AiQ Synertial

Hardware Specification

G4-*SE Sports Edition*

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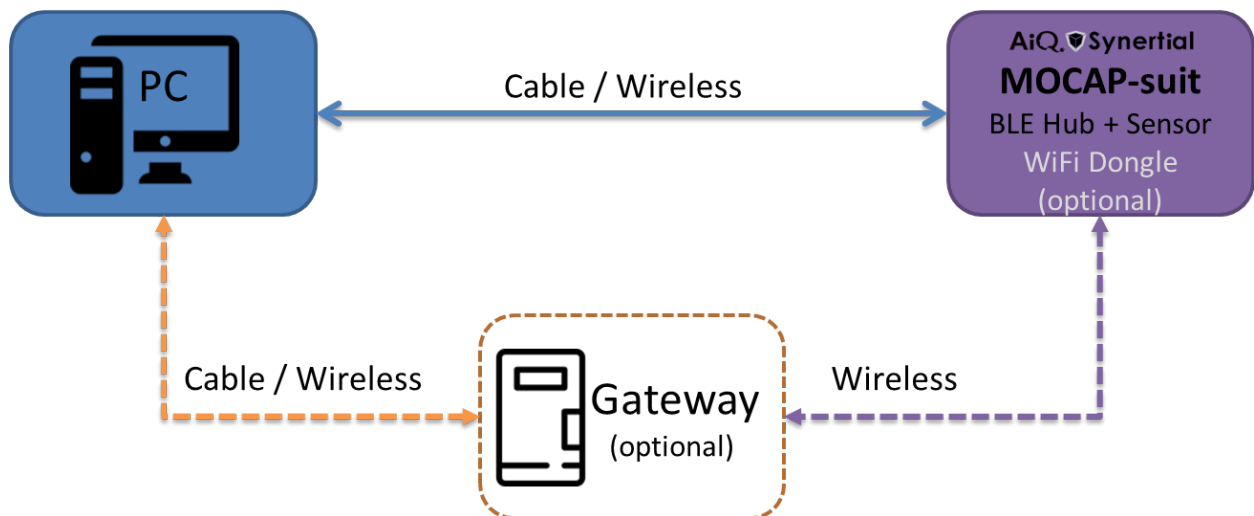**RB-M1807, AiQ Synertial**

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System Version: G5

Feature:

- Lightweight body sensing network.
- Small hub and sensor package.
- Up to 24 sensors for the whole body.
- With internal storage, support offline application.
- Advanced power management on firmware, reduces the requirement on the power supply.
- Support BT or WIFI communication, unique data acquisition equipment is unnecessary.
- Different type of suit and glove can be selected.
- OS support, Win 10.
- Application support,
  - Unity, UE4, MoBu.
- Easy to use, operate by yourself.
- Flexibility for different application:
  - Sports, Medical, Education, Animation, Gaming
- Reserved SPI interface for the expansion of different application and module.

System specification:

Power	
Power supply	External 3.3~5V
Battery capacity:	Based on customers' choice
System operation voltage	3.3V
System power consumption	Total 24 sensor ~1.8W
Operation time	Based on Num. of sensors and battery capacity.
Data transmission	
Basic (Suit-hub only)	Bluetooth 5.0, up to 2Mbps (24 sensors, 60fps)
Option (Suit-dongle with Wi-Fi)	Wi-Fi 2.4G, support 802.11 b/g/n, up to 65Mbps.
*Maximum data rate, frame rate, and distance relative to the PC, gateway performance and environment.	
Storage	
Flash	4GB (24 sensors, 60fps, about 80 hours)
Sensor support	
Number	Up to 24 sensors
Suit & Glove	
Stretch suit (upper & lower body, head)	L, M, S size
Armor suit (upper & lower body, head)	Single size, tunable
Glove	3-, 8-, 17-sensors /per hand
Water proof	
Water proof level	IPX4
Certification	
Certification	CE, FCC (Bluetooth already have)
	FCC, IC, TELEC, RED (Wi-Fi already have)
Software	
Software support	SynDash, AutoCal
Plug-in for application	Unity, UE4, MoBu
Expansion	
Expansion possibility	The additional function can be implemented in suit-dongle. (ex. voice, vibration, lighting….etc)

Sensor specification:

Supply voltage	3.3~5V
Operation voltage	3.3V
Current consumption	18mA
Accelerometer range	+/- 8g
Gyroscope range	+/- 2000 °/s

Number of sensor per set: **Up to 24 sensors**

Suit	17 sensors
Suit + 1 pair glove_basic	17 + 3x2 , Total 23 sensors

Glove_basic	3 sensors
Glove_advanced	8 sensors
Glove_extreme	17 sensors

Sensor Report Rate:

Gyro rotation Vector	1000 times/s
Rotation Vector	400 times/s
Gravity	400 times/s
Linear Acceleration	400 times/s
Accelerometer	500 times/s
Gyroscope	400 times/s
Magnetometer	100 times/s

Suit-hub specification:

Power	
Supply voltage	3.3~5V
Operation voltage	3.3V
Data transmission	
Basic (Suit-hub only)	MtM+ Technology M905, Bluetooth 5.0 Up to 2Mbps (Support 23 sensor, 60fps) (Bluetooth in hub will be disabled when Wi-Fi exist)
*Maximum data rate, frame rate, and distance relative to the PC, gateway performance and environment.	
Storage	
Flash	4GB (TBD, 23 sensor, 60fps, ~80 hour)
Bio sensing	
ECG	Integrate MAXIM biopotential, analog front-end solution.
IMU sensor	
IMU	Integrate IMU sensor, same spec as body
Expansion	
Expansion possibility	Reserved SPI can support customized suit-dongle.
Support FW upgrade	
MCU	Yes
BT	Yes
IMU	Yes
Water proof	
Water proof level	IPX5
Certification	
Certification	CE, FCC (M905 already have)
Package size	
Body	Ø 25.4mm x 5.5mm
Base	Ø35mm x 3.2mm
Total	Ø35mm x 8.7mm

Suit-dongle specification:

Power	
Supply voltage	3.3~5V
Operation voltage	3.3V
Data transmission	
Wireless version	Telit GS2200M, Wifi 2.4G, 802.11bgn, up to 65Mbps.[*1] (Bluetooth in hub will be disabled when Wi-Fi exist)
Wire connection version	Up to 3Mbps, suitable for radio complex environment. (Ex. CES, COMPUTEX)

*[1]Maximum data rate, frame rate, and distance relative to the equipment and environment.	
Storage	
Flash	No
Expansion	
Expansion possibility	Can be customized for different applications. (ex. voice, vibration, lighting….etc)
Support FW upgrade	
Wi-Fi module	Yes
Water proof	
Water proof level	IPX4
Certification	
Certification Compliance	FCC, IC, TELEC, RED (GS2200M already have)
Package size	
dongle	Ø 33mm x 11.3mm
hub + dongle	Ø 35mm x 12.3mm

Reference of sensor position on suit: Total 17 sensors

Yellow bar or ball: Sensor position
Blue donut: Suit-hub and Suit-dongle position
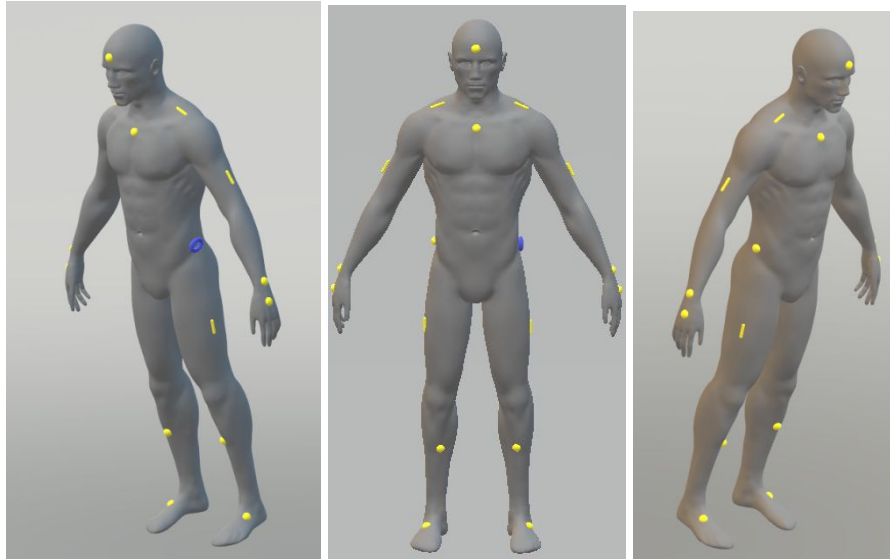
Reference of sensor position on glove:

- 3 sensors : needs to work with *Sports Edition* suit

- 7, 13 & 16 sensors : stand alone or pairs only