GestureSense XZ01 Sensor I2C Register Map
Version 1
Last update: 20140728

Address	Name	Description
0x00	STATUS	Sensor and Gesture Status
0x01	DRE	Data Ready Enable Bitmap
0x02	DRCFG	Data Ready Configuration
0x04	GESTURE	Last Detected Gesture
0x05	GSPEED	Last Detected Gesture Speed
0x06	DCM	Data Confidence Metric
0x08	XPOS	X Coordinate
0x0a	ZPOS	Z Coordinate
0x0c	LRNG	Left Emitter Ranging Data
0x0e	RRNG	Right Emitter Ranging Data
0xfe	REGVER	Register Map Version
0xff	MODEL	Sensor Model ID

Register 0x00 - STATUS

7	6	5	4	3	2	1	0
RO	RO	RO	RO	RO	RO	RO	RO
HB	0	EDGE	HVG	HOVER	SWP	OVF	DAV

DAV   **Position Data Available**
1 indicates that new position data is available in the coordinate registers
This bit automatically resets to zero after being read

OVF   **Brightness value overflow**
currently unused, reads 0

SWP   **Swipe Gesture Available**
1 indicates that a swipe gesture has been detected
Gesture data is available in the gesture register
This bit automatically resets to zero after being read

HOVER   **Hover Gesture Available**
1 indicates that a hover gesture has been detected
Gesture data is available in the gesture register
This bit automatically resets to zero after being read

HVG   **Hover-Move Gesture Available**

1 indicates that a hover-and-move gesture has been detected
Gesture data is available in the gesture register
This bit automatically resets to zero after being read

EDGE   **Edge Detection Event**
currently unused, reads 0

HB   **Heartbeat**
This bit will toggle every time the status register has been read

Register 0x01 - DRE (Data Ready Enable)

7	6	5	4	3	2	1	0
RO	RO	RW	RW	RW	RW	RW	RW
0	0	EDGE	HVG	HOVER	SWP	CRD	RNG

A '1' in any of these bits will allow the DR pin to assert when the respective event or gesture occurs.
The default value of this register is 0x00, meaning that nothing will cause the DR pin to assert.
The value of this register does not prevent gestures or events from being detected. It only controls which gestures or events will cause the DR pin to assert.

RNG   **Ranging Data Available Enable**
1 = assert DR when new ranging data is available

CRD   **Coordinate Data Available Enable**
1 = assert DR when new coordinate data is available

SWP   **Swipe Gestures Enable**
1 = assert DR when swipe gestures are detected

HOVER   **Hover Gestures Enable**
1 = assert DR when hover gestures are detected

HVG   **Hover-Move Gestures Enable**
1 = assert DR when "hover-move" gestures are detected

EDGE   **Edge Detection Events Enable**
1 = assert DR when edge detection occurs

Register 0x02 - DRCFG (Data Ready Config)

7	6	5	4	3	2	1	0
RW	RW	RO	RO	RO	RO	RW	RW
EN	FORCE	0	0	0	0	EDGE	POLARITY

The default value of this register is 0x81.

POLARITY   **DR pin Polarity Select**
        1 = DR pin is active-high, 0 = DR pin is active-low

EDGE   **DR pin Edge/Level Select**
        1 = DR pin asserts for 1 pulse, 0 = DR pin asserts until STATUS is read

FORCE   **Force DR pin to assert (this bit auto-clears)**
        1 = Force DR pin to assert, 0 = normal DR operation

EN   **Enable DR**
        1 = DR enabled, 0 = DR always negated

Register 0x04 - Last Detected Gesture

7	6	5	4	3	2	1	0
RO Gesture							

The most recent gesture appears in this register.
The gesture value remains until a new gesture is detected
The gesture bits in the status register can be used to determine when to read a new value from this regist

Valid Gesture Values

0x01	Right Swipe
0x02	Left Swipe
0x03	Up Swipe
0x05	Hover
0x06	Hover-Left
0x07	Hover-Right
0x08	Hover-Up

Register 0x05 - Last Detected Gesture Speed

7	6	5	4	3	2	1	0
RO Gesture Speed							

The speed of the most recently detected gesture is stored here.
The value remains until a new gesture is detected.

Register 0x06 - Data Confidence Metric

7	6	5	4	3	2	1	0
RO							
Data Confidence Metric							

Currently unused. Returns 0.

Register 0x08 - X Position

7	6	5	4	3	2	1	0
RO							
X Position							

The most recently calcuated X position is stored in this register

Register 0x0a - Z Position

7	6	5	4	3	2	1	0
RO							
Z Position							

The most recently calcuated Z position is stored in this register

Register 0x0c - Left Emitter Ranging Data

7	6	5	4	3	2	1	0
RO							
Left Emitter Ranging Data							

The left emitter ranging data is stored in this register.

Register 0x0d - Right Emitter Ranging Data

7	6	5	4	3	2	1	0
RO							
Right Emitter Ranging Data							

The right emitter ranging data is stored in this register.

Register 0xfe - Register Map Version

7	6	5	4	3	2	1	0
RO							
Register Map Version							

This register is used to identify the register map version of attached sensor
All sensors share a register map. Sensors with the same register map have the same data arrangement
0x01 = Register Map v1

Register 0xff - Sensor Model							
7	6	5	4	3	2	1	0
RO							
Sensor Model ID							

This register is used to identify the type of sensor attached.
0x01 = XZ01