_MODE	AP_SPI_MODE
2D	45	INTF_CONFIG1_OVRD	R/W	-				AP_SPI_34_MODE_OVRD	AP_SPI_34_MODE_OVRD_VAL	AP_SPI_MODE_OVRD	AP_SPI_MODE_OVRD_VAL
2E	46	INTF_AUX_CONFIG	R/W	-						AUX1_SPI_34_MODE	AUX1_SPI_MODE
2F	47	IOC_PAD_SCENARIO	R	-					AUX1_MODE		AUX1_ENABLE
30	48	IOC_PAD_SCENARIO_AUX_OVRD	R/W	-			AUX1_MODE_OVRD	AUX1_ENABLE_OVRD_VAL		AUX1_ENABLE_OVRD	AUX1_ENABLE_OVRD_VAL
31	49	IOC_PAD_SCENARIO_OVRD	R/W	-					PADS_INT2_CFG_OVRD	PADS_INT2_CFG_OVRD_VAL	
32	50	DRIVE_CONFIG0	R/W	-	PADS_I2C_SLEW			PADS_SPI_SLEW			-
33	51	DRIVE_CONFIG1	R/W	-		PADS_I3C_DDR_SLEW			PADS_I3C_SDR_SLEW		
34	52	DRIVE_CONFIG2	R/W	-					PADS_SLEW		
39	57	INT_APEX_CONFIG0	R/W	INT_STATUS_MASK_PIN_B2S_DET	INT_STATUS_MASK_PIN_FF_DET	INT_STATUS_MASK_PIN_AID_DET	INT_STATUS_MASK_PIN_AID_HUMAN_DET	INT_STATUS_MASK_PIN_SIF_DET	INT_STATUS_MASK_PIN_LOW_G_DET	INT_STATUS_MASK_PIN_HIGH_G_DET	INT_STATUS_MASK_PIN_TAP_DET
3A	58	INT_APEX_CONFIG1	R/W	-	INT_STATUS_MASK_PIN_RESERVED2	INT_STATUS_MASK_PIN_RESERVED1	INT_STATUS_MASK_PIN_SA_DONE	-	INT_STATUS_MASK_PIN_SELFTEST_DONE	INT_STATUS_MASK_PIN_VVD_DET	INT_STATUS_MASK_PIN_B2S_REV_DET
3B	59	INT_APEX_STATUS0	R/C	INT_STATUS_B2S_DET	INT_STATUS_FF_DET	INT_STATUS_AID_DEVICE_DET	INT_STATUS_AID_HUMAN_DET	INT_STATUS_SIF_DET	INT_STATUS_LOW_G_DET	INT_STATUS_HIGH_G_DET	INT_STATUS_TAP_DET
3C	60	INT_APEX_STATUS1	R/C	-	INT_STATUS_RESERVED2	-	INT_STATUS_SA_DONE	-	INT_STATUS_SELFTEST_DONE	INT_STATUS_VVD_DET	INT_STATUS_B2S_REV_DET
44	68	ACCEL_DATA_X1_AUX1	SYNCR	ACCEL_DATA_X_AUX1[15:8]							
45	69	ACCEL_DATA_X0_AUX1	SYNCR	ACCEL_DATA_X_AUX1[7:0]							
46	70	ACCEL_DATA_Y1_AUX1	SYNCR	ACCEL_DATA_Y_AUX1[15:8]							
47	71	ACCEL_DATA_Y0_AUX1	SYNCR	ACCEL_DATA_Y_AUX1[7:0]							
48	72	ACCEL_DATA_Z1_AUX1	SYNCR	ACCEL_DATA_Z_AUX1[15:8]							
49	73	ACCEL_DATA_Z0_AUX1	SYNCR	ACCEL_DATA_Z_AUX1[7:0]							
4A	74	GYRO_DATA_X1_AUX1	SYNCR	GYRO_DATA_X_AUX1[15:8]							
4B	75	GYRO _DATA_X0_AUX1	SYNCR	GYRO_DATA_X_AUX1[7:0]							
4C	76	GYRO_DATA_Y1_AUX1	SYNCR	GYRO_DATA_Y_AUX1[15:8]							
4D	77	GYRO_DATA_Y0_AUX1	SYNCR	GYRO_DATA_Y_AUX1[7:0]							
4E	78	GYRO_DATA_Z1_AUX1	SYNCR	GYRO_DATA_Z_AUX1[15:8]							
4F	79	GYRO_DATA_Z0_AUX1	SYNCR	GYRO_DATA_Z_AUX1[7:0]							
50	80	TEMP_DATA1_AUX1	SYNCR	TEMP_DATA_AUX1[15:8]							
51	81	TEMP_DATA0_AUX1	SYNCR	TEMP_DATA_AUX1[7:0]							
52	82	TMST_FSYNCH_AUX1	SYNCR	TMST_FSYNC_DATA_AUX1[15:8]							
53	83	TMST_FSYNCL_AUX1	SYNCR	TMST_FSYNC_DATA_AUX1[7:0]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
54	84	PWR_MGMT_AUX1	R/W	-						GYRO_AUX1_EN	ACCEL_AUX1_EN
55	85	FS_SEL_AUX1	R/W	-	GYRO_AUX1_FS_SEL				ACCEL_AUX1_FS_SEL		
56	86	INT2_CONFIG0	R/W	INT2_STATUS_EN_RESET_DONE	INT2_STATUS_EN_AUX1_AGC_RDY	INT2_STATUS_EN_AP_AGC_RDY	INT2_STATUS_EN_AP_FSYNC	INT2_STATUS_EN_AUX1_DRDY	INT2_STATUS_EN_DRDY	INT2_STATUS_EN_FIFO_THS	INT2_STATUS_EN_FIFO_FULL
57	87	INT2_CONFIG1	R/W	-	INT2_STATUS_EN_APEX_EVENT	INT2_STATUS_EN_I2CM_DONE	INT2_STATUS_EN_I3C_PROTOCOL_ERR	INT2_STATUS_EN_WOM_Z	INT2_STATUS_EN_WOM_Y	INT2_STATUS_EN_WOM_X	INT2_STATUS_EN_PLL_RDY
58	88	INT2_CONFIG2	R/W	-					INT2_DRIVE	INT2_MODE	INT2_POLARITY
59	89	INT2_STATUS0	R/C	INT2_STATUS_RESET_DONE	INT2_STATUS_AUX1_AGC_RDY	INT2_STATUS_AP_AGC_RDY	INT2_STATUS_AP_FSYNC	INT2_STATUS_AUX1_DRDY	INT2_STATUS_DRDY	INT2_STATUS_FIFO_THS	INT2_STATUS_FIFO_FULL
5A	90	INT2_STATUS1	R/C	-	INT2_STATUS_APEX_EVENT	INT2_STATUS_I2CM_DONE	INT2_STATUS_I3C_PROTOCOL_ERR	INT2_STATUS_WOM_Z	INT2_STATUS_WOM_Y	INT2_STATUS_WOM_X	INT2_STATUS_PLL_RDY
72	114	WHO_AM_I	R	WHOAMI							
73	115	REG_HOST_MSG	R/W	-		EDMP_ON_DEMAND_EN	-				TESTOPENABLE
7C	124	IREG_ADDR_15_8	R/W	IREG_ADDR_15_8							
7D	125	IREG_ADDR_7_0	R/W	IREG_ADDR_7_0							
7E	126	IREG_DATA	R/W	IREG_DATA							
7F	127	REG_MISC2	R/W	-						SOFT_RST	IREG_DONE

15.2 USER BANK IMEM_SRAM REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
00	00	IMEM_SRAM_REG_0	R/W	GYRO_X_STR_FT[7:0]							
01	01	IMEM_SRAM_REG_1	R/W	GYRO_X_STR_FT[15:8]							
02	02	IMEM_SRAM_REG_2	R/W	GYRO_Y_STR_FT[7:0]							
03	03	IMEM_SRAM_REG_3	R/W	GYRO_Y_STR_FT[15:8]							
04	04	IMEM_SRAM_REG_4	R/W	GYRO_Z_STR_FT[7:0]							
05	05	IMEM_SRAM_REG_5	R/W	GYRO_Z_STR_FT[15:8]							
06	06	IMEM_SRAM_REG_6	R/W	GYRO_X_CMOS_GAIN_FT[7:0]							
07	07	IMEM_SRAM_REG_7	R/W	-				GYRO_X_CMOS_GAIN_FT[11:8]			
08	08	IMEM_SRAM_REG_8	R/W	GYRO_Y_CMOS_GAIN_FT[7:0]							
09	09	IMEM_SRAM_REG_9	R/W	-				GYRO_Y_CMOS_GAIN_FT[11:8]			
0A	10	IMEM_SRAM_REG_10	R/W	GYRO_Z_CMOS_GAIN_FT[7:0]							
0B	11	IMEM_SRAM_REG_11	R/W	-				GYRO_Z_CMOS_GAIN_FT[11:8]			
0C	12	IMEM_SRAM_REG_12	R/W	ACCEL_X_STR_FT[7:0]							
0D	13	IMEM_SRAM_REG_13	R/W	ACCEL_X_STR_FT[15:8]							
0E	14	IMEM_SRAM_REG_14	R/W	ACCEL_Y_STR_FT[7:0]							
0F	15	IMEM_SRAM_REG_15	R/W	ACCEL_Y_STR_FT[15:8]							
10	16	IMEM_SRAM_REG_16	R/W	ACCEL_Z_STR_FT[7:0]							
11	17	IMEM_SRAM_REG_17	R/W	ACCEL_Z_STR_FT[15:8]							

15.3 USER BANK IMEM_SRAM_APEX REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
04	04	IMEM_SRAM_APEX_REG_4	R/W	ONDEMAND_DYNAMIC_SERVICE_REQUEST[7:0]							
05	05	IMEM_SRAM_APEX_REG_5	R/W	USE_CASE_BITMASK[7:0]							
06	06	IMEM_SRAM_APEX_REG_6	R/W	TAP_NUM[7:0]							
07	07	IMEM_SRAM_APEX_REG_7	R/W	TAP_AXIS[7:0]							
08	08	IMEM_SRAM_APEX_REG_8	R/W	TAP_DIR[7:0]							
34	52	IMEM_SRAM_APEX_REG_52	R/W	VVD_DYNAMIC_THRESH[7:0]							
35	53	IMEM_SRAM_APEX_REG_53	R/W	VVD_DYNAMIC_THRESH[15:8]							
36	54	IMEM_SRAM_APEX_REG_54	R/W	VVD_DYNAMIC_THRESH[23:16]							
37	55	IMEM_SRAM_APEX_REG_55	R/W	VVD_DYNAMIC_THRESH[31:24]							
3C	60	IMEM_SRAM_APEX_REG_60	R/W	POWER_SAVE_TIME[7:0]							
3D	61	IMEM_SRAM_APEX_REG_61	R/W	POWER_SAVE_TIME[15:8]							
3E	62	IMEM_SRAM_APEX_REG_62	R/W	POWER_SAVE_TIME[23:16]							
3F	63	IMEM_SRAM_APEX_REG_63	R/W	POWER_SAVE_TIME[31:24]							
AA	170	IMEM_SRAM_APEX_REG_170	R/W	FF_DURATION[7:0]							
AB	171	IMEM_SRAM_APEX_REG_171	R/W	FF_DURATION[15:8]							
B0	176	IMEM_SRAM_APEX_REG_176	R/W	FF_MIN_DURATION[7:0]							
B1	177	IMEM_SRAM_APEX_REG_177	R/W	FF_MIN_DURATION[15:8]							
B2	178	IMEM_SRAM_APEX_REG_178	R/W	FF_MIN_DURATION[23:16]							
B3	179	IMEM_SRAM_APEX_REG_179	R/W	FF_MIN_DURATION[31:24]							
B4	180	IMEM_SRAM_APEX_REG_180	R/W	FF_MAX_DURATION[7:0]							
B5	181	IMEM_SRAM_APEX_REG_181	R/W	FF_MAX_DURATION[15:8]							
B6	182	IMEM_SRAM_APEX_REG_182	R/W	FF_MAX_DURATION[23:16]							
B7	183	IMEM_SRAM_APEX_REG_183	R/W	FF_MAX_DURATION[31:24]							
B8	184	IMEM_SRAM_APEX_REG_184	R/W	FF_DEBOUNCE_DURATION[7:0]							
B9	185	IMEM_SRAM_APEX_REG_185	R/W	FF_DEBOUNCE_DURATION[15:8]							
BA	186	IMEM_SRAM_APEX_REG_186	R/W	FF_DEBOUNCE_DURATION[23:16]							
BB	187	IMEM_SRAM_APEX_REG_187	R/W	FF_DEBOUNCE_DURATION[31:24]							
C0	192	IMEM_SRAM_APEX_REG_192	R/W	HIGHG_PEAK_TH[7:0]							
C1	193	IMEM_SRAM_APEX_REG_193	R/W	HIGHG_PEAK_TH[15:8]							
C2	194	IMEM_SRAM_APEX_REG_194	R/W	HIGHG_PEAK_TH_HYST[7:0]							
C3	195	IMEM_SRAM_APEX_REG_195	R/W	HIGHG_PEAK_TH_HYST[15:8]							
C4	196	IMEM_SRAM_APEX_REG_196	R/W	HIGHG_TIME_TH[7:0]							
C5	197	IMEM_SRAM_APEX_REG_197	R/W	HIGHG_TIME_TH[15:8]							
CC	204	IMEM_SRAM_APEX_REG_204	R/W	LOWG_PEAK_TH[7:0]							
CD	205	IMEM_SRAM_APEX_REG_205	R/W	LOWG_PEAK_TH[15:8]							
CE	206	IMEM_SRAM_APEX_REG_206	R/W	LOWG_PEAK_TH_HYST[7:0]							
CF	207	IMEM_SRAM_APEX_REG_207	R/W	LOWG_PEAK_TH_HYST[15:8]							
D0	208	IMEM_SRAM_APEX_REG_208	R/W	LOWG_TIME_TH[7:0]							
D1	209	IMEM_SRAM_APEX_REG_209	R/W	LOWG_TIME_TH[15:8]							
138	312	IMEM_SRAM_APEX_REG_312	R/W	ONDEMAND_STATIC_SERVICE_REQUEST[7:0]							
139	313	IMEM_SRAM_APEX_REG_313	R/W	ONDEMAND_STATIC_SERVICE_REQUEST[15:8]							
13A	314	IMEM_SRAM_APEX_REG_314	R/W	ONDEMAND_STATIC_SERVICE_REQUEST[23:16]							
13B	315	IMEM_SRAM_APEX_REG_315	R/W	ONDEMAND_STATIC_SERVICE_REQUEST[31:24]							
13C	316	IMEM_SRAM_APEX_REG_316	R/W	ONDEMAND_MEMSET_ADDR[7:0]							
13D	317	IMEM_SRAM_APEX_REG_317	R/W	ONDEMAND_MEMSET_ADDR[15:8]							
13E	318	IMEM_SRAM_APEX_REG_318	R/W	ONDEMAND_MEMSET_VALUE[7:0]							
140	320	IMEM_SRAM_APEX_REG_320	R/W	ONDEMAND_MEMSET_SIZE[7:0]							
141	321	IMEM_SRAM_APEX_REG_321	R/W	ONDEMAND_MEMSET_SIZE[15:8]							
1A0	416	IMEM_SRAM_APEX_REG_416	R/W	GAF_PDR_PARTITION[7:0]							
1A1	417	IMEM_SRAM_APEX_REG_417	R/W	GAF_PDR_PARTITION[15:8]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
1A2	418	IMEM_SRAM_APEX_REG_418	R/W	GAF_PDR_PARTITION[23:16]							
1A3	419	IMEM_SRAM_APEX_REG_419	R/W	GAF_PDR_PARTITION[31:24]							
1B4	436	IMEM_SRAM_APEX_REG_436	R/W	DMP_ODR_LAST_INIT[7:0]							
1B5	437	IMEM_SRAM_APEX_REG_437	R/W	DMP_ODR_LAST_INIT[15:8]							
1B6	438	IMEM_SRAM_APEX_REG_438	R/W	DMP_ODR_LAST_INIT[23:16]							
1B7	439	IMEM_SRAM_APEX_REG_439	R/W	DMP_ODR_LAST_INIT[31:24]							
1C4	452	IMEM_SRAM_APEX_REG_452	R/W	TAP_MIN_JERK[7:0]							
1C5	453	IMEM_SRAM_APEX_REG_453	R/W	TAP_MIN_JERK[15:8]							
1C6	454	IMEM_SRAM_APEX_REG_454	R/W	TAP_TMAX[7:0]							
1C7	455	IMEM_SRAM_APEX_REG_455	R/W	TAP_TMAX[15:8]							
1C8	456	IMEM_SRAM_APEX_REG_456	R/W	TAP_TMIN[7:0]							
1C9	457	IMEM_SRAM_APEX_REG_457	R/W	TAP_SMUDGE_REJECT_THR[7:0]							
1CA	458	IMEM_SRAM_APEX_REG_458	R/W	TAP_MAX_PEAK_TOL[7:0]							
1CB	459	IMEM_SRAM_APEX_REG_459	R/W	TAP_TAVG[7:0]							
1CC	460	IMEM_SRAM_APEX_REG_460	R/W	TAP_ODR[7:0]							
1CD	461	IMEM_SRAM_APEX_REG_461	R/W	TAP_MAX[7:0]							
1CE	462	IMEM_SRAM_APEX_REG_462	R/W	TAP_MIN[7:0]							
1F4	500	IMEM_SRAM_APEX_REG_500	R/W	DOUBLE_TAP_TIMING[7:0]							
1F5	501	IMEM_SRAM_APEX_REG_501	R/W	DOUBLE_TAP_TIMING[15:8]							
1F6	502	IMEM_SRAM_APEX_REG_502	R/W	TRIPLE_TAP_TIMING[7:0]							
1F7	503	IMEM_SRAM_APEX_REG_503	R/W	TRIPLE_TAP_TIMING[15:8]							
204	516	IMEM_SRAM_APEX_REG_516	R/W	B2S_ONE_G_VALUE[7:0]							
205	517	IMEM_SRAM_APEX_REG_517	R/W	B2S_ONE_G_VALUE[15:8]							
206	518	IMEM_SRAM_APEX_REG_518	R/W	B2S_ONE_G_VALUE[23:16]							
207	519	IMEM_SRAM_APEX_REG_519	R/W	B2S_ONE_G_VALUE[31:24]							
208	520	IMEM_SRAM_APEX_REG_520	R/W	B2S_SETTINGS_DEV_NORM_MAX[7:0]							
209	521	IMEM_SRAM_APEX_REG_521	R/W	B2S_SETTINGS_DEV_NORM_MAX[15:8]							
20A	522	IMEM_SRAM_APEX_REG_522	R/W	B2S_SETTINGS_DEV_NORM_MAX[23:16]							
20B	523	IMEM_SRAM_APEX_REG_523	R/W	B2S_SETTINGS_DEV_NORM_MAX[31:24]							
20C	524	IMEM_SRAM_APEX_REG_524	R/W	B2S_SETTINGS_SIN_LIMIT[7:0]							
20D	525	IMEM_SRAM_APEX_REG_525	R/W	B2S_SETTINGS_SIN_LIMIT[15:8]							
20E	526	IMEM_SRAM_APEX_REG_526	R/W	B2S_SETTINGS_SIN_LIMIT[23:16]							
20F	527	IMEM_SRAM_APEX_REG_527	R/W	B2S_SETTINGS_SIN_LIMIT[31:24]							
210	528	IMEM_SRAM_APEX_REG_528	R/W	B2S_SETTINGS_FAST_LIMIT[7:0]							
211	529	IMEM_SRAM_APEX_REG_529	R/W	B2S_SETTINGS_FAST_LIMIT[15:8]							
212	530	IMEM_SRAM_APEX_REG_530	R/W	B2S_SETTINGS_FAST_LIMIT[23:16]							
213	531	IMEM_SRAM_APEX_REG_531	R/W	B2S_SETTINGS_FAST_LIMIT[31:24]							
214	532	IMEM_SRAM_APEX_REG_532	R/W	B2S_SETTINGS_STATIC_LIMIT[7:0]							
215	533	IMEM_SRAM_APEX_REG_533	R/W	B2S_SETTINGS_STATIC_LIMIT[15:8]							
216	534	IMEM_SRAM_APEX_REG_534	R/W	B2S_SETTINGS_STATIC_LIMIT[23:16]							
217	535	IMEM_SRAM_APEX_REG_535	R/W	B2S_SETTINGS_STATIC_LIMIT[31:24]							
218	536	IMEM_SRAM_APEX_REG_536	R/W	B2S_SETTINGS_THR_COS_ANG[7:0]							
219	537	IMEM_SRAM_APEX_REG_537	R/W	B2S_SETTINGS_THR_COS_ANG[15:8]							
21A	538	IMEM_SRAM_APEX_REG_538	R/W	B2S_SETTINGS_THR_COS_ANG[23:16]							
21B	539	IMEM_SRAM_APEX_REG_539	R/W	B2S_SETTINGS_THR_COS_ANG[31:24]							
21C	540	IMEM_SRAM_APEX_REG_540	R/W	B2S_SETTINGS_LIMIT_INF[7:0]							
21D	541	IMEM_SRAM_APEX_REG_541	R/W	B2S_SETTINGS_LIMIT_INF[15:8]							
21E	542	IMEM_SRAM_APEX_REG_542	R/W	B2S_SETTINGS_LIMIT_INF[23:16]							
21F	543	IMEM_SRAM_APEX_REG_543	R/W	B2S_SETTINGS_LIMIT_INF[31:24]							
220	544	IMEM_SRAM_APEX_REG_544	R/W	B2S_SETTINGS_LIMIT_SUP[7:0]							
221	545	IMEM_SRAM_APEX_REG_545	R/W	B2S_SETTINGS_LIMIT_SUP[15:8]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
222	546	IMEM_SRAM_APEX_REG_546	R/W	B2S_SETTINGS_LIMIT_SUP[23:16]							
223	547	IMEM_SRAM_APEX_REG_547	R/W	B2S_SETTINGS_LIMIT_SUP[31:24]							
224	548	IMEM_SRAM_APEX_REG_548	R/W	B2S_SETTINGS_REV_X_LIMIT[7:0]							
225	549	IMEM_SRAM_APEX_REG_549	R/W	B2S_SETTINGS_REV_X_LIMIT[15:8]							
226	550	IMEM_SRAM_APEX_REG_550	R/W	B2S_SETTINGS_REV_X_LIMIT[23:16]							
227	551	IMEM_SRAM_APEX_REG_551	R/W	B2S_SETTINGS_REV_X_LIMIT[31:24]							
228	552	IMEM_SRAM_APEX_REG_552	R/W	B2S_SETTINGS_SIN_FLAT_ANGLE[7:0]							
229	553	IMEM_SRAM_APEX_REG_553	R/W	B2S_SETTINGS_SIN_FLAT_ANGLE[15:8]							
22A	554	IMEM_SRAM_APEX_REG_554	R/W	B2S_SETTINGS_SIN_FLAT_ANGLE[23:16]							
22B	555	IMEM_SRAM_APEX_REG_555	R/W	B2S_SETTINGS_SIN_FLAT_ANGLE[31:24]							
22C	556	IMEM_SRAM_APEX_REG_556	R/W	B2S_SETTINGS_TIMER_FLAT_REJECT[7:0]							
22D	557	IMEM_SRAM_APEX_REG_557	R/W	B2S_SETTINGS_TIMER_FLAT_REJECT[15:8]							
22E	558	IMEM_SRAM_APEX_REG_558	R/W	B2S_SETTINGS_TIMER_FLAT_REJECT[23:16]							
22F	559	IMEM_SRAM_APEX_REG_559	R/W	B2S_SETTINGS_TIMER_FLAT_REJECT[31:24]							
230	560	IMEM_SRAM_APEX_REG_560	R/W	B2S_SETTINGS_FAST_MOTION_AGE_LIMIT[7:0]							
231	561	IMEM_SRAM_APEX_REG_561	R/W	B2S_SETTINGS_FAST_MOTION_AGE_LIMIT[15:8]							
232	562	IMEM_SRAM_APEX_REG_562	R/W	B2S_SETTINGS_FAST_MOTION_TIME_LIMIT[7:0]							
233	563	IMEM_SRAM_APEX_REG_563	R/W	B2S_SETTINGS_FAST_MOTION_TIME_LIMIT[15:8]							
234	564	IMEM_SRAM_APEX_REG_564	R/W	B2S_SETTINGS_AGE_LIMIT[7:0]							
235	565	IMEM_SRAM_APEX_REG_565	R/W	B2S_SETTINGS_AGE_LIMIT[15:8]							
236	566	IMEM_SRAM_APEX_REG_566	R/W	B2S_SETTINGS_REV_LATENCY_TH[7:0]							
237	567	IMEM_SRAM_APEX_REG_567	R/W	B2S_SETTINGS_REV_LATENCY_TH[15:8]							
2DF	735	IMEM_SRAM_APEX_REG_735	R/W	B2S_MOUNTING_MATRIX[7:0]							
2FC	764	IMEM_SRAM_APEX_REG_764	R/W	AID_EN_OUTPUT_HUMAN[7:0]							
2FD	765	IMEM_SRAM_APEX_REG_765	R/W	AID_DIS_MULTI_OUTPUT_HUMAN[7:0]							
300	768	IMEM_SRAM_APEX_REG_768	R/W	AID_WIN_HUMAN[7:0]							
301	769	IMEM_SRAM_APEX_REG_769	R/W	AID_WIN_HUMAN[15:8]							
302	770	IMEM_SRAM_APEX_REG_770	R/W	AID_WIN_HUMAN[23:16]							
303	771	IMEM_SRAM_APEX_REG_771	R/W	AID_WIN_HUMAN[31:24]							
304	772	IMEM_SRAM_APEX_REG_772	R/W	AID_ALERT_HUMAN[7:0]							
305	773	IMEM_SRAM_APEX_REG_773	R/W	AID_ALERT_HUMAN[15:8]							
306	774	IMEM_SRAM_APEX_REG_774	R/W	AID_ALERT_HUMAN[23:16]							
307	775	IMEM_SRAM_APEX_REG_775	R/W	AID_ALERT_HUMAN[31:24]							
309	777	IMEM_SRAM_APEX_REG_777	R/W	AID_HUMAN_OUTPUT_STATE[7:0]							
320	800	IMEM_SRAM_APEX_REG_800	R/W	AID_EN_OUTPUT_DEVICE[7:0]							
321	801	IMEM_SRAM_APEX_REG_801	R/W	AID_DIS_MULTI_OUTPUT_DEVICE[7:0]							
324	804	IMEM_SRAM_APEX_REG_804	R/W	AID_WIN_DEVICE[7:0]							
325	805	IMEM_SRAM_APEX_REG_805	R/W	AID_WIN_DEVICE[15:8]							
326	806	IMEM_SRAM_APEX_REG_806	R/W	AID_WIN_DEVICE[23:16]							
327	807	IMEM_SRAM_APEX_REG_807	R/W	AID_WIN_DEVICE[31:24]							
328	808	IMEM_SRAM_APEX_REG_808	R/W	AID_ALERT_DEVICE[7:0]							
329	809	IMEM_SRAM_APEX_REG_809	R/W	AID_ALERT_DEVICE[15:8]							
32A	810	IMEM_SRAM_APEX_REG_810	R/W	AID_ALERT_DEVICE[23:16]							
32B	811	IMEM_SRAM_APEX_REG_811	R/W	AID_ALERT_DEVICE[31:24]							
32D	813	IMEM_SRAM_APEX_REG_813	R/W	AID_DEVICE_OUTPUT_STATE[7:0]							
330	816	IMEM_SRAM_APEX_REG_816	R/W	GLOBAL_MOUNTING_MATRIX[7:0]							
331	817	IMEM_SRAM_APEX_REG_817	R/W	GLOBAL_MOUNTING_MATRIX[15:8]							
332	818	IMEM_SRAM_APEX_REG_818	R/W	GLOBAL_MOUNTING_MATRIX[23:16]							
333	819	IMEM_SRAM_APEX_REG_819	R/W	GLOBAL_MOUNTING_MATRIX[31:24]							
334	820	IMEM_SRAM_APEX_REG_820	R/W	GLOBAL_MOUNTING_MATRIX[39:32]							
335	821	IMEM_SRAM_APEX_REG_821	R/W	GLOBAL_MOUNTING_MATRIX[47:40]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
336	822	IMEM_SRAM_APEX_REG_822	R/W	GLOBAL_MOUNTING_MATRIX[55:48]							
337	823	IMEM_SRAM_APEX_REG_823	R/W	GLOBAL_MOUNTING_MATRIX[63:56]							
338	824	IMEM_SRAM_APEX_REG_824	R/W	GLOBAL_MOUNTING_MATRIX[71:64]							
339	825	IMEM_SRAM_APEX_REG_825	R/W	GLOBAL_MOUNTING_MATRIX[79:72]							
33A	826	IMEM_SRAM_APEX_REG_826	R/W	GLOBAL_MOUNTING_MATRIX[87:80]							
33B	827	IMEM_SRAM_APEX_REG_827	R/W	GLOBAL_MOUNTING_MATRIX[95:88]							
33C	828	IMEM_SRAM_APEX_REG_828	R/W	GLOBAL_MOUNTING_MATRIX[103:96]							
33D	829	IMEM_SRAM_APEX_REG_829	R/W	GLOBAL_MOUNTING_MATRIX[111:104]							
33E	830	IMEM_SRAM_APEX_REG_830	R/W	GLOBAL_MOUNTING_MATRIX[119:112]							
33F	831	IMEM_SRAM_APEX_REG_831	R/W	GLOBAL_MOUNTING_MATRIX[127:120]							
340	832	IMEM_SRAM_APEX_REG_832	R/W	GLOBAL_MOUNTING_MATRIX[135:128]							
341	833	IMEM_SRAM_APEX_REG_833	R/W	GLOBAL_MOUNTING_MATRIX[143:136]							
344	836	IMEM_SRAM_APEX_REG_836	R/W	GAF_CONFIG_ACC_ODR_US[7:0]							
345	837	IMEM_SRAM_APEX_REG_837	R/W	GAF_CONFIG_ACC_ODR_US[15:8]							
346	838	IMEM_SRAM_APEX_REG_838	R/W	GAF_CONFIG_ACC_ODR_US[23:16]							
347	839	IMEM_SRAM_APEX_REG_839	R/W	GAF_CONFIG_ACC_ODR_US[31:24]							
348	840	IMEM_SRAM_APEX_REG_840	R/W	GAF_CONFIG_GYR_ODR_US[7:0]							
349	841	IMEM_SRAM_APEX_REG_841	R/W	GAF_CONFIG_GYR_ODR_US[15:8]							
34A	842	IMEM_SRAM_APEX_REG_842	R/W	GAF_CONFIG_GYR_ODR_US[23:16]							
34B	843	IMEM_SRAM_APEX_REG_843	R/W	GAF_CONFIG_GYR_ODR_US[31:24]							
34C	844	IMEM_SRAM_APEX_REG_844	R/W	GAF_CONFIG_ACC_PDR_US[7:0]							
34D	845	IMEM_SRAM_APEX_REG_845	R/W	GAF_CONFIG_ACC_PDR_US[15:8]							
34E	846	IMEM_SRAM_APEX_REG_846	R/W	GAF_CONFIG_ACC_PDR_US[23:16]							
34F	847	IMEM_SRAM_APEX_REG_847	R/W	GAF_CONFIG_ACC_PDR_US[31:24]							
350	848	IMEM_SRAM_APEX_REG_848	R/W	GAF_CONFIG_GYR_PDR_US[7:0]							
351	849	IMEM_SRAM_APEX_REG_849	R/W	GAF_CONFIG_GYR_PDR_US[15:8]							
352	850	IMEM_SRAM_APEX_REG_850	R/W	GAF_CONFIG_GYR_PDR_US[23:16]							
353	851	IMEM_SRAM_APEX_REG_851	R/W	GAF_CONFIG_GYR_PDR_US[31:24]							
35C	860	IMEM_SRAM_APEX_REG_860	R/W	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[7:0]							
35D	861	IMEM_SRAM_APEX_REG_861	R/W	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[15:8]							
35E	862	IMEM_SRAM_APEX_REG_862	R/W	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[23:16]							
35F	863	IMEM_SRAM_APEX_REG_863	R/W	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[31:24]							
360	864	IMEM_SRAM_APEX_REG_864	R/W	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[7:0]							
361	865	IMEM_SRAM_APEX_REG_865	R/W	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[15:8]							
362	866	IMEM_SRAM_APEX_REG_866	R/W	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[23:16]							
363	867	IMEM_SRAM_APEX_REG_867	R/W	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[31:24]							
364	868	IMEM_SRAM_APEX_REG_868	R/W	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[7:0]							
365	869	IMEM_SRAM_APEX_REG_869	R/W	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[15:8]							
366	870	IMEM_SRAM_APEX_REG_870	R/W	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[23:16]							
367	871	IMEM_SRAM_APEX_REG_871	R/W	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[31:24]							
368	872	IMEM_SRAM_APEX_REG_872	R/W	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[7:0]							
369	873	IMEM_SRAM_APEX_REG_873	R/W	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[15:8]							
36A	874	IMEM_SRAM_APEX_REG_874	R/W	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[23:16]							
36B	875	IMEM_SRAM_APEX_REG_875	R/W	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[31:24]							
36C	876	IMEM_SRAM_APEX_REG_876	R/W	GAF_CONFIG_PLL_CLOCK_VARIATION[7:0]							
400	1024	IMEM_SRAM_APEX_REG_1024	R/W	GAF_CONFIG_GYR_DT_US[7:0]							
401	1025	IMEM_SRAM_APEX_REG_1025	R/W	GAF_CONFIG_GYR_DT_US[15:8]							
402	1026	IMEM_SRAM_APEX_REG_1026	R/W	GAF_CONFIG_GYR_DT_US[23:16]							
403	1027	IMEM_SRAM_APEX_REG_1027	R/W	GAF_CONFIG_GYR_DT_US[31:24]							
408	1032	IMEM_SRAM_APEX_REG_1032	R/W	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[7:0]							
409	1033	IMEM_SRAM_APEX_REG_1033	R/W	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[15:8]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
40A	1034	IMEM_SRAM_APEX_REG_1034	R/W	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[23:16]							
40B	1035	IMEM_SRAM_APEX_REG_1035	R/W	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[31:24]							
41C	1052	IMEM_SRAM_APEX_REG_1052	R/W	GAF_CONFIG_FUS_ACCELERATION_REJECTION[7:0]							
41D	1053	IMEM_SRAM_APEX_REG_1053	R/W	GAF_CONFIG_FUS_ACCELERATION_REJECTION[15:8]							
41E	1054	IMEM_SRAM_APEX_REG_1054	R/W	GAF_CONFIG_FUS_ACCELERATION_REJECTION[23:16]							
41F	1055	IMEM_SRAM_APEX_REG_1055	R/W	GAF_CONFIG_FUS_ACCELERATION_REJECTION[31:24]							
420	1056	IMEM_SRAM_APEX_REG_1056	R/W	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[7:0]							
421	1057	IMEM_SRAM_APEX_REG_1057	R/W	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[15:8]							
422	1058	IMEM_SRAM_APEX_REG_1058	R/W	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[23:16]							
423	1059	IMEM_SRAM_APEX_REG_1059	R/W	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[31:24]							
4BC	1212	IMEM_SRAM_APEX_REG_1212	R/W	GAF_SAVED_GYR_ACCURACY[7:0]							
4BD	1213	IMEM_SRAM_APEX_REG_1213	R/W	GAF_SAVED_GYR_ACCURACY[15:8]							
4BE	1214	IMEM_SRAM_APEX_REG_1214	R/W	GAF_SAVED_GYR_ACCURACY[23:16]							
4BF	1215	IMEM_SRAM_APEX_REG_1215	R/W	GAF_SAVED_GYR_ACCURACY[31:24]							
4CC	1228	IMEM_SRAM_APEX_REG_1228	R/W	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[7:0]							
4CD	1229	IMEM_SRAM_APEX_REG_1229	R/W	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[15:8]							
4CE	1230	IMEM_SRAM_APEX_REG_1230	R/W	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[23:16]							
4CF	1231	IMEM_SRAM_APEX_REG_1231	R/W	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[31:24]							
4DC	1244	IMEM_SRAM_APEX_REG_1244	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[7:0]							
4DD	1245	IMEM_SRAM_APEX_REG_1245	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[15:8]							
4DE	1246	IMEM_SRAM_APEX_REG_1246	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[23:16]							
4DF	1247	IMEM_SRAM_APEX_REG_1247	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[31:24]							
4E0	1248	IMEM_SRAM_APEX_REG_1248	R/W	GAF_CONFIG_GYR_BIAS_REJECT_TH[7:0]							
4E1	1249	IMEM_SRAM_APEX_REG_1249	R/W	GAF_CONFIG_GYR_BIAS_REJECT_TH[15:8]							
4E2	1250	IMEM_SRAM_APEX_REG_1250	R/W	GAF_CONFIG_GYR_BIAS_REJECT_TH[23:16]							
4E3	1251	IMEM_SRAM_APEX_REG_1251	R/W	GAF_CONFIG_GYR_BIAS_REJECT_TH[31:24]							
4EC	1260	IMEM_SRAM_APEX_REG_1260	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[7:0]							
4ED	1261	IMEM_SRAM_APEX_REG_1261	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[15:8]							
4EE	1262	IMEM_SRAM_APEX_REG_1262	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[23:16]							
4EF	1263	IMEM_SRAM_APEX_REG_1263	R/W	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[31:24]							
5A0	1440	IMEM_SRAM_APEX_REG_1440	R/W	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[7:0]							
5A1	1441	IMEM_SRAM_APEX_REG_1441	R/W	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[15:8]							
5A2	1442	IMEM_SRAM_APEX_REG_1442	R/W	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[23:16]							
5A3	1443	IMEM_SRAM_APEX_REG_1443	R/W	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[31:24]							
5B0	1456	IMEM_SRAM_APEX_REG_1456	R/W	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[7:0]							
5B1	1457	IMEM_SRAM_APEX_REG_1457	R/W	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[15:8]							
5B2	1458	IMEM_SRAM_APEX_REG_1458	R/W	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[23:16]							
5B3	1459	IMEM_SRAM_APEX_REG_1459	R/W	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[31:24]							
5B4	1460	IMEM_SRAM_APEX_REG_1460	R/W	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[7:0]							
5B5	1461	IMEM_SRAM_APEX_REG_1461	R/W	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[15:8]							
5B6	1462	IMEM_SRAM_APEX_REG_1462	R/W	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[23:16]							
5B7	1463	IMEM_SRAM_APEX_REG_1463	R/W	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[31:24]							
5B8	1464	IMEM_SRAM_APEX_REG_1464	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[7:0]							
5B9	1465	IMEM_SRAM_APEX_REG_1465	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[15:8]							
5BA	1466	IMEM_SRAM_APEX_REG_1466	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[23:16]							
5BB	1467	IMEM_SRAM_APEX_REG_1467	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[31:24]							
5BC	1468	IMEM_SRAM_APEX_REG_1468	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[7:0]							
5BD	1469	IMEM_SRAM_APEX_REG_1469	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[15:8]							
5BE	1470	IMEM_SRAM_APEX_REG_1470	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[23:16]							
5BF	1471	IMEM_SRAM_APEX_REG_1471	R/W	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[31:24]							
5C0	1472	IMEM_SRAM_APEX_REG_1472	R/W	GAF_CONFIG_GOLDEN_BIAS_TIMER[7:0]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
5C1	1473	IMEM_SRAM_APEX_REG_1473	R/W	GAF_CONFIG_GOLDEN_BIAS_TIMER[15:8]							
5C2	1474	IMEM_SRAM_APEX_REG_1474	R/W	GAF_CONFIG_GOLDEN_BIAS_TIMER[23:16]							
5C3	1475	IMEM_SRAM_APEX_REG_1475	R/W	GAF_CONFIG_GOLDEN_BIAS_TIMER[31:24]							
5C4	1476	IMEM_SRAM_APEX_REG_1476	R/W	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[7:0]							
5C5	1477	IMEM_SRAM_APEX_REG_1477	R/W	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[15:8]							
5C6	1478	IMEM_SRAM_APEX_REG_1478	R/W	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[23:16]							
5C7	1479	IMEM_SRAM_APEX_REG_1479	R/W	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[31:24]							
5C8	1480	IMEM_SRAM_APEX_REG_1480	R/W	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[7:0]							
5C9	1481	IMEM_SRAM_APEX_REG_1481	R/W	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[15:8]							
5CA	1482	IMEM_SRAM_APEX_REG_1482	R/W	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[23:16]							
5CB	1483	IMEM_SRAM_APEX_REG_1483	R/W	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[31:24]							
5CC	1484	IMEM_SRAM_APEX_REG_1484	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[7:0]							
5CD	1485	IMEM_SRAM_APEX_REG_1485	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[15:8]							
5CE	1486	IMEM_SRAM_APEX_REG_1486	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[23:16]							
5CF	1487	IMEM_SRAM_APEX_REG_1487	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[31:24]							
5D0	1488	IMEM_SRAM_APEX_REG_1488	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[39:32]							
5D1	1489	IMEM_SRAM_APEX_REG_1489	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[47:40]							
5D2	1490	IMEM_SRAM_APEX_REG_1490	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[55:48]							
5D3	1491	IMEM_SRAM_APEX_REG_1491	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[63:56]							
5D4	1492	IMEM_SRAM_APEX_REG_1492	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[71:64]							
5D5	1493	IMEM_SRAM_APEX_REG_1493	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[79:72]							
5D6	1494	IMEM_SRAM_APEX_REG_1494	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[87:80]							
5D7	1495	IMEM_SRAM_APEX_REG_1495	R/W	GAF_SAVED_GYR_BIAS_DPS_Q12[95:88]							
66C	1644	IMEM_SRAM_APEX_REG_1644	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[7:0]							
66D	1645	IMEM_SRAM_APEX_REG_1645	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[15:8]							
66E	1646	IMEM_SRAM_APEX_REG_1646	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[23:16]							
66F	1647	IMEM_SRAM_APEX_REG_1647	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[31:24]							
670	1648	IMEM_SRAM_APEX_REG_1648	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[39:32]							
671	1649	IMEM_SRAM_APEX_REG_1649	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[47:40]							
672	1650	IMEM_SRAM_APEX_REG_1650	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[55:48]							
673	1651	IMEM_SRAM_APEX_REG_1651	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[63:56]							
674	1652	IMEM_SRAM_APEX_REG_1652	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[71:64]							
675	1653	IMEM_SRAM_APEX_REG_1653	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[79:72]							
676	1654	IMEM_SRAM_APEX_REG_1654	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[87:80]							
677	1655	IMEM_SRAM_APEX_REG_1655	R/W	GAF_SAVED_ACC_BIAS_1G_Q16[95:88]							
6B5	1717	IMEM_SRAM_APEX_REG_1717	R/W	GAF_SAVED_ACC_ACCURACY[7:0]							
6B6	1718	IMEM_SRAM_APEX_REG_1718	R/W	GAF_INIT_STATUS[7:0]							
744	1860	IMEM_SRAM_APEX_REG_1860	R/W	VVD_TREE_THRESHOLDS[7:0]							
745	1861	IMEM_SRAM_APEX_REG_1861	R/W	VVD_TREE_THRESHOLDS[15:8]							
7C2	1986	IMEM_SRAM_APEX_REG_1986	R/W	VVD_TREE_FEATUREIDS[7:0]							
801	2049	IMEM_SRAM_APEX_REG_2049	R/W	VVD_TREE_NEXTNODERIGHT[7:0]							
840	2112	IMEM_SRAM_APEX_REG_2112	R/W	VVD_TREE_THRESHOLDSSHIFT[7:0]							
960	2400	IMEM_SRAM_APEX_REG_2400	R/W	VVD_PARAMS_DELAY_HIGH[7:0]							
961	2401	IMEM_SRAM_APEX_REG_2401	R/W	VVD_PARAMS_DELAY_HIGH[15:8]							
962	2402	IMEM_SRAM_APEX_REG_2402	R/W	VVD_PARAMS_DELAY_HIGH[23:16]							
963	2403	IMEM_SRAM_APEX_REG_2403	R/W	VVD_PARAMS_DELAY_HIGH[31:24]							
964	2404	IMEM_SRAM_APEX_REG_2404	R/W	VVD_PARAMS_DELAY_LOW[7:0]							
965	2405	IMEM_SRAM_APEX_REG_2405	R/W	VVD_PARAMS_DELAY_LOW[15:8]							
966	2406	IMEM_SRAM_APEX_REG_2406	R/W	VVD_PARAMS_DELAY_LOW[23:16]							
967	2407	IMEM_SRAM_APEX_REG_2407	R/W	VVD_PARAMS_DELAY_LOW[31:24]							
968	2408	IMEM_SRAM_APEX_REG_2408	R/W	VVD_PARAMS_SAMPLE_CNT[7:0]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
969	2409	IMEM_SRAM_APEX_REG_2409	R/W	VVD_PARAMS_SAMPLE_CNT[15:8]							
96A	2410	IMEM_SRAM_APEX_REG_2410	R/W	VVD_PARAMS_SAMPLE_CNT[23:16]							
96B	2411	IMEM_SRAM_APEX_REG_2411	R/W	VVD_PARAMS_SAMPLE_CNT[31:24]							
96C	2412	IMEM_SRAM_APEX_REG_2412	R/W	VVD_PARAMS_BEST_AXIS[7:0]							
96D	2413	IMEM_SRAM_APEX_REG_2413	R/W	VVD_PARAMS_BEST_AXIS[15:8]							
96E	2414	IMEM_SRAM_APEX_REG_2414	R/W	VVD_PARAMS_BEST_AXIS[23:16]							
96F	2415	IMEM_SRAM_APEX_REG_2415	R/W	VVD_PARAMS_BEST_AXIS[31:24]							
970	2416	IMEM_SRAM_APEX_REG_2416	R/W	VVD_PARAMS_BEST_AXIS[39:32]							
971	2417	IMEM_SRAM_APEX_REG_2417	R/W	VVD_PARAMS_BEST_AXIS[47:40]							
972	2418	IMEM_SRAM_APEX_REG_2418	R/W	VVD_PARAMS_BEST_AXIS[55:48]							
973	2419	IMEM_SRAM_APEX_REG_2419	R/W	VVD_PARAMS_BEST_AXIS[63:56]							
974	2420	IMEM_SRAM_APEX_REG_2420	R/W	VVD_PARAMS_BEST_AXIS[71:64]							
975	2421	IMEM_SRAM_APEX_REG_2421	R/W	VVD_PARAMS_BEST_AXIS[79:72]							
976	2422	IMEM_SRAM_APEX_REG_2422	R/W	VVD_PARAMS_BEST_AXIS[87:80]							
977	2423	IMEM_SRAM_APEX_REG_2423	R/W	VVD_PARAMS_BEST_AXIS[95:88]							
978	2424	IMEM_SRAM_APEX_REG_2424	R/W	VVD_PARAMS_THRESH[7:0]							
979	2425	IMEM_SRAM_APEX_REG_2425	R/W	VVD_PARAMS_THRESH[15:8]							
97A	2426	IMEM_SRAM_APEX_REG_2426	R/W	VVD_PARAMS_THRESH[23:16]							
97B	2427	IMEM_SRAM_APEX_REG_2427	R/W	VVD_PARAMS_THRESH[31:24]							
97C	2428	IMEM_SRAM_APEX_REG_2428	R/W	SIF_TIME_FEAS_CONFIG[7:0]							
97D	2429	IMEM_SRAM_APEX_REG_2429	R/W	SIF_TIME_FEAS_CONFIG[15:8]							
994	2452	IMEM_SRAM_APEX_REG_2452	R/W	SIF_CLASS_INDEX[7:0]							
995	2453	IMEM_SRAM_APEX_REG_2453	R/W	SIF_CLASS_INDEX[15:8]							
9D4	2516	IMEM_SRAM_APEX_REG_2516	R/W	SIF_CCONFIG[7:0]							
9D5	2517	IMEM_SRAM_APEX_REG_2517	R/W	SIF_CCONFIG[15:8]							
9D6	2518	IMEM_SRAM_APEX_REG_2518	R/W	SIF_CCONFIG[23:16]							
9D7	2519	IMEM_SRAM_APEX_REG_2519	R/W	SIF_CCONFIG[31:24]							
9D8	2520	IMEM_SRAM_APEX_REG_2520	R/W	SIF_CCONFIG[39:32]							
9D9	2521	IMEM_SRAM_APEX_REG_2521	R/W	SIF_CCONFIG[47:40]							
9DA	2522	IMEM_SRAM_APEX_REG_2522	R/W	SIF_CCONFIG[55:48]							
9DB	2523	IMEM_SRAM_APEX_REG_2523	R/W	SIF_CCONFIG[63:56]							
9DC	2524	IMEM_SRAM_APEX_REG_2524	R/W	SIF_CCONFIG[71:64]							
9DD	2525	IMEM_SRAM_APEX_REG_2525	R/W	SIF_CCONFIG[79:72]							
9DE	2526	IMEM_SRAM_APEX_REG_2526	R/W	SIF_CCONFIG[87:80]							
9DF	2527	IMEM_SRAM_APEX_REG_2527	R/W	SIF_CCONFIG[95:88]							
9E0	2528	IMEM_SRAM_APEX_REG_2528	R/W	SIF_TCONFIG[7:0]							
9E1	2529	IMEM_SRAM_APEX_REG_2529	R/W	SIF_TCONFIG[15:8]							
9E2	2530	IMEM_SRAM_APEX_REG_2530	R/W	SIF_TCONFIG[23:16]							
9E3	2531	IMEM_SRAM_APEX_REG_2531	R/W	SIF_TCONFIG[31:24]							
9E4	2532	IMEM_SRAM_APEX_REG_2532	R/W	SIF_TCONFIG[39:32]							
9E5	2533	IMEM_SRAM_APEX_REG_2533	R/W	SIF_TCONFIG[47:40]							
9E6	2534	IMEM_SRAM_APEX_REG_2534	R/W	SIF_TCONFIG[55:48]							
9E7	2535	IMEM_SRAM_APEX_REG_2535	R/W	SIF_TCONFIG[63:56]							
9E8	2536	IMEM_SRAM_APEX_REG_2536	R/W	SIF_TCONFIG[71:64]							
9E9	2537	IMEM_SRAM_APEX_REG_2537	R/W	SIF_TCONFIG[79:72]							
9EA	2538	IMEM_SRAM_APEX_REG_2538	R/W	SIF_TCONFIG[87:80]							
9EB	2539	IMEM_SRAM_APEX_REG_2539	R/W	SIF_TCONFIG[95:88]							
9EC	2540	IMEM_SRAM_APEX_REG_2540	R/W	SIF_TCONFIG[103:96]							
9ED	2541	IMEM_SRAM_APEX_REG_2541	R/W	SIF_TCONFIG[111:104]							
9EE	2542	IMEM_SRAM_APEX_REG_2542	R/W	SIF_TCONFIG[119:112]							
9EF	2543	IMEM_SRAM_APEX_REG_2543	R/W	SIF_TCONFIG[127:120]							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
9F0	2544	IMEM_SRAM_APEX_REG_2544	R/W	SIF_TCONFIG[135:128]							
9F1	2545	IMEM_SRAM_APEX_REG_2545	R/W	SIF_TCONFIG[143:136]							
9F2	2546	IMEM_SRAM_APEX_REG_2546	R/W	SIF_TCONFIG[151:144]							
9F3	2547	IMEM_SRAM_APEX_REG_2547	R/W	SIF_TCONFIG[159:152]							
9F4	2548	IMEM_SRAM_APEX_REG_2548	R/W	SIF_TCONFIG[167:160]							
9F5	2549	IMEM_SRAM_APEX_REG_2549	R/W	SIF_TCONFIG[175:168]							
9F6	2550	IMEM_SRAM_APEX_REG_2550	R/W	SIF_TCONFIG[183:176]							
9F7	2551	IMEM_SRAM_APEX_REG_2551	R/W	SIF_TCONFIG[191:184]							
9FC to A4B	2556 to 2635	IMEM_SRAM_APEX_REG_2556 to IMEM_SRAM_APEX_REG_2635	R/W	SIF_FILTER[639:0]							
138C	5004	IMEM_SRAM_APEX_REG_5004	R/W	SIF_TREE_THRESHOLDS[7:0]							
138D	5005	IMEM_SRAM_APEX_REG_5005	R/W	SIF_TREE_THRESHOLDS[15:8]							
158A	5514	IMEM_SRAM_APEX_REG_5514	R/W	SIF_TREE_FEATUREIDS[7:0]							
1689	5769	IMEM_SRAM_APEX_REG_5769	R/W	SIF_TREE_NEXTNODERIGHT[7:0]							
1788	6024	IMEM_SRAM_APEX_REG_6024	R/W	SIF_TREE_THRESHOLDSSHIFT[7:0]							

15.4 USER BANK IMEM_SRAM_STC REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
188	392	IMEM_SRAM_STC_REG_392	R/W	STC_CONFIGPARAMS[7:0]							
189	393	IMEM_SRAM_STC_REG_393	R/W	STC_CONFIGPARAMS[15:8]							
18A	394	IMEM_SRAM_STC_REG_394	R/W	STC_CONFIGPARAMS[23:16]							
18B	395	IMEM_SRAM_STC_REG_395	R/W	STC_CONFIGPARAMS[31:24]							
18C	396	IMEM_SRAM_STC_REG_396	R/W	STC_DEBUG_EN[7:0]							
18D	397	IMEM_SRAM_STC_REG_397	R/W	STC_DEBUG_EN[15:8]							
18E	398	IMEM_SRAM_STC_REG_398	R/W	STC_DEBUG_EN[23:16]							
18F	399	IMEM_SRAM_STC_REG_399	R/W	STC_DEBUG_EN[31:24]							
190	400	IMEM_SRAM_STC_REG_400	R/W	STC_RESULTS[7:0]							
191	401	IMEM_SRAM_STC_REG_401	R/W	STC_RESULTS[15:8]							
192	402	IMEM_SRAM_STC_REG_402	R/W	STC_RESULTS[23:16]							
193	403	IMEM_SRAM_STC_REG_403	R/W	STC_RESULTS[31:24]							

15.5 USER BANK IPREG_BAR REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
39	57	IPREG_BAR_REG_57	R/W	-	IO_OPT0	IO_OPT1	-				
3A	58	IPREG_BAR_REG_58	R/W	PADS_AP_SCLK_PUD_TRIM_D2A	PADS_AP_SCLK_PE_TRIM_D2A	-	PADS_AP_CS_PUD_TRIM_D2A	PADS_AP_CS_PE_TRIM_D2A	-		IO_OPT2
3B	59	IPREG_BAR_REG_59	R/W	PADS_PIN7_PE_TRIM_D2A	-	PADS_AP_SDO_PUD_TRIM_D2A	PADS_AP_SDO_PE_TRIM_D2A	-	PADS_AP_SDI_PUD_TRIM_D2A	PADS_AP_SDI_PE_TRIM_D2A	-
3C	60	IPREG_BAR_REG_60	R/W	-	PADS_AUX1_SCLK_PUD_TRIM_D2A	PADS_AUX1_SCLK_PE_TRIM_D2A	PADS_AUX_SCLK_TP2_FROM_PAD_DISABLE_TRIM_D2A	PADS_AUX1_CS_PUD_TRIM_D2A	PADS_AUX1_CS_PE_TRIM_D2A	-	PADS_PIN7_CS_PUD_TRIM_D2A
3D	61	IPREG_BAR_REG_61	R/W	PADS_INT1_PUD_TRIM_D2A	PADS_INT1_PE_TRIM_D2A	-	PADS_AUX1_SDO_PUD_TRIM_D2A	PADS_AUX1_SDO_PE_TRIM_D2A	-	PADS_AUX1_SDI_PUD_TRIM_D2A	PADS_AUX1_SDI_PE_TRIM_D2A
3E	62	IPREG_BAR_REG_62	R/W	-					PADS_INT2_PUD_TRIM_D2A	PADS_INT2_PE_TRIM_D2A	-

15.6 USER BANK IPREG_TOP1 REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
06	06	I2CM_COMMAND_0	R/W	ENDFLAG_0	CH_SEL_0	R_W_0		BURSTLEN_0			
07	07	I2CM_COMMAND_1	R/W	ENDFLAG_1	CH_SEL_1	R_W_1		BURSTLEN_1			
08	08	I2CM_COMMAND_2	R/W	ENDFLAG_2	CH_SEL_2	R_W_2		BURSTLEN_2			
09	09	I2CM_COMMAND_3	R/W	ENDFLAG_3	CH_SEL_3	R_W_3		BURSTLEN_3			
0E	14	I2CM_DEV_PROFILE0	R/W	RD_ADDRESS_0							
0F	15	I2CM_DEV_PROFILE1	R/W	-	DEV_ID_0						
10	16	I2CM_DEV_PROFILE2	R/W	RD_ADDRESS_1							
11	17	I2CM_DEV_PROFILE3	R/W	-	DEV_ID_1						
16	22	I2CM_CONTROL	RWS	-	I2CM_RESTART_EN	-		I2CM_SPEED	-		I2CM_GO
18	24	I2CM_STATUS	R	-		I2CM_SDA_ERR	I2CM_SCL_ERR	I2CM_SRST_ERR	I2CM_TIMEOUT_ERR	I2CM_DONE	I2CM_BUSY
1A	26	I2CM_EXT_DEV_STATUS		-				I2CM_EXT_DEV_STATUS			
1B	27	I2CM_RD_DATA0	RWS	I2CM_RD_DATA0							
1C	28	I2CM_RD_DATA1	RWS	I2CM_RD_DATA1							
1D	29	I2CM_RD_DATA2	RWS	I2CM_RD_DATA2							
1E	30	I2CM_RD_DATA3	RWS	I2CM_RD_DATA3							
1F	31	I2CM_RD_DATA4	RWS	I2CM_RD_DATA4							
20	32	I2CM_RD_DATA5	RWS	I2CM_RD_DATA5							
21	33	I2CM_RD_DATA6	RWS	I2CM_RD_DATA6							
22	34	I2CM_RD_DATA7	RWS	I2CM_RD_DATA7							
23	35	I2CM_RD_DATA8	RWS	I2CM_RD_DATA8							
24	36	I2CM_RD_DATA9	RWS	I2CM_RD_DATA9							
25	37	I2CM_RD_DATA10	RWS	I2CM_RD_DATA10							
26	38	I2CM_RD_DATA11	RWS	I2CM_RD_DATA11							
27	39	I2CM_RD_DATA12	RWS	I2CM_RD_DATA12							
28	40	I2CM_RD_DATA13	RWS	I2CM_RD_DATA13							
29	41	I2CM_RD_DATA14	RWS	I2CM_RD_DATA14							
2A	42	I2CM_RD_DATA15	RWS	I2CM_RD_DATA15							
2B	43	I2CM_RD_DATA16	RWS	I2CM_RD_DATA16							
2C	44	I2CM_RD_DATA17	RWS	I2CM_RD_DATA17							
2D	45	I2CM_RD_DATA18	RWS	I2CM_RD_DATA18							
2E	46	I2CM_RD_DATA19	RWS	I2CM_RD_DATA19							
2F	47	I2CM_RD_DATA20	RWS	I2CM_RD_DATA20							
33	51	I2CM_WR_DATA0	R/W	I2CM_WR_DATA0							
34	52	I2CM_WR_DATA1	R/W	I2CM_WR_DATA1							
35	53	I2CM_WR_DATA2	R/W	I2CM_WR_DATA2							
36	54	I2CM_WR_DATA3	R/W	I2CM_WR_DATA3							
37	55	I2CM_WR_DATA4	R/W	I2CM_WR_DATA4							
38	56	I2CM_WR_DATA5	R/W	I2CM_WR_DATA5							
4B	75	SIFS_IXC_ERROR_STATUS	R/C	-						AUX1_SIFS_IXC_TIMEOUT_ERR	SIFS_IXC_TIMEOUT_ERR
4F	79	EDMP_PRGRM_IRQ0_0	R/W	PRGRM_STRT_ADDR_IRQ_0[7:0]							
50	80	EDMP_PRGRM_IRQ0_1	R/W	PRGRM_STRT_ADDR_IRQ_0[15:8]							
51	81	EDMP_PRGRM_IRQ1_0	R/W	PRGRM_STRT_ADDR_IRQ_1[7:0]							
52	82	EDMP_PRGRM_IRQ1_1	R/W	PRGRM_STRT_ADDR_IRQ_1[15:8]							
53	83	EDMP_PRGRM_IRQ2_0	R/W	PRGRM_STRT_ADDR_IRQ_2[7:0]							
54	84	EDMP_PRGRM_IRQ2_1	R/W	PRGRM_STRT_ADDR_IRQ_2[15:8]							
55	85	EDMP_SP_START_ADDR	R/W	EDMP_SP_START_ADDR							

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
58	88	SMC_CONTROL_0	R/W	-			ACCEL_LP_CLK_SEL	TEMP_DIS	TMST_FORCE_AUX_FINE_EN	TMST_FSYNC_EN	TMST_EN
59	89	SMC_CONTROL_1	R/W	-				SREG_AUX_ACCEL_ONLY_EN	-		
63	99	STC_CONFIG	R/W	-				STC_SENSOR_SEL		-	
67	103	SREG_CTRL	R/W	-						SREG_DATA_ENDIAN_SEL	-
68	104	SIFS_I3C_STC_CFG	R/W	-					I3C_STC_MODE	-	
69	105	INT_PULSE_MIN_ON_INTF0	R/W	-					INT0_TPULSE_DURATION		
6A	106	INT_PULSE_MIN_ON_INTF1	R/W	-					INT1_TPULSE_DURATION		
6B	107	INT_PULSE_MIN_OFF_INTF0	R/W	-					INT0_TDEASSERT_DISABLE		
6C	108	INT_PULSE_MIN_OFF_INTF1	R/W	-					INT1_TDEASSERT_DISABLE		
6E	110	ISR_0_7	R/C	-		INT_STATUS_ON_DEMAND_PIN_0	-	INT_STATUS_EXT_ODR_DRDY_PIN_0	-		INT_STATUS_ACCEL_DRDY_PIN_0
6F	111	ISR_8_15	R/C	-		INT_STATUS_ON_DEMAND_PIN_1	-	INT_STATUS_EXT_ODR_DRDY_PIN_1	-		INT_STATUS_ACCEL_DRDY_PIN_1
70	112	ISR_16_23	R/C	-		INT_STATUS_ON_DEMAND_PIN_2	-	INT_STATUS_EXT_ODR_DRDY_PIN_2	-		INT_STATUS_ACCEL_DRDY_PIN_2
71	113	STATUS_MASK_PIN_0_7	R/W	-		INT_ON_DEMAND_PIN_0_DIS	-	INT_EXT_ODR_DRDY_PIN_0_DIS	-		INT_ACCEL_DRDY_PIN_0_DIS
72	114	STATUS_MASK_PIN_8_15	R/W	-		INT_ON_DEMAND_PIN_1_DIS	-	INT_EXT_ODR_DRDY_PIN_1_DIS	-		INT_ACCEL_DRDY_PIN_1_DIS
73	115	STATUS_MASK_PIN_16_23	R/W	-		INT_ON_DEMAND_PIN_2_DIS	-	INT_EXT_ODR_DRDY_PIN_2_DIS	-		INT_ACCEL_DRDY_PIN_2_DIS
74	116	INT_I2CM_SOURCE	R/W	-						INT_STATUS_I2CM_SMC_EXT_ODR_EN	-
7E	126	ACCEL_WOM_X_THR	R/W	WOM_X_TH							
7F	127	ACCEL_WOM_Y_THR	R/W	WOM_Y_TH							
80	128	ACCEL_WOM_Z_THR	R/W	WOM_Z_TH							
90	144	SELFTEST		-		EN_GZ_ST	EN_GY_ST	EN_GX_ST	EN_AZ_ST	EN_AY_ST	EN_AX_ST
97	151	IPREG_MISC	R	-						EDMP_IDLE	-
A2	162	SW_PLL1_TRIM	R	SW_PLL1_TRIM							
A7	167	FIFO_SRAM_SLEEP	R/W	-						FIFO_GSLEEP_SHARED_SRAM	

15.7 USER BANK IPREG_SYS1 REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
2A	42	IPREG_SYS1_REG_42	R/W	GYRO_X_OFFUSER[7:0]							
2B	43	IPREG_SYS1_REG_43	R/W	-		GYRO_X_OFFUSER[13:8]					
38	56	IPREG_SYS1_REG_56	R/W	GYRO_Y_OFFUSER[7:0]							
39	57	IPREG_SYS1_REG_57	R/W	-		GYRO_Y_OFFUSER[13:8]					
46	70	IPREG_SYS1_REG_56	R/W	GYRO_Z_OFFUSER[7:0]							
47	71	IPREG_SYS1_REG_57	R/W	-		GYRO_Z_OFFUSER[13:8]					
A6	166	IPREG_SYS1_REG_166	R/W	-	GYRO_SRC_CTRL		-				
A8	168	IPREG_SYS1_REG_168	R/W	-						GYRO_OIS_M6_BYP	-
AA	170	IPREG_SYS1_REG_170	R/W	GYRO_OIS_HPFBW_SEL			GYRO_LP_AVG_SEL				-
AB	171	IPREG_SYS1_REG_171	R/W	-					GYRO_OIS_LPF1BW_SEL		

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
AC	172	IPREG_SYS1_REG_172	R/W	GYRO_OIS_HPF1_BYP	-		GYRO_LPF_BYP	-	GYRO_UI_LPFBW_SEL		

15.8 USER BANK IPREG_SYS2 REGISTER MAP

Addr (Hex)	Addr (Dec.)	Register Name	Serial I/F	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
18	24	IPREG_SYS2_REG_24	R/W	ACCEL_X_OFFUSER[7:0]							
19	25	IPREG_SYS2_REG_25	R/W	-		ACCEL_X_OFFUSER[13:8]					
20	32	IPREG_SYS2_REG_32	R/W	ACCEL_Y_OFFUSER[7:0]							
21	33	IPREG_SYS2_REG_33	R/W	-		ACCEL_Y_OFFUSER[13:8]					
28	40	IPREG_SYS2_REG_40	R/W	ACCEL_Z_OFFUSER[7:0]							
29	41	IPREG_SYS2_REG_41	R/W	-		ACCEL_Z_OFFUSER[13:8]					
7B	123	IPREG_SYS2_REG_123	R/W	-						ACCEL_SRC_CTRL	
80	128	IPREG_SYS2_REG_128	R/W	-		TMP_DEC_CFG			TMP_LPF_CFG		
81	129	IPREG_SYS2_REG_129	R/W	-	ACCEL_OIS_HPFBW_SEL			ACCEL_LP_AVG_SEL			
82	130	IPREG_SYS2_REG_130	R/W	-					ACCEL_OIS_LPF1BW_SEL		
83	131	IPREG_SYS2_REG_131	R/W	-		ACCEL_LPF_BYP	-		ACCEL_UI_LPFBW_SEL		
84	132	IPREG_SYS2_REG_132	R/W	-					ACCEL_OIS_M6_BYP	-	ACCEL_OIS_HPF1_BYP

Detailed register descriptions are provided in the sections that follow.

Register fields marked as Reserved must not be modified by the user. The Reset Value of the register can be used to determine the default value of reserved register fields, and unless otherwise noted this default value must be maintained even if the values of other register fields are modified by the user.

In the sections that follow, some register fields are described as “can be changed on-the-fly.” These are the only register fields that can be changed on-the-fly even if sensor is on. Register fields not described as such must not be changed on-the-fly if sensor is on.

16 USER BANK 0 REGISTER MAP – DESCRIPTIONS

Please refer to the procedure in Section 14 for configuring device data endianness before using the register map.

16.1 ACCEL_DATA_X1_UI

Name: ACCEL_DATA_X1_UI
Address: 00 (00h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_X_UI[15:8]	Upper byte of Accel X-axis data for UI path

16.2 ACCEL_DATA_X0_UI

Name: ACCEL_DATA_X0_UI
Address: 01 (01h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_X_UI[7:0]	Lower byte of Accel X-axis data for UI path

16.3 ACCEL_DATA_Y1_UI

Name: ACCEL_DATA_Y1_UI
Address: 02 (02h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Y_UI[15:8]	Upper byte of Accel Y-axis data for UI path

16.4 ACCEL_DATA_Y0_UI

Name: ACCEL_DATA_Y0_UI
Address: 03 (03h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Y_UI[7:0]	Lower byte of Accel Y-axis data for UI path

16.5 ACCEL_DATA_Z1_UI

Name: ACCEL_DATA_Z1_UI
Address: 04 (04h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Z_UI[15:8]	Upper byte of Accel Z-axis data for UI path

16.6 ACCEL_DATA_Z0_UI

Name: ACCEL_DATA_Z0_UI
Address: 05 (05h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Z_UI[7:0]	Lower byte of Accel Z-axis data for UI path

16.7 GYRO_DATA_X1_UI

Name: GYRO_DATA_X1_UI
Address: 06 (06h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_X_UI[15:8]	Upper byte of Gyro X-axis data for UI path

16.8 GYRO_DATA_X0_UI

Name: GYRO_DATA_X0_UI
Address: 07 (07h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_X_UI[7:0]	Lower byte of Gyro X-axis data for UI path

16.9 GYRO_DATA_Y1_UI

Name: GYRO_DATA_Y1_UI
Address: 08 (08h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Y_UI[15:8]	Upper byte of Gyro Y-axis data for UI path

16.10 GYRO_DATA_Y0_UI

Name: GYRO_DATA_Y0_UI
Address: 09 (09h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Y_UI[7:0]	Lower byte of Gyro Y-axis data for UI path

16.11 GYRO_DATA_Z1_UI

Name: GYRO_DATA_Z1_UI
Address: 10 (0Ah)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Z_UI[15:8]	Upper byte of Gyro Z-axis data for UI path

16.12 GYRO_DATA_Z0_UI

Name: GYRO_DATA_Z0_UI
Address: 11 (0Bh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Z_UI[7:0]	Lower byte of Gyro Z-axis data for UI path

16.13 TEMP_DATA1_UI

Name: TEMP_DATA1_UI
Address: 12 (0Ch)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TEMP_DATA_UI[15:8]	Upper byte of temperature data for UI path

16.14 TEMP_DATA0_UI

Name: TEMP_DATA0_UI
Address: 13 (0Dh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TEMP_DATA_UI[7:0]	Lower byte of temperature data for UI path

Temperature data value from the sensor data registers can be converted to degrees centigrade by using the following formula:

Temperature in Degrees Centigrade = (TEMP_DATA / 128) + 25

Temperature data stored in FIFO is an 8-bit quantity, FIFO_TEMP_DATA. It can be converted to degrees centigrade by using the following formula:

Temperature in Degrees Centigrade = (FIFO_TEMP_DATA / 2) + 25

16.15 TMST_FSYNCH

Name: TMST_FSYNCH
Address: 14 (0Eh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TMST_FSYNC_DATA_UI[15:8]	Stores the upper byte of the time delta from the rising edge of FSYNC to the latest ODR until the UI Interface reads the FSYNC tag in the status register

16.16 TMST_FSYNCL

Name: TMST_FSYNCL
Address: 15 (0Fh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TMST_FSYNC_DATA_UI[7:0]	Stores the lower byte of the time delta from the rising edge of FSYNC to the latest ODR until the UI Interface reads the FSYNC tag in the status register

16.17 PWR_MGMT0

Name: PWR_MGMT0
Address: 16 (10h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:2	GYRO_MODE	00: Turns gyroscope off 01: Places gyroscope in Standby Mode 10: Places gyroscope in Low Power (LP) Mode 11: Places gyroscope in Low Noise (LN) Mode Can be changed on-the-fly.
1:0	ACCEL_MODE	00: Turns accelerometer off 01: Turns accelerometer off 10: Places accelerometer in Low Power (LP) Mode 11: Places accelerometer in Low Noise (LN) Mode Can be changed on-the-fly.

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16.18 FIFO_COUNT_0

Name: FIFO_COUNT_0
Address: 18 (12h)
Serial IF: R
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	FIFO_DATA_CNT[15:8]	High Bits, count indicates the number of packets available in FIFO.

16.19 FIFO_COUNT_1

Name: FIFO_COUNT_1
Address: 19 (13h)
Serial IF: R
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	FIFO_DATA_CNT[7:0]	Low Bits, count indicates the number of packets available in FIFO.

16.20 FIFO_DATA

Name: FIFO_DATA
Address: 20 (14h)
Serial IF: R
Reset value: 0x7F
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	FIFO_DATA	FIFO data port

16.21 INT1_CONFIG0

Name: INT1_CONFIG0
Address: 22 (16h)
Serial IF: R/W
Reset value: 0x80
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT1_STATUS_EN_RESET_DONE	Enable interrupt status bit to flag the occurrence of Reset Done event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
6	INT1_STATUS_EN_AUX1_AGC_RDY	Enable interrupt status bit to flag the occurrence of AUX1 AGC Ready event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
5	INT1_STATUS_EN_AP_AGC_RDY	Enable interrupt status bit to flag the occurrence of UI AGC Ready event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
4	INT1_STATUS_EN_AP_FSYNC	Enable interrupt status bit to flag the occurrence of UI FSYNC event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
3	INT1_STATUS_EN_AUX1_DRDY	Enable interrupt status bit to flag the occurrence of AUX1 Data Ready event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
2	INT1_STATUS_EN_DRDY	Enable interrupt status bit to flag the occurrence of UI Data Ready event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
1	INT1_STATUS_EN_FIFO_THS	Enable interrupt status bit to flag the occurrence of FIFO count ≥ FIFO threshold event on INT1

		0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
0	INT1_STATUS_EN_FIFO_FULL	Enable interrupt status bit to flag the occurrence of FIFO full event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.

16.22 INT1_CONFIG1

Name: INT1_CONFIG1
Address: 23 (17h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT1_STATUS_EN_APEX_EVENT	Enable interrupt status bit to flag the occurrence of APEX event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
5	INT1_STATUS_EN_I2CM_DONE	Enable interrupt status bit to flag the completion of I^2C master event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
4	INT1_STATUS_EN_I3C_PROTOCOL_ERR	Enable interrupt status bit to flag the occurrence of I3C Protocol Error event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
3	INT1_STATUS_EN_WOM_Z	Enable interrupt status bit to flag the occurrence of WOM on Z-axis event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
2	INT1_STATUS_EN_WOM_Y	Enable interrupt status bit to flag the occurrence of WOM on Y-axis event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
1	INT1_STATUS_EN_WOM_X	Enable interrupt status bit to flag the occurrence of WOM on X-axis event on INT1 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
0	INT1_STATUS_EN_PLL_RDY	Enable interrupt status bit to flag the occurrence of PLL Ready event on INT1 0: Disable interrupt.

		1: Enable interrupt. Setting can be changed by UI interface.

16.23 INT1_CONFIG2

Name: INT1_CONFIG2
Address: 24 (18h)
Serial IF: R/W
Reset value: 0x04
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	INT1_DRIVE	Sets INT1 to open-drain or push-pull 0: Push-pull 1: Open-drain
1	INT1_MODE	INT1 interrupt mode 0: Pulse mode 1: Latch mode Setting can be changed only when all interrupts of the corresponding serial interface are disabled
0	INT1_POLARITY	INT1 interrupt polarity 0: Active low 1: Active high Setting can be changed only when all interrupts of the corresponding serial interface are disabled

16.24 INT1_STATUS0

Name: INT1_STATUS0
Address: 25 (19h)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT1_STATUS_RESET_DONE	Flags the occurrence of Reset Done event on INT1 0: Interrupt did not occur 1: Interrupt occurred
6	INT1_STATUS_AUX1_AGC_RDY	Flags the occurrence of AUX1 AGC Ready event on INT1 0: Interrupt did not occur 1: Interrupt occurred
5	INT1_STATUS_AP_AGC_RDY	Flags the occurrence of UI AGC Ready event on INT1 0: Interrupt did not occur 1: Interrupt occurred
4	INT1_STATUS_AP_FSYNC	Flags the occurrence of UI FSYNC event on INT1 0: Interrupt did not occur 1: Interrupt occurred
3	INT1_STATUS_AUX1_DRDY	Flags the occurrence of AUX1 Data Ready event on INT1 0: Interrupt did not occur 1: Interrupt occurred
2	INT1_STATUS_DRDY	Flags the occurrence of UI Data Ready event on INT1 0: Interrupt did not occur 1: Interrupt occurred
1	INT1_STATUS_FIFO_THS	Flags the occurrence of FIFO count ≥ FIFO threshold event on INT1 0: Interrupt did not occur 1: Interrupt occurred
0	INT1_STATUS_FIFO_FULL	Flags the occurrence of FIFO full event on INT1 0: Interrupt did not occur 1: Interrupt occurred

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16.25 INT1_STATUS1

Name: INT1_STATUS1
Address: 26 (1Ah)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT1_STATUS_APEX_EVENT	Flags the occurrence of APEX event on INT1 0: Interrupt did not occur 1: Interrupt occurred
5	INT1_STATUS_I2CM_DONE	Flags the occurrence of I^2C Master Done event on INT1 0: Interrupt did not occur 1: Interrupt occurred
4	INT1_STATUS_I3C_PROTOCOL_ERR	Flags the occurrence of $I3C^{SM}$ Protocol Error event on INT1 0: Interrupt did not occur 1: Interrupt occurred
3	INT1_STATUS_WOM_Z	Flags the occurrence of Z-axis WOM event on INT1 0: Interrupt did not occur 1: Interrupt occurred
2	INT1_STATUS_WOM_Y	Flags the occurrence of Y-axis WOM event on INT1 0: Interrupt did not occur 1: Interrupt occurred
1	INT1_STATUS_WOM_X	Flags the occurrence of X-axis WOM event on INT1 0: Interrupt did not occur 1: Interrupt occurred
0	INT1_STATUS_PLL_RDY	Flags the occurrence of PLL Ready event on INT1 0: Interrupt did not occur 1: Interrupt occurred

16.26 ACCEL_CONFIG0

Name: ACCEL_CONFIG0
Address: 27 (1Bh)
Serial IF: R/W
Reset value: 0x06
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:4	ACCEL_UI_FS_SEL	Full scale select for accelerometer UI interface output 000: ±32g 001: ±16g 010: ±8g 011: ±4g 100: ±2g 101: Reserved 110: Reserved 111: Reserved Can be changed on-the-fly.
3:0	ACCEL_ODR	Accelerometer ODR selection for UI interface output 0000: Reserved 0001: Reserved 0010: Reserved 0011: 6.4kHz (LN mode) 0100: 3.2kHz (LN mode) 0101: 1.6kHz (LN mode) 0110: 800Hz (LN mode) 0111: 400Hz (LP or LN mode) 1000: 200Hz (LP or LN mode) 1001: 100Hz (LP or LN mode) 1010: 50Hz (LP or LN mode) 1011: 25Hz (LP or LN mode) 1100: 12.5Hz (LP or LN mode) 1101: 6.25Hz (LP mode) 1110: 3.125Hz (LP mode) 1111: 1.5625Hz (LP mode) Can be changed on-the-fly.

16.27 GYRO_CONFIG0

Name: GYRO_CONFIG0
Address: 28 (1Ch)
Serial IF: R/W
Reset value: 0x06
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	GYRO_UI_FS_SEL	Full scale select for gyroscope UI interface output 0000: ±4000dps 0001: ±2000dps 0010: ±1000dps 0011: ±500dps 0100: ±250dps 0101: ±125dps 0110: ±62.5dps 0111: ±31.25dps 1000: ±15.625dps Rest of the settings are reserved Can be changed on-the-fly.
3:0	GYRO_ODR	Gyroscope ODR selection for UI interface output 0000: Reserved 0001: Reserved 0010: Reserved 0011: 6.4kHz (LN mode) 0100: 3.2kHz (LN mode) 0101: 1.6kHz (LN mode) 0110: 800Hz (LN mode) 0111: 400Hz (LP or LN mode) 1000: 200Hz (LP or LN mode) 1001: 100Hz (LP or LN mode) 1010: 50Hz (LP or LN mode) 1011: 25Hz (LP or LN mode) 1100: 12.5Hz (LP or LN mode) 1101: 6.25Hz (LP mode) 1110: 3.125Hz (LP mode) 1111: 1.5625Hz (LP mode) Can be changed on-the-fly.

16.28 FIFO_CONFIG0

Name: FIFO_CONFIG0
Address: 29 (1Dh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	FIFO_MODE	Set the FIFO operation mode. 00: Bypass (disabled) 01: Stream mode - Frames are overwritten when the FIFO full condition is reached. Supported only for 8, 16, 20 bytes frame size. When this mode is selected for 32 or 64 bytes frame sizes, FIFO remains in Bypass mode. 10: Stop-on-full mode - Frames are not stored in FIFO once the FIFO full condition is reached. 11: Reserved Can be changed on-the-fly.
5:0	FIFO_DEPTH	Set the FIFO depth in bytes. 000111: Sets FIFO depth to 2K bytes (recommended setting) 011111: Sets FIFO depth to 8K bytes (valid when all APEX features are disabled) Others: Reserved Can be changed when FIFO is disabled (Bypass mode).

16.29 FIFO_CONFIG1_0

Name: FIFO_CONFIG1_0
Address: 30 (1Eh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FIFO_WM_TH[7:0]	Lower bits of FIFO watermark threshold. When set to 0, the watermark is disabled. When writing new threshold value, user must first write threshold LSByte (bits [7:0]), then MSByte (bits [15:8]). New threshold register value will take effect only when MSByte is written. Can be changed on-the-fly.

16.30 FIFO_CONFIG1_1

Name: FIFO_CONFIG1_1
Address: 31 (1Fh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FIFO_WM_TH[15:8]	Upper bits of FIFO watermark threshold. When set to 0, the watermark is disabled. When writing new threshold value, user must first write threshold LSByte (bits [7:0]), then MSByte (bits [15:8]). New threshold register value will take effect only when MSByte is written. Can be changed on-the-fly.

16.31 FIFO_CONFIG2

Name: FIFO_CONFIG2
Address: 32 (20h)
Serial IF: R/W
Reset value: 0x20
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	FIFO_FLUSH	FIFO flush command. When set high the FIFO is flushed, meaning the pointers and control logic is reset. Configuration registers are not reset. Can be changed on-the-fly.
6:4	-	Reserved
3	FIFO_WR_WM_GT_TH	Set write watermark interrupt generating condition: 0: Write watermark interrupt generated when FIFO data count is equal to the FIFO watermark threshold 1: Write watermark interrupt generated when FIFO data count is greater than or equal to FIFO watermark threshold Can be changed when FIFO is disabled (Bypass mode).
2:0	-	Reserved

16.32 FIFO_CONFIG3

Name: FIFO_CONFIG3
Address: 33 (21h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	FIFO_ES1_EN	Enable External Sensor 1 data insertion into FIFO frame
4	FIFO_ES0_EN	Enable External Sensor 0 data insertion into FIFO frame
3	FIFO_HIRES_EN	Enable high resolution accel and gyro data insertion into FIFO frame
2	FIFO_GYRO_EN	Enable gyro data insertion into FIFO frame
1	FIFO_ACCEL_EN	Enable accel data insertion into FIFO frame
0	FIFO_IF_EN	Enable Sensor Registers write interface to FIFO. This interface should be enabled when the FIFO is also enabled (i.e., not in bypass mode). A standard enable sequence is: 1) Enable FIFO. 2) Enable Sensor Registers to FIFO interface. The opposite sequence should be used for the disable. To prevent power drain, FIFO_IF_EN should be set to 0 if FIFO is in bypass mode. Can be changed on-the-fly.

16.33 FIFO_CONFIG4

Name: FIFO_CONFIG4
Address: 34 (22h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:3	FIFO_COMP_NC_FLOW_CFG	Configures the compression algorithm to write non-compressed packets to FIFO at a certain rate 000: Non-compressed packet flow is disabled 001: Non-compressed packet every 8 frames 010: Non-compressed packet every 16 frames 011: Non-compressed packet every 32 frames 100: Non-compressed packet every 64 frames 101: Non-compressed packet every 128 frames Others: Reserved
2	FIFO_COMP_EN	0: FIFO compression disabled 1: FIFO compression enabled
1	FIFO_TMST_FSYNC_EN	Enable the insertion of the Timestamp or FSYNC data into FIFO frame 0: No Timestamp/FSYNC data inserted into FIFO frame (timestamp fields are 0x0000). FSYNC_TAG_EN bit in FIFO header is 0. 1: Timestamp/FSYNC data inserted into FIFO frame. FSYNC_TAG_EN bit in FIFO header is set on an FSYNC trigger event.
0	FIFO_ES0_6B_9B	Select number of valid bytes provided by External Sensor 0 0: 6 bytes 1: 9 bytes

16.34 TMST_WOM_CONFIG

Name: TMST_WOM_CONFIG
Address: 35 (23h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	TMST_DELTA_EN	Time Stamp Delta Enable 0: Time stamp field does not contain the measurement of time since the last occurrence of trigger event 1: Time stamp field contains the measurement of time since the last occurrence of trigger event
5	TMST_RESOL	Time Stamp Resolution 0: 1µs 1: 16µs
4	WOM_EN	Wake on Motion Enable 0: Wake on Motion not enabled 1: Wake on Motion enabled
3	WOM_MODE	Wake on Motion Mode 0: Initial sample is stored. Future samples are compared to initial sample 1: Compare current sample to previous sample
2	WOM_INT_MODE	Wake on Motion Interrupt 0: Off 1: On
1:0	WOM_INT_DUR	Wake on Motion Interrupt Duration 00: Wake on Motion interrupt asserted at first over-threshold event 01: Wake on Motion interrupt asserted at second over-threshold event 10: Wake on Motion interrupt asserted at third over-threshold event 11: Wake on Motion interrupt asserted at fourth over-threshold event

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16.35 FSYNC_CONFIG0

Name: FSYNC_CONFIG0
Address: 36 (24h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3	AP_FSYNC_FLAG_CLEAR_SEL	Select the AP/UI FSYNC flag clear policy. 0: The FSYNC flag is cleared when UI/AP sensor register is updated. 1: The FSYNC flag is cleared when UI/AP serial interface reads the sensor register LSB of FSYNC tagged axis.
2:0	AP_FSYNC_SEL	Select the AP/UI sensor that will carry the FSYNC tagging. 0: FSYNC tagging is disabled 1: Tag FSYNC flag to TEMP_DATA_UI LSB 2: Tag FSYNC flag to GYRO_DATA_X_UI LSB 3: Tag FSYNC flag to GYRO_DATA_Y_UI LSB 4: Tag FSYNC flag to GYRO_DATA_Z_UI LSB 5: Tag FSYNC flag to ACCEL_DATA_X_UI LSB 6: Tag FSYNC flag to ACCEL_DATA_Y_UI LSB 7: Tag FSYNC flag to ACCEL_DATA_Z_UI LSB

16.36 FSYNC_CONFIG1

Name: FSYNC_CONFIG1
Address: 37 (25h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3	AUX1_FSYNC_FLAG_CLEAR_SEL	Select the AUX1 FSYNC flag clear policy. 0: The FSYNC flag is cleared when AUX1 sensor register is updated . 1: The FSYNC flag is cleared when AUX1 serial interface reads the sensor register LSB of FSYNC tagged axis.
2:0	AUX1_FSYNC_SEL	Select the AUX1 sensor that will carry the FSYNC tagging. 0: FSYNC tagging is disabled 1: Tag FSYNC flag to TEMP_DATA_AUX1 LSB 2: Tag FSYNC flag to GYRO_DATA_X_AUX1 LSB 3: Tag FSYNC flag to GYRO_DATA_Y_AUX1 LSB 4: Tag FSYNC flag to GYRO_DATA_Z_AUX1 LSB 5: Tag FSYNC flag to ACCEL_DATA_X_AUX1 LSB 6: Tag FSYNC flag to ACCEL_DATA_Y_AUX1 LSB 7: Tag FSYNC flag to ACCEL_DATA_Z_AUX1 LSB

16.37 RTC_CONFIG

Name: RTC_CONFIG
Address: 38 (26h)
Serial IF: R/W
Reset value: 0x03
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	RTC_ALIGN	RTC align bit. Re-align command is generated by writing 1 to this bit.
5	RTC_MODE	0: RTC functionality not enabled. 1: RTC functionality enabled. If also the I3C^{SM} Synchronous Mode functionality is enabled, then setting this bit to 1 will have no effect. RTC functionality can be enabled only if ACCEL_LP_CLK_SEL is set to 1; otherwise device may not behave as expected.
4:0	-	Reserved

16.38 DMP_EXT_SEN_ODR_CFG

Name: DMP_EXT_SEN_ODR_CFG
Address: 39 (27h)
Serial IF: R/W
Reset value: 0x01
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	EXT_SENSOR_EN	0: Disables generation of ODR event for external sensor operation per the setting of EXT_ODR. 1: Enables generation of ODR event for external sensor operation per the setting of EXT_ODR.
5:3	EXT_ODR	I^2C master external sensor ODR 000: 3.125Hz 001: 6.25Hz 010: 12.5Hz 011: 25Hz 100: 50Hz 101: 100Hz 110: 200Hz 111: 400Hz
2:0	APEX_ODR	DMP Output Data Rate. APEX_ODR should be smaller than or equal to both ACCEL_ODR and GYRO_ODR. All rates shown below except 800Hz can be set if Accel UI/AP in in LP mode. Accel UI/AP must be in LN mode to set 800Hz. 000: 25Hz 001: 50Hz 010: 100Hz 011: 200Hz 100: 400Hz

		101: 800Hz 110: Reserved 111: Reserved

16.39 ODR_DECIMATE_CONFIG

Name: ODR_DECIMATE_CONFIG
Address: 40 (28h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	GYRO_FIFO_ODR_DEC	Decimation factor for Gyroscope FIFO data: 0000: 1 (same are input ODR) 0001: 2 0010: 4 0011: 8 0100: 16 0101: 32 0110: 64 0111: 128 1000: 256 1001: 512 1010: 1024 1011: 2048 1100: 4096 1101: Reserved 1110: Reserved 1111: Reserved
3:0	ACCEL_FIFO_ODR_DEC	Decimation factor for Accelerometer FIFO data: 0000: 1 (same are input ODR) 0001: 2 0010: 4 0011: 8 0100: 16 0101: 32 0110: 64 0111: 128 1000: 256 1001: 512 1010: 1024 1011: 2048 1100: 4096 1101: Reserved 1110: Reserved 1111: Reserved

16.40 EDMP_APEX_EN0

Name: EDMP_APEX_EN0
Address: 41 (29h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	B2S_EN	Set 1 to enable B2S algorithm
5	FF_EN	Set 1 to enable Freefall algorithm
4	AID_EN	Set 1 to enable AID algorithm
3	-	Reserved
2	VVD_EN	Set 1 to enable VVD algorithm
1	SIF_EN	Set 1 to enable SIF algorithm
0	TAP_EN	Set 1 to enable Tap algorithm

16.41 EDMP_APEX_EN1

Name: EDMP_APEX_EN1
Address: 42 (2Ah)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	EDMP_ENABLE	Set 1 to enable eDMP
5	FEATURE3_EN	Set 1 to enable eDMP to run algorithms from RAM image
4:3	-	Reserved
2	POWER_SAVE_EN	Set 1 to enable power save mode
1	INIT_EN	This bit is set by the host to indicate: eDMP executes only the segment of code that initialize constants used by algorithms.
0	-	Reserved

16.42 APEX_BUFFER_MGMT

Name: APEX_BUFFER_MGMT
Address: 43 (2Bh)
Serial IF: R/W (bits 5:4 are R only)
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	FF_DURATION_HOST_RPTR	LSB indicates SRAM address for host to read; MSB indicates size 2 buffer wrap around 00: Host reads buffer 0 01: Host reads buffer 1 10: Host reads buffer 0 11: Host reads buffer 1
5:4	FF_DURATION_EDMP_WPTR	Read only register field: LSB indicates SRAM address for eDMP to write; MSB indicates size 2 buffer wrap around 00: eDMP writes to buffer 0 01: eDMP writes to buffer 1 10: eDMP writes to buffer 0 11: eDMP writes to buffer 1
3:0	-	Reserved

16.43 INTF_CONFIG0

Name: INTF_CONFIG0
Address: 44 (2Ch)
Serial IF: R/W (bits 1 and 0 are Read only)
Reset value: 0x9A
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	VIRTUAL_ACCESS_AUX1_EN	Enable AUX1 virtual access by host interface 0: AUX1 virtual access by host interface not enabled 1: AUX1 virtual access by host enabled; AUX1 registers are accessible by host interface but not accessible by AUX1 interface
4:2	-	Reserved
1	AP_SPI_34_MODE	Read only register field, shows OTP trim for UI interface SPI in 3-wire or 4-wire mode 0: 3-wire mode 1: 4-wire mode
0	AP_SPI_MODE	Read only register field, shows OTP trim for UI interface SPI mode selection 0: SPI mode 0 or 3 1: SPI mode 1 or 2

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16.44 INTF_CONFIG1_OVRD

Name: INTF_CONFIG1_OVRD
Address: 45 (2Dh)
Serial IF: R/W
Reset value: 0x0C
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3	AP_SPI_34_MODE_OVRD	0: Override disable for AP interface SPI 4-wire/3-wire modes 1: Override enable for AP interface SPI 4-wire/3-wire modes
2	AP_SPI_34_MODE_OVRD_VAL	Override value for AP interface SPI 4-wire/3-wire modes 0: SPI 3-wire mode 1: SPI 4-wire mode
1	AP_SPI_MODE_OVRD	0: Override disable for AP interface SPI_MODE value 1: Override enable for AP interface SPI_MODE value
0	AP_SPI_MODE_OVRD_VAL	Override value for AP interface SPI Mode 0: SPI mode 0 or 3 1: SPI mode 1 or 2

16.45 INTF_AUX_CONFIG

Name: INTF_AUX_CONFIG
Address: 46 (2Eh)
Serial IF: R/W
Reset value: 0x02
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	AUX1_SPI_34_MODE	Configures AUX1 SPI in 3-wire or 4-wire mode 0: 3-wire mode 1: 4-wire mode
0	AUX1_SPI_MODE	AUX1 SPI mode selection 0: SPI mode 0 or 3 1: SPI mode 1 or 2

16.46 IOC_PAD_SCENARIO

Name: IOC_PAD_SCENARIO
Address: 47 (2Fh)
Serial IF: R
Reset value: 0x01

Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:1	AUX1_MODE	Read only register field, effective only when AUX1_ENABLE is 1. Selects AUX1 mode: 00: AUX1 in SPI Slave mode 01: AUX1 in I2C Master mode 10: AUX1 in I2C Master Bypass mode (Enable only when AP is not in SPI mode) 11: Reserved
0	AUX1_ENABLE	Read only register field, enable or disable AUX1 0: AUX1 disabled 1: AUX1 enabled

16.47 IOC_PAD_SCENARIO_AUX_OVRD

Name: IOC_PAD_SCENARIO_AUX_OVRD
Address: 48 (30h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:5	-	Reserved
4	AUX1_MODE_OVRD	Override enable for AUX1_MODE 0: Disable 1: Enable
3:2	AUX1_ENABLE_OVRD_VAL	Override value for AUX1_ENABLE. Effective only when AUX1_ENABLE is 1. Selects modes of AUX1 use: 0: AUX1 in SPI Slave mode 1: AUX1 in I2C Master mode 2: AUX1 in I2C Master Bypass mode (enable only when AP is not in SPI mode) Note: When enabling the I2C Master Bypass mode, this register should be programmed individually, not as part of a burst transaction.
1	AUX1_ENABLE_OVRD	Override enable for AUX1_ENABLE 0: Disable 1: Enable
0	AUX1_ENABLE_OVRD_VAL	Override value for AUX1_ENABLE 0: AUX1 disabled 1: AUX1 enabled

16.48 IOC_PAD_SCENARIO_OVRD

Name: IOC_PAD_SCENARIO_OVRD
Address: 49 (31h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	PADS_INT2_CFG_OVRD	Override enable for PADS_INT2_CFG 0: Disable 1: Enable
1:0	PADS_INT2_CFG_OVRD_VAL	Override value. Selects how pin 9 is used. 0: INT2 is selected 1: FSYNC is selected 2: CLKIN is selected 3: Reserved

16.49 DRIVE_CONFIG0

Name: DRIVE_CONFIG0
Address: 50 (32h)
Serial IF: R/W
Reset value: 0x6A
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:4	PADS_I2C_SLEW	Slew rate control for any pin in the I^2C mode of operation, including pins on the AP serial interface when device is a client device of an I^2C bus, including pins on the AUX1 serial interface when device is a master device of an I^2C bus. Setting of the slew rate takes effect 1.5µs after the register is programmed. 100: MIN: 3 ns; TYP: 20 ns; MAX: 136 ns 110: MIN: 2 ns; TYP: 7 ns; MAX: 84 ns Others: Reserved
3:1	PADS_SPI_SLEW	Slew rate control for any pin in the SPI mode of operation. Setting of the slew rate takes effect 1.5µs after the register is programmed. 000: MIN: 12 ns; TYP: 38 ns; MAX: 106 ns 001: MIN: 4 ns; TYP: 14 ns; MAX: 45 ns 010: MIN: 3 ns; TYP: 10 ns; MAX: 37 ns 011: MIN: 2 ns; TYP: 7 ns; MAX: 25 ns 100: MIN: 1 ns; TYP: 5 ns; MAX: 17 ns 101: MIN: 1 ns; TYP: 4 ns; MAX: 14 ns 11x: MIN: 0.1 ns; TYP: 0.5 ns; MAX: 6 ns
0	-	Reserved

16.50 DRIVE_CONFIG1

Name: DRIVE_CONFIG1
Address: 51 (33h)
Serial IF: R/W
Reset value: 0x2D
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:3	PADS_I3C_DDR_SLEW	Slew rate control when device is in I3C^{SM} DDR protocol. Setting of the slew rate takes effect 1.5µs after the register is programmed. 000: MIN: 12 ns; TYP: 38 ns; MAX: 106 ns 001: MIN: 4 ns; TYP: 14 ns; MAX: 45 ns 010: MIN: 3 ns; TYP: 10 ns; MAX: 37 ns 011: MIN: 2 ns; TYP: 7 ns; MAX: 25 ns 100: MIN: 1 ns; TYP: 5 ns; MAX: 17 ns 101: MIN: 1 ns; TYP: 4 ns; MAX: 14 ns 11x: MIN: 0.1 ns; TYP: 0.5 ns; MAX: 6 ns
2:0	PADS_I3C_SDR_SLEW	Slew rate control when device is in I3C^{SM} SDR protocol. Setting of the slew rate takes effect 1.5µs after the register is programmed. 000: MIN: 12 ns; TYP: 38 ns; MAX: 106 ns 001: MIN: 4 ns; TYP: 14 ns; MAX: 45 ns 010: MIN: 3 ns; TYP: 10 ns; MAX: 37 ns 011: MIN: 2 ns; TYP: 7 ns; MAX: 25 ns 100: MIN: 1 ns; TYP: 5 ns; MAX: 17 ns 101: MIN: 1 ns; TYP: 4 ns; MAX: 14 ns 11x: MIN: 0.1 ns; TYP: 0.5 ns; MAX: 6 ns

16.51 DRIVE_CONFIG2

Name: DRIVE_CONFIG2
Address: 52 (34h)
Serial IF: R/W
Reset value: 0x02
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	PADS_SLEW	Slew rate control for INT1 pin at all times. Slew rate control for all pins before OTP copy operation is completed. Setting of the slew rate takes effect 1.5µs after the register is programmed. 000: MIN: 12 ns; TYP: 38 ns; MAX: 106 ns 001: MIN: 4 ns; TYP: 14 ns; MAX: 45 ns 010: MIN: 3 ns; TYP: 10 ns; MAX: 37 ns 011: MIN: 2 ns; TYP: 7 ns; MAX: 25 ns 100: MIN: 1 ns; TYP: 5 ns; MAX: 17 ns 101: MIN: 1 ns; TYP: 4 ns; MAX: 14 ns 11x: MIN: 0.1 ns; TYP: 0.5 ns; MAX: 6 ns

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16.52 REG_MISC1

Name: REG_MISC1
Address: 53 (35h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:0	OSC_ID_OVRD	Selects MCLK source. 0000: MCLK source requested by internal logic (default) 0010: Requests internal relaxation oscillator 1000: Requests external clock Rest: Reserved The selected clock source is the highest index that's requested and that is ready.

16.53 INT_APEX_CONFIG0

Name: INT_APEX_CONFIG0
Address: 57 (39h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT_STATUS_MASK_PIN_B2S_DET	Enable interrupt pin assertion when the INT_STATUS_B2S_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
6	INT_STATUS_MASK_PIN_FF_DET	Enable interrupt pin assertion when the INT_STATUS_FF_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
5	INT_STATUS_MASK_PIN_AID_DEVICE_DET	Enable interrupt pin assertion when the INT_STATUS_AID_DEVICE_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
4	INT_STATUS_MASK_PIN_AID_HUMAN_DET	Enable interrupt pin assertion when the INT_STATUS_AID_HUMAN_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
3	INT_STATUS_MASK_PIN_SIF_DET	Enable interrupt pin assertion when the INT_STATUS_SIF_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion

2	INT_STATUS_MASK_PIN_LOW_G_DET	Enable interrupt pin assertion when the INT_STATUS_LOW_G_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
1	INT_STATUS_MASK_PIN_HIGH_G_DET	Enable interrupt pin assertion when the INT_STATUS_HIGH_G_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion
0	INT_STATUS_MASK_PIN_TAP_DET	Enable interrupt pin assertion when the INT_STATUS_TAP_DETECT status bit is 1. 0: Enable Interrupt pin assertion 1: No Interrupt pin assertion

16.54 INT_APEX_CONFIG1

Name: INT_APEX_CONFIG1
Address: 58 (3Ah)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT_STATUS_MASK_PIN_RESERVED2	0: Enable interrupt generation when Reserved2 is done 1: Disable interrupt generation for Reserved2
5	INT_STATUS_MASK_PIN_RESERVED1	0: Enable interrupt generation when Reserved1 is done 1: Disable interrupt generation for Reserved1
4	INT_STATUS_MASK_PIN_SA_DONE	0: Enable interrupt generation when Secure Authentication is done 1: Disable interrupt generation for Secure Authentication
3	-	Reserved
2	INT_STATUS_MASK_PIN_SELFTEST_DONE	0: Enable interrupt generation when self-test is done 1: Disable interrupt generation for self-test
1	INT_STATUS_MASK_PIN_VVD_DET	0: Enable interrupt generation for VVD 1: Disable interrupt generation for VVD
0	INT_STATUS_MASK_PIN_B2S_REV_DET	0: Enable interrupt generation for B2S_Rev 1: Disable interrupt generation for B2S_Rev

16.55 INT_APEX_STATUS0

Name: INT_APEX_STATUS0
Address: 59 (3Bh)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT_STATUS_B2S_DET	0: B2S interrupt did not occur. 1: B2S interrupt occurred.
6	INT_STATUS_FF_DET	0: Freefall interrupt did not occur. 1: Freefall interrupt occurred.
5	INT_STATUS_AID_DEVICE_DET	0: AID Device Detection interrupt did not occur. 1: AID Device Detection interrupt occurred.
4	INT_STATUS_AID_HUMAN_DET	0: AID Human Detection interrupt did not occur. 1: AID Human Detection interrupt occurred.
3	INT_STATUS_SIF_DET	0: SIF Detection interrupt did not occur. 1: SIF Detection interrupt occurred.
2	INT_STATUS_LOW_G_DET	0: LowG Detection interrupt did not occur. 1: LowG Detection interrupt occurred.
1	INT_STATUS_HIGH_G_DET	0: HighG Detection interrupt did not occur. 1: HighG Detection interrupt occurred.
0	INT_STATUS_TAP_DETECT	0: Tap Detection interrupt did not occur. 1: Tap Detection interrupt occurred.

16.56 INT_APEX_STATUS1

Name: INT_APEX_STATUS1
Address: 60 (3Ch)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT_STATUS_RESERVED2	0: Reserved2 interrupt did not occur. 1: Reserved2 interrupt occurred.
5	-	Reserved
4	INT_STATUS_SA_DONE	For EDMP_OUT interface. 0: Secure Authentication interrupt did not occur. 1: Secure Authentication interrupt occurred.
3	-	Reserved
2	INT_STATUS_SELFTEST_DONE	0: Self-Test interrupt did not occur. 1: Self-Test interrupt occurred.
1	INT_STATUS_VVD_DET	0: VVD Detection interrupt did not occur. 1: VVD Detection interrupt occurred.
0	INT_STATUS_B2S_REV_DET	0: B2S_REV Detection interrupt did not occur. 1: B2S_REV Detection interrupt occurred.

16.57 ACCEL_DATA_X1_AUX1

Name: ACCEL_DATA_X1_AUX1
Address: 68 (44h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_X_AUX1[15:8]	Upper byte of Accel X-axis data for AUX1 path

16.58 ACCEL_DATA_X0_AUX1

Name: ACCEL_DATA_X0_AUX1
Address: 69 (45h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_X_AUX1[7:0]	Lower byte of Accel X-axis data for AUX1 path

16.59 ACCEL_DATA_Y1_AUX1

Name: ACCEL_DATA_Y1_AUX1
Address: 70 (46h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Y_AUX1[15:8]	Upper byte of Accel Y-axis data for AUX1 path

16.60 ACCEL_DATA_Y0_AUX1

Name: ACCEL_DATA_Y0_AUX1
Address: 71 (47h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Y_AUX1[7:0]	Lower byte of Accel Y-axis data for AUX1 path

16.61 ACCEL_DATA_Z1_AUX1

Name: ACCEL_DATA_Z1_AUX1
Address: 72 (48h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Z_AUX1[15:8]	Upper byte of Accel Z-axis data for AUX1 path

16.62 ACCEL_DATA_Z0_AUX1

Name: ACCEL_DATA_Z0_AUX1
Address: 73 (49h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	ACCEL_DATA_Z_AUX1I[7:0]	Lower byte of Accel Z-axis data for AUX1 path

16.63 GYRO_DATA_X1_AUX1

Name: GYRO_DATA_X1_AUX1
Address: 74 (4Ah)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_X_AUX1[15:8]	Upper byte of Gyro X-axis data for AUX1 path

16.64 GYRO_DATA_X0_AUX1

Name: GYRO_DATA_X0_AUX1
Address: 75 (4Bh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_X_AUX1[7:0]	Lower byte of Gyro X-axis data for AUX1 path

16.65 GYRO_DATA_Y1_AUX1

Name: GYRO_DATA_Y1_AUX1
Address: 76 (4Ch)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Y_AUX1[15:8]	Upper byte of Gyro Y-axis data for AUX1 path

16.66 GYRO_DATA_Y0_AUX1

Name: GYRO_DATA_Y0_AUX1
Address: 77 (4Dh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Y_AUX1[7:0]	Lower byte of Gyro Y-axis data for AUX1 path

16.67 GYRO_DATA_Z1_AUX1

Name: GYRO_DATA_Z1_AUX1
Address: 78 (4Eh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Z_AUX1[15:8]	Upper byte of Gyro Z-axis data for AUX1 path

16.68 GYRO_DATA_Z0_AUX1

Name: GYRO_DATA_Z0_AUX1
Address: 79 (4Fh)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	GYRO_DATA_Z_AUX1[7:0]	Lower byte of Gyro Z-axis data for AUX1 path

16.69 TEMP_DATA1_AUX1

Name: TEMP_DATA1_AUX1
Address: 80 (50h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TEMP_DATA_AUX1[15:8]	Upper byte of temperature data for AUX1 path

16.70 TEMP_DATA0_AUX1

Name: TEMP_DATA0_AUX1
Address: 81 (51h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TEMP_DATA_AUX1[7:0]	Lower byte of temperature data for AUX1 path

16.71 TMST_FSYNCH_AUX1

Name: TMST_FSYNCH_AUX1
Address: 82 (52h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TMST_FSYNC_DATA_AUX1[15:8]	Stores the upper byte of the time delta from the rising edge of FSYNC to the latest ODR until the UI Interface reads the FSYNC tag in the status register

16.72 TMST_FSYNCL_AUX1

Name: TMST_FSYNCL_AUX1
Address: 83 (53h)
Serial IF: SYNCR
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	TMST_FSYNC_DATA_AUX1[7:0]	Stores the lower byte of the time delta from the rising edge of FSYNC to the latest ODR until the UI Interface reads the FSYNC tag in the status register

16.73 PWR_MGMT_AUX1

Name: PWR_MGMT_AUX1
Address: 84 (54h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	GYRO_AUX1_EN	Enable AUX1 interface for the Gyroscope sensor. 0: OFF 1: ON Can be changed on-the-fly.
0	ACCEL_AUX1_EN	Enable AUX1 interface for the Accelerometer sensor. 0: OFF 1: ON Can be changed on-the-fly.

16.74 FS_SEL_AUX1

Name: FS_SEL_AUX1
Address: 85 (55h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:3	GYRO_AUX1_FS_SEL	Full scale select for gyroscope AUX1 interface output 0000: ±4000dps 0001: ±2000dps 0010: ±1000dps 0011: ±500dps 0100: ±250dps 0101: ±125dps 0110: ±62.5dps 0111: ±31.25dps 1000: ±15.625dps Rest of the settings are reserved Can be changed on-the-fly.
2:0	ACCEL_AUX1_FS_SEL	Full scale select for accelerometer AUX1 interface output 000: ±32g 001: ±16g 010: ±8g 011: ±4g 100: ±2g 101: Reserved 110: Reserved 111: Reserved Can be changed on-the-fly.

16.75 INT2_CONFIG0

Name: INT2_CONFIG0
Address: 86 (56h)
Serial IF: R/W
Reset value: 0x80
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT2_STATUS_EN_RESET_DONE	Enable interrupt status bit to flag the occurrence of Reset Done event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
6	INT2_STATUS_EN_AUX1_AGC_RDY	Enable interrupt status bit to flag the occurrence of AUX1 AGC Ready event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
5	INT2_STATUS_EN_AP_AGC_RDY	Enable interrupt status bit to flag the occurrence of UI AGC Ready event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
4	INT2_STATUS_EN_AP_FSYNC	Enable interrupt status bit to flag the occurrence of UI FSYNC event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
3	INT2_STATUS_EN_AUX1_DRDY	Enable interrupt status bit to flag the occurrence of AUX1 Data Ready event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
2	INT2_STATUS_EN_DRDY	Enable interrupt status bit to flag the occurrence of UI Data Ready event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
1	INT2_STATUS_EN_FIFO_THS	Enable interrupt status bit to flag the occurrence of FIFO count ≥ FIFO threshold event on INT2

		0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.
0	INT2_STATUS_EN_FIFO_FULL	Enable interrupt status bit to flag the occurrence of FIFO full event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI or AUX1 interface.

16.76 INT2_CONFIG1

Name: INT2_CONFIG1
Address: 87 (57h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT2_STATUS_EN_APEX_EVENT	Enable interrupt status bit to flag the occurrence of APEX event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
5	INT2_STATUS_EN_I2CM_DONE	Enable interrupt status bit to flag the completion of I^2C master event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
4	INT2_STATUS_EN_I3C_PROTOCOL_ERR	Enable interrupt status bit to flag the occurrence of I3C Protocol Error event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
3	INT2_STATUS_EN_WOM_Z	Enable interrupt status bit to flag the occurrence of WOM on Z-axis event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
2	INT2_STATUS_EN_WOM_Y	Enable interrupt status bit to flag the occurrence of WOM on Y-axis event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
1	INT2_STATUS_EN_WOM_X	Enable interrupt status bit to flag the occurrence of WOM on X-axis event on INT2 0: Disable interrupt. 1: Enable interrupt. Setting can be changed by UI interface.
0	INT2_STATUS_EN_PLL_RDY	Enable interrupt status bit to flag the occurrence of PLL Ready event on INT2 0: Disable interrupt.

		1: Enable interrupt. Setting can be changed by UI interface.

16.77 INT2_CONFIG2

Name: INT2_CONFIG2
Address: 88 (58h)
Serial IF: R/W
Reset value: 0x04
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	INT2_DRIVE	Sets INT2 to open-drain or push-pull 0: Push-pull 1: Open-drain
1	INT2_MODE	INT2 interrupt mode 0: Pulse mode 1: Latch mode Setting can be changed only when all interrupts of the corresponding serial interface are disabled
0	INT2_POLARITY	INT2 interrupt polarity 0: Active low 1: Active high Setting can be changed only when all interrupts of the corresponding serial interface are disabled

16.78 INT2_STATUS0

Name: INT2_STATUS0
Address: 89 (59h)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	INT2_STATUS_RESET_DONE	Flags the occurrence of Reset Done event on INT2 0: Interrupt did not occur 1: Interrupt occurred
6	INT2_STATUS_AUX1_AGC_RDY	Flags the occurrence of AUX1 AGC Ready event on INT2 0: Interrupt did not occur 1: Interrupt occurred
5	INT2_STATUS_AP_AGC_RDY	Flags the occurrence of UI AGC Ready event on INT2 0: Interrupt did not occur 1: Interrupt occurred
4	INT2_STATUS_AP_FSYNC	Flags the occurrence of UI FSYNC event on INT2 0: Interrupt did not occur 1: Interrupt occurred
3	INT2_STATUS_AUX1_DRDY	Flags the occurrence of AUX1 Data Ready event on INT2 0: Interrupt did not occur 1: Interrupt occurred
2	INT2_STATUS_DRDY	Flags the occurrence of UI Data Ready event on INT2 0: Interrupt did not occur 1: Interrupt occurred
1	INT2_STATUS_FIFO_THS	Flags the occurrence of FIFO count ≥ FIFO threshold event on INT2 0: Interrupt did not occur 1: Interrupt occurred
0	INT2_STATUS_FIFO_FULL	Flags the occurrence of FIFO full event on INT2 0: Interrupt did not occur 1: Interrupt occurred

16.79 INT2_STATUS1

Name: INT2_STATUS1
Address: 90 (5Ah)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	INT2_STATUS_APEX_EVENT	Flags the occurrence of APEX event on INT2 0: Interrupt did not occur 1: Interrupt occurred
5	INT2_STATUS_I2CM_DONE	Flags the occurrence of I^2C Master Done event on INT2 0: Interrupt did not occur 1: Interrupt occurred
4	INT2_STATUS_I3C_PROTOCOL_ERR	Flags the occurrence of $I3C^{SM}$ Protocol Error event on INT2 0: Interrupt did not occur 1: Interrupt occurred
3	INT2_STATUS_WOM_Z	Flags the occurrence of Z-axis WOM event on INT2 0: Interrupt did not occur 1: Interrupt occurred
2	INT2_STATUS_WOM_Y	Flags the occurrence of Y-axis WOM event on INT2 0: Interrupt did not occur 1: Interrupt occurred
1	INT2_STATUS_WOM_X	Flags the occurrence of X-axis WOM event on INT2 0: Interrupt did not occur 1: Interrupt occurred
0	INT2_STATUS_PLL_RDY	Flags the occurrence of PLL Ready event on INT2 0: Interrupt did not occur 1: Interrupt occurred

16.80 WHO_AM_I

Name: WHO_AM_I
Address: 114 (72h)
Serial IF: R
Reset value: 0x85
Clock Domain: ALL

BIT	NAME	FUNCTION
7:0	WHOAMI	Register to indicate to user which device is being accessed

Description:

This register is used to verify the identity of the device. The contents of WHOAMI is an 8-bit device ID. The default value of the register is 0x85. This is different from the I^2C address of the device as seen on the slave I^2C controller by the applications processor.

16.81 REG_HOST_MSG

Name: REG_HOST_MSG
Address: 115 (73h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	EDMP_ON_DEMAND_EN	When set, a trigger will be sent which will cause the eDMP to run once. It is automatically reset to 0.
4:1	-	Reserved
0	TESTOPENABLE	1: Enable test operation

16.82 IREG_ADDR_15_8

Name: IREG_ADDR_15_8
Address: 124 (7Ch)
Serial IF: R/W
Reset value: 0xAF
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	IREG_ADDR_15_8	Address bit[15:8] of the 16-bit indirect address for assessing indirect access registers (IREG) Can be changed on-the-fly.

16.83 IREG_ADDR_7_0

Name: IREG_ADDR_7_0
Address: 125 (7Dh)
Serial IF: R/W
Reset value: 0x06
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	IREG_ADDR_7_0	Address bit[7:0] of the 16-bit indirect address for assessing indirect access registers (IREG) Can be changed on-the-fly.

16.84 IREG_DATA

Name: IREG_DATA
Address: 126 (7Eh)
Serial IF: R/W
Reset value: 0x02
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:0	IREG_DATA	Register for indirect access registers (IREG) data read/write operations. Can be changed on-the-fly.

16.85 REG_MISC2

Name: REG_MISC2
Address: 127 (7Fh)
Serial IF: R/W
Reset value: 0x01
Clock Domain: SCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	SOFT_RST	0: Soft reset not enabled. 1: Triggers soft reset operation. The programmed value of 1 is self-cleared to 0 upon completion of soft reset operation. Can be changed on-the-fly.
0	IREG_DONE	0: Indicates that an indirect register access operation is in progress. No new indirect register access should be triggered. 1: Indirect register access has completed. New indirect register access can be triggered.

17 USER BANK IMEM_SRAM REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IMEM_SRAM. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

17.1 IMEM_SRAM_REG_0

Name: IMEM_SRAM_REG_0
Address: 00 (00h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_X_STR_FT[7:0]	Self-test response for gyro X-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

17.2 IMEM_SRAM_REG_1

Name: IMEM_SRAM_REG_1
Address: 01 (01h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_X_STR_FT[15:8]	Self-test response for gyro X-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

17.3 IMEM_SRAM_REG_2

Name: IMEM_SRAM_REG_2
Address: 02 (02h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Y_STR_FT[7:0]	Self-test response for gyro Y-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

17.4 IMEM_SRAM_REG_3

Name: IMEM_SRAM_REG_3
Address: 03 (03h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Y_STR_FT[15:8]	Self-test response for gyro Y-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

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17.5 IMEM_SRAM_REG_4

Name: IMEM_SRAM_REG_4
Address: 04 (04h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Z_STR_FT[7:0]	Self-test response for gyro Z-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

17.6 IMEM_SRAM_REG_5

Name: IMEM_SRAM_REG_5
Address: 05 (05h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Z_STR_FT[15:8]	Self-test response for gyro Z-axis. Units are in kdps. Full scale is 0.5kdps, LSB is 30mdps.

17.7 IMEM_SRAM_REG_6

Name: IMEM_SRAM_REG_6
Address: 06 (06h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_X_CMOS_GAIN_FT[7:0]	Gyro X-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.8 IMEM_SRAM_REG_7

Name: IMEM_SRAM_REG_7
Address: 07 (07h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:0	GYRO_X_CMOS_GAIN_FT[11:8]	Gyro X-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.9 IMEM_SRAM_REG_8

Name: IMEM_SRAM_REG_8
Address: 08 (08h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Y_CMOS_GAIN_FT[7:0]	Gyro Y-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.10 IMEM_SRAM_REG_9

Name: IMEM_SRAM_REG_9
Address: 09 (09h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:0	GYRO_Y_CMOS_GAIN_FT[11:8]	Gyro Y-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.11 IMEM_SRAM_REG_10

Name: IMEM_SRAM_REG_10
Address: 10 (0Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Z_CMOS_GAIN_FT[7:0]	Gyro Z-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.12 IMEM_SRAM_REG_11

Name: IMEM_SRAM_REG_11
Address: 11 (0Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:0	GYRO_Z_CMOS_GAIN_FT[11:8]	Gyro Z-axis gain measurement result. Units are in kdps. FSR is 500 dps, resolution is 122 mdps.

17.13 IMEM_SRAM_REG_12

Name: IMEM_SRAM_REG_12
Address: 12 (0Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_X_STR_FT[7:0]	Self-test response for accel X-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

17.14 IMEM_SRAM_REG_13

Name: IMEM_SRAM_REG_13
Address: 13 (0Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_X_STR_FT[15:8]	Self-test response for accel X-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

17.15 IMEM_SRAM_REG_14

Name: IMEM_SRAM_REG_14
Address: 14 (0Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Y_STR_FT[7:0]	Self-test response for accel Y-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

17.16 IMEM_SRAM_REG_15

Name: IMEM_SRAM_REG_15
Address: 15 (0Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Y_STR_FT[15:8]	Self-test response for accel Y-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

17.17 IMEM_SRAM_REG_16

Name: IMEM_SRAM_REG_16
Address: 16 (10h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Z_STR_FT[7:0]	Self-test response for accel Z-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

17.18 IMEM_SRAM_REG_17

Name: IMEM_SRAM_REG_17
Address: 17 (11h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Z_STR_FT[15:8]	Self-test response for accel Z-axis. Units are in g. Full scale is 1g, LSB is 0.122mg.

18 USER BANK IMEM_SRAM_APEX REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IMEM_SRAM_APEX. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

18.1 IMEM_SRAM_APEX_REG_4

Name: IMEM_SRAM_APEX_REG_4
Address: 04 (04h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_DYNAMIC_SERVICE_REQUEST[7:0]	ISR1 on-demand service request ID Set bit 1 to request set GAF parameters Set bit 2 to request set GAF bias Set bit 3 to request eDMP reconfiguration for GAF PDR 100Hz Set bit 4 to request eDMP reconfiguration for GAF PDR 50Hz Set bit 5 to request eDMP reconfiguration for ML PDR 100Hz Set bit 6 to request eDMP reconfiguration for ML PDR 50Hz Set bit 7 to request VVD dynamic on-the-fly parameterization Default: 0 (no ISR1 service requested)

18.2 IMEM_SRAM_APEX_REG_5

Name: IMEM_SRAM_APEX_REG_5
Address: 05 (05h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	USE_CASE_BITMASK[7:0]	ISR1 init request service ID depending on system usecase Set bit 0 for usecase which does not require VVD Set bit 1 for usecase which does not require GAF Set bit 2 for usecase which does not require SIF Set bit 3 for usecase which does not require Free-Fall Set bit 4 for usecase which does not require TAP Set bit 5 for usecase which does not require B2S Set bit 6 for usecase which does not require AID for human Set bit 7 for usecase which does not require AID for device Default: 0 (initialize all algo)

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18.3 IMEM_SRAM_APEX_REG_6

Name: IMEM_SRAM_APEX_REG_6
Address: 06 (06h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_NUM[7:0]	Type of the last reported TAP event: 0: no tap, 1: single tap, 2: double tap, 3:triple tap

18.4 IMEM_SRAM_APEX_REG_7

Name: IMEM_SRAM_APEX_REG_7
Address: 07 (07h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_AXIS[7:0]	Indicate the axis of the tap in the device frame 0: ax, 1: ay, 2: az

18.5 IMEM_SRAM_APEX_REG_8

Name: IMEM_SRAM_APEX_REG_8
Address: 08 (08h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_DIR[7:0]	Indicate the direction of the tap in the device frame 0: positive, 1: negative

18.6 IMEM_SRAM_APEX_REG_52

Name: IMEM_SRAM_APEX_REG_52
Address: 52 (34h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_DYNAMIC_THRESH[7:0]	Value to be applied to vvd_params_thresh configuration when VVD dynamic on-the-fly parametrization is requested in ISR1.

18.7 IMEM_SRAM_APEX_REG_53

Name: IMEM_SRAM_APEX_REG_53
Address: 53 (35h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_DYNAMIC_THRESH[15:8]	Value to be applied to vvd_params_thresh configuration when VVD dynamic on-the-fly parametrization is requested in ISR1.

18.8 IMEM_SRAM_APEX_REG_54

Name: IMEM_SRAM_APEX_REG_54
Address: 54 (36h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_DYNAMIC_THRESH[23:16]	Value to be applied to vvd_params_thresh configuration when VVD dynamic on-the-fly parametrization is requested in ISR1.

18.9 IMEM_SRAM_APEX_REG_55

Name: IMEM_SRAM_APEX_REG_55
Address: 55 (37h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_DYNAMIC_THRESH[31:24]	Value to be applied to vvd_params_thresh configuration when VVD dynamic on-the-fly parametrization is requested in ISR1.

18.10 IMEM_SRAM_APEX_REG_60

Name: IMEM_SRAM_APEX_REG_60
Address: 60 (3Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	POWER_SAVE_TIME[7:0]	Time of inactivity after which eDMP goes in power save mode. Unit: time in sample number Range: [0 - 4294967295] Default value: 6400

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18.11 IMEM_SRAM_APEX_REG_61

Name: IMEM_SRAM_APEX_REG_61
Address: 61 (3Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	POWER_SAVE_TIME[15:8]	Time of inactivity after which eDMP goes in power save mode. Unit: time in sample number Range: [0 - 4294967295] Default value: 6400

18.12 IMEM_SRAM_APEX_REG_62

Name: IMEM_SRAM_APEX_REG_62
Address: 62 (3Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	POWER_SAVE_TIME[23:16]	Time of inactivity after which eDMP goes in power save mode. Unit: time in sample number Range: [0 - 4294967295] Default value: 6400

18.13 IMEM_SRAM_APEX_REG_63

Name: IMEM_SRAM_APEX_REG_63
Address: 63 (3Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	POWER_SAVE_TIME[31:24]	Time of inactivity after which eDMP goes in power save mode. Unit: time in sample number Range: [0 - 4294967295] Default value: 6400

18.14 IMEM_SRAM_APEX_REG_170

Name: IMEM_SRAM_APEX_REG_170
Address: 170 (AAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DURATION[7:0]	Duration of the freefall. Unit: number of samples. Freefall duration in seconds / ACCEL_ODR in Hz

18.15 IMEM_SRAM_APEX_REG_171

Name: IMEM_SRAM_APEX_REG_171
Address: 171 (ABh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DURATION[15:8]	Duration of the freefall. Unit: number of samples. Freefall duration in seconds / ACCEL_ODR in Hz

18.16 IMEM_SRAM_APEX_REG_176

Name: IMEM_SRAM_APEX_REG_176
Address: 176 (B0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MIN_DURATION[7:0]	Minimum freefall duration. Shorter freefalls are ignored. Unit: time in samples number Range: [4 - 420] Default: 57 (set for default ODR = 400 Hz, equivalent to 142 ms)

18.17 IMEM_SRAM_APEX_REG_177

Name: IMEM_SRAM_APEX_REG_177
Address: 177 (B1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MIN_DURATION[15:8]	Minimum freefall duration. Shorter freefalls are ignored. Unit: time in samples number Range: [4 - 420] Default: 57 (set for default ODR = 400 Hz, equivalent to 142 ms)

18.18 IMEM_SRAM_APEX_REG_178

Name: IMEM_SRAM_APEX_REG_178
Address: 178 (B2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MIN_DURATION[23:16]	Minimum freefall duration. Shorter freefalls are ignored. Unit: time in samples number Range: [4 - 420] Default: 57 (set for default ODR = 400 Hz, equivalent to 142 ms)

18.19 IMEM_SRAM_APEX_REG_179

Name: IMEM_SRAM_APEX_REG_179
Address: 179 (B3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MIN_DURATION[31:24]	Minimum freefall duration. Shorter freefalls are ignored. Unit: time in samples number Range: [4 - 420] Default: 57 (set for default ODR = 400 Hz, equivalent to 142 ms)

18.20 IMEM_SRAM_APEX_REG_180

Name: IMEM_SRAM_APEX_REG_180
Address: 180 (B4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MAX_DURATION[7:0]	Maximum freefall duration. Longer freefalls are ignored. Unit: time in samples number Range: [12 - 1040] Default: 285 (set for default ODR = 400 Hz, equivalent to 712 ms)

18.21 IMEM_SRAM_APEX_REG_181

Name: IMEM_SRAM_APEX_REG_181
Address: 181 (B5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MAX_DURATION[15:8]	Maximum freefall duration. Longer freefalls are ignored. Unit: time in samples number Range: [12 - 1040] Default: 285 (set for default ODR = 400 Hz, equivalent to 712 ms)

18.22 IMEM_SRAM_APEX_REG_182

Name: IMEM_SRAM_APEX_REG_182
Address: 182 (B6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MAX_DURATION[23:16]	Maximum freefall duration. Longer freefalls are ignored. Unit: time in samples number Range: [12 - 1040] Default: 285 (set for default ODR = 400 Hz, equivalent to 712 ms)

18.23 IMEM_SRAM_APEX_REG_183

Name: IMEM_SRAM_APEX_REG_183
Address: 183 (B7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_MAX_DURATION[31:24]	Maximum freefall duration. Longer freefalls are ignored. Unit: time in samples number Range: [12 - 1040] Default: 285 (set for default ODR = 400 Hz, equivalent to 712 ms)

18.24 IMEM_SRAM_APEX_REG_184

Name: IMEM_SRAM_APEX_REG_184
Address: 184 (B8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DEBOUNCE_DURATION [7:0]	Period after a freefall is signaled during which a new freefall will not be detected. Prevents false detection due to bounces. Unit: time in samples number Range: [75 - 3000] Default: 800 (set for default ODR = 800 Hz, equivalent to 1 s)

18.25 IMEM_SRAM_APEX_REG_185

Name: IMEM_SRAM_APEX_REG_185
Address: 185 (B9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DEBOUNCE_DURATION [15:8]	Period after a freefall is signaled during which a new freefall will not be detected. Prevents false detection due to bounces. Unit: time in samples number Range: [75 - 3000] Default: 800 (set for default ODR = 800 Hz, equivalent to 1 s)

18.26 IMEM_SRAM_APEX_REG_186

Name: IMEM_SRAM_APEX_REG_186
Address: 186 (BAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DEBOUNCE_DURATION [23:16]	Period after a freefall is signaled during which a new freefall will not be detected. Prevents false detection due to bounces. Unit: time in samples number Range: [75 - 3000] Default: 800 (set for default ODR = 800 Hz, equivalent to 1 s)

18.27 IMEM_SRAM_APEX_REG_187

Name: IMEM_SRAM_APEX_REG_187
Address: 187 (BBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	FF_DEBOUNCE_DURATION [31:24]	Period after a freefall is signaled during which a new freefall will not be detected. Prevents false detection due to bounces. Unit: time in samples number Range: [75 - 3000] Default: 800 (set for default ODR = 800 Hz, equivalent to 1 s)

18.28 IMEM_SRAM_APEX_REG_192

Name: IMEM_SRAM_APEX_REG_192
Address: 192 (C0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_PEAK_TH[7:0]	Threshold for accel values above which high-g state is detected. Unit: g in q12 Range: [1024 - 32768] Default: 29696

18.29 IMEM_SRAM_APEX_REG_193

Name: IMEM_SRAM_APEX_REG_193
Address: 193 (C1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_PEAK_TH[15:8]	Threshold for accel values above which high-g state is detected. Unit: g in q12 Range: [1024 - 32768] Default: 29696

18.30 IMEM_SRAM_APEX_REG_194

Name: IMEM_SRAM_APEX_REG_194
Address: 194 (C2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_PEAK_TH_HYST[7:0]	Hysteresis value subtracted from the high-g threshold after exceeding it. Unit: g in q12 Range: [128 - 1024] Default: 640

18.31 IMEM_SRAM_APEX_REG_195

Name: IMEM_SRAM_APEX_REG_195
Address: 195 (C3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_PEAK_TH_HYST[15:8]	Hysteresis value subtracted from the high-g threshold after exceeding it. Unit: g in q12 Range: [128 - 1024] Default: 640

18.32 IMEM_SRAM_APEX_REG_196

Name: IMEM_SRAM_APEX_REG_196
Address: 196 (C4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_TIME_TH[7:0]	The number of samples device should stay above (HIGHG_PEAK_TH + HIGHG_PEAK_TH_HYST) before HighG state is triggered. Unit: time in samples number Range: [1-300] Default: 1 (set for default ODR = 800 Hz, equivalent to 1.25 ms)

18.33 IMEM_SRAM_APEX_REG_197

Name: IMEM_SRAM_APEX_REG_197
Address: 197 (C5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	HIGHG_TIME_TH[15:8]	The number of samples device should stay above (HIGHG_PEAK_TH + HIGHG_PEAK_TH_HYST) before HighG state is triggered. Unit: time in samples number Range: [1-300] Default: 1 (set for default ODR = 800 Hz, equivalent to 1.25 ms)

18.34 IMEM_SRAM_APEX_REG_204

Name: IMEM_SRAM_APEX_REG_204
Address: 204 (CCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_PEAK_TH[7:0]	Threshold for accel values below which low-g state is detected. Unit: g in q12 Range: [128 - 4096] Default: 2048

18.35 IMEM_SRAM_APEX_REG_205

Name: IMEM_SRAM_APEX_REG_205
Address: 205 (CDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_PEAK_TH[15:8]	Threshold for accel values below which low-g state is detected. Unit: g in q12 Range: [128 - 4096] Default: 2048

18.36 IMEM_SRAM_APEX_REG_206

Name: IMEM_SRAM_APEX_REG_206
Address: 206 (CEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_PEAK_TH_HYST[7:0]	Hysteresis value added to the low-g threshold after exceeding it. Unit: g in q12 Range: [128 - 1024] Default: 128

18.37 IMEM_SRAM_APEX_REG_207

Name: IMEM_SRAM_APEX_REG_207
Address: 207 (CFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_PEAK_TH_HYST[15:8]	Hysteresis value added to the low-g threshold after exceeding it. Unit: g in q12 Range: [128 - 1024] Default: 128

18.38 IMEM_SRAM_APEX_REG_208

Name: IMEM_SRAM_APEX_REG_208
Address: 208 (D0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_TIME_TH[7:0]	Number of samples required to enter low-g state. Unit: time in samples number Range: [1 - 300] Default: 13 (set for default ODR = 800 Hz, equivalent to 16 ms)

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18.39 IMEM_SRAM_APEX_REG_209

Name: IMEM_SRAM_APEX_REG_209
Address: 209 (D1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	LOWG_TIME_TH[15:8]	Number of samples required to enter low-g state. Unit: time in samples number Range: [1 - 300] Default: 13 (set for default ODR = 800 Hz, equivalent to 16 ms)

18.40 IMEM_SRAM_APEX_REG_312

Name: IMEM_SRAM_APEX_REG_312
Address: 312 (138h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_STATIC_SERVICE_REQUEST[7:0]	ISR2 on-demand service request ID Set bit 0 to request memset service Default: 0 (no ISR2 service requested)

18.41 IMEM_SRAM_APEX_REG_313

Name: IMEM_SRAM_APEX_REG_313
Address: 313 (139h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_STATIC_SERVICE_REQUEST[15:8]	ISR2 on-demand service request ID Set bit 0 to request memset service Default: 0 (no ISR2 service requested)

18.42 IMEM_SRAM_APEX_REG_314

Name: IMEM_SRAM_APEX_REG_314
Address: 314 (13Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_STATIC_SERVICE_REQUEST[23:16]	ISR2 on-demand service request ID Set bit 0 to request memset service Default: 0 (no ISR2 service requested)

18.43 IMEM_SRAM_APEX_REG_315

Name: IMEM_SRAM_APEX_REG_315
Address: 315 (13Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_STATIC_SERVICE_REQUEST[31:24]	ISR2 on-demand service request ID Set bit 0 to request memset service Default: 0 (no ISR2 service requested)

18.44 IMEM_SRAM_APEX_REG_316

Name: IMEM_SRAM_APEX_REG_316
Address: 316 (13Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_MEMSET_ADDR[7:0]	Start address of RAM area to be written by EDMP when requested by memset static service.

18.45 IMEM_SRAM_APEX_REG_317

Name: IMEM_SRAM_APEX_REG_317
Address: 317 (13Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_MEMSET_ADDR[15:8]	Start address of RAM area to be written by EDMP when requested by memset static service.

18.46 IMEM_SRAM_APEX_REG_318

Name: IMEM_SRAM_APEX_REG_318
Address: 318 (13Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_MEMSET_VALUE[7:0]	Value to be written by EDMP to RAM area when requested by memset static service.

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18.47 IMEM_SRAM_APEX_REG_320

Name: IMEM_SRAM_APEX_REG_320
Address: 320 (140h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_MEMSET_SIZE[7:0]	Length in bytes of RAM area to be written by EDMP when requested by memset static service.

18.48 IMEM_SRAM_APEX_REG_321

Name: IMEM_SRAM_APEX_REG_321
Address: 321 (141h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ONDEMAND_MEMSET_SIZE[15:8]	Length in bytes of RAM area to be written by EDMP when requested by memset static service.

18.49 IMEM_SRAM_APEX_REG_416

Name: IMEM_SRAM_APEX_REG_416
Address: 416 (1A0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_PDR_PARTITION[7:0]	GAF partition reconfiguration in case GAF PDR is not 50 Hz or 100 Hz.

18.50 IMEM_SRAM_APEX_REG_417

Name: IMEM_SRAM_APEX_REG_417
Address: 417 (1A1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_PDR_PARTITION[15:8]	GAF partition reconfiguration in case GAF PDR is not 50 Hz or 100 Hz.

18.51 IMEM_SRAM_APEX_REG_418

Name: IMEM_SRAM_APEX_REG_418
Address: 418 (1A2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_PDR_PARTITION[23:16]	GAF partition reconfiguration in case GAF PDR is not 50 Hz or 100 Hz.

18.52 IMEM_SRAM_APEX_REG_419

Name: IMEM_SRAM_APEX_REG_419
Address: 419 (1A3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_PDR_PARTITION[31:24]	GAF partition reconfiguration in case GAF PDR is not 50 Hz or 100 Hz.

18.53 IMEM_SRAM_APEX_REG_436

Name: IMEM_SRAM_APEX_REG_436
Address: 436 (1B4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DMP_ODR_LAST_INIT[7:0]	Encoded eDMP ODR value effective during last eDMP init request 0x1 for eDMP ODR 25Hz 0x2 for eDMP ODR 50Hz 0x8 for eDMP ODR 100Hz 0x80 for eDMP ODR 200Hz 0x8000 for eDMP ODR 400Hz 0x80000000 for eDMP ODR 800Hz Other values are reserved

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18.54 IMEM_SRAM_APEX_REG_437

Name: IMEM_SRAM_APEX_REG_437
Address: 437 (1B5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DMP_ODR_LAST_INIT[15:8]	Encoded eDMP ODR value effective during last eDMP init request 0x1 for eDMP ODR 25Hz 0x2 for eDMP ODR 50Hz 0x8 for eDMP ODR 100Hz 0x80 for eDMP ODR 200Hz 0x8000 for eDMP ODR 400Hz 0x80000000 for eDMP ODR 800Hz Other values are reserved

18.55 IMEM_SRAM_APEX_REG_438

Name: IMEM_SRAM_APEX_REG_438
Address: 438 (1B6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DMP_ODR_LAST_INIT[23:16]	Encoded eDMP ODR value effective during last eDMP init request 0x1 for eDMP ODR 25Hz 0x2 for eDMP ODR 50Hz 0x8 for eDMP ODR 100Hz 0x80 for eDMP ODR 200Hz 0x8000 for eDMP ODR 400Hz 0x80000000 for eDMP ODR 800Hz Other values are reserved

18.56 IMEM_SRAM_APEX_REG_439

Name: IMEM_SRAM_APEX_REG_439
Address: 439 (1B7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DMP_ODR_LAST_INIT[31:24]	Encoded eDMP ODR value effective during last eDMP init request 0x1 for eDMP ODR 25Hz 0x2 for eDMP ODR 50Hz 0x8 for eDMP ODR 100Hz 0x80 for eDMP ODR 200Hz 0x8000 for eDMP ODR 400Hz 0x80000000 for eDMP ODR 800Hz Other values are reserved

18.57 IMEM_SRAM_APEX_REG_452

Name: IMEM_SRAM_APEX_REG_452
Address: 452 (1C4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_MIN_JERK[7:0]	The minimal value of jerk to be considered as a tap candidate. Unit: LSB with 1 LSB = 1g / 2^12 (of the jerk value) Range: [0 - 16384] Default: 4608 (equivalent to 1.125 g)

18.58 IMEM_SRAM_APEX_REG_453

Name: IMEM_SRAM_APEX_REG_453
Address: 453 (1C5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_MIN_JERK[15:8]	The minimal value of jerk to be considered as a tap candidate. Unit: LSB with 1 LSB = 1g / 2^12 (of the jerk value) Range: [0 - 16384] Default: 4608 (equivalent to 1.125 g)

18.59 IMEM_SRAM_APEX_REG_454

Name: IMEM_SRAM_APEX_REG_454
Address: 454 (1C6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_TMAX[7:0]	Size of the analysis window to detect tap events (single, double or triple tap) Unit: time in sample number Range: [49 - 496] Default: 198 (set for default ODR = 400 Hz, equivalent to 0.495 s)

18.60 IMEM_SRAM_APEX_REG_455

Name: IMEM_SRAM_APEX_REG_455
Address: 455 (1C7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_TMAX[15:8]	Size of the analysis window to detect tap events (single, double or triple tap) Unit: time in sample number Range: [49 - 496] Default: 198 (set for default ODR = 400 Hz, equivalent to 0.495 s)

18.61 IMEM_SRAM_APEX_REG_456

Name: IMEM_SRAM_APEX_REG_456
Address: 456 (1C8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_TMIN[7:0]	Single tap window, sub-windows within Tmax to detect single-tap event. Unit: time in sample number Range: [24 - 184] Default: 66 (set for default ODR = 400 Hz, equivalent to 0.165 s)

18.62 IMEM_SRAM_APEX_REG_457

Name: IMEM_SRAM_APEX_REG_457
Address: 457 (1C9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_SMUDGE_REJECT_THR[7:0]	Max acceptable number of samples (jerk value) over TAP_MAX_PEAK_TOL during the Tmin window. Over this value, Tap event is rejected Unit: time in number of samples Range: [13 - 92] Default: 34 (set for default ODR = 400 Hz, equivalent to 0.085 s)

18.63 IMEM_SRAM_APEX_REG_458

Name: IMEM_SRAM_APEX_REG_458
Address: 458 (1CAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_MAX_PEAK_TOL[7:0]	Maximum peak tolerance is the percentage of pulse amplitude to get the smudge threshold for rejection Range: [1 (12.5%) 2 (25.0%) 3 (37.5%) 4 (50.0 %)] Default: 2

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18.64 IMEM_SRAM_APEX_REG_459

Name: IMEM_SRAM_APEX_REG_459
Address: 459 (1CBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_TAVG[7:0]	Energy measurement window size to determine the tap axis associated with the 1st tap. Unit: time in sample number Range: [1 ; 2 ; 4 ; 8] Default: 8

18.65 IMEM_SRAM_APEX_REG_460

Name: IMEM_SRAM_APEX_REG_460
Address: 460 (1CCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_ODR[7:0]	Tap execution ODR: 0: 200Hz 1: 400Hz 2: 800Hz Default: 1 (400Hz)

18.66 IMEM_SRAM_APEX_REG_461

Name: IMEM_SRAM_APEX_REG_461
Address: 461 (1CDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_MAX[7:0]	Maximal number of tap quantity detected to be valid. Range: [1 (single) ; 2 (double) ; 3 (triple)] Default: 2 (double tap)

18.67 IMEM_SRAM_APEX_REG_462

Name: IMEM_SRAM_APEX_REG_462
Address: 462 (1CEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TAP_MIN[7:0]	Minimal number of tap quantity detected to be valid. Range: [1 (single); 2 (double); 3 (triple)] Default: 2 (double tap)

18.68 IMEM_SRAM_APEX_REG_500

Name: IMEM_SRAM_APEX_REG_500
Address: 500 (1F4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DOUBLE_TAP_TIMING[7:0]	In case of double tap, indicate the sample count between the two detected pulses. Double tap timing in seconds is double_tap_timing / TAP_ODR in Hz.

18.69 IMEM_SRAM_APEX_REG_501

Name: IMEM_SRAM_APEX_REG_501
Address: 501 (1F5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	DOUBLE_TAP_TIMING[15:8]	In case of double tap, indicate the sample count between the two detected pulses. Double tap timing in seconds is double_tap_timing / TAP_ODR in Hz.

18.70 IMEM_SRAM_APEX_REG_502

Name: IMEM_SRAM_APEX_REG_502
Address: 502 (1F6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TRIPLE_TAP_TIMING[7:0]	In case of triple tap, indicate the sample count between the first and third detected pulses. Triple tap timing in seconds is triple_tap_timing / TAP_ODR in Hz.

18.71 IMEM_SRAM_APEX_REG_503

Name: IMEM_SRAM_APEX_REG_503
Address: 503 (1F7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	TRIPLE_TAP_TIMING[15:8]	In case of triple tap, indicate the sample count between the first and third detected pulses. Triple tap timing in seconds is triple_tap_timing / TAP_ODR in Hz.

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18.72 IMEM_SRAM_APEX_REG_516

Name: IMEM_SRAM_APEX_REG_516
Address: 516 (204h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_ONE_G_VALUE[7:0]	One g value to be used as reference to trigger Bring-To-See. Unit: 1g = 2^12 Default: 4096

18.73 IMEM_SRAM_APEX_REG_517

Name: IMEM_SRAM_APEX_REG_517
Address: 517 (205h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_ONE_G_VALUE[15:8]	One g value to be used as reference to trigger Bring-To-See. Unit: 1g = 2^12 Default: 4096

18.74 IMEM_SRAM_APEX_REG_518

Name: IMEM_SRAM_APEX_REG_518
Address: 518 (206h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_ONE_G_VALUE[23:16]	One g value to be used as reference to trigger Bring-To-See. Unit: 1g = 2^12 Default: 4096

18.75 IMEM_SRAM_APEX_REG_519

Name: IMEM_SRAM_APEX_REG_519
Address: 519 (207h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_ONE_G_VALUE[31:24]	One g value to be used as reference to trigger Bring-To-See. Unit: 1g = 2^12 Default: 4096

18.76 IMEM_SRAM_APEX_REG_520

Name: IMEM_SRAM_APEX_REG_520
Address: 520 (208h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_DEV_NORM_MAX[7:0]	Hysteresis added or removed to norm estimate and Y axis constrains value for RevB2S. Unit: LSB, with 1 LSB = 1g / 2^12 Range: [1 - 2048] Default: 700 (corresponding to 0.1709g)

18.77 IMEM_SRAM_APEX_REG_521

Name: IMEM_SRAM_APEX_REG_521
Address: 521 (209h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_DEV_NORM_MAX[15:8]	Hysteresis added or removed to norm estimate and Y axis constrains value for RevB2S. Unit: LSB, with 1 LSB = 1g / 2^12 Range: [1 - 2048] Default: 700 (corresponding to 0.1709g)

18.78 IMEM_SRAM_APEX_REG_522

Name: IMEM_SRAM_APEX_REG_522
Address: 522 (20Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_DEV_NORM_MAX[23:16]	Hysteresis added or removed to norm estimate and Y axis constrains value for RevB2S. Unit: LSB, with 1 LSB = 1g / 2^12 Range: [1 - 2048] Default: 700 (corresponding to 0.1709g)

18.79 IMEM_SRAM_APEX_REG_523

Name: IMEM_SRAM_APEX_REG_523
Address: 523 (20Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_DEV_NORM_MAX[31:24]	Hysteresis added or removed to norm estimate and Y axis constrains value for RevB2S. Unit: LSB, with 1 LSB = 1g / 2^12 Range: [1 - 2048] Default: 700 (corresponding to 0.1709g)

18.80 IMEM_SRAM_APEX_REG_524

Name: IMEM_SRAM_APEX_REG_524
Address: 524 (20Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_LIMIT[7:0]	Maximum threshold on absolute value of X axis in b2s position. Link to the sine value of inclination angle on X axis. Unit: LSB, with 1 LBS = 1g / 2^12 Range: [300 - 3000] Default: 2048 (corresponding to 30deg)

18.81 IMEM_SRAM_APEX_REG_525

Name: IMEM_SRAM_APEX_REG_525
Address: 525 (20Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_LIMIT[15:8]	Maximum threshold on absolute value of X axis in b2s position. Link to the sine value of inclination angle on X axis. Unit: LSB, with 1 LBS = 1g / 2^12 Range: [300 - 3000] Default: 2048 (corresponding to 30deg)

18.82 IMEM_SRAM_APEX_REG_526

Name: IMEM_SRAM_APEX_REG_526
Address: 526 (20Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_LIMIT[23:16]	Maximum threshold on absolute value of X axis in b2s position. Link to the sine value of inclination angle on X axis. Unit: LSB, with 1 LBS = 1g / 2^12 Range: [300 - 3000] Default: 2048 (corresponding to 30deg)

18.83 IMEM_SRAM_APEX_REG_527

Name: IMEM_SRAM_APEX_REG_527
Address: 527 (20Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_LIMIT[31:24]	Maximum threshold on absolute value of X axis in b2s position. Link to the sine value of inclination angle on X axis. Unit: LSB, with 1 LBS = 1g / 2^12 Range: [300 - 3000] Default: 2048 (corresponding to 30deg)

18.84 IMEM_SRAM_APEX_REG_528

Name: IMEM_SRAM_APEX_REG_528
Address: 528 (210h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_LIMIT[7:0]	Threshold of minimal motion to be detected as "Fast motion". Filtered data Range: [300 - 3000] Default: 200

18.85 IMEM_SRAM_APEX_REG_529

Name: IMEM_SRAM_APEX_REG_529
Address: 529 (211h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_LIMIT[15:8]	Threshold of minimal motion to be detected as "Fast motion". Filtered data Range: [300 - 3000] Default: 200

18.86 IMEM_SRAM_APEX_REG_530

Name: IMEM_SRAM_APEX_REG_530
Address: 530 (212h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_LIMIT[23:16]	Threshold of minimal motion to be detected as "Fast motion". Filtered data Range: [300 - 3000] Default: 200

18.87 IMEM_SRAM_APEX_REG_531

Name: IMEM_SRAM_APEX_REG_531
Address: 531 (213h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_LIMIT[31:24]	Threshold of minimal motion to be detected as "Fast motion". Filtered data Range: [300 - 3000] Default: 200

18.88 IMEM_SRAM_APEX_REG_532

Name: IMEM_SRAM_APEX_REG_532
Address: 532 (214h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_STATIC_LIMIT[7:0]	Threshold to determine static phase required after the gesture B2S to validate it. Default: 1400

18.89 IMEM_SRAM_APEX_REG_533

Name: IMEM_SRAM_APEX_REG_533
Address: 533 (215h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_STATIC_LIMIT[15:8]	Threshold to determine static phase required after the gesture B2S to validate it. Default: 1400

18.90 IMEM_SRAM_APEX_REG_534

Name: IMEM_SRAM_APEX_REG_534
Address: 534 (216h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_STATIC_LIMIT[23:16]	Threshold to determine static phase required after the gesture B2S to validate it. Default: 1400

18.91 IMEM_SRAM_APEX_REG_535

Name: IMEM_SRAM_APEX_REG_535
Address: 535 (217h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_STATIC_LIMIT[31:24]	Threshold to determine static phase required after the gesture B2S to validate it. Default: 1400

18.92 IMEM_SRAM_APEX_REG_536

Name: IMEM_SRAM_APEX_REG_536
Address: 536 (218h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_THR_COS_ANG[7:0]	RevB2S threshold, condition satisfied when moving away from bring2see orientation position by more than threshold angle corresponding to the cosine angle. Unit: cosine value of angle in q30 Default: 1057429273 (so 10deg)

18.93 IMEM_SRAM_APEX_REG_537

Name: IMEM_SRAM_APEX_REG_537
Address: 537 (219h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_THR_COS_ANG[15:8]	RevB2S threshold, condition satisfied when moving away from bring2see orientation position by more than threshold angle corresponding to the cosine angle. Unit: cosine value of angle in q30 Default: 1057429273 (so 10deg)

18.94 IMEM_SRAM_APEX_REG_538

Name: IMEM_SRAM_APEX_REG_538
Address: 538 (21Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_THR_COS_ANG[23:16]	RevB2S threshold, condition satisfied when moving away from bring2see orientation position by more than threshold angle corresponding to the cosine angle. Unit: cosine value of angle in q30 Default: 1057429273 (so 10deg)

18.95 IMEM_SRAM_APEX_REG_539

Name: IMEM_SRAM_APEX_REG_539
Address: 539 (21Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_THR_COS_ANG[31:24]	RevB2S threshold, condition satisfied when moving away from bring2see orientation position by more than threshold angle corresponding to the cosine angle. Unit: cosine value of angle in q30 Default: 1057429273 (so 10deg)

18.96 IMEM_SRAM_APEX_REG_540

Name: IMEM_SRAM_APEX_REG_540
Address: 540 (21Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_INF[7:0]	Lower bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 0.687g2 is: 11532816 Unit: s32q24

18.97 IMEM_SRAM_APEX_REG_541

Name: IMEM_SRAM_APEX_REG_541
Address: 541 (21Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_INF[15:8]	Lower bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 0.687g2 is: 11532816 Unit: s32q24

18.98 IMEM_SRAM_APEX_REG_542

Name: IMEM_SRAM_APEX_REG_542
Address: 542 (21Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_INF[23:16]	Lower bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 0.687g2 is: 11532816 Unit: s32q24

18.99 IMEM_SRAM_APEX_REG_543

Name: IMEM_SRAM_APEX_REG_543
Address: 543 (21Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_INF[31:24]	Lower bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 0.687g2 is: 11532816 Unit: s32q24

18.100 IMEM_SRAM_APEX_REG_544

Name: IMEM_SRAM_APEX_REG_544
Address: 544 (220h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_SUP[7:0]	Higher bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 1.371g2 is: 23001616 Unit: s32q24

18.101 IMEM_SRAM_APEX_REG_545

Name: IMEM_SRAM_APEX_REG_545
Address: 545 (221h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_SUP[15:8]	Higher bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 1.371g2 is: 23001616 Unit: s32q24

18.102 IMEM_SRAM_APEX_REG_546

Name: IMEM_SRAM_APEX_REG_546
Address: 546 (222h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_SUP[23:16]	Higher bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 1.371g2 is: 23001616 Unit: s32q24

18.103 IMEM_SRAM_APEX_REG_547

Name: IMEM_SRAM_APEX_REG_547
Address: 547 (223h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_LIMIT_SUP[31:24]	Higher bound limit of the last sample's norm considered for b2s detection, in s32q24. Value corresponding to the squared norm value of 1.371g2 is: 23001616 Unit: s32q24

18.104 IMEM_SRAM_APEX_REG_548

Name: IMEM_SRAM_APEX_REG_548
Address: 548 (224h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_X_LIMIT[7:0]	Condition of reverse bring2see on X axis value to ensure Rev-B2S when arm points down. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 3680 (corresponding to 0.8984g)

18.105 IMEM_SRAM_APEX_REG_549

Name: IMEM_SRAM_APEX_REG_549
Address: 549 (225h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_X_LIMIT[15:8]	Condition of reverse bring2see on X axis value to ensure Rev-B2S when arm points down. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 3680 (corresponding to 0.8984g)

18.106 IMEM_SRAM_APEX_REG_550

Name: IMEM_SRAM_APEX_REG_550
Address: 550 (226h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_X_LIMIT[23:16]	Condition of reverse bring2see on X axis value to ensure Rev-B2S when arm points down. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 3680 (corresponding to 0.8984g)

18.107 IMEM_SRAM_APEX_REG_551

Name: IMEM_SRAM_APEX_REG_551
Address: 551 (227h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_X_LIMIT[31:24]	Condition of reverse bring2see on X axis value to ensure Rev-B2S when arm points down. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 3680 (corresponding to 0.8984g)

18.108 IMEM_SRAM_APEX_REG_552

Name: IMEM_SRAM_APEX_REG_552
Address: 552 (228h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_FLAT_ANGLE[7:0]	Condition to detect the flat position and reject B2S interrupt at return to rest position. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 2048 (corresponding to 30°)

18.109 IMEM_SRAM_APEX_REG_553

Name: IMEM_SRAM_APEX_REG_553
Address: 553 (229h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_FLAT_ANGLE[15:8]	Condition to detect the flat position and reject B2S interrupt at return to rest position. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 2048 (corresponding to 30°)

18.110 IMEM_SRAM_APEX_REG_554

Name: IMEM_SRAM_APEX_REG_554
Address: 554 (22Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_FLAT_ANGLE[23:16]	Condition to detect the flat position and reject B2S interrupt at return to rest position. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 2048 (corresponding to 30°)

18.111 IMEM_SRAM_APEX_REG_555

Name: IMEM_SRAM_APEX_REG_555
Address: 555 (22Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_SIN_FLAT_ANGLE[31:24]	Condition to detect the flat position and reject B2S interrupt at return to rest position. Unit: LSB, with 1 LSB = 1g / 2^12 Default: 2048 (corresponding to 30°)

18.112 IMEM_SRAM_APEX_REG_556

Name: IMEM_SRAM_APEX_REG_556
Address: 556 (22Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_TIMER_FLAT_REJECT[7:0]	A timer to disable flat rejection when age of the last no-flat B2S detection is over the timer. Unit: sample number - ODR dependent Default: 350 (corresponding to 7s at 50Hz)

18.113 IMEM_SRAM_APEX_REG_557

Name: IMEM_SRAM_APEX_REG_557
Address: 557 (22Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_TIMER_FLAT_REJECT[15:8]	A timer to disable flat rejection when age of the last no-flat B2S detection is over the timer. Unit: sample number - ODR dependent Default: 350 (corresponding to 7s at 50Hz)

18.114 IMEM_SRAM_APEX_REG_558

Name: IMEM_SRAM_APEX_REG_558
Address: 558 (22Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_TIMER_FLAT_REJECT[23:16]	A timer to disable flat rejection when age of the last no-flat B2S detection is over the timer. Unit: sample number - ODR dependent Default: 350 (corresponding to 7s at 50Hz)

18.115 IMEM_SRAM_APEX_REG_559

Name: IMEM_SRAM_APEX_REG_559
Address: 559 (22Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_TIMER_FLAT_REJECT[31:24]	A timer to disable flat rejection when age of the last no-flat B2S detection is over the timer. Unit: sample number - ODR dependent Default: 350 (corresponding to 7s at 50Hz)

18.116 IMEM_SRAM_APEX_REG_560

Name: IMEM_SRAM_APEX_REG_560
Address: 560 (230h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_MOTION_AGE_LIMIT[7:0]	Time limit between last "Fast motion" and b2s position. Unit: sample number - ODR dependent Default: 20 (corresponding to 400ms at 50Hz)

18.117 IMEM_SRAM_APEX_REG_561

Name: IMEM_SRAM_APEX_REG_561
Address: 561 (231h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_MOTION_AGE_LIMIT[15:8]	Time limit between last "Fast motion" and b2s position. Unit: sample number - ODR dependent Default: 20 (corresponding to 400ms at 50Hz)

18.118 IMEM_SRAM_APEX_REG_562

Name: IMEM_SRAM_APEX_REG_562
Address: 562 (232h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_MOTION_TIME_LIMIT[7:0]	Minimum time where the criterion is above the threshod to be classified as "Fast motion." Unit: sample number - ODR dependent Default: 4 (corresponding to 80ms at 50Hz)

18.119 IMEM_SRAM_APEX_REG_563

Name: IMEM_SRAM_APEX_REG_563
Address: 563 (233h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_FAST_MOTION_TIME_LIMIT[15:8]	Minimum time where the criterion is above the threshod to be classified as "Fast motion." Unit: sample number - ODR dependent Default: 4 (corresponding to 80ms at 50Hz)

18.120 IMEM_SRAM_APEX_REG_564

Name: IMEM_SRAM_APEX_REG_564
Address: 564 (234h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_AGE_LIMIT[7:0]	Minimum time between 2 event b2s. Unit: sample number - ODR dependent Default: 50 (corresponding to 1s at 50Hz)

18.121 IMEM_SRAM_APEX_REG_565

Name: IMEM_SRAM_APEX_REG_565
Address: 565 (235h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_AGE_LIMIT[15:8]	Minimum time between 2 event b2s. Unit: sample number - ODR dependent Default: 50 (corresponding to 1s at 50Hz)

18.122 IMEM_SRAM_APEX_REG_566

Name: IMEM_SRAM_APEX_REG_566
Address: 566 (236h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_LATENCY_TH[7:0]	Condition of RevB2S should be maintained at least during RevB2sLatencyTh. Unit: sample number - ODR dependent Default: 25 (corresponding to 0.5s at 50Hz)

18.123 IMEM_SRAM_APEX_REG_567

Name: IMEM_SRAM_APEX_REG_567
Address: 567 (237h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_SETTINGS_REV_LATENCY_TH[15:8]	Condition of RevB2S should be maintained at least during RevB2sLatencyTh. Unit: sample number - ODR dependent Default: 25 (corresponding to 0.5s at 50Hz)

18.124 IMEM_SRAM_APEX_REG_735

Name: IMEM_SRAM_APEX_REG_735
Address: 735 (2DFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	B2S_MOUNTING_MATRIX[7:0]	Mounting matrix to apply the accelerometer data before bring-to-see computation, as a bit-mask combination of operations. bit0: flip Y, flip Z bit1: flip X, flip Z bit2: swap X/Y, flip Z Range: [0 - 7] Default: 0 being identity matrix

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18.125 IMEM_SRAM_APEX_REG_764

Name: IMEM_SRAM_APEX_REG_764
Address: 764 (2FCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_EN_OUTPUT_HUMAN [7:0]	Bitmask controlling which output are enabled from AID bit 0: enable activity detection bit 1: inactivity detection bit 3: alert Default: 7 (all outputs enabled)

18.126 IMEM_SRAM_APEX_REG_765

Name: IMEM_SRAM_APEX_REG_765
Address: 765 (2FDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_DIS_MULTI_OUTPUT_ HUMAN[7:0]	Option to disable output after each internal decision of the algorithm 0: enable repetition of same state after AID_WIN_HUMAN 1: disable repetition of same state Default: 0 (repetition enabled)

18.127 IMEM_SRAM_APEX_REG_768

Name: IMEM_SRAM_APEX_REG_768
Address: 768 (300h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_HUMAN[7:0]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

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18.128 IMEM_SRAM_APEX_REG_769

Name: IMEM_SRAM_APEX_REG_769
Address: 769 (301h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_HUMAN[15:8]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.129 IMEM_SRAM_APEX_REG_770

Name: IMEM_SRAM_APEX_REG_770
Address: 770 (302h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_HUMAN[23:16]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.130 IMEM_SRAM_APEX_REG_771

Name: IMEM_SRAM_APEX_REG_771
Address: 771 (303h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_HUMAN[31:24]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

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18.131 IMEM_SRAM_APEX_REG_772

Name: IMEM_SRAM_APEX_REG_772
Address: 772 (304h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_HUMAN[7:0]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.132 IMEM_SRAM_APEX_REG_773

Name: IMEM_SRAM_APEX_REG_773
Address: 773 (305h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_HUMAN[15:8]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.133 IMEM_SRAM_APEX_REG_774

Name: IMEM_SRAM_APEX_REG_774
Address: 774 (306h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_HUMAN[23:16]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

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18.134 IMEM_SRAM_APEX_REG_775

Name: IMEM_SRAM_APEX_REG_775
Address: 775 (307h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_HUMAN[31:24]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.135 IMEM_SRAM_APEX_REG_777

Name: IMEM_SRAM_APEX_REG_777
Address: 777 (309h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_HUMAN_OUTPUT_STATE[7:0]	Decision taken by the AID algorithm for human instance 1: when activity is detected 2: when inactivity is detected 6: when inactivity and sedentary alert are detected

18.136 IMEM_SRAM_APEX_REG_800

Name: IMEM_SRAM_APEX_REG_800
Address: 800 (320h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_EN_OUTPUT_DEVICE[7:0]	Bitmask controlling which output are enabled from AID bit 0: enable activity detection bit 1: inactivity detection bit 3 alert Default: 7 (all outputs enabled)

18.137 IMEM_SRAM_APEX_REG_801

Name: IMEM_SRAM_APEX_REG_801
Address: 801 (321h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_DIS_MULTI_OUTPUT_DEVICE[7:0]	Option to disable output after each internal decision of the algorithm 0: enable repetition of same state after AID_WIN_DEVICE 1: disable repetition of same state Default: 0 (repetition enabled)

18.138 IMEM_SRAM_APEX_REG_804

Name: IMEM_SRAM_APEX_REG_804
Address: 804 (324h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_DEVICE[7:0]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.139 IMEM_SRAM_APEX_REG_805

Name: IMEM_SRAM_APEX_REG_805
Address: 805 (325h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_DEVICE[15:8]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.140 IMEM_SRAM_APEX_REG_806

Name: IMEM_SRAM_APEX_REG_806
Address: 806 (326h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_DEVICE[23:16]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.141 IMEM_SRAM_APEX_REG_807

Name: IMEM_SRAM_APEX_REG_807
Address: 807 (327h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_WIN_DEVICE[31:24]	The window time in number of samples to wait for continuous WOM before triggering AID Unit: time in sample number Range: [25 - 500] Default: 150 (3sec at 50Hz) Recommended value at 50Hz = 150 Recommended value at 25Hz = 75

18.142 IMEM_SRAM_APEX_REG_808

Name: IMEM_SRAM_APEX_REG_808
Address: 808 (328h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_DEVICE[7:0]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.143 IMEM_SRAM_APEX_REG_809

Name: IMEM_SRAM_APEX_REG_809
Address: 809 (329h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_DEVICE[15:8]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.144 IMEM_SRAM_APEX_REG_810

Name: IMEM_SRAM_APEX_REG_810
Address: 810 (32Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_DEVICE[23:16]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

18.145 IMEM_SRAM_APEX_REG_811

Name: IMEM_SRAM_APEX_REG_811
Address: 811 (32Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_ALERT_DEVICE[31:24]	The window time in number of samples before AID alert trigger after WOM stop reported motion Unit: time in sample number Range: [150 - 2147483648] Default: 90000 (30min at 50Hz) Recommended value at 50Hz = 90000 Recommended value at 25Hz = 45000

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18.146 IMEM_SRAM_APEX_REG_813

Name: IMEM_SRAM_APEX_REG_813
Address: 813 (32Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	AID_DEVICE_OUTPUT_STATE[7:0]	Decision taken by the AID algorithm for device instance 1: activity is detected 2: inactivity is detected 6: inactivity and sedentary alert are detected

18.147 IMEM_SRAM_APEX_REG_816

Name: IMEM_SRAM_APEX_REG_816
Address: 816 (330h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[7:0]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.148 IMEM_SRAM_APEX_REG_817

Name: IMEM_SRAM_APEX_REG_817
Address: 817 (331h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[15:8]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.149 IMEM_SRAM_APEX_REG_818

Name: IMEM_SRAM_APEX_REG_818
Address: 818 (332h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[23:16]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

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18.150 IMEM_SRAM_APEX_REG_819

Name: IMEM_SRAM_APEX_REG_819
Address: 819 (333h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[31:24]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.151 IMEM_SRAM_APEX_REG_820

Name: IMEM_SRAM_APEX_REG_820
Address: 820 (334h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[39:32]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.152 IMEM_SRAM_APEX_REG_821

Name: IMEM_SRAM_APEX_REG_821
Address: 821 (335h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[47:40]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.153 IMEM_SRAM_APEX_REG_822

Name: IMEM_SRAM_APEX_REG_822
Address: 822 (336h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[55:48]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.154 IMEM_SRAM_APEX_REG_823

Name: IMEM_SRAM_APEX_REG_823
Address: 823 (337h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[63:56]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.155 IMEM_SRAM_APEX_REG_824

Name: IMEM_SRAM_APEX_REG_824
Address: 824 (338h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[71:64]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.156 IMEM_SRAM_APEX_REG_825

Name: IMEM_SRAM_APEX_REG_825
Address: 825 (339h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[79:72]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.157 IMEM_SRAM_APEX_REG_826

Name: IMEM_SRAM_APEX_REG_826
Address: 826 (33Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[87:80]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.158 IMEM_SRAM_APEX_REG_827

Name: IMEM_SRAM_APEX_REG_827
Address: 827 (33Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[95:88]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.159 IMEM_SRAM_APEX_REG_828

Name: IMEM_SRAM_APEX_REG_828
Address: 828 (33Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[103:96]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.160 IMEM_SRAM_APEX_REG_829

Name: IMEM_SRAM_APEX_REG_829
Address: 829 (33Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[111:104]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.161 IMEM_SRAM_APEX_REG_830

Name: IMEM_SRAM_APEX_REG_830
Address: 830 (33Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[119:112]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.162 IMEM_SRAM_APEX_REG_831

Name: IMEM_SRAM_APEX_REG_831
Address: 831 (33Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[127:120]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.163 IMEM_SRAM_APEX_REG_832

Name: IMEM_SRAM_APEX_REG_832
Address: 832 (340h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[135:128]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.164 IMEM_SRAM_APEX_REG_833

Name: IMEM_SRAM_APEX_REG_833
Address: 833 (341h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GLOBAL_MOUNTING_MATRIX[143:136]	A q14 3x3 matrix applied to input accel and gyro data Default: Identity matrix being 0x4000 0 0 0 0x4000 0 0 0 0x4000

18.165 IMEM_SRAM_APEX_REG_836

Name: IMEM_SRAM_APEX_REG_836
Address: 836 (344h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_ODR_US[7:0]	GAF accelerometer input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.166 IMEM_SRAM_APEX_REG_837

Name: IMEM_SRAM_APEX_REG_837
Address: 837 (345h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_ODR_US[15:8]	GAF accelerometer input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.167 IMEM_SRAM_APEX_REG_838

Name: IMEM_SRAM_APEX_REG_838
Address: 838 (346h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_ODR_US[23:16]	GAF accelerometer input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.168 IMEM_SRAM_APEX_REG_839

Name: IMEM_SRAM_APEX_REG_839
Address: 839 (347h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_ODR_US[31:24]	GAF accelerometer input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.169 IMEM_SRAM_APEX_REG_840

Name: IMEM_SRAM_APEX_REG_840
Address: 840 (348h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_ODR_US[7:0]	GAF gyroscope input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.170 IMEM_SRAM_APEX_REG_841

Name: IMEM_SRAM_APEX_REG_841
Address: 841 (349h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_ODR_US[15:8]	GAF gyroscope input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.171 IMEM_SRAM_APEX_REG_842

Name: IMEM_SRAM_APEX_REG_842
Address: 842 (34Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_ODR_US[23:16]	GAF gyroscope input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.172 IMEM_SRAM_APEX_REG_843

Name: IMEM_SRAM_APEX_REG_843
Address: 843 (34Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_ODR_US[31:24]	GAF gyroscope input sensor data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.173 IMEM_SRAM_APEX_REG_844

Name: IMEM_SRAM_APEX_REG_844
Address: 844 (34Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_PDR_US[7:0]	GAF accelerometer processing data rate, sensor data are averaged if sensor is faster than GAF accelerometer PDR. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.174 IMEM_SRAM_APEX_REG_845

Name: IMEM_SRAM_APEX_REG_845
Address: 845 (34Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_PDR_US[15:8]	GAF accelerometer processing data rate, sensor data are averaged if sensor is faster than GAF accelerometer PDR. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.175 IMEM_SRAM_APEX_REG_846

Name: IMEM_SRAM_APEX_REG_846
Address: 846 (34Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_PDR_US[23:16]	GAF accelerometer processing data rate, sensor data are averaged if sensor is faster than GAF accelerometer PDR. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.176 IMEM_SRAM_APEX_REG_847

Name: IMEM_SRAM_APEX_REG_847
Address: 847 (34Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_PDR_US[31:24]	GAF accelerometer processing data rate, sensor data are averaged if sensor is faster than GAF accelerometer PDR. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.177 IMEM_SRAM_APEX_REG_848

Name: IMEM_SRAM_APEX_REG_848
Address: 848 (350h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_PDR_US[7:0]	GAF gyroscope processing data rate, sensor data are averaged if sensor is faster than GAF gyroscope PDR. Corresponds to GAF output data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.178 IMEM_SRAM_APEX_REG_849

Name: IMEM_SRAM_APEX_REG_849
Address: 849 (351h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_PDR_US[15:8]	GAF gyroscope processing data rate, sensor data are averaged if sensor is faster than GAF gyroscope PDR. Corresponds to GAF output data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.179 IMEM_SRAM_APEX_REG_850

Name: IMEM_SRAM_APEX_REG_850
Address: 850 (352h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_PDR_US[23:16]	GAF gyroscope processing data rate, sensor data are averaged if sensor is faster than GAF gyroscope PDR. Corresponds to GAF output data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.180 IMEM_SRAM_APEX_REG_851

Name: IMEM_SRAM_APEX_REG_851
Address: 851 (353h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_PDR_US[31:24]	GAF gyroscope processing data rate, sensor data are averaged if sensor is faster than GAF gyroscope PDR. Corresponds to GAF output data rate. Range: {1250;2500;5000;10000;20000} Unit: µs Default: 10000

18.181 IMEM_SRAM_APEX_REG_860

Name: IMEM_SRAM_APEX_REG_860
Address: 860 (35Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[7:0]	Duration of stationary detection. Unit: µs Default: 500000 (0.5 seconds)

18.182 IMEM_SRAM_APEX_REG_861

Name: IMEM_SRAM_APEX_REG_861
Address: 861 (35Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[15:8]	Duration of stationary detection. Unit: µs Default: 500000 (0.5 seconds)

18.183 IMEM_SRAM_APEX_REG_862

Name: IMEM_SRAM_APEX_REG_862
Address: 862 (35Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[23:16]	Duration of stationary detection. Unit: µs Default: 500000 (0.5 seconds)

18.184 IMEM_SRAM_APEX_REG_863

Name: IMEM_SRAM_APEX_REG_863
Address: 863 (35Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_DURATION_US[31:24]	Duration of stationary detection. Unit: µs Default: 500000 (0.5 seconds)

18.185 IMEM_SRAM_APEX_REG_864

Name: IMEM_SRAM_APEX_REG_864
Address: 864 (360h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[7:0]	Threshold on angular deviation for stationary detection. Unit: degree s32q16 Default: 65536 (1 degree)

18.186 IMEM_SRAM_APEX_REG_865

Name: IMEM_SRAM_APEX_REG_865
Address: 865 (361h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[15:8]	Threshold on angular deviation for stationary detection. Unit: degree s32q16 Default: 65536 (1 degree)

18.187 IMEM_SRAM_APEX_REG_866

Name: IMEM_SRAM_APEX_REG_866
Address: 866 (362h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[23:16]	Threshold on angular deviation for stationary detection. Unit: degree s32q16 Default: 65536 (1 degree)

18.188 IMEM_SRAM_APEX_REG_867

Name: IMEM_SRAM_APEX_REG_867
Address: 867 (363h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_THRESHOLD_DEG_Q16[31:24]	Threshold on angular deviation for stationary detection. Unit: degree s32q16 Default: 65536 (1 degree)

18.189 IMEM_SRAM_APEX_REG_868

Name: IMEM_SRAM_APEX_REG_868
Address: 868 (364h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[7:0]	Gyroscope integration error related to bias precision. Higher value increases accel roll/pitch correction in steady state. Unit: LSB Default: 20

18.190 IMEM_SRAM_APEX_REG_869

Name: IMEM_SRAM_APEX_REG_869
Address: 869 (365h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[15:8]	Gyroscope integration error related to bias precision. Higher value increases accel roll/pitch correction in steady state. Unit: LSB Default: 20

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18.191 IMEM_SRAM_APEX_REG_870

Name: IMEM_SRAM_APEX_REG_870
Address: 870 (366h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[23:16]	Gyroscope integration error related to bias precision. Higher value increases accel roll/pitch correction in steady state. Unit: LSB Default: 20

18.192 IMEM_SRAM_APEX_REG_871

Name: IMEM_SRAM_APEX_REG_871
Address: 871 (367h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_LOW_SPEED_DRIFT_ROLL_PITCH[31:24]	Gyroscope integration error related to bias precision. Higher value increases accel roll/pitch correction in steady state. Unit: LSB Default: 20

18.193 IMEM_SRAM_APEX_REG_872

Name: IMEM_SRAM_APEX_REG_872
Address: 872 (368h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[7:0]	Enable/disable stop integration of stationary angle. Default: 0

18.194 IMEM_SRAM_APEX_REG_873

Name: IMEM_SRAM_APEX_REG_873
Address: 873 (369h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[15:8]	Enable/disable stop integration of stationary angle. Default: 0

18.195 IMEM_SRAM_APEX_REG_874

Name: IMEM_SRAM_APEX_REG_874
Address: 874 (36Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[23:16]	Enable/disable stop integration of stationary angle. Default : 0

18.196 IMEM_SRAM_APEX_REG_875

Name: IMEM_SRAM_APEX_REG_875
Address: 875 (36Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STATIONARY_ANGLE_ENABLE[31:24]	Enable/disable stop integration of stationary angle. Default: 0

18.197 IMEM_SRAM_APEX_REG_876

Name: IMEM_SRAM_APEX_REG_876
Address: 876 (36Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_PLL_CLOCK_VARIATION[7:0]	Error on the clock in same format as reg SW_PLL1_TRIM. Calculated as (actual_clk - target_clk) / target_clk * (2^7 - 1) / 5 * 100. Default: 0

18.198 IMEM_SRAM_APEX_REG_1024

Name: IMEM_SRAM_APEX_REG_1024
Address: 1024 (400h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_DT_US[7:0]	Gyro ODR corrected with PLL clock correction. Unit: µs Default: 20000

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18.199 IMEM_SRAM_APEX_REG_1025

Name: IMEM_SRAM_APEX_REG_1025
Address: 1025 (401h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_DT_US[15:8]	Gyro ODR corrected with PLL clock correction. Unit: µs Default: 20000

18.200 IMEM_SRAM_APEX_REG_1026

Name: IMEM_SRAM_APEX_REG_1026
Address: 1026 (402h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_DT_US[23:16]	Gyro ODR corrected with PLL clock correction. Unit: µs Default: 20000

18.201 IMEM_SRAM_APEX_REG_1027

Name: IMEM_SRAM_APEX_REG_1027
Address: 1027 (403h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_DT_US[31:24]	Gyro ODR corrected with PLL clock correction. Unit: µs Default: 20000

18.202 IMEM_SRAM_APEX_REG_1032

Name: IMEM_SRAM_APEX_REG_1032
Address: 1032 (408h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[7:0]	Accelerometer measurement covariance. Unit: g^2 s32q15 Default: 32768 (so 0.5g^2)

18.203 IMEM_SRAM_APEX_REG_1033

Name: IMEM_SRAM_APEX_REG_1033
Address: 1033 (409h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[15:8]	Accelerometer measurement covariance. Unit: g^2 s32q15 Default: 32768 (so 0.5g^2)

18.204 IMEM_SRAM_APEX_REG_1034

Name: IMEM_SRAM_APEX_REG_1034
Address: 1034 (40Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[23:16]	Accelerometer measurement covariance. Unit: g^2 s32q15 Default: 32768 (so 0.5g^2)

18.205 IMEM_SRAM_APEX_REG_1035

Name: IMEM_SRAM_APEX_REG_1035
Address: 1035 (40Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_MEASUREMENT_COVARIANCE_ACC[31:24]	Accelerometer measurement covariance. Unit: g^2 s32q15 Default: 32768 (so 0.5g^2)

18.206 IMEM_SRAM_APEX_REG_1052

Name: IMEM_SRAM_APEX_REG_1052
Address: 1052 (41Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_ACCELERATION_REJECTION[7:0]	Linear acceleration rejection. Unit: m/s^2 s32q30 Range: [0 - 1073741824] Default: 1073741824 (so 1.0, being maximum rejection)

18.207 IMEM_SRAM_APEX_REG_1053

Name: IMEM_SRAM_APEX_REG_1053
Address: 1053 (41Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_ACCELERATION_REJECTION[15:8]	Linear acceleration rejection. Unit: m/s^2 s32q30 Range: [0 - 1073741824] Default: 1073741824 (so 1.0, being maximum rejection)

18.208 IMEM_SRAM_APEX_REG_1054

Name: IMEM_SRAM_APEX_REG_1054
Address: 1054 (41Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_ACCELERATION_REJECTION[23:16]	Linear acceleration rejection. Unit: m/s^2 s32q30 Range: [0 - 1073741824] Default: 1073741824 (so 1.0, being maximum rejection)

18.209 IMEM_SRAM_APEX_REG_1055

Name: IMEM_SRAM_APEX_REG_1055
Address: 1055 (41Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_ACCELERATION_REJECTION[31:24]	Linear acceleration rejection. Unit: m/s^2 s32q30 Range: [0 - 1073741824] Default: 1073741824 (so 1.0, being maximum rejection)

18.210 IMEM_SRAM_APEX_REG_1056

Name: IMEM_SRAM_APEX_REG_1056
Address: 1056 (420h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[7:0]	Percentage of error (covering gyroscope sensitivity, timestamp and quantization) on gyroscope integration. Unit: LSB with 2^15 LSB = 1% error Default: 262144 (so 8% error)

18.211 IMEM_SRAM_APEX_REG_1057

Name: IMEM_SRAM_APEX_REG_1057
Address: 1057 (421h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[15:8]	Percentage of error (covering gyroscope sensitivity, timestamp and quantization) on gyroscope integration. Unit: LSB with 2^15 LSB = 1% error Default: 262144 (so 8% error)

18.212 IMEM_SRAM_APEX_REG_1058

Name: IMEM_SRAM_APEX_REG_1058
Address: 1058 (422h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[23:16]	Percentage of error (covering gyroscope sensitivity, timestamp and quantization) on gyroscope integration. Unit: LSB with 2^15 LSB = 1% error Default: 262144 (so 8% error)

18.213 IMEM_SRAM_APEX_REG_1059

Name: IMEM_SRAM_APEX_REG_1059
Address: 1059 (423h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_FUS_HIGH_SPEED_DRIFT[31:24]	Percentage of error (covering gyroscope sensitivity, timestamp and quantization) on gyroscope integration. Unit: LSB with 2^15 LSB = 1% error Default: 262144 (so 8% error)

18.214 IMEM_SRAM_APEX_REG_1212

Name: IMEM_SRAM_APEX_REG_1212
Address: 1212 (4BCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_ACCURACY[7:0]	Gyroscope accuracy from 0 (non-calibrated) to 3 (well-calibrated). Range: [0 - 3] Default: 0

18.215 IMEM_SRAM_APEX_REG_1213

Name: IMEM_SRAM_APEX_REG_1213
Address: 1213 (4BDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_ACCURACY[15:8]	Gyroscope accuracy from 0 (non-calibrated) to 3 (well-calibrated). Range: [0 - 3] Default: 0

18.216 IMEM_SRAM_APEX_REG_1214

Name: IMEM_SRAM_APEX_REG_1214
Address: 1214 (4BEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_ACCURACY[23:16]	Gyroscope accuracy from 0 (non-calibrated) to 3 (well-calibrated). Range: [0 - 3] Default: 0

18.217 IMEM_SRAM_APEX_REG_1215

Name: IMEM_SRAM_APEX_REG_1215
Address: 1215 (4BFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_ACCURACY[31:24]	Gyroscope accuracy from 0 (non-calibrated) to 3 (well-calibrated). Range: [0 - 3] Default: 0

18.218 IMEM_SRAM_APEX_REG_1228

Name: IMEM_SRAM_APEX_REG_1228
Address: 1228 (4CCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[7:0]	Duration for no motion gyroscope bias calibration. Unit: µs Default value: 500000

18.219 IMEM_SRAM_APEX_REG_1229

Name: IMEM_SRAM_APEX_REG_1229
Address: 1229 (4CDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[15:8]	Duration for no motion gyroscope bias calibration. Unit: µs Default value: 500000

18.220 IMEM_SRAM_APEX_REG_1230

Name: IMEM_SRAM_APEX_REG_1230
Address: 1230 (4CEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[23:16]	Duration for no motion gyroscope bias calibration. Unit: µs Default value: 500000

18.221 IMEM_SRAM_APEX_REG_1231

Name: IMEM_SRAM_APEX_REG_1231
Address: 1231 (4CFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_STATIONARY_DURATION_US[31:24]	Duration for no motion gyroscope bias calibration. Unit: µs Default value: 500000

18.222 IMEM_SRAM_APEX_REG_1244

Name: IMEM_SRAM_APEX_REG_1244
Address: 1244 (4DCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[7:0]	Stationary detection threshold of 2nd metric for the loose bias calibration. Default value: 60000 (no unit).

18.223 IMEM_SRAM_APEX_REG_1245

Name: IMEM_SRAM_APEX_REG_1245
Address: 1245 (4DDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[15:8]	Stationary detection threshold of 2nd metric for the loose bias calibration. Default value: 60000 (no unit).

18.224 IMEM_SRAM_APEX_REG_1246

Name: IMEM_SRAM_APEX_REG_1246
Address: 1246 (4DEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[23:16]	Stationary detection threshold of 2nd metric for the loose bias calibration. Default value: 60000 (no unit).

18.225 IMEM_SRAM_APEX_REG_1247

Name: IMEM_SRAM_APEX_REG_1247
Address: 1247 (4DFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC2[31:24]	Stationary detection threshold of 2nd metric for the loose bias calibration. Default value: 60000 (no unit).

18.226 IMEM_SRAM_APEX_REG_1248

Name: IMEM_SRAM_APEX_REG_1248
Address: 1248 (4E0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_BIAS_REJECT_TH[7:0]	Gyro bias rejection threshold above which device is considered as moving. Threshold is compared against absolute value of delta between current estimated gyro bias and last estimated gyro bias in an analysis window. Unit: 2000dps = 2^30 Default value: 3650722 (so 6.8dps)

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18.227 IMEM_SRAM_APEX_REG_1249

Name: IMEM_SRAM_APEX_REG_1249
Address: 1249 (4E1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_BIAS_REJECT_TH[15:8]	Gyro bias rejection threshold above which device is considered as moving. Threshold is compared against absolute value of delta between current estimated gyro bias and last estimated gyro bias in an analysis window. Unit: 2000dps = 2^30 Default value: 3650722 (so 6.8dps)

18.228 IMEM_SRAM_APEX_REG_1250

Name: IMEM_SRAM_APEX_REG_1250
Address: 1250 (4E2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_BIAS_REJECT_TH[23:16]	Gyro bias rejection threshold above which device is considered as moving. Threshold is compared against absolute value of delta between current estimated gyro bias and last estimated gyro bias in an analysis window. Unit: 2000dps = 2^30 Default value: 3650722 (so 6.8dps)

18.229 IMEM_SRAM_APEX_REG_1251

Name: IMEM_SRAM_APEX_REG_1251
Address: 1251 (4E3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GYR_BIAS_REJECT_TH[31:24]	Gyro bias rejection threshold above which device is considered as moving. Threshold is compared against absolute value of delta between current estimated gyro bias and last estimated gyro bias in an analysis window. Unit: 2000dps = 2^30 Default value: 3650722 (so 6.8dps)

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18.230 IMEM_SRAM_APEX_REG_1260

Name: IMEM_SRAM_APEX_REG_1260
Address: 1260 (4ECh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[7:0]	Stationary detection threshold of 1st metric for the loose bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 1200 (so 2.28dps)

18.231 IMEM_SRAM_APEX_REG_1261

Name: IMEM_SRAM_APEX_REG_1261
Address: 1261 (4EDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[15:8]	Stationary detection threshold of 1st metric for the loose bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 1200 (so 2.28dps)

18.232 IMEM_SRAM_APEX_REG_1262

Name: IMEM_SRAM_APEX_REG_1262
Address: 1262 (4EEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[23:16]	Stationary detection threshold of 1st metric for the loose bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 1200 (so 2.28dps)

18.233 IMEM_SRAM_APEX_REG_1263

Name: IMEM_SRAM_APEX_REG_1263
Address: 1263 (4EFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_THRESHOLD_METRIC1[31:24]	Stationary detection threshold of 1st metric for the loose bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 1200 (so 2.28dps)

18.234 IMEM_SRAM_APEX_REG_1440

Name: IMEM_SRAM_APEX_REG_1440
Address: 1440 (5A0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[7:0]	Previously stored temperature when gyro bias was estimated. Unit: degree C in s32q16

18.235 IMEM_SRAM_APEX_REG_1441

Name: IMEM_SRAM_APEX_REG_1441
Address: 1441 (5A1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[15:8]	Previously stored temperature when gyro bias was estimated. Unit: degree C in s32q16

18.236 IMEM_SRAM_APEX_REG_1442

Name: IMEM_SRAM_APEX_REG_1442
Address: 1442 (5A2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[23:16]	Previously stored temperature when gyro bias was estimated. Unit: degree C in s32q16

18.237 IMEM_SRAM_APEX_REG_1443

Name: IMEM_SRAM_APEX_REG_1443
Address: 1443 (5A3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_TEMPERATURE_DEG_Q16[31:24]	Previously stored temperature when gyro bias was estimated. Unit: degree C in s32q16

18.238 IMEM_SRAM_APEX_REG_1456

Name: IMEM_SRAM_APEX_REG_1456
Address: 1456 (5B0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[7:0]	Square of sin on angle threshold to reject gyroscope calibration. Unit: (sin(theta)2)*225 Default: 4318 (so 0.65 degree)

18.239 IMEM_SRAM_APEX_REG_1457

Name: IMEM_SRAM_APEX_REG_1457
Address: 1457 (5B1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[15:8]	Square of sin on angle threshold to reject gyroscope calibration. Unit: (sin(theta)2)*225 Default: 4318 (so 0.65 degree)

18.240 IMEM_SRAM_APEX_REG_1458

Name: IMEM_SRAM_APEX_REG_1458
Address: 1458 (5B2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[23:16]	Square of sin on angle threshold to reject gyroscope calibration. Unit: (sin(theta)2)*225 Default: 4318 (so 0.65 degree)

18.241 IMEM_SRAM_APEX_REG_1459

Name: IMEM_SRAM_APEX_REG_1459
Address: 1459 (5B3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_SQUARE_SIN_ANGLE_MOTION_DETECT_TH[31:24]	Square of sin on angle threshold to reject gyroscope calibration. Unit: (sin(theta)2)*225 Default: 4318 (so 0.65 degree)

18.242 IMEM_SRAM_APEX_REG_1460

Name: IMEM_SRAM_APEX_REG_1460
Address: 1460 (5B4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[7:0]	Accelerometer filtering mean value. Unit: sample number in log2 Default: 5 (so 32 samples)

18.243 IMEM_SRAM_APEX_REG_1461

Name: IMEM_SRAM_APEX_REG_1461
Address: 1461 (5B5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[15:8]	Accelerometer filtering mean value. Unit: sample number in log2 Default: 5 (so 32 samples)

18.244 IMEM_SRAM_APEX_REG_1462

Name: IMEM_SRAM_APEX_REG_1462
Address: 1462 (5B6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[23:16]	Accelerometer filtering mean value. Unit: sample number in log2 Default: 5 (so 32 samples)

18.245 IMEM_SRAM_APEX_REG_1463

Name: IMEM_SRAM_APEX_REG_1463
Address: 1463 (5B7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_ACC_FILTERING_NPOINTS_LOG2[31:24]	Accelerometer filtering mean value. Unit: sample number in log2 Default: 5 (so 32 samples)

18.246 IMEM_SRAM_APEX_REG_1464

Name: IMEM_SRAM_APEX_REG_1464
Address: 1464 (5B8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[7:0]	Stationary detection threshold of 1st metric for strict bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 300 (so 0.57dps)

18.247 IMEM_SRAM_APEX_REG_1465

Name: IMEM_SRAM_APEX_REG_1465
Address: 1465 (5B9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[15:8]	Stationary detection threshold of 1st metric for strict bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 300 (so 0.57dps)

18.248 IMEM_SRAM_APEX_REG_1466

Name: IMEM_SRAM_APEX_REG_1466
Address: 1466 (5BAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[23:16]	Stationary detection threshold of 1st metric for strict bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 300 (so 0.57dps)

18.249 IMEM_SRAM_APEX_REG_1467

Name: IMEM_SRAM_APEX_REG_1467
Address: 1467 (5BBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC1[31:24]	Stationary detection threshold of 1st metric for strict bias calibration. Threshold is compared against absolute value of delta between current gyro value and last gyro value in an analysis window. Unit: 2000dps = 2^20 Default value: 300 (so 0.57dps)

18.250 IMEM_SRAM_APEX_REG_1468

Name: IMEM_SRAM_APEX_REG_1468
Address: 1468 (5BCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[7:0]	Stationary detection threshold of 2nd metric for the strict bias calibration. Default value: 400

18.251 IMEM_SRAM_APEX_REG_1469

Name: IMEM_SRAM_APEX_REG_1469
Address: 1469 (5BDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[15:8]	Stationary detection threshold of 2nd metric for the strict bias calibration. Default value: 400

18.252 IMEM_SRAM_APEX_REG_1470

Name: IMEM_SRAM_APEX_REG_1470
Address: 1470 (5BEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[23:16]	Stationary detection threshold of 2nd metric for the strict bias calibration. Default value: 400

18.253 IMEM_SRAM_APEX_REG_1471

Name: IMEM_SRAM_APEX_REG_1471
Address: 1471 (5BFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_STRICT_GYR_CAL_THRESHOLD_METRIC2[31:24]	Stationary detection threshold of 2nd metric for the strict bias calibration. Default value: 400

18.254 IMEM_SRAM_APEX_REG_1472

Name: IMEM_SRAM_APEX_REG_1472
Address: 1472 (5C0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TIMER[7:0]	Validity timer of the strict bias in sample number. Default: 1440000 (so 8 hours at 50Hz)

18.255 IMEM_SRAM_APEX_REG_1473

Name: IMEM_SRAM_APEX_REG_1473
Address: 1473 (5C1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TIMER[15:8]	Validity timer of the strict bias in sample number. Default: 1440000 (so 8 hours at 50Hz)

18.256 IMEM_SRAM_APEX_REG_1474

Name: IMEM_SRAM_APEX_REG_1474
Address: 1474 (5C2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TIMER[23:16]	Validity timer of the strict bias in sample number. Default: 1440000 (so 8 hours at 50Hz)

18.257 IMEM_SRAM_APEX_REG_1475

Name: IMEM_SRAM_APEX_REG_1475
Address: 1475 (5C3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TIMER[31:24]	Validity timer of the strict bias in sample number. Default: 1440000 (so 8 hours at 50Hz)

18.258 IMEM_SRAM_APEX_REG_1476

Name: IMEM_SRAM_APEX_REG_1476
Address: 1476 (5C4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[7:0]	Validity temperature variation of the strict bias. Unit: degree C s32q16 Default: 983040 (so 15 degree C)

18.259 IMEM_SRAM_APEX_REG_1477

Name: IMEM_SRAM_APEX_REG_1477
Address: 1477 (5C5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[15:8]	Validity temperature variation of the strict bias. Unit: degree C s32q16 Default: 983040 (so 15 degree C)

18.260 IMEM_SRAM_APEX_REG_1478

Name: IMEM_SRAM_APEX_REG_1478
Address: 1478 (5C6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[23:16]	Validity temperature variation of the strict bias. Unit: degree C s32q16 Default: 983040 (so 15 degree C)

18.261 IMEM_SRAM_APEX_REG_1479

Name: IMEM_SRAM_APEX_REG_1479
Address: 1479 (5C7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_GOLDEN_BIAS_TEMPERATURE_VALIDITY[31:24]	Validity temperature variation of the strict bias. Unit: degree C s32q16 Default: 983040 (so 15 degree C)

18.262 IMEM_SRAM_APEX_REG_1480

Name: IMEM_SRAM_APEX_REG_1480
Address: 1480 (5C8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[7:0]	Gyroscope calibration number of samples used to estimate metric1 and metric2, and minimum gyroscope calibration duration. Unit: number of samples in log2 Range: [6 - 8] Default: 7 (so 2^7 = 128 samples)

18.263 IMEM_SRAM_APEX_REG_1481

Name: IMEM_SRAM_APEX_REG_1481
Address: 1481 (5C9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[15:8]	Gyroscope calibration number of samples used to estimate metric1 and metric2, and minimum gyroscope calibration duration. Unit: number of samples in log2 Range: [6 - 8] Default: 7 (so 2^7 = 128 samples)

18.264 IMEM_SRAM_APEX_REG_1482

Name: IMEM_SRAM_APEX_REG_1482
Address: 1482 (5CAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[23:16]	Gyroscope calibration number of samples used to estimate metric1 and metric2, and minimum gyroscope calibration duration. Unit: number of samples in log2 Range: [6 - 8] Default: 7 (so 2^7 = 128 samples)

18.265 IMEM_SRAM_APEX_REG_1483

Name: IMEM_SRAM_APEX_REG_1483
Address: 1483 (5CBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_CONFIG_LOOSE_GYR_CAL_SAMPLE_NUM_LOG2[31:24]	Gyroscope calibration number of samples used to estimate metric1 and metric2, and minimum gyroscope calibration duration. Unit: number of samples in log2 Range: [6 - 8] Default: 7 (so 2^7 = 128 samples)

18.266 IMEM_SRAM_APEX_REG_1484

Name: IMEM_SRAM_APEX_REG_1484
Address: 1484 (5CCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[7:0]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.267 IMEM_SRAM_APEX_REG_1485

Name: IMEM_SRAM_APEX_REG_1485
Address: 1485 (5CDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[15:8]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.268 IMEM_SRAM_APEX_REG_1486

Name: IMEM_SRAM_APEX_REG_1486
Address: 1486 (5CEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[23:16]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.269 IMEM_SRAM_APEX_REG_1487

Name: IMEM_SRAM_APEX_REG_1487
Address: 1487 (5CFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[31:24]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.270 IMEM_SRAM_APEX_REG_1488

Name: IMEM_SRAM_APEX_REG_1488
Address: 1488 (5D0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[39:32]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.271 IMEM_SRAM_APEX_REG_1489

Name: IMEM_SRAM_APEX_REG_1489
Address: 1489 (5D1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[47:40]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.272 IMEM_SRAM_APEX_REG_1490

Name: IMEM_SRAM_APEX_REG_1490
Address: 1490 (5D2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[55:48]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.273 IMEM_SRAM_APEX_REG_1491

Name: IMEM_SRAM_APEX_REG_1491
Address: 1491 (5D3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[63:56]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.274 IMEM_SRAM_APEX_REG_1492

Name: IMEM_SRAM_APEX_REG_1492
Address: 1492 (5D4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[71:64]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.275 IMEM_SRAM_APEX_REG_1493

Name: IMEM_SRAM_APEX_REG_1493
Address: 1493 (5D5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[79:72]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.276 IMEM_SRAM_APEX_REG_1494

Name: IMEM_SRAM_APEX_REG_1494
Address: 1494 (5D6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[87:80]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.277 IMEM_SRAM_APEX_REG_1495

Name: IMEM_SRAM_APEX_REG_1495
Address: 1495 (5D7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_GYR_BIAS_DPS_Q12[95:88]	Previous gyroscope bias to start with (one value per axis). Unit: dps in s32q12 Default: 0;0;0

18.278 IMEM_SRAM_APEX_REG_1644

Name: IMEM_SRAM_APEX_REG_1644
Address: 1644 (66Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[7:0]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.279 IMEM_SRAM_APEX_REG_1645

Name: IMEM_SRAM_APEX_REG_1645
Address: 1645 (66Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[15:8]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.280 IMEM_SRAM_APEX_REG_1646

Name: IMEM_SRAM_APEX_REG_1646
Address: 1646 (66Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[23:16]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.281 IMEM_SRAM_APEX_REG_1647

Name: IMEM_SRAM_APEX_REG_1647
Address: 1647 (66Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[31:24]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.282 IMEM_SRAM_APEX_REG_1648

Name: IMEM_SRAM_APEX_REG_1648
Address: 1648 (670h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[39:32]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.283 IMEM_SRAM_APEX_REG_1649

Name: IMEM_SRAM_APEX_REG_1649
Address: 1649 (671h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[47:40]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.284 IMEM_SRAM_APEX_REG_1650

Name: IMEM_SRAM_APEX_REG_1650
Address: 1650 (672h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[55:48]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.285 IMEM_SRAM_APEX_REG_1651

Name: IMEM_SRAM_APEX_REG_1651
Address: 1651 (673h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[63:56]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.286 IMEM_SRAM_APEX_REG_1652

Name: IMEM_SRAM_APEX_REG_1652
Address: 1652 (674h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[71:64]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.287 IMEM_SRAM_APEX_REG_1653

Name: IMEM_SRAM_APEX_REG_1653
Address: 1653 (675h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[79:72]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.288 IMEM_SRAM_APEX_REG_1654

Name: IMEM_SRAM_APEX_REG_1654
Address: 1654 (676h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[87:80]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.289 IMEM_SRAM_APEX_REG_1655

Name: IMEM_SRAM_APEX_REG_1655
Address: 1655 (677h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_BIAS_1G_Q16[95:88]	Externally computed accelerometer biases to feed into the fusion (one value per axis). Unit: g in s32q16 Default: 0;0;0

18.290 IMEM_SRAM_APEX_REG_1717

Name: IMEM_SRAM_APEX_REG_1717
Address: 1717 (6B5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_SAVED_ACC_ACCURACY[7:0]	Accelerometer accuracy from 0 (non-calibrated) to 3 (well-calibrated). Range: [0 - 3] Default: 0

18.291 IMEM_SRAM_APEX_REG_1718

Name: IMEM_SRAM_APEX_REG_1718
Address: 1718 (6B6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GAF_INIT_STATUS[7:0]	GAF initialization status. Set to 1 by eDMP once GAF initialization is done. Default: 0 (GAF initialization not performed)

18.292 IMEM_SRAM_APEX_REG_1860

Name: IMEM_SRAM_APEX_REG_1860
Address: 1860 (744h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_TREE_THRESHOLDS[7:0]	VVD Tree thresholds. Structure member of the VVD model Decision Tree. Must loaded with VVD model provided by TDK based on TDK recommendation.

18.293 IMEM_SRAM_APEX_REG_1861

Name: IMEM_SRAM_APEX_REG_1861
Address: 1861 (745h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_TREE_THRESHOLDS[15:8]	VVD Tree thresholds. Structure member of the VVD model Decision Tree. Must loaded with VVD model provided by TDK based on TDK recommendation.

18.294 IMEM_SRAM_APEX_REG_1986

Name: IMEM_SRAM_APEX_REG_1986
Address: 1986 (7C2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_TREE_FEATUREIDS[7:0]	VVD Tree feature index. Structure member of the VVD model Decision Tree. Must loaded with VVD model provided by TDK based on TDK recommendation.

18.295 IMEM_SRAM_APEX_REG_2049

Name: IMEM_SRAM_APEX_REG_2049
Address: 2049 (801h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_TREE_NEXTNODERIGHT[7:0]	VVD Tree nextNodeRight. Structure member of the VVD model Decision Tree. Must loaded with VVD model provided by TDK based on TDK recommendation.

18.296 IMEM_SRAM_APEX_REG_2112

Name: IMEM_SRAM_APEX_REG_2112
Address: 2112 (840h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_TREE_THRESHOLDSSHIFT[7:0]	VVD Tree threshold shift. Structure member of the VVD model Decision Tree. Must loaded with VVD model provided by TDK based on TDK recommendation.

18.297 IMEM_SRAM_APEX_REG_2400

Name: IMEM_SRAM_APEX_REG_2400
Address: 2400 (960h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_HIGH[7:0]	Number of additional successive Vocal Vibration positive decisions to wait for before raising a VVD event interrupt. Increasing this tuning parameter will also increase Vocal Vibration Detection latency. Depending on the keyword, values suggested for KWS application are 0 or 1. For Transparency mode or music pause application, values suggested are either 1 or 2. Range: {0, 1, 2, 3} Default: 1

18.298 IMEM_SRAM_APEX_REG_2401

Name: IMEM_SRAM_APEX_REG_2401
Address: 2401 (961h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_HIGH[15:8]	Number of additional successive Vocal Vibration positive decisions to wait for before raising a VVD event interrupt. Increasing this tuning parameter will also increase Vocal Vibration Detection latency. Depending on the keyword, values suggested for KWS application are 0 or 1. For Transparency mode or music pause application, values suggested are either 1 or 2. Range: {0, 1, 2, 3} Default: 1

18.299 IMEM_SRAM_APEX_REG_2402

Name: IMEM_SRAM_APEX_REG_2402
Address: 2402 (962h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_HIGH[23:16]	Number of additional successive Vocal Vibration positive decisions to wait for before raising a VVD event interrupt. Increasing this tuning parameter will also increase Vocal Vibration Detection latency. Depending on the keyword, values suggested for KWS application are 0 or 1. For Transparency mode or music pause application, values suggested are either 1 or 2. Range: {0, 1, 2, 3} Default: 1

18.300 IMEM_SRAM_APEX_REG_2403

Name: IMEM_SRAM_APEX_REG_2403
Address: 2403 (963h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_HIGH[31:24]	Number of additional successive Vocal Vibration positive decisions to wait for before raising a VVD event interrupt. Increasing this tuning parameter will also increase Vocal Vibration Detection latency. Depending on the keyword, values suggested for KWS application are 0 or 1. For Transparency mode or music pause application, values suggested are either 1 or 2. Range: {0, 1, 2, 3} Default: 1

18.301 IMEM_SRAM_APEX_REG_2404

Name: IMEM_SRAM_APEX_REG_2404
Address: 2404 (964h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_LOW[7:0]	Number of additional successive Vocal Vibration negative decisions to wait for after a VVD event before resetting VVD state to 0. This can be used to avoid VVD rebounds or for applications where a continuous VVD flag is needed. Default: 0

18.302 IMEM_SRAM_APEX_REG_2405

Name: IMEM_SRAM_APEX_REG_2405
Address: 2405 (965h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_LOW[15:8]	Number of additional successive Vocal Vibration negative decisions to wait for after a VVD event before resetting VVD state to 0. This can be used to avoid VVD rebounds or for applications where a continuous VVD flag is needed. Default: 0

18.303 IMEM_SRAM_APEX_REG_2406

Name: IMEM_SRAM_APEX_REG_2406
Address: 2406 (966h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_LOW[23:16]	Number of additional successive Vocal Vibration negative decisions to wait for after a VVD event before resetting VVD state to 0. This can be used to avoid VVD rebounds or for applications where a continuous VVD flag is needed. Default: 0

18.304 IMEM_SRAM_APEX_REG_2407

Name: IMEM_SRAM_APEX_REG_2407
Address: 2407 (967h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_DELAY_LOW[31:24]	Number of additional successive Vocal Vibration negative decisions to wait for after a VVD event before resetting VVD state to 0. This can be used to avoid VVD rebounds or for applications where a continuous VVD flag is needed. Default: 0

18.305 IMEM_SRAM_APEX_REG_2408

Name: IMEM_SRAM_APEX_REG_2408
Address: 2408 (968h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_SAMPLE_CNT[7:0]	Number of samples having an inference, i.e. on which features are computed. Default: 31

18.306 IMEM_SRAM_APEX_REG_2409

Name: IMEM_SRAM_APEX_REG_2409
Address: 2409 (969h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_SAMPLE_CNT[15:8]	Number of samples having an inference, i.e. on which features are computed. Default: 31

18.307 IMEM_SRAM_APEX_REG_2410

Name: IMEM_SRAM_APEX_REG_2410
Address: 2410 (96Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_SAMPLE_CNT[23:16]	Number of samples having an inference, i.e. on which features are computed. Default: 31

18.308 IMEM_SRAM_APEX_REG_2411

Name: IMEM_SRAM_APEX_REG_2411
Address: 2411 (96Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_SAMPLE_CNT[31:24]	Number of samples having an inference, i.e. on which features are computed. Default: 31

18.309 IMEM_SRAM_APEX_REG_2412

Name: IMEM_SRAM_APEX_REG_2412
Address: 2412 (96Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[7:0]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.310 IMEM_SRAM_APEX_REG_2413

Name: IMEM_SRAM_APEX_REG_2413
Address: 2413 (96Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[15:8]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.311 IMEM_SRAM_APEX_REG_2414

Name: IMEM_SRAM_APEX_REG_2414
Address: 2414 (96Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[23:16]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.312 IMEM_SRAM_APEX_REG_2415

Name: IMEM_SRAM_APEX_REG_2415
Address: 2415 (96Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[31:24]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.313 IMEM_SRAM_APEX_REG_2416

Name: IMEM_SRAM_APEX_REG_2416
Address: 2416 (970h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[39:32]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.314 IMEM_SRAM_APEX_REG_2417

Name: IMEM_SRAM_APEX_REG_2417
Address: 2417 (971h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[47:40]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.315 IMEM_SRAM_APEX_REG_2418

Name: IMEM_SRAM_APEX_REG_2418
Address: 2418 (972h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[55:48]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.316 IMEM_SRAM_APEX_REG_2419

Name: IMEM_SRAM_APEX_REG_2419
Address: 2419 (973h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[63:56]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.317 IMEM_SRAM_APEX_REG_2420

Name: IMEM_SRAM_APEX_REG_2420
Address: 2420 (974h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[71:64]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.318 IMEM_SRAM_APEX_REG_2421

Name: IMEM_SRAM_APEX_REG_2421
Address: 2421 (975h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[79:72]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.319 IMEM_SRAM_APEX_REG_2422

Name: IMEM_SRAM_APEX_REG_2422
Address: 2422 (976h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[87:80]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.320 IMEM_SRAM_APEX_REG_2423

Name: IMEM_SRAM_APEX_REG_2423
Address: 2423 (977h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_BEST_AXIS[95:88]	Allows to project on X/Y/Z axis based on IMU orientation inside earbud according to following equation: bestAxisCoordinate = bestAxis[0] * x + bestAxis[1] * y + bestAxis[2] * z Unit: s32q12 Default: {0, 0, 2^12} to achieve best speech SNR on axis perpendicular to TWS user's ear

18.321 IMEM_SRAM_APEX_REG_2424

Name: IMEM_SRAM_APEX_REG_2424
Address: 2424 (978h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_THRESH[7:0]	Dynamic energy threshold to trigger VVD in Q12. Unit: s32q12 Default: 1920

18.322 IMEM_SRAM_APEX_REG_2425

Name: IMEM_SRAM_APEX_REG_2425
Address: 2425 (979h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_THRESH[15:8]	Dynamic energy threshold to trigger VVD in Q12. Unit: s32q12 Default: 1920

18.323 IMEM_SRAM_APEX_REG_2426

Name: IMEM_SRAM_APEX_REG_2426
Address: 2426 (97Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_THRESH[23:16]	Dynamic energy threshold to trigger VVD in Q12. Unit: s32q12 Default: 1920

18.324 IMEM_SRAM_APEX_REG_2427

Name: IMEM_SRAM_APEX_REG_2427
Address: 2427 (97Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	VVD_PARAMS_THRESH[31:24]	Dynamic energy threshold to trigger VVD in Q12. Unit: s32q12 Default: 1920

18.325 IMEM_SRAM_APEX_REG_2428

Name: IMEM_SRAM_APEX_REG_2428
Address: 2428 (97Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TIME_FEAS_CONFIG[7:0]	SIF bitmask marking which time feature is enabled, for each configuration present in the model Values [0 : 4095] 0x4: mean 0x8: variance 0x10: peak-to-peak 0x20: energy 0x40: mcr 0x80: pos mcr 0x100: neg mcr 0x200: peak 0x400: pos peak 0x800: neg peak. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.326 IMEM_SRAM_APEX_REG_2429

Name: IMEM_SRAM_APEX_REG_2429
Address: 2429 (97Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TIME_FEAS_CONFIG[15:8]	SIF bitmask marking which time feature is enabled, for each configuration present in the model Values [0 : 4095] 0x4: mean 0x8: variance 0x10: peak-to-peak 0x20: energy 0x40: mcr 0x80: pos mcr 0x100: neg mcr 0x200: peak 0x400: pos peak 0x800: neg peak. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.327 IMEM_SRAM_APEX_REG_2452

Name: IMEM_SRAM_APEX_REG_2452
Address: 2452 (994h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CLASS_INDEX[7:0]	Index of SIF predicted gesture class.

18.328 IMEM_SRAM_APEX_REG_2453

Name: IMEM_SRAM_APEX_REG_2453
Address: 2453 (995h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CLASS_INDEX[15:8]	Index of SIF predicted gesture class.

18.329 IMEM_SRAM_APEX_REG_2516

Name: IMEM_SRAM_APEX_REG_2516
Address: 2516 (9D4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[7:0]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.330 IMEM_SRAM_APEX_REG_2517

Name: IMEM_SRAM_APEX_REG_2517
Address: 2517 (9D5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[15:8]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.331 IMEM_SRAM_APEX_REG_2518

Name: IMEM_SRAM_APEX_REG_2518
Address: 2518 (9D6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[23:16]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.332 IMEM_SRAM_APEX_REG_2519

Name: IMEM_SRAM_APEX_REG_2519
Address: 2519 (9D7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[31:24]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.333 IMEM_SRAM_APEX_REG_2520

Name: IMEM_SRAM_APEX_REG_2520
Address: 2520 (9D8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[39:32]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.334 IMEM_SRAM_APEX_REG_2521

Name: IMEM_SRAM_APEX_REG_2521
Address: 2521 (9D9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[47:40]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.335 IMEM_SRAM_APEX_REG_2522

Name: IMEM_SRAM_APEX_REG_2522
Address: 2522 (9DAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[55:48]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.336 IMEM_SRAM_APEX_REG_2523

Name: IMEM_SRAM_APEX_REG_2523
Address: 2523 (9DBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[63:56]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.337 IMEM_SRAM_APEX_REG_2524

Name: IMEM_SRAM_APEX_REG_2524
Address: 2524 (9DCh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[71:64]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.338 IMEM_SRAM_APEX_REG_2525

Name: IMEM_SRAM_APEX_REG_2525
Address: 2525 (9DDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[79:72]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.339 IMEM_SRAM_APEX_REG_2526

Name: IMEM_SRAM_APEX_REG_2526
Address: 2526 (9DEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[87:80]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.340 IMEM_SRAM_APEX_REG_2527

Name: IMEM_SRAM_APEX_REG_2527
Address: 2527 (9DFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_CCONFIG[95:88]	SIF Common configuration structure including general settings for feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.341 IMEM_SRAM_APEX_REG_2528

Name: IMEM_SRAM_APEX_REG_2528
Address: 2528 (9E0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[7:0]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.342 IMEM_SRAM_APEX_REG_2529

Name: IMEM_SRAM_APEX_REG_2529
Address: 2529 (9E1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[15:8]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.343 IMEM_SRAM_APEX_REG_2530

Name: IMEM_SRAM_APEX_REG_2530
Address: 2530 (9E2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[23:16]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.344 IMEM_SRAM_APEX_REG_2531

Name: IMEM_SRAM_APEX_REG_2531
Address: 2531 (9E3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[31:24]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.345 IMEM_SRAM_APEX_REG_2532

Name: IMEM_SRAM_APEX_REG_2532
Address: 2532 (9E4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[39:32]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.346 IMEM_SRAM_APEX_REG_2533

Name: IMEM_SRAM_APEX_REG_2533
Address: 2533 (9E5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[47:40]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.347 IMEM_SRAM_APEX_REG_2534

Name: IMEM_SRAM_APEX_REG_2534
Address: 2534 (9E6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[55:48]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.348 IMEM_SRAM_APEX_REG_2535

Name: IMEM_SRAM_APEX_REG_2535
Address: 2535 (9E7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[63:56]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.349 IMEM_SRAM_APEX_REG_2536

Name: IMEM_SRAM_APEX_REG_2536
Address: 2536 (9E8h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[71:64]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.350 IMEM_SRAM_APEX_REG_2537

Name: IMEM_SRAM_APEX_REG_2537
Address: 2537 (9E9h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[79:72]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.351 IMEM_SRAM_APEX_REG_2538

Name: IMEM_SRAM_APEX_REG_2538
Address: 2538 (9EAh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[87:80]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.352 IMEM_SRAM_APEX_REG_2539

Name: IMEM_SRAM_APEX_REG_2539
Address: 2539 (9EBh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[95:88]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.353 IMEM_SRAM_APEX_REG_2540

Name: IMEM_SRAM_APEX_REG_2540
Address: 2540 (9ECh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[103:96]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.354 IMEM_SRAM_APEX_REG_2541

Name: IMEM_SRAM_APEX_REG_2541
Address: 2541 (9EDh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[111:104]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.355 IMEM_SRAM_APEX_REG_2542

Name: IMEM_SRAM_APEX_REG_2542
Address: 2542 (9EEh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[119:112]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.356 IMEM_SRAM_APEX_REG_2543

Name: IMEM_SRAM_APEX_REG_2543
Address: 2543 (9EFh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[127:120]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.357 IMEM_SRAM_APEX_REG_2544

Name: IMEM_SRAM_APEX_REG_2544
Address: 2544 (9F0h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[135:128]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.358 IMEM_SRAM_APEX_REG_2545

Name: IMEM_SRAM_APEX_REG_2545
Address: 2545 (9F1h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[143:136]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.359 IMEM_SRAM_APEX_REG_2546

Name: IMEM_SRAM_APEX_REG_2546
Address: 2546 (9F2h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[151:144]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.360 IMEM_SRAM_APEX_REG_2547

Name: IMEM_SRAM_APEX_REG_2547
Address: 2547 (9F3h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[159:152]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.361 IMEM_SRAM_APEX_REG_2548

Name: IMEM_SRAM_APEX_REG_2548
Address: 2548 (9F4h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[167:160]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.362 IMEM_SRAM_APEX_REG_2549

Name: IMEM_SRAM_APEX_REG_2549
Address: 2549 (9F5h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[175:168]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.363 IMEM_SRAM_APEX_REG_2550

Name: IMEM_SRAM_APEX_REG_2550
Address: 2550 (9F6h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[183:176]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.364 IMEM_SRAM_APEX_REG_2551

Name: IMEM_SRAM_APEX_REG_2551
Address: 2551 (9F7h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TCONFIG[191:184]	SIF Time configuration structure including information for time-domain feature extraction. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.365 IMEM_SRAM_APEX_REG_2556 TO IMEM_SRAM_APEX_REG_2635

Name: IMEM_SRAM_APEX_REG_2556 to IMEM_SRAM_APEX_REG_2635
Address: 2556 to 2635 (9FCh to A4Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_FILTER[639:0]	SIF Filter state structure with filter coefficients and buffer. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.366 IMEM_SRAM_APEX_REG_5004

Name: IMEM_SRAM_APEX_REG_5004
Address: 5004 (138Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TREE_THRESHOLDS[7:0]	SIF Tree thresholds. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.367 IMEM_SRAM_APEX_REG_5005

Name: IMEM_SRAM_APEX_REG_5005
Address: 5005 (138Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TREE_THRESHOLDS[15:8]	SIF Tree thresholds. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.368 IMEM_SRAM_APEX_REG_5514

Name: IMEM_SRAM_APEX_REG_5514
Address: 5514 (158Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TREE_FEATUREIDS[7:0]	SIF Tree feature index. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.369 IMEM_SRAM_APEX_REG_5769

Name: IMEM_SRAM_APEX_REG_5769
Address: 5769 (1689h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TREE_NEXTNODERIGHT[7:0]	SIF Tree nextNodeRight. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

18.370 IMEM_SRAM_APEX_REG_6024

Name: IMEM_SRAM_APEX_REG_6024
Address: 6024 (1788h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SIF_TREE_THRESHOLDSSHIFT[7:0]	SIF Tree threshold shift. Structure member of the SIF model Decision Tree generated with TDK SIF software tools. Must be loaded as-is based on TDK recommendation.

19 USER BANK IMEM_SRAM_STC REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IMEM_SRAM_STC. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

19.1 IMEM_SRAM_STC_REG_392

Name: IMEM_SRAM_STC_REG_392
Address: 392 (188h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_CONFIGPARAMS[7:0]	Self-test input parameters bit0: If set, enable self-test init, must be set when any of accel or gyro self-test enable bit is set (bits 2:1) bit1: If set, enable accel self-test bit2: If set, enable gyro self-test bit3~6: Unused bit7~9: Averaging time used to perform self-test (0/1/2/3/4/5: 10/20/40/80/160/320 ms) bit10~12: Tolerance between factory trim and accel self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%) bit13~15: Tolerance between factory trim and gyro self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%)

19.2 IMEM_SRAM_STC_REG_393

Name: IMEM_SRAM_STC_REG_393
Address: 393 (189h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_CONFIGPARAMS[15:8]	Self-test input parameters bit0: If set, enable self-test init, must be set when any of accel or gyro self-test enable bit is set (bits 2:1) bit1: If set, enable accel self-test bit2: If set, enable gyro self-test bit3~6: Unused bit7~9: Averaging time used to perform self-test (0/1/2/3/4/5: 10/20/40/80/160/320 ms) bit10~12: Tolerance between factory trim and accel self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%) bit13~15: Tolerance between factory trim and gyro self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%)

19.3 IMEM_SRAM_STC_REG_394

Name: IMEM_SRAM_STC_REG_394
Address: 394 (18Ah)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_CONFIGPARAMS[23:16]	Self-test input parameters bit0: If set, enable self-test init, must be set when any of accel or gyro self-test enable bit is set (bits 2:1) bit1: If set, enable accel self-test bit2: If set, enable gyro self-test bit3~6: Unused bit7~9: Averaging time used to perform self-test (0/1/2/3/4/5: 10/20/40/80/160/320 ms) bit10~12: Tolerance between factory trim and accel self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%) bit13~15: Tolerance between factory trim and gyro self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%)

19.4 IMEM_SRAM_STC_REG_395

Name: IMEM_SRAM_STC_REG_395
Address: 395 (18Bh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_CONFIGPARAMS[31:24]	Self-test input parameters bit0: If set, enable self-test init, must be set when any of accel or gyro self-test enable bit is set (bits 2:1) bit1: If set, enable accel self-test bit2: If set, enable gyro self-test bit3~6: Unused bit7~9: Averaging time used to perform self-test (0/1/2/3/4/5: 10/20/40/80/160/320 ms) bit10~12: Tolerance between factory trim and accel self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%) bit13~15: Tolerance between factory trim and gyro self-test response (0/1/2/3/4/5/6/7: 5/10/15/20/25/30/40/50%)

19.5 IMEM_SRAM_STC_REG_396

Name: IMEM_SRAM_STC_REG_396
Address: 396 (18Ch)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_DEBUG_EN[7:0]	Debug capability of self-test feature. Must be set to 0 when self-test is requested.

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19.6 IMEM_SRAM_STC_REG_397

Name: IMEM_SRAM_STC_REG_397
Address: 397 (18Dh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_DEBUG_EN[15:8]	Debug capability of self-test feature. Must be set to 0 when self-test is requested.

19.7 IMEM_SRAM_STC_REG_398

Name: IMEM_SRAM_STC_REG_398
Address: 398 (18Eh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_DEBUG_EN[23:16]	Debug capability of self-test feature. Must be set to 0 when self-test is requested.

19.8 IMEM_SRAM_STC_REG_399

Name: IMEM_SRAM_STC_REG_399
Address: 399 (18Fh)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_DEBUG_EN[31:24]	Debug capability of self-test feature. Must be set to 0 when self-test is requested.

19.9 IMEM_SRAM_STC_REG_400

Name: IMEM_SRAM_STC_REG_400
Address: 400 (190h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_RESULTS[7:0]	Results/status from self-test run bit0: AX Self-test result (0:pass 1:fail) bit1: AY Self-test result (0:pass 1:fail) bit2: AZ Self-test result (0:pass 1:fail) bit3: GX Self-test result (0:pass 1:fail) bit4: GY Self-test result (0:pass 1:fail) bit5: GZ Self-test result (0:pass 1:fail) bit6~7: Self-test status (0:Done 1:InProgress)

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19.10 IMEM_SRAM_STC_REG_401

Name: IMEM_SRAM_STC_REG_401
Address: 401 (191h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_RESULTS[15:8]	Results/status from self-test run bit0: AX Self-test result (0:pass 1:fail) bit1: AY Self-test result (0:pass 1:fail) bit2: AZ Self-test result (0:pass 1:fail) bit3: GX Self-test result (0:pass 1:fail) bit4: GY Self-test result (0:pass 1:fail) bit5: GZ Self-test result (0:pass 1:fail) bit6~7: Self-test status (0:Done 1:InProgress)

19.11 IMEM_SRAM_STC_REG_402

Name: IMEM_SRAM_STC_REG_402
Address: 402 (192h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_RESULTS[23:16]	Results/status from self-test run bit0: AX Self-test result (0:pass 1:fail) bit1: AY Self-test result (0:pass 1:fail) bit2: AZ Self-test result (0:pass 1:fail) bit3: GX Self-test result (0:pass 1:fail) bit4: GY Self-test result (0:pass 1:fail) bit5: GZ Self-test result (0:pass 1:fail) bit6~7: Self-test status (0:Done 1:InProgress)

19.12 IMEM_SRAM_STC_REG_403

Name: IMEM_SRAM_STC_REG_403
Address: 403 (193h)
Serial IF: R/W
Reset value: Random value after reset until host runs EDMP_INIT procedure
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	STC_RESULTS[31:24]	Results/status from self-test run bit0: AX Self-test result (0:pass 1:fail) bit1: AY Self-test result (0:pass 1:fail) bit2: AZ Self-test result (0:pass 1:fail) bit3: GX Self-test result (0:pass 1:fail) bit4: GY Self-test result (0:pass 1:fail) bit5: GZ Self-test result (0:pass 1:fail) bit6~7: Self-test status (0:Done 1:InProgress)

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Revision: 1.0

20 USER BANK IPREG_BAR REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IPREG_BAR. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

20.1 IPREG_BAR_REG_57

Name: IPREG_BAR_REG_57
Address: 57 (39h)
Serial IF: R/W
Reset value: 0x32
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	IO_OPT0	Set this register field to 1 for optimal speed of IOs. IO_OPT1 must be also set to 1 if IO_OPT0 is set to 1. Can be changed on-the-fly.
5	IO_OPT1	Set this register field to 1 for optimal speed of IOs. Can be changed on-the-fly.
4:0	-	Reserved

20.2 IPREG_BAR_REG_58

Name: IPREG_BAR_REG_58
Address: 58 (3Ah)
Serial IF: R/W
Reset value: 0xD9
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	PADS_AP_SCLK_PUD_TRIM_D2A	Selects internal resistor pull direction for AP_SCLK pin (pin 13) 0: Down 1: Up Can be changed on-the-fly.
6	PADS_AP_SCLK_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AP_SCLK pin (pin 13), depending on direction selected by bit 7. 0: Not enabled 1: Enabled Can be changed on-the-fly.
5	-	Reserved
4	PADS_AP_CS_PUD_TRIM_D2A	Selects internal resistor pull direction for AP_CS pin (pin 12) 0: Down 1: Up Can be changed on-the-fly.
3	PADS_AP_CS_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AP_CS pin (pin 12), depending on direction selected by bit 4. 0: Not enabled 1: Enabled Can be changed on-the-fly.
2:1	-	Reserved
0	IO_OPT2	Set this register field to 1 for optimal speed of IOs. IO_OPT1 must be also set to 1 if IO_OPT2 is set to 1 Can be changed on-the-fly.

20.3 IPREG_BAR_REG_59

Name: IPREG_BAR_REG_59
Address: 59 (3Bh)
Serial IF: R/W
Reset value: 0x96
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	PADS_PIN7_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for pin 7, depending on direction selected by bit 0 of register IPREG_BAR_REG_60 0: Not enabled 1: Enabled Can be changed on-the-fly.
6	-	Reserved
5	PADS_AP_SDO_PUD_TRIM_D2A	Selects internal resistor pull direction for AP_SDO pin (pin 1) 0: Down 1: Up Can be changed on-the-fly.
4	PADS_AP_SDO_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AP_SDO pin (pin 1), depending on direction selected by bit 5. 0: Not enabled 1: Enabled Can be changed on-the-fly.
3	-	Reserved
2	PADS_AP_SDI_PUD_TRIM_D2A	Selects internal resistor pull direction for AP_SDI pin (pin 14) 0: Down 1: Up Can be changed on-the-fly.
1	PADS_AP_SDI_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AP_SDI pin (pin 14), depending on direction selected by bit 2. 0: Not enabled 1: Enabled Can be changed on-the-fly.
0	-	Reserved

20.4 IPREG_BAR_REG_60

Name: IPREG_BAR_REG_60
Address: 60 (3Ch)
Serial IF: R/W
Reset value: 0x7D
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	PADS_AUX1_SCLK_PUD_TRIM_D2A	Selects internal resistor pull direction for AUX1_SCLK pin (pin 3) 0: Down 1: Up Can be changed on-the-fly.
5	PADS_AUX1_SCLK_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AUX1_SCLK pin (pin 3), depending on direction selected by bit 6. 0: Not enabled 1: Enabled Can be changed on-the-fly.
4	PADS_AUX_SCLK_TP2_FROM_PAD_DISABLE_TRIM_D2A	Set this bit to 1 if using I^2C master mode. Set it to 0 otherwise.
3	PADS_AUX1_CS_PUD_TRIM_D2A	Selects internal resistor pull direction for AUX1_CS pin (pin 10) 0: Down 1: Up Can be changed on-the-fly.
2	PADS_AUX1_CS_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AUX1_CS pin (pin 10), depending on direction selected by bit 3. 0: Not enabled 1: Enabled Can be changed on-the-fly.
1	-	Reserved
0	PADS_PIN7_CS_PUD_TRIM_D2A	Selects internal resistor pull direction for pin 7 0: Down 1: Up Can be changed on-the-fly.

20.5 IPREG_BAR_REG_61

Name: IPREG_BAR_REG_61
Address: 61 (3Dh)
Serial IF: R/W
Reset value: 0xBB
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	PADS_INT1_PUD_TRIM_D2A	Selects internal resistor pull direction for INT1 pin (pin 4) 0: Down 1: Up Can be changed on-the-fly.
6	PADS_INT1_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for INT1 pin (pin 4), depending on direction selected by bit 7. 0: Not enabled 1: Enabled Can be changed on-the-fly.
5	-	Reserved
4	PADS_AUX1_SDO_PUD_TRIM_D2A	Selects internal resistor pull direction for AUX1_SDO pin (pin 11) 0: Down 1: Up Can be changed on-the-fly.
3	PADS_AUX1_SDO_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AUX1_SDO pin (pin 11), depending on direction selected by bit 4. 0: Not enabled 1: Enabled Can be changed on-the-fly.
2	-	Reserved
1	PADS_AUX1_SDI_PUD_TRIM_D2A	Selects internal resistor pull direction for AUX1_SDI pin (pin 2) 0: Down 1: Up Can be changed on-the-fly.
0	PADS_AUX1_SDI_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for AUX1_SDI pin (pin 2), depending on direction selected by bit 1. 0: Not enabled 1: Enabled Can be changed on-the-fly.

20.6 IPREG_BAR_REG_62

Name: IPREG_BAR_REG_62
Address: 62 (3Eh)
Serial IF: R/W
Reset value: 0x06
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	PADS_INT2_PUD_TRIM_D2A	Selects internal resistor pull direction for INT2 pin (pin 9) 0: Down 1: Up Can be changed on-the-fly.
1	PADS_INT2_PE_TRIM_D2A	Enables internal pull resistor to pull up or down for INT2 pin (pin 9), depending on direction selected by bit 2. 0: Not enabled 1: Enabled Can be changed on-the-fly.
0	-	Reserved

21 USER BANK IPREG_TOP1 REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IPREG_TOP1. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

21.1 I2CM_COMMAND_0

Name: I2CM_COMMAND_0 (I^2C master command buffer 0)
Address: 06 (06h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	ENDFLAG_0	Indicates if the current entry is the last I^2C master communication with the external slave device.
6	CH_SEL_0	Specifies the channel number for I^2C master transaction. Two external sensors are supported. 0: Specify one external sensor with device ID “ID1” 1: Specify the other external sensor with device ID “ID2” “ID1” and “ID2” should be replaced by the actual device ID of the chosen external devices.
5:4	R_W_0	I^2C master read/write command. 00: Write operation 01: Read operation with register address specified 10: Read operation without register address specified 11: Reserved
3:0	BURSTLEN_0	Specifies the burst length of I^2C master communication with the external slave device. 0000: Reserved 0001: 1 byte 0010: 2 bytes 0011: 3 bytes 0100: 4 bytes 0101: 5 bytes 0110: 6 bytes 0111: 7 bytes 1000: 8 bytes 1001: 9 bytes 1010: 10 bytes 1011: 11 bytes 1100: 12 bytes 1101: 13 bytes 1110: 14 bytes 1111: 15 bytes Note: For write operation the valid values are 0001 to 0110; For read operation the valid values are 0001 to 1111.

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21.2 I2CM_COMMAND_1

Name: I2CM_COMMAND_1 (I^2C master command buffer 1)
Address: 07 (07h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	ENDFLAG_1	Indicates if the current entry is the last I^2C master communication with the external slave device.
6	CH_SEL_1	Specifies the channel number for I^2C master transaction. Two external sensors are supported. 0: Specify one external sensor with device ID “ID1” 1: Specify the other external sensor with device ID “ID2” “ID1” and “ID2” should be replaced by the actual device ID of the chosen external devices.
5:4	R_W_1	I^2C master read/write command. 00: Write operation 01: Read operation with register address specified 10: Read operation without register address specified 11: Reserved
3:0	BURSTLEN_1	Specifies the burst length of I^2C master communication with the external slave device. 0000: Reserved 0001: 1 byte 0010: 2 bytes 0011: 3 bytes 0100: 4 bytes 0101: 5 bytes 0110: 6 bytes 0111: 7 bytes 1000: 8 bytes 1001: 9 bytes 1010: 10 bytes 1011: 11 bytes 1100: 12 bytes 1101: 13 bytes 1110: 14 bytes 1111: 15 bytes Note: For write operation the valid values are 0001 to 0110; For read operation the valid values are 0001 to 1111.

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21.3 I2CM_COMMAND_2

Name: I2CM_COMMAND_2 (I^2C master command buffer 2)
Address: 08 (08h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	ENDFLAG_2	Indicates if the current entry is the last I^2C master communication with the external slave device.
6	CH_SEL_2	Specifies the channel number for I^2C master transaction. Two external sensors are supported. 0: Specify one external sensor with device ID “ID1” 1: Specify the other external sensor with device ID “ID2” “ID1” and “ID2” should be replaced by the actual device ID of the chosen external devices.
5:4	R_W_2	I^2C master read/write command. 00: Write operation 01: Read operation with register address specified 10: Read operation without register address specified 11: Reserved
3:0	BURSTLEN_2	Specifies the burst length of I^2C master communication with the external slave device. 0000: Reserved 0001: 1 byte 0010: 2 bytes 0011: 3 bytes 0100: 4 bytes 0101: 5 bytes 0110: 6 bytes 0111: 7 bytes 1000: 8 bytes 1001: 9 bytes 1010: 10 bytes 1011: 11 bytes 1100: 12 bytes 1101: 13 bytes 1110: 14 bytes 1111: 15 bytes Note: For write operation the valid values are 0001 to 0110; For read operation the valid values are 0001 to 1111.

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21.4 I2CM_COMMAND_3

Name: I2CM_COMMAND_3 (I^2C master command buffer 3)
Address: 09 (09h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	ENDFLAG_3	Indicates if the current entry is the last I^2C master communication with the external slave device.
6	CH_SEL_3	Specifies the channel number for I^2C master transaction. Two external sensors are supported. 0: Specify one external sensor with device ID “ID1” 1: Specify the other external sensor with device ID “ID2” “ID1” and “ID2” should be replaced by the actual device ID of the chosen external devices.
5:4	R_W_3	I^2C master read/write command. 00: Write operation 01: Read operation with register address specified 10: Read operation without register address specified 11: Reserved
3:0	BURSTLEN_3	Specifies the burst length of I^2C master communication with the external slave device. 0000: Reserved 0001: 1 byte 0010: 2 bytes 0011: 3 bytes 0100: 4 bytes 0101: 5 bytes 0110: 6 bytes 0111: 7 bytes 1000: 8 bytes 1001: 9 bytes 1010: 10 bytes 1011: 11 bytes 1100: 12 bytes 1101: 13 bytes 1110: 14 bytes 1111: 15 bytes Note: For write operation the valid values are 0001 to 0110; For read operation the valid values are 0001 to 1111.

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21.5 I2CM_DEV_PROFILE0

Name: I2CM_DEV_PROFILE0
Address: 14 (0Eh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	RD_ADDRESS_0	Specifies the read address for channel 0 I^2C master transaction

21.6 I2CM_DEV_PROFILE1

Name: I2CM_DEV_PROFILE1
Address: 15 (0Fh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:0	DEV_ID_0	Specifies the slave ID for channel 0 I^2C master transaction

21.7 I2CM_DEV_PROFILE2

Name: I2CM_DEV_PROFILE2
Address: 16 (10h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	RD_ADDRESS_1	Specifies the read address for channel 1 I^2C master transaction

21.8 I2CM_DEV_PROFILE3

Name: I2CM_DEV_PROFILE3
Address: 17 (11h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:0	DEV_ID_1	Specifies the slave ID for channel 1 I^2C master transaction

21.9 I2CM_CONTROL

Name: I2CM_CONTROL
Address: 22 (16h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6	I2CM_RESTART_EN	0: No Restart is used 1: In an I2C register read transaction, the Restart is used to bridge the register-address write transaction and register-data read transaction. This bit is not programmable by MCU when I2CM_BUSY = 1.
5:4	-	Reserved
3	I2CM_SPEED	0: I^2C Fast Mode 1: I^2C Standard Mode
2:1	-	Reserved
0	I2CM_GO	1: Kicks off I^2C master operation. Clears to 0 after I^2C master operation is completed. This bit is not programmable when I2CM_BUSY = 1

21.10 I2CM_STATUS

Name: I2CM_STATUS
Address: 24 (18h)
Serial IF: R
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	I2CM_SDA_ERR	I2C master SDA error indication
4	I2CM_SCL_ERR	I2C master SCL error indication
3	I2CM_SRST_ERR	I2C master SRST error indication
2	I2CM_TIMEOUT_ERR	I2C master timeout error indication
1	I2CM_DONE	1: Status bit, indicates I^2C master operation has completed, with or without errors. This bit is cleared due to (a) MCU read or (b) when I2CM_GO is programmed to 1 or (c) ODR event for fetching sensor data from the external sensor.
0	I2CM_BUSY	0: Indicates no I^2C master operation is running 1: Indicates I^2C master operation is running

21.11 I2CM_EXT_DEV_STATUS

Name: I2CM_EXT_DEV_STATUS
Address: 26 (1Ah)
Serial IF: R/C
Reset value: 0x0F
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:0	I2CM_EXT_DEV_STATUS	Indicates ACK/NACK feedback from the external device per each entry of the command buffer. I2CM_EXT_DEV_STATUS is set to 0xF whenever I^2C master operation is kicked off. Bit 0 of I2CM_EXT_DEV_STATUS: ACK/NACK feedback from the external device to I2CM_COMMAND_0. 0: ACK 1: NACK Bit 1 of I2CM_EXT_DEV_STATUS: ACK/NACK feedback from the external device to I2CM_COMMAND_1. 0: ACK 1: NACK Bit 2 of I2CM_EXT_DEV_STATUS: ACK/NACK feedback from the external device to I2CM_COMMAND_2. 0: ACK 1: NACK Bit 3 of I2CM_EXT_DEV_STATUS: ACK/NACK feedback from the external device to I2CM_COMMAND_3. 0: ACK 1: NACK

21.12 I2CM_RD_DATA0

Name: I2CM_RD_DATA0
Address: 27 (1Bh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA0	The 1st byte received from I^2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

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21.13 I2CM_RD_DATA1

Name: I2CM_RD_DATA1
Address: 28 (1Ch)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA1	The 2nd byte received from I²C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.14 I2CM_RD_DATA2

Name: I2CM_RD_DATA2
Address: 29 (1Dh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA2	The 3rd byte received from I²C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.15 I2CM_RD_DATA3

Name: I2CM_RD_DATA3
Address: 30 (1Eh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA3	The 4th byte received from I²C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.16 I2CM_RD_DATA4

Name: I2CM_RD_DATA4
Address: 31 (1Fh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA4	The 5th byte received from I²C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

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21.17 I2CM_RD_DATA5

Name: I2CM_RD_DATA5
Address: 32 (20h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA5	The 6th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.18 I2CM_RD_DATA6

Name: I2CM_RD_DATA6
Address: 33 (21h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA6	The 7th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.19 I2CM_RD_DATA7

Name: I2CM_RD_DATA7
Address: 34 (22h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA7	The 8th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.20 I2CM_RD_DATA8

Name: I2CM_RD_DATA8
Address: 35 (23h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA8	The 9th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.21 I2CM_RD_DATA9

Name: I2CM_RD_DATA9
Address: 36 (24h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA9	The 10th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.22 I2CM_RD_DATA10

Name: I2CM_RD_DATA10
Address: 37 (25h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA10	The 11th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.23 I2CM_RD_DATA11

Name: I2CM_RD_DATA11
Address: 38 (26h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA11	The 12th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.24 I2CM_RD_DATA12

Name: I2CM_RD_DATA12
Address: 39 (27h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA12	The 13th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

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21.25 I2CM_RD_DATA13

Name: I2CM_RD_DATA13
Address: 40 (28h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA13	The 14th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.26 I2CM_RD_DATA14

Name: I2CM_RD_DATA14
Address: 41 (29h)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA14	The 15th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.27 I2CM_RD_DATA15

Name: I2CM_RD_DATA15
Address: 42 (2Ah)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA15	The 16th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.28 I2CM_RD_DATA16

Name: I2CM_RD_DATA16
Address: 43 (2Bh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA16	The 17th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.29 I2CM_RD_DATA17

Name: I2CM_RD_DATA17
Address: 44 (2Ch)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA17	The 18th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.30 I2CM_RD_DATA18

Name: I2CM_RD_DATA18
Address: 45 (2Dh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA18	The 19th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.31 I2CM_RD_DATA19

Name: I2CM_RD_DATA19
Address: 46 (2Eh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA19	The 20th byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.32 I2CM_RD_STATUS20

Name: I2CM_RD_DATA20
Address: 47 (2Fh)
Serial IF: RWS
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_RD_DATA20	The 21st byte received from I2C slave. Content of this register is automatically cleared to 0 when I2CM_GO = 1 or upon ODR event for fetching sensor data from the external sensor.

21.33 I2CM_WR_DATA0

Name: I2CM_WR_DATA0
Address: 51 (33h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA0	The data/address byte for a Write transaction.

21.34 I2CM_WR_DATA1

Name: I2CM_WR_DATA1
Address: 52 (34h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA1	The data/address byte for a Write transaction.

21.35 I2CM_WR_DATA2

Name: I2CM_WR_DATA2
Address: 53 (35h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA2	The data/address byte for a Write transaction.

21.36 I2CM_WR_DATA3

Name: I2CM_WR_DATA3
Address: 54 (36h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA3	The data/address byte for a Write transaction.

21.37 I2CM_WR_DATA4

Name: I2CM_WR_DATA4
Address: 55 (37h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA4	The data/address byte for a Write transaction.

21.38 I2CM_WR_DATA5

Name: I2CM_WR_DATA5
Address: 56 (38h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	I2CM_WR_DATA5	The data/address byte for a Write transaction.

21.39 SIFS_IXC_ERROR_STATUS

Name: SIFS_IXC_ERROR_STATUS
Address: 75 (4Bh)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	AUX1_SIFS_IXC_TIMEOUT_ERR	0: No timeout error or when SPI slave is selected for serial transfers. 1: Indicates than an IxC timeout error occurred in AUX1 SIFS. No clock toggle condition from host for 32ms while an IxC transaction was ongoing (after START and before STOP).
0	SIFS_IXC_TIMEOUT_ERR	0: No timeout error or when SPI slave is selected for serial transfers. 1: Indicates than an IxC timeout error occurred in SIFS. No clock toggle condition from host for 32ms while an IxC transaction was ongoing (after START and before STOP).

21.40 EDMP_PRGRM_IRQ0_0

Name: EDMP_PRGRM_IRQ0_0
Address: 79 (4Fh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_0[7:0]	Start address of IRQ_0 vector. Can be changed on-the-fly.

21.41 EDMP_PRGRM_IRQ0_1

Name: EDMP_PRGRM_IRQ0_1
Address: 80 (50h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_0[15:8]	Start address of IRQ_0 vector. Can be changed on-the-fly.

21.42 EDMP_PRGRM_IRQ1_0

Name: EDMP_PRGRM_IRQ1_0
Address: 81 (51h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_1[7:0]	Start address of IRQ_1 vector. Can be changed on-the-fly.

21.43 EDMP_PRGRM_IRQ1_1

Name: EDMP_PRGRM_IRQ1_1
Address: 82 (52h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_1[15:8]	Start address of IRQ_1 vector. Can be changed on-the-fly.

21.44 EDMP_PRGRM_IRQ2_0

Name: EDMP_PRGRM_IRQ2_0
Address: 83 (53h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_2[7:0]	Start address of IRQ_2 vector. Can be changed on-the-fly.

21.45 EDMP_PRGRM_IRQ2_1

Name: EDMP_PRGRM_IRQ2_1
Address: 84 (54h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	PRGRM_STRT_ADDR_IRQ_2[15:8]	Start address of IRQ_2 vector. Can be changed on-the-fly.

21.46 EDMP_SP_START_ADDR

Name: EDMP_SP_START_ADDR
Address: 85 (55h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	EDMP_SP_START_ADDR	Sets eDMP stack address. Can be changed on-the-fly.

21.47 SMC_CONTROL_0

Name: SMC_CONTROL_0
Address: 88 (58h)
Serial IF: R/W
Reset value: 0x60
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:5	-	Reserved
4	ACCEL_LP_CLK_SEL	This bit is applicable to host interface operation. A. When RTC mode is not enabled (or RTC_MODE = 0): This bit is effective when the host interface is in accel only operation with ACCEL_MODE set to LP mode. 0: Host interface is in AULP mode. 1: Host interface is in ALP mode. When I3C^{SM} Synchronous Timing Control function is enabled on host interface, if the host interface is in accel only operation with ACCEL_MODE set to LP mode, ACCEL_LP_CLK_SEL must be set to 1. I3C^{SM} Synchronous Timing Control may not generate correct timing if ACCEL_LP_CLK_SEL is set to 0. B. When RTC mode is enabled (or RTC_MODE = 1): Independent of enabling/disabling of I3C^{SM} Synchronous timing control function, ACCEL_LP_CLK_SEL must be set to 1. Dynamic Change Supported.
3	TEMP_DIS	0: Temperature Sensor not disabled. 1: Temperature Sensor disabled.
2	TMST_FORCE_AUX_FINE_EN	0: Time Stamp fine counting enabled only on UI interface. 1: Time Stamp fine counting enabled on AUX interfaces in addition to UI interface.
1	TMST_FSYNC_EN	Time Stamp register FSYNC Enable. 0: Timestamp feature of FSYNC not enabled. 1: Timestamp feature of FSYNC enabled.
0	TMST_EN	0: Timestamp not enabled.

		1: Timestamp enabled.

21.48 SMC_CONTROL_1

Name: SMC_CONTROL_1
Address: 89 (59h)
Serial IF: R/W
Reset value: 0x04
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3	SREG_AUX_ACCEL_ONLY_EN	0: Sensor data register read from AUX1 interface is supported only if gyro sensor is enabled. 1: Sensor data register read from AUX1 interface is supported even if gyro sensor is not enabled.
2:0	-	Reserved

21.49 STC_CONFIG

Name: STC_CONFIG
Address: 99 (63h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:4	-	Reserved
3:2	STC_SENSOR_SEL	Sensor that controls STC: 0 or 1: Slowest ODR sensor 2: Accel 3: Gyro
1:0	-	Reserved

21.50 SREG_CTRL

Name: SREG_CTRL
Address: 103 (67h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	SREG_DATA_ENDIAN_SEL	Selects Endianness of Sensor Data Registers and FIFO data 0: Sensor data, FIFO data, and FIFO count is in Little Endian format 1: Sensor data, FIFO data, and FIFO count is in Big Endian format Note: User must set register field SREG_DATA_ENDIAN_SEL to 1, to enable Big Endian data format for data in Sensor Data Registers and FIFO, and for FIFO Count.
0	-	Reserved

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21.51 SIFS_I3C_STC_CFG

Name: SIFS_I3C_STC_CFG
Address: 104 (68h)
Serial IF: R/W
Reset value: 0x23
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	I3C_STC_MODE	Enable the STC controller 0: Disable I3C STC. 1: Enable I3C STC. Toggling this bit restarts the ODR frequency and phase correction operation as if the chip is out of reset. The STC functionality can be enabled only if ACCEL_LP_CLK_SEL is set to 1; otherwise device may not behave as expected.
1:0	-	Reserved

21.52 INT_PULSE_MIN_ON_INTF0

Name: INT_PULSE_MIN_ON_INTF0
Address: 105 (69h)
Serial IF: R/W
Reset value: 0x01
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	INT0_TPULSE_DURATION	INT0 interrupt pulse minimum “on” duration for host interface, when in pulse mode. 0: 100µs (use only if ODR < 4kHz) 1: 8µs (required if ODR ≥ 4kHz, optional for ODR < 4kHz) Other Settings: Reserved

21.53 INT_PULSE_MIN_ON_INTF1

Name: INT_PULSE_MIN_ON_INTF1
Address: 106 (6Ah)
Serial IF: R/W
Reset value: 0x01
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	INT1_TPULSE_DURATION	INT1 interrupt pulse minimum “on” duration for host interface, when in pulse mode. 0: 100µs (use only if ODR < 4kHz) 1: 8µs (required if ODR ≥ 4kHz, optional for ODR < 4kHz) Other Settings: Reserved

21.54 INT_PULSE_MIN_OFF_INTF0

Name: INT_PULSE_MIN_OFF_INTF0
Address: 107 (6Bh)
Serial IF: R/W
Reset value: 0x01
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	INT0_TDEASSERT_DISABLE	INT0 interrupt pulse minimum “off” duration for host interface, indicates minimum interrupt de-assertion duration. 0: 100µs 1: 8µs Other Settings: Reserved

21.55 INT_PULSE_MIN_OFF_INTF1

Name: INT_PULSE_MIN_OFF_INTF1
Address: 108 (6Ch)
Serial IF: R/W
Reset value: 0x01
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	INT1_TDEASSERT_DISABLE	INT1 interrupt pulse minimum “off” duration for host interface, indicates minimum interrupt de-assertion duration. 0: 100µs 1: 8µs Other Settings: Reserved

21.56 ISR_0_7

Name: ISR_0_7
Address: 110 (6Eh)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_STATUS_ON_DEMAND_PIN_0	For IRQ0 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of on demand event. 0: Interrupt did not occur. 1: Interrupt occurred.
4	-	Reserved
3	INT_STATUS_EXT_ODR_DRDY_PIN_0	For IRQ0 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of EXT ODR DRDY event. 0: Interrupt did not occur. 1: Interrupt occurred.
2:1	-	Reserved
0	INT_STATUS_ACCEL_DRDY_PIN_0	For IRQ0 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of Accel DRDY event. 0: Interrupt did not occur. 1: Interrupt occurred.

21.57 ISR_8_15

Name: ISR_8_15
Address: 111 (6Fh)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_STATUS_ON_DEMAND_PIN_1	For IRQ1 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of on demand event. 0: Interrupt did not occur. 1: Interrupt occurred.
4	-	Reserved
3	INT_STATUS_EXT_ODR_DRDY_PIN_1	For IRQ1 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of EXT ODR DRDY event. 0: Interrupt did not occur. 1: Interrupt occurred.
2:1	-	Reserved
0	INT_STATUS_ACCEL_DRDY_PIN_1	For IRQ1 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of Accel DRDY event. 0: Interrupt did not occur.

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		1: Interrupt occurred.

21.58 ISR_16_23

Name: ISR_16_23
Address: 112 (70h)
Serial IF: R/C
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_STATUS_ON_DEMAND_PIN_2	For IRQ2 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of on demand event. 0: Interrupt did not occur. 1: Interrupt occurred.
4	-	Reserved
3	INT_STATUS_EXT_ODR_DRDY_PIN_2	For IRQ2 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of EXT ODR DRDY event. 0: Interrupt did not occur. 1: Interrupt occurred.
2:1	-	Reserved
0	INT_STATUS_ACCEL_DRDY_PIN_2	For IRQ2 interface, if this interrupt status bit is enabled, this bit is to flag the occurrence of Accel DRDY event. 0: Interrupt did not occur. 1: Interrupt occurred.

21.59 STATUS_MASK_PIN_0_7

Name: STATUS_MASK_PIN_0_7
Address: 113 (71h)
Serial IF: R/W
Reset value: 0x3F
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_ON_DEMAND_PIN_0_DIS	For IRQ0, on-demand DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_ON_DEMAND_PIN_0 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.
4	-	Reserved
3	INT_EXT_ODR_DRDY_PIN_0_DIS	For IRQ0, ODR DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_EXT_ODR_DRDY_PIN_0 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.
2:1	-	Reserved

0	INT_ACCEL_DRDY_PIN_0_DIS	For IRQ0, accel DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_ACCEL_DRDY_PIN_0 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.

21.60 STATUS_MASK_PIN_8_15

Name: STATUS_MASK_PIN_8_15
Address: 114 (72h)
Serial IF: R/W
Reset value: 0x3F
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_ON_DEMAND_PIN_1_DIS	For IRQ1, on-demand DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_ON_DEMAND_PIN_1 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.
4	-	Reserved
3	INT_EXT_ODR_DRDY_PIN_1_DIS	For IRQ1, ODR DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_EXT_ODR_DRDY_PIN_1 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.
2:1	-	Reserved
0	INT_ACCEL_DRDY_PIN_1_DIS	For IRQ1, accel DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_ACCEL_DRDY_PIN_1 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.

21.61 STATUS_MASK_PIN_16_23

Name: STATUS_MASK_PIN_16_23
Address: 115 (73h)
Serial IF: R/W
Reset value: 0x3F
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	INT_ON_DEMAND_PIN_2_DIS	Enables the eDMP to be run once when IRQ2 is triggered by setting the EDMP_ON_DEMAND_EN bit.
4	-	Reserved
3	INT_EXT_ODR_DRDY_PIN_2_DIS	For IRQ2, ODR DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_EXT_ODR_DRDY_PIN_2 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.
2:1	-	Reserved
0	INT_ACCEL_DRDY_PIN_2_DIS	For IRQ2, accel DRDY event, this is to enable the interrupt pin assertion when the INT_STATUS_ACCEL_DRDY_PIN_2 status bit is 1. 0: Enable the Interrupt pin assertion. 1: No Interrupt pin assertion.

21.62 INT_I2CM_SOURCE

Name: INT_I2CM_SOURCE
Address: 116 (74h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	INT_STATUS_I2CM_SMC_EXT_ODR_EN	0: Does not automatically trigger eDMP operation on target ODR 1: Automatically triggers eDMP operation on target ODR
0	-	Reserved

21.63 ACCEL_WOM_X_THR

Name: ACCEL_WOM_X_THR
Address: 126 (7Eh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	WOM_X_TH	Set X-axis Wake on Motion threshold Wake on Motion thresholds are expressed in fixed “mg” independently of the selected full-scale (format <U,8,0>, range [0g : 1g], resolution 1g/256=~4mg)

21.64 ACCEL_WOM_Y_THR

Name: ACCEL_WOM_Y_THR
Address: 127 (7Fh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	WOM_Y_TH	Set Y-axis Wake on Motion threshold Wake on Motion thresholds are expressed in fixed “mg” independently of the selected full-scale (format <U,8,0>, range [0g : 1g], resolution 1g/256=~4mg)

21.65 ACCEL_WOM_Z_THR

Name: ACCEL_WOM_Z_THR
Address: 128 (80h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	WOM_Z_TH	Set Z-axis Wake on Motion threshold Wake on Motion thresholds are expressed in fixed “mg” independently of the selected full-scale (format <U,8,0>, range [0g : 1g], resolution 1g/256=~4mg)

21.66 SELFTEST

Name: SELFTEST
Address: 144 (90h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	EN_GZ_ST	0: Z-axis gyroscope self-test is not enabled 1: Z-axis gyroscope self-test is enabled Can be changed on-the-fly.
4	EN_GY_ST	0: Y-axis gyroscope self-test is not enabled 1: Y-axis gyroscope self-test is enabled Can be changed on-the-fly.
3	EN_GX_ST	0: X-axis gyroscope self-test is not enabled 1: X-axis gyroscope self-test is enabled Can be changed on-the-fly.
2	EN_AZ_ST	0: Z-axis accelerometer self-test is not enabled 1: Z-axis accelerometer self-test is enabled Can be changed on-the-fly.
1	EN_AY_ST	0: Y-axis accelerometer self-test is not enabled 1: Y-axis accelerometer self-test is enabled Can be changed on-the-fly.
0	EN_AX_ST	0: X-axis accelerometer self-test is not enabled 1: X-axis accelerometer self-test is enabled Can be changed on-the-fly.

21.67 IPREG_MISC

Name: IPREG_MISC
Address: 151 (97h)
Serial IF: R
Reset value: 0x02
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	EDMP_IDLE	0: Indicates eDMP is busy. 1: Indicates eDMP is idle.
0	-	Reserved

21.68 SW_PLL1_TRIM

Name: SW_PLL1_TRIM
Address: 162 (A2h)
Serial IF: R
Reset value: 0xFD
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	SW_PLL1_TRIM	Stores variation of PLL frequency test measurement vs. target value, used for SW applications. Value to trim =(PLL_measurement – 6144000Hz) / 6144000Hz * 2540. 6144000Hz is the target PLL freq. 2540 is the resolution coefficient: max register range / max oscillator frequency error = (2^7 - 1) / 5%, with a sign bit.

21.69 FIFO_SRAM_SLEEP

Name: FIFO_SRAM_SLEEP
Address: 167 (A7h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1:0	FIFO_GSLEEP_SHARED_SRAM	Set selected SRAM bank global sleep mode **Bit 0:** 1. When set to 1: SRAM bank-0 will remain enabled 2. When 0: permits SRAM bank-0 to go to sleep mode a. SRAM bank goes to sleep, if not allocated as FIFO memory space b. If allocated as FIFO memory space, remains active unless FIFO is empty and sensors are off **Bit 1:** 1. When set to 1: SRAM bank-1 will remain enabled 2. When 0: Permits SRAM bank-1 to go to sleep mode a. SRAM bank goes to sleep, if not allocated as FIFO memory space b. If allocated as FIFO memory space, remains active unless FIFO is empty and sensors are off

22 USER BANK IPREG_SYS1 REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IPREG_SYS1. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

22.1 IPREG_SYS1_REG_42

Name: IPREG_SYS1_REG_42
Address: 42 (2Ah)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_X_OFFUSER[7:0]	Low bits for X-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.2 IPREG_SYS1_REG_43

Name: IPREG_SYS1_REG_43
Address: 43 (2Bh)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	GYRO_X_OFFUSER[13:8]	Upper bits for X-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.3 IPREG_SYS1_REG_56

Name: IPREG_SYS1_REG_56
Address: 56 (38h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Y_OFFUSER[7:0]	Low bits for Y-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.4 IPREG_SYS1_REG_57

Name: IPREG_SYS1_REG_57
Address: 57 (39h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	GYRO_Y_OFFUSER[13:8]	Upper bits for Y-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.5 IPREG_SYS1_REG_70

Name: IPREG_SYS1_REG_70
Address: 70 (46h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	GYRO_Z_OFFUSER[7:0]	Low bits for Z-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.6 IPREG_SYS1_REG_71

Name: IPREG_SYS1_REG_71
Address: 71 (47h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	GYRO_Z_OFFUSER[13:8]	Upper bits for Z-gyro offset programmed by user. Range is ±62.5dps, resolution is 7.5mdps.

22.7 IPREG_SYS1_REG_166

Name: IPREG_SYS1_REG_166
Address: 166 (A6h)
Serial IF: R/W
Reset value: 0x1B
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:5	GYRO_SRC_CTRL	Gyro SRC CTRL: 0: Interpolator and FIR filter off 1: Interpolator off and FIR filter on 2: Interpolator on and FIR filter on 3: Reserved (debug mode)
4:0	-	Reserved

22.8 IPREG_SYS1_REG_168

Name: IPREG_SYS1_REG_168
Address: 168 (A8h)
Serial IF: R/W
Reset value: 0x06
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1	GYRO_OIS_M6_BYP	0: OIS path gyro notch filter not bypassed 1: OIS path gyro notch filter bypassed
0	-	Reserved

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22.9 IPREG_SYS1_REG_170

Name: IPREG_SYS1_REG_170
Address: 170 (AAh)
Serial IF: R/W
Reset value: 0x0A
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:5	GYRO_OIS_HPFBW_SEL	Select Bandwidth for Gyro OIS signal path HPF 000: Bypass 001: Reserved 010: 0.25Hz 011: 0.062Hz 100: 0.016Hz Others: Reserved
4:1	GYRO_LP_AVG_SEL	Gyro Low Power Mode Averaging Filter Selection 0000: 1x 0001: 2x 0010: 4x 0011: 5x 0100: 7x 0101: 8x 0110: 10x 0111: 11x 1000: 16x 1001: 18x 1010: 20x 1011: 32x 1100: 64x Others: Reserved
0	-	Reserved

22.10 IPREG_SYS1_REG_171

Name: IPREG_SYS1_REG_171
Address: 171 (ABh)
Serial IF: R/W
Reset value: 0x09
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2:0	GYRO_OIS_LPF1BW_SEL	Selects cut-off bandwidth for 1st order LPF in Gyro AUX1 signal path 000: Bypass 001: 1100Hz 010: 900Hz 011: 600Hz 100: 285Hz 101: 139Hz 110: 65Hz 111: 65Hz

22.11 IPREG_SYS1_REG_172

Name: IPREG_SYS1_REG_172
Address: 172 (ACh)
Serial IF: R/W
Reset value: 0x80
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	GYRO_OIS_HPF1_BYP	0: HPF not bypassed for Gyro AUX1 signal path 1: HPF bypassed for Gyro AUX1 signal path
6:5	-	Reserved
4	GYRO_LPF_BYP	0: LPF in Gyro UI signal path not bypassed for all axes. 1: LPF in Gyro UI signal path bypassed for all axes.
3	-	Reserved
2:0	GYRO_UI_LPFBW_SEL	Selects cut-off bandwidth for Gyro UI path LPF 000: Bypass 001: ODR/4 010: ODR/8 011: ODR/16 100: ODR/32 101: ODR/64 110: ODR/128 111: ODR/128

Note: When the FIR AAF is enabled, the signal path BW is decided by the FIR AAF and UI LPF combination. Please refer to AN-000365 ICM-456xx User Guide for details.

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23 USER BANK IPREG_SYS2 REGISTER MAP – DESCRIPTIONS

This section describes the function and contents of each register within user bank IPREG_SYS2. The registers described in this section are indirect access registers. Section 13 describes the procedure for accessing indirect access registers.

23.1 IPREG_SYS2_REG_24

Name: IPREG_SYS2_REG_24
Address: 24 (18h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_X_OFFUSER[7:0]	Low bits for X-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.2 IPREG_SYS2_REG_25

Name: IPREG_SYS2_REG_25
Address: 25 (19h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	ACCEL_X_OFFUSER[13:8]	Upper bits for X-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.3 IPREG_SYS2_REG_32

Name: IPREG_SYS2_REG_32
Address: 32 (20h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Y_OFFUSER[7:0]	Low bits for Y-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.4 IPREG_SYS2_REG_33

Name: IPREG_SYS2_REG_33
Address: 33 (21h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	ACCEL_Y_OFFUSER[13:8]	Upper bits for Y-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.5 IPREG_SYS2_REG_40

Name: IPREG_SYS2_REG_40
Address: 40 (28h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:0	ACCEL_Z_OFFUSER[7:0]	Low bits for Z-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.6 IPREG_SYS2_REG_41

Name: IPREG_SYS2_REG_41
Address: 41 (29h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:0	ACCEL_Z_OFFUSER[13:8]	Upper bits for Z-accel offset programmed by user. Range is ±1g, resolution is 0.125mg.

23.7 IPREG_SYS2_REG_123

Name: IPREG_SYS2_REG_123
Address: 123 (7Bh)
Serial IF: R/W
Reset value: 0x34
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:2	-	Reserved
1:0	ACCEL_SRC_CTRL	Accel SRC CTRL: 0: Interpolator and FIR filter off 1: Interpolator off and FIR filter on 2: Interpolator on and FIR filter on 3: Reserved (debug mode)

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23.8 IPREG_SYS2_REG_128

Name: IPREG_SYS2_REG_128
Address: 128 (80h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5:3	TMP_DEC_CFG	Temperature sensor decimation factor – controls the processing ODR of the temperature sensor 000: Bypass 001: 2 010: 4 011: 8 100: 16 101: 32 110: 64 111: 128
2:0	TMP_LPF_CFG	Set Temp Sensor Low Pass Filter BW (LNM) 000: Bypass filter 001: 25% of output data rate 010: 17% of output data rate 011:10% of output data rate 100: 4.5% of output data rate 101: 2.1% of output data rate 110: 1% of output data rate 111: 1% of output data rate

23.9 IPREG_SYS2_REG_129

Name: IPREG_SYS2_REG_129
Address: 129 (81h)
Serial IF: R/W
Reset value: 0x02
Clock Domain: MCLK

BIT	NAME	FUNCTION
7	-	Reserved
6:4	ACCEL_OIS_HPFBW_SEL	Select Bandwidth for Accel OIS signal path HPF 000: Bypass 001: Reserved 010: 0.25Hz 011: 0.062Hz 100: 0.016Hz Others: Reserved
3:0	ACCEL_LP_AVG_SEL	Accel Low Power Mode Averaging Filter Selection 0000: 1x 0001: 2x 0010: 4x 0011: 5x 0100: 7x 0101: 8x 0110: 10x 0111: 11x 1000: 16x 1001: 18x 1010: 20x 1011: 32x 1100: 64x Others: Reserved

23.10 IPREG_SYS2_REG_130

Name: IPREG_SYS2_REG_130
Address: 130 (82h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
2:0	ACCEL_OIS_LPF1BW_SEL	Selects cut-off bandwidth for 1st order LPF in Accel AUX1 signal path 000: Bypass 001: 1100Hz 010: 900Hz 011: 600Hz 100: 285Hz 101: 139Hz 110: 65Hz 111: 65Hz

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23.11 IPREG_SYS2_REG_131

Name: IPREG_SYS2_REG_131
Address: 131 (83h)
Serial IF: R/W
Reset value: 0x00
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:6	-	Reserved
5	ACCEL_LPF_BYP	0: LPF in Accel UI signal path not bypassed for all axes. 1: LPF in Accel UI signal path bypassed for all axes.
4:3	-	Reserved
2:0	ACCEL_UI_LPFBW_SEL	Selects cut-off bandwidth for Accel UI path LPF 000: Bypass 001: ODR/4 010: ODR/8 011: ODR/16 100: ODR/32 101: ODR/64 110: ODR/128 111: ODR/128

Note: When the FIR AAF is enabled, the signal path BW is decided by the FIR AAF and UI LPF combination. Please refer to AN-000365 ICM-456xx User Guide for details.

23.12 IPREG_SYS2_REG_132

Name: IPREG_SYS2_REG_132
Address: 132 (84h)
Serial IF: R/W
Reset value: 0x03
Clock Domain: MCLK

BIT	NAME	FUNCTION
7:3	-	Reserved
2	ACCEL_OIS_M6_BYP	0: OIS path accel notch filter not bypassed 1: OIS path accel notch filter bypassed
1	-	Reserved
0	ACCEL_OIS_HPF1_BYP	0: HPF not bypassed for Accel AUX1 signal path 1: HPF bypassed for Accel AUX1 signal path

24 REFERENCE

Please refer to the following application notes for additional information.

- IMU PCB Design and MEMS Assembly Guidelines (AN-000393)
- Understanding IMU Sensor Offset (AN-000257)
- TDK InvenSense IMU Calibration Application Note (AN-000265)
- ICM-456xx User Guide (AN-000365)

25 REVISION HISTORY

Revision Date	Revision	Description
12/05/2024	0.1	Initial Release
01/10/2025	1.0	Updated Tables 1, 2, 3; Added IMEM_SRAM_APEX (Sections 13.4, 13.5, 15.3, 18); Added IMEM_SRAM_STC (Sections 13.4, 13.5, 15.4, 19); Updated IPREG_SYS1_REG_172 (Sections 15.7, 22.11); Added IPREG_SYS2_REG_128 (Sections 15.8, 23.8); Updated IPREG_SYS2_REG_131 (Sections 15.8, 23.11); Updated IPREG_BAR_REG_60 (Section 20.4)