

GP5000 Asset Tracking Platform

1 Description

For developers who need to rapidly develop a wearable device with sensing capabilities, the GP5000 is a small, battery-powered module for logging sensor data and wirelessly egressing it to a companion mobile App.

Genesys has dealt with the challenges of miniaturisation and middleware required to run the enabling functions and peripherals, allowing developers to focus on the unique sensing features and application software.

This platform will cost-effectively accelerate your proof-concept, MVP or product development, as well as smooth the pathway to regulatory compliance and commercial readiness through the use of our modularised hardware and software.

2 Features

2.1 Embedded Microcontroller

- nRF52 Series SoC
- 64 MHz ARM® Cortex®-M4 with FPU
- 1 MB Flash and 256 kB RAM
- 128-bit AES co-processor for security

2.2 Bluetooth

- Bluetooth® 5.3, 2.4 GHz Transceiver
- BLE (Bluetooth® Low-Energy)
- Bluetooth® Mesh
- +8 dBm output power
- 2 m range

2.3 Additional Communications

- Near Field Communication (NFC)
- Thread
- Zigbee
- USB 2.0
- And more upon request

2.4 Peripheral Interfaces

- GPIOs
- ADC (12-bit)
- UART
- I2C
- SPI
- PWM
- I2S

2.5 Memory

- EEPROM 2 Kbit with EUI-64 identifier
- 32 Mb or 1 Gb Flash

2.6 Powering

- Coin Cell powering - rechargeable and non-rechargeable options
- Rechargeable via USB Type-C Connection
- Inbuilt Li-Ion charger
- Battery Fuel Gauge
- Low Power mode
- Power activation and deactivation by Hall Effect Sensor

2.7 Sensor Options

- Made available via Board-to-Board connectors
- Possible additions of selected sensors over UART, I2C and SPI
- See 5.2 *Optional Sensors* below

2.8 Software

- Preloaded with high reliability, standard compliant operating system, I/O drivers and middleware
- Compatible with companion multi-platform mobile app
- Cyber security protection of data and communications
- Secure over the air updates via BLE
- Custom software upon request

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3 Mechanical and Environmental

Table 3-1 Mechanical and Environmental Specifications

Parameter	Value
Dimensions	30 mm diameter x 14 mm height (Versions as small as 16 mm x 5.2 mm available on request)
Weight	10 g to 20 g depending on enclosure and sensor options
Temperature operating range	-15 °C to +55 °C
Humidity	95% Max RH
IP Rating	IP66 (Other ratings available on request)

4 Sensing Capabilities

Table 4-1 Standard On-Board Sensors

Measurement Type	Part #	Measurement Type	Part #
Temp/Humidity Sensor	SHT40-AD1B-R3	Hall Effect Sensor	S-5712BCDH2-I4T1U
IMU	ICM42688-P	Pressure Sensor	LPS22HBTR
Ambient Light Sensor	VEML6035	Magnetometer	AK09973D

Table 4-2 Optional On-Board Sensors

Measurement Type	Part #	Measurement Type	Part #
Voltage	ADC ADS1220IRVA	Force	FMAMSDXX025WC SC3
Current	ACS71240	Touch	CAP1296-1-AIA-TR
Conductivity	LFS1107	Distance/LIDAR	VL53L1CBV0FY/1, TMF8805
Sound	MP23DB01HPTR	Proximity (IR)	TSMP77000TT
Ultrasonic	MA40H1S-R	Proximity (Inductive)	LDC0851HDSGT
Pyroelectric Infrared (PIR)	IRA-S510ST01	Video (Camera)	Himax HM0360-MWA-00FP963
Spectral	AS7341	Air Flow	FS7.0.1L.195
Air Quality (TVOC)	MOD4410AI1R, ZMOD4410AI3V	Heart Rate and SPO2	MAX30101EFD+T
Carbon Dioxide (CO2)	SCD40-D-R2, ENS160-BGLR	Radiation	TY03 RADFET; Varadis RADFET
Air Quality (CO, CO2, HC)	USEQGCOAC82H00	pH	PHSP5-PK7-ADH
Hydrogen	PS1-H2-1000	<i>Custom sensors available upon request</i>	

5 Enclosure Options

Table 5-1 Enclosure Types and Use Cases

Enclosure Type	Use Case
Optically Transparent	Cameras, IR, etc
Gas or Chemically Porous	CO2, pH, etc
Acoustically Transmissive	Microphone, Speaker, Buzzer, etc
Electrically Conductive	Conductivity, etc
Force Transmissive	Pressure, etc
Thermally Conductive	Temperature, etc

Specifications presented in this document are subject to change without notice